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ADEQUACY OF KNOWLEDGE AND ATTITUDE TOWARDS INFORMATION TECHNOLOGY OF STUDENT LIBRARY USERS AT SELECTED COLLEGES AND UNIVERSITIES IN CALABARZON, PHILIPPINES

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ABSTRACT

Technology plays a very vital role in almost aspect of life. In fact it has completely changed the way we live. There are many manual tasks that have been automated, thanks to new and innovative technology. Modern day technology has the ability to carry out a wide range of critical and complex processes quite efficiently. Just as technology has created an impact on almost all walks of life, it also has had a major impact in the field of education. In fact the impact of information technology in education has been very positive, thereby leading to huge changes in the entire education industry for the better. The modern world has reacted strongly to the fast pace of the advancement of science and technology which has affected the various dimensions of living and lifestyles. It has likewise affected all types of organizations, the business, government, and most of all the school. In management operation, automation has taken place of clerks and computers have pervaded all types of organization, and have become an inherent feature. Methods of operations, communications have been revised to suit what are current of the times. Not only have lifestyles of people been affected with the use of cell phones as a mode for communication, it has also affected the classroom processes including structure This study sought to answer the following questions: How adequate is the knowledge of personnel on IT? What are the attitudes of student respondents towards the following: Technical knowledge of the computer, Capabilities of the computer, and Importance of the computer; and To what extent are attitudes of the respondents significantly related to: knowledge of computer and demographic variables? Descriptive method and random sampling was used in this study. The researchers utilized a quota samples of five hundred (500) student library users of selected colleges and universities in (Cavite, Laguna, Batangas, Rizal and Quezon) CALABARZON during first semester of the school year 2012-2013, and focus only on attitudes of respondents in terms of technical knowledge of computer, capabilities and importance. Descriptive method of research with the questionnaire as the main source of data. Based on the results the importance of information technology to the respondents, showed positive attitudes, followed by the capabilities of the computer, but attitudes were neutral on the technical knowledge of the computer. On relationship between attitudes with adequacy of knowledge of information technology in its technical aspect, capabilities and importance was determined the summary of the values on such relationship with attitudes as the independent variables and adequacy of knowledge as the criterion measures; technical aspect showed negligible but positive and direct relationship, technical knowledge of information technology does not contribute much to attitudes towards information technology; Capabilities of the computer showed almost significant but very negligible relationship which means that knowledge of computer does not contribute much to the attitudes of the students towards information technology and importance of computers showed substantial and it was very significant which means that importance of the computers result in positive attitudes towards them.

KEYWORDS

Information technology; knowledge, attitude - computer; Information Technology, Assessment.

INTRODUCTION

Technology plays a very vital role in almost aspect of life. In fact it has completely changed the way we live. There are many manual tasks that have been automated, thanks to new and innovative technology. Modern day technology has the ability to carry out a wide range of critical and complex processes quite efficiently. Just as technology has created an impact on almost all walks of life, it also has had a major impact in the field of education. In fact the

impact of information technology in education has been very positive, thereby leading to huge changes in the entire education industry for the better. With the advent of computers and internet technology, the field of education has undergone a complete transformation. This shows that the relevance of information technology in education is something that cannot be ignored. Consider this fact, the introduction of computers in education has made it very convenient for teachers to provide knowledge to students in an easy to learn manner. The use of internet technology has made education an interactive process.

Technology adaptation theory was utilized in this study it is a theory of cycles. As technology alters the work environment, creating new routines and conditions, new problems develop. Those who produce technology realize these problems and continually modify the technology in order to solve them. It is an ongoing cycle of adjustment to the new reality that technology creates in all areas of life. The modern world has reacted strongly to the fast pace of the advancement of science and technology which has affected the various dimensions of living and lifestyles. It has likewise affected all types of organizations, the business, government, and most of all the school. In management operation, automation has taken place of clerks and computers have pervaded all types of organization, and have become an inherent feature.

Faculty, students and researchers now frequent the library not only to pore over volumes of reference materials in the shelves, but to participate in a variety of interactive concerns. These are provided by, among others, sound and video clips which supplement knowledge generated in the past by traditional mode. The advent of internet technology has given rise to online education. Today, distance learning through online education has added a new dimension to education and learning. There are plenty of schools and colleges offering online courses to students wherein students can submit their assignments and homework through internet. In fact most online schools, colleges, and universities offer students the facility of making online submission of assignments. (Buenrosto, 2009) According to Scheeren (2010). the future for library information systems includes the ongoing move to visual system with single-search capability with these systems patrons will be able to enter a research questions on once screen in the return will be books from the collection, items from fee-based databases, and vetted Web sites. Further, students will have had instructions in query formulation, so they will be able to create efficient searches. Another area for the future library information system is that of digital libraries. Library information systems provide more search options for patrons than traditional card catalogs. Any piece of data in the MARC record can be searched by a modern library information system. Library system reduce the cost of providing catalog. While initial costs are high, sustaining costs are lower than such labor-intense duties as typing and filing catalog cards. The study attempts to determine the relationship between adequacy of knowledge of respondents who are library users of selected colleges and universities in CALABARZON and their attitudes if they are significantly different or related to demographic variables.

METHODOLOGY

This study sought to answer the following questions: What are the attitudes of student respondents towards the following: Technical knowledge of the computer, Capabilities of the computer, and Importance of the computer; and To what extent are attitudes of the respondents significantly related to: knowledge of computer and demographic variables? The researchers utilized a quota samples of five hundred (500) student library users of selected colleges and universities in (Cavite, Laguna, Batangas, Rizal and Quezon) CALABARZON, Philippines during first semester of the school year 2012-2013, and focus only on attitudes of respondents in terms of technical knowledge of computer, capabilities and importance. Descriptive method of research was utilized in this study with the questionnaire as the main source of data. The questionnaire was validated by members of the faculty of the University of Perpetual Help Laguna, who were requested to go over the questionnaires and recommend suggestions for the improvement. For evaluation and scoring Likert Scale within a continuum of five was used. Percentage, weighted and T-test was used for in-depth interpretation of the data. The primary sources of data were students in selected colleges and universities in CALABARZON area.(UPHSL; UPH-DJGTMU; St. Michael's College of Laguna; University of San Agustin and La Consolacion College). Through self-made questionnaires, the researchers acquired the needed information necessary for the study. The secondary sources of data were acquired from books, journals, researches and internet. The researchers acquired permission from the management of selected colleges and universities prior to the conduct of the study where the researchers personally direct the data gathering procedure. The data gathered were tallied, tabulated, and interpreted.

RESULTS

1. ADEQUACY OF KNOWLEDGE OF STUDENT ABOUT INFORMATION TECHNOLOGY

The knowledge of the student respondents were described in terms of their adequacy of information on the technical, capabilities and importance aspect. *1.1 Technical aspect*, adequacy of knowledge of respondents were quite varied and fell in two (2) categories with the most of their responses saying that "they were not sure" and some responses showing adequate knowledge about the technical aspect of IT. *1.2 Capabilities*, weighted averages ranged from 3.55 to 3.90 identifying adequacy of knowledge in one category that is "adequate" as to the capabilities. *1.3 Importance*, knowledge of the respondents on the importance were reckoned as "adequate and very adequate" as revealed by weighted average ranging from 4.10 to 4.92.

2. ATTITUDES OF STUDENTS TOWARDS INFORMATION TECHNOLOGY

2.1 Technical aspect, attitudes of students were neutral as indicated by weighted averages ranging from 3.19 to 3.48. An overall weighted mean of 3.32 revealed that as a whole, their attitudes towards the technical aspect of computer were neutral. *2.2 Capabilities*, responses of the group revealed receptively and acceptance of the capabilities of the computers. An overall weighted mean of 4.33 revealed that they had positive attitudes towards capabilities of the computers, which is part of information technology. *2.3 Attitudes*, student responses were homogeneous and fell in one category, showing very positive attitudes towards the importance of the computer as revealed by weighted means ranging from 4.50 to 4.85 indicated a very positive attitudes.

3. RELATIONSHIP OF ATTITUDES WITH ADEQUACY OF KNOWLEDGE ON INFORMATION TECHNOLOGY

The relationship between attitudes of respondents towards information technology was determined with adequacy of their knowledge of information technology. *3.1 Technical aspect*, the relationship between attitudes and the student knowledge was described by a computed correlation of 0.126 as negligible but positive and direct. A computed T-value of 1.265 reckoned it however as not significant nor important. With this, technical knowledge of Information Technology does not contribute much to the attitudes towards Information Technology. *3.2 Capabilities of the computers*, the relationship between attitudes and their knowledge of capabilities is described by a bigger correlation coefficient of 1.211 which was almost significant beyond the .05 level. However, a computed T-value of 1.945 reckoned is not significant and bringing only 4.452 percent of variations with the relationship which is very negligible. Knowledge of the capabilities does not contribute much to the attitudes towards information technology. *3.3 Importance of computers*, the relationship between attitudes and knowledge of the importance of computer was described by a computed correlation coefficient of 0.421 which was substantial. It was very significant beyond the .01 level. Attitudes due to their knowledge of important result in positive attitudes towards them. Overall knowledge of information technology is described by a computed correlation coefficient of 0.326 which is described as low but positive and direct. Amount of variations observable in attitudes due to knowledge of information technology reached 10.63 percent which is quite large and reckons overall adequacy of knowledge of information technology as strong predictors of attitudes.

4. RELATIONSHIP BETWEEN ATTITUDES TOWARDS INFORMATION TECHNOLOGY AND DEMOGRAPHIC VARIABLES

The relationship between attitudes towards information technology and demographic variables are age, gender, course enrolled in, time they spent in the library and what part of the day they spend in the library. *4.1 Age*, was significantly related to attitudes towards information technology as described by computed correlation coefficient of 0.732 as low but positive and direct. It is significant beyond the .01 level. Amount of variations observable in attitude due to the contribution of age reached 15.05 percent, which is quite large and reckons age as a strong predictor attitudes. *4.2 Gender*, relationship between gender and attitudes was described by a computed correlation coefficient of 0.388, which is positive and direct and signifies low relationship. *4.3 Courses enrolled in*, relationship was described by a computed correlation coefficient of 0.443 which described the relationship as marked and substantial and also positive and direct. It is also significant as reckoned by a computed t-value of 3.132. Course enrolled in is a strong predictor of attitudes towards information technology. *4.4 Time spent in the library*, relationship was described by a computed correlation coefficient of 0.126, as negligible and also not significant by a computed t-value of 0.891. Amount of variations observable in attitude is negligible and not strong predictor of attitudes towards information technology.

DISCUSSION

Based on the results the importance of information technology to the respondents, showed positive attitudes, followed by the capabilities of the computer, but attitudes were neutral on the technical knowledge of the computer. On relationship between attitudes with adequacy of knowledge of information technology in its technical aspect, capabilities and importance was determined the summary of the values on such relationship with attitudes as the independent variables and adequacy of knowledge as the criterion measures; technical aspect showed negligible but positive and direct relationship, technical knowledge of information technology does not contribute much to attitudes towards information technology; Capabilities of the computer showed almost significant but very negligible relationship which means that knowledge of computer does not contribute much to the attitudes of the students towards information technology and importance of computers showed substantial and it was very significant which means that importance of the computers result in positive attitudes towards them.

CONCLUSION

In the light of the above findings of the study, the following conclusion can now be made. Respondents were in general young in their middle twenties, mostly females, enrolled in Nursing, Engineering and Education. Students had more knowledge of the importance and capabilities of Information Technology than technical knowledge. Age gender and course enrolled in were strong intervening variables of attitudes towards information technology. Technical aspect was not indispensable in the use of computers, while their attitudes were neutral on technical aspect, they had positive attitudes in general to information technology. Except time, most of the demographic variables were good predictors of knowledge and attitudes.

RECOMMENDATIONS

In the light of the above results, the following recommendations are hereby given. More personal variables should be elicited from student so that information would be known on what differences or similarities exists. There should be more promotional gimmicks from the library staff to encourage students to know more about the technical aspects of the computer. More information should be found in bulletins that are attractive to students, so they would be encourage to read more about computers. A series of lectures may be conducted by the library staff on the technical aspect of Information Technology. Ways and means should be planned to encouraged other groups to develop positive attitudes towards Information Technology. Information should be given to the staff on the strong predictors of both knowledge and attitudes. Information about adequacy of knowledge and attitudes should be given to staff and different colleges for decision making.

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MOBILITY IN HETEROGENEOUS WIRELESS NETWORK USING HMAC**C. SUGANTHI****ASST. PROFESSOR****DEPARTMENT OF INFORMATION TECHNOLOGY****V.M.K.V.ENGINEERING COLLEGE****SALEM****DR. C. MANOHARAN****PRINCIPAL****ANNAI MATHAMMAL SHEELA ENGINEERING COLLEGE****NAMAKKAL****ABSTRACT**

These NG wireless terminals must provide seamless access while roaming between different wireless networks. For a seamless integration, the mobile terminal must be capable of accessing each network when needed. Each network structure performs resource allocation according to various techniques such as Time Division Multiple Allocation (TDMA) slots, Code Division Multiple Allocation (CDMA) codes, and random allocation in order to achieve high network utilization in accessing different networks. Therefore, to address the diverse Quality of Service (QoS) requirements, NG wireless terminals must be able to adapt to the heterogeneous access schemes. To achieve this Hexagon based Medium Access Control (HMAC) Layer is proposed to model heterogeneous access schemes. Based on this, HMAC provides architecture independent decision and guarantees QoS requirements. The six parameters are analyzed to evaluate the performance of the heterogeneous wireless network. The simulation result shows that HMAC provides a seamless access, achieves high network utilization and guarantees QoS requirement.

KEYWORDS

Heterogeneous Wireless Network, Medium Access Control, Resource Allocation, and Seamless Access.

INTRODUCTION

The next generation of wireless systems represents a heterogeneous environment with different access networks technologies that differ in bandwidth or data rate. In this kind of environment, seamless access is the challenging issue that supports the roaming of users from one system to another.

Wireless communication, despite the hype of the popular press, is a field that has been around for over a hundred years, starting around 1897 with Marconi's successful demonstrations of wireless telegraphy. By 1901, radio reception across the Atlantic Ocean had been established; thus, rapid progress in technology has also been around for quite a while. In the intervening hundred years, many types of wireless systems have flourished, and often later disappeared. For example, television transmission, in its early days, was broadcast by wireless radio transmitters, which are increasingly being replaced by cable transmission. Similarly, the point-to-point microwave circuits that formed the backbone of the telephone network are being replaced by optical fiber. In the first example, wireless technology became outdated when a wired distribution network was installed; in the second, a new wired technology (optical fiber) replaced the older technology. The opposite type of example is occurring today in telephony, where wireless (cellular) technology is partially replacing the use of the wired telephone network (particularly in parts of the world where the wired network is not well developed) [1].

Many types of wireless communication systems exist, but a distinguishing attribute of a wireless network is that communication takes place between computer devices. These devices include personal digital assistants (PDAs), laptops, personal computers (PCs), servers, and printers. As with networks based on wire, or optical fiber, wireless networks convey information between computer devices. The information can take the form of e-mail messages, web pages, database record, streaming video or voice. In most cases, wireless networks transfer data, such as e-mail messages and files, but advancements in the performance of wireless network is enabling support for video and voice communications as well.

TYPES OF WIRELESS NETWORKS

- **WLANS:** Wireless Local Area Networks

WLANS allow users in a local area, such as a university campus or library, to form a network or gain access to the internet. A temporary network can be formed by a small number of users without the need of an access point; given that they do not need access to network resources.

- **WPANS:** Wireless Personal Area Networks

The two current technologies for wireless personal area networks are Infra Red (IR) and Bluetooth (IEEE 802.15). These will allow the connectivity of personal devices within an area of about 30 feet. However, IR requires a direct line of site and the range is less.

- **WMANS:** Wireless Metropolitan Area Networks

This technology allows the connection of multiple networks in a metropolitan area such as different buildings in a city, which can be an alternative or backup to laying copper or fiber cabling.

- **WWANS:** Wireless Wide Area Networks

These types of networks can be maintained over large areas, such as cities or countries, via multiple satellite systems or antenna sites looked after by an ISP. These types of systems are referred to as 2G (2nd Generation) systems [3].

Today, growing consumer demand for access to communication services anywhere and anytime is accelerating the technological development towards the integration of various wireless access technologies, nowadays called as Fourth Generation (4G) wireless systems. 4G wireless systems will provide significantly higher data rates, offer a variety of services and applications previously not possible due to speed limitations, and allow global roaming among a diverse range of mobile access networks.

REVIEW OF LITERATURE

There exist several studies in the literature to address the integration of existing wireless system. In [12], Ad-hoc CELLular NETwork (ACENET) architecture for 3.5G and 4G mobile system is proposed. In which a heterogeneous MAC protocol is used to integrate IEEE 802.11, Bluetooth and HiperLAN/2 with cellular architectures. The coordination between transmissions of different access protocols is provided using beacons from the base stations. ACENET consists of a cellular network and ad hoc network. Even though ACENET improves the throughput performance, it needs many modifications in the base stations in order to achieve this.

In [6], a dynamic access probability protocol has been proposed for cellular Internet and satellite-based networks. The network computes an access probability, which depends on the load, and announces it, as a broadcast message, to the user. However, the QoS requirements of the application are not addressed.

A unified framework for the channel assignment problem in time, frequency, and code domains is proposed in [9]. The unified (T/F/C) DMA algorithm consists of labelling and colouring phases. Using the graph theory solutions, channel assignment problems in heterogeneous network structures have been addressed.

A MAC protocol with Fair Packet Loss Sharing (FPLS) scheduling is proposed for fourth generation wireless multimedia communications in [4]. The MAC protocol exploits both time-division and code division multiplexing. FPLS is a QoS requirement based packet scheduling algorithm. The main aim is to provide QoS guarantees in terms of transmission delay, accuracy, and to maximize system resource utilization. The proposed MAC protocol is shown to provide QoS guarantees in hybrid TD/CDMA systems. However, the proposed protocol necessitates a new wireless network infrastructure with new base stations for fourth generation communications.

In [8], an integrated approach for the management of power and performance of mobile devices in heterogeneous wireless environments is developed. It decides what wireless network interface (WNIC) to employ for a given application and how to optimize the WNIC usage. And it enhances the QoS by maximizing the power savings in heterogeneous wireless systems. In [5], an Adaptive Medium Access Control (A-MAC) layer to address the heterogeneities posed by the NG wireless networks is proposed.

A joint session admission control scheme for multimedia traffic is introduced in [13]. In which it maximizes the overall network revenue with good Quality of Service (QoS). They integrate two different networks, a Wireless Local Area Network (WLAN) and a wideband Code Division Multiple Access Network (CDMA). A novel concept of effective bandwidth is used in the CDMA network to derive the unified radio resource usage, taking into account both physical layer linear minimum mean square errors (LMMSE) receivers and characteristics of the packet traffic. However, the integration requires modifications in the existing base stations.

In [2], a new adaptive MAC based on OFDMA technology has been designed. In Wireless Local Area Network (WLAN), the existing Medium Access Control (MAC) scheme lack scalability when the network is crowded. It is due to the use of random multiple access techniques in the MAC layer. It provides a new opportunity for devising more efficient MAC protocols. Data transmission opportunities are assigned through an access point that can schedule traffic streams in both time and frequency domains.

A radio resource allocation is proposed for a heterogeneous wireless access medium in [11]. A novel algorithm is developed for the resource allocation. The coordination among different available wireless access networks base stations is established via the MT multiple radio interfaces in order to provide the required bandwidth to each MT. A priority mechanism is employed, so that each network gives a higher priority on its resources to its own subscribers as compared to other user. Numerical results demonstrate the validity of the proposed algorithm. The application of this framework requires major modifications in the NG wireless network components.

Based on the above works, the existing proposals need a significant modification in the existing infrastructure and base stations or a completely new architecture. The result is the integration problem, in terms of implementation costs, scalability and backward compatibility. The NG wireless networks are also expected to provide diverse range of services. This diversity in the MAC layer guarantees Quality of Service requirements in wireless environments.

PROBLEM IDENTIFICATION

The literature reviews presented above discussed listed several proposals which address the integration of existing wireless systems. However, the integration requires modifications in the existing base stations or a new wireless network infrastructure with new base stations. Although it improves the throughput performance over the existing networks, many modifications in the base stations are required to achieve this. These approaches lead to integration problems in terms of implementation costs, scalability and backward compatibility. Few proposals concentrate only on integrating the existing wireless network but not on the Quality of Service. Some proposals discuss the Quality of Service requirement in heterogeneous wireless network. Therefore, the problem is identified as integration of existing wireless network, high network utilization and guarantees Quality of Service requirements.

METHODOLOGY

The proposed work is a solution to the problems identified above. The solution is a new Hexagon based Adaptive Medium Access Control (HMAL) layer. The proposed HMAL framework has three sub-layers for seamless access, resource utilization and QoS scheduling. This HMAL framework is deployed in the NG wireless terminals of heterogeneous wireless network.

A. Hexagon based Medium Access Control

HMAL has three sub-layers. The Access sub-layer detects the available networks that the NG wireless terminal can access. The Decision sub-layer is responsible for selecting a suitable resource from the available network. The Scheduling sub-layer provides a QoS-based scheduling.

B. Access sub-layer

The NG wireless terminal is equipped with multiple-mode radio capabilities. Recent developments in radio receiver and transmitter development have led the way to mobile hand-held devices that are capable of functioning in multiple access technologies. The NG wireless terminals are capable of receiving signals from multiple network access points and transmitting signals to different access schemes simultaneously.

The HMAL consists of Adaptive Network Interfaces (ANIs) which is responsible for accessing different resource schemes in the underlying heterogeneous wireless networks. The MT communicates with different networks through ANIs. It monitors and records the parameters of various networks based on bandwidth, usage charges and power consumption as in [7]. These parameters are expressed in terms of weight factors to calculate the access function as follows:

$$N_{access}^i = \sum_{j=1}^n w_j f_{i,j} \quad 0 < N_{access}^i < 1 \quad (1)$$

$$\sum_{j=1}^n w_j = 1 \quad (2)$$

In the equation (1) and (2), n represent the numbers of parameters consider for calculating the N_{access}^i access function of network interface i . w_j represent the weight of j^{th} parameters. $f_{i,j}$ stands for the normalized score of interface i for j^{th} parameter.

C. Decision Sub-layer

The Decision sub-layer performs decision to choose a suitable interface to forward a specific traffic. The ANIs associated with each network discovers the possible network from the available networks. The Received Signal Strength of the base station and velocity of the NG wireless terminals are used to select the possible network. The decision algorithm is shown below:

Step 1: If the rss_i is less than rss_t , then for all n_j where j not equal to i

Step 2: Check whether rss_i is greater than rss_t and v_i is less than v_t then

Step 3: Add the network n_j to the possible network

Step 4: Calculate the difference $rssd_i$ between rss_i and rss_t

After selecting the possible network, a priority value is assigned to each possible network. Based on the decision function the ANIs selects a suitable network interface. The decision function is calculated as follows:

$$N_{decision}^i = N_{access}^i * P_{value}^i \quad (3)$$

In the equation (3), N_{access} is the access function calculated by access sub-layer using (1) and (2). P'_{value} is the priority value assigned to each possible network.

D. Scheduling Sub-layer

After the decision process calculation using (3), a QoS-based scheduler is used for each ANI in order to guarantee the QoS requirements of each flow. Accordingly the scheduling is performed in the ANIs where multiple flows are directed.

To address the requirements of the scheduler in NG wireless terminals, we propose a Dynamic Time Slot scheduling algorithm based on the idea presented in [10]. The scheduling algorithm is presented as follows.

• Dynamic Time Slot Scheduling Algorithm

The dynamic time slot scheduling is a frame based packet scheduler. Here, the time is slotted into frames of variable length. Each session makes a reservation in terms of maximum traffic when it is allowed to transmit during a frame period. The reservation is made according to a session's allocated rate. Each session is assigned a weight in terms of number of bits or bytes. The algorithm is defined as follows:

Enqueue

- Step 1: Assign arrived packet p to a flow index $flow_i$,
- Step 2: Check whether the active list $alist_i$ is empty then
- Step 3: Add the flow index $flow_i$ in the active list $alist_i$,
- Step 4: Assign zero to the deficit counter dc_i ,
- Step 5: Check for free buffers if not available then
- Step 6: Free the buffer
- Step 7: Enqueue the packet p to the queue q_i

The Enqueue algorithm adds arrived packet in the queue. When the packet p arrives, a flow index $flow_i$ is assigned to the packet. Then the flow index $flow_i$ is added in the active list $alist_i$, queue. If the active list $alist_i$ is full, then find a free buffer and add the flow index $flow_i$ with packet p in the queue.

Dequeue

- Step 1: Check whether the active list $alist_i$ is not empty then
- Step 2: Remove the flow index $flow_i$ from the active list $alist_i$,
- Step 3: Add quantum value qtv_i to the deficit counter dc_i ,
- Step 4: Calculate the packet size $pktsize_i$ of the packet p in the queue q_i
- Step 5: If the packet size $pktsize_i$ is less than or equal to deficit counter dc_i ,
- Step 6: Delete the flow index $flow_i$ from the queue q_i ,
- Step 7: Subtract the packet size $pktsize_i$ from the deficit counter dc_i ,

The Dequeue algorithm removes the flow index $flow_i$ from the queue q_i . Then the quantum value qtv_i is added to the deficit counter dc_i . The packet size $pktsize_i$ is calculated from the queue q_i . Then subtract the packet size $pktsize_i$ from the deficit counter dc_i and delete the head of the active list $alist_i$.

PERFORMANCE EVALUATION

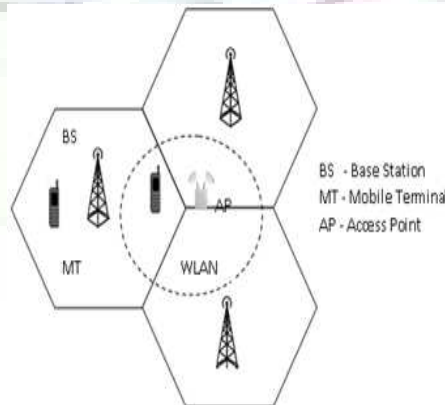
In this section, the experimental work evaluates the performance of the existing and proposed systems. A simulation model is developed using Network Simulator (NS2) for heterogeneous wireless network. Figure 1 shows the heterogeneous wireless network. It has different access schemes namely TDMA, CDMA, and CSMA. There are 100 nodes. The simulation parameters are listed in the below in Table I.

TABLE I: SIMULATION PARAMETERS

Parameters	Values
Simulator	NS2
Protocol	DSDV
No. of Nodes	100
Simulation Time	230seconds
Simulation Area	1000x1000m
Transmission Range	230m
Traffic Model	CBR, VBR
Transfer per Packet	512 bytes
Data Processing Delay	0.5,0.10,0.15ms
Energy Model	0.3,0.6

These nodes are distributed randomly in a 1000 x 1000m grid. The simulation time is 230 seconds. Each node is connected to only one network. And one node is equipped with the proposed model HMAC. This node is named as an Adaptive Node which is capable of accessing different networks.

FIG. 1: THE HETEROGENEOUS WIRELESS NETWORK



Two traffic models CBR and VBR are used. In this model six parameters throughput, power consumption, data rate, end-end delay, routing overhead, and network density are calculated.

RESULTS AND DISCUSSIONS

The results are carried out for the throughput, power consumption, data rate, end-end delay, routing overhead, and network density. The proposed system performance is compared with the existing systems. In Figure 2 the throughput for CBR and VBR traffic are presented. The throughput ratio of three nodes is considered. It is shown that, the proposed model achieves high throughput. In Figure 3 the power consumption of the proposed model is shown.

FIG. 2: THROUGHPUT OF PROPOSED MODEL

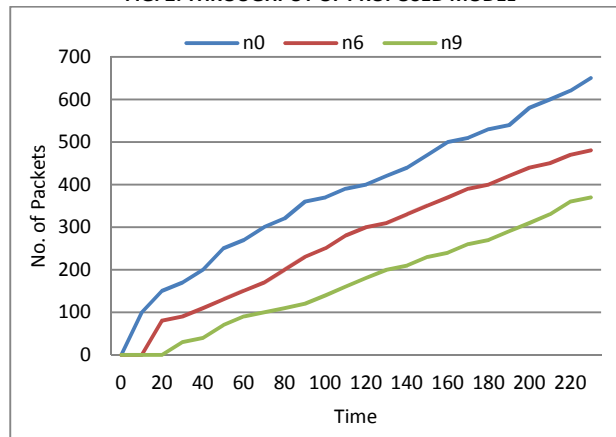
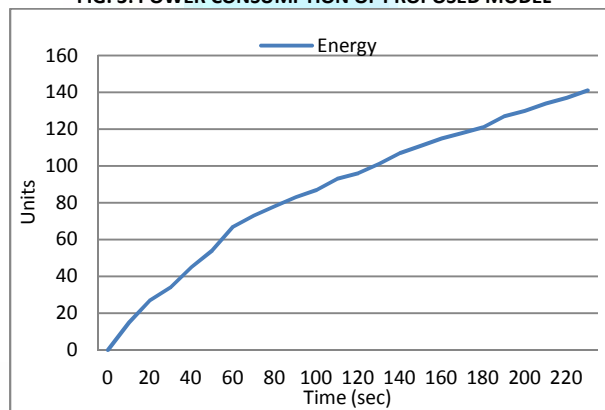
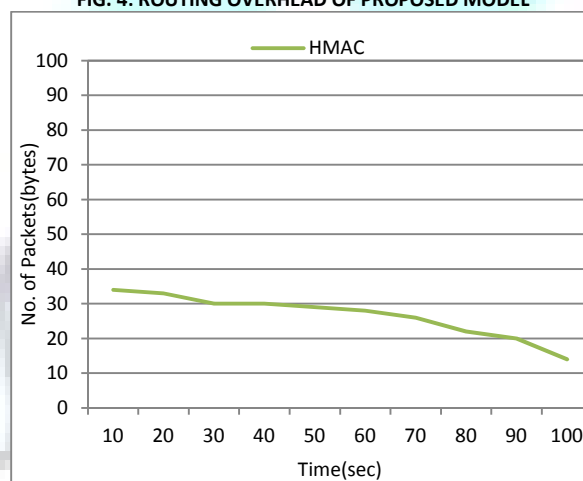


FIG. 3: POWER CONSUMPTION OF PROPOSED MODEL



The routing overhead graph is shown in Figure 4. The routing overhead of existing model is 1.45 where as the proposed model has 0.87. The routing overhead has been reduced by HMAC.

FIG. 4: ROUTING OVERHEAD OF PROPOSED MODEL



It is observed that the proposed scheme is more effective than the existing model. The packets arrival rate is higher, and the overall system throughput is higher in the proposed model. This is because our model uses QoS scheduling. Based on this, the routing overhead of the proposed model is reduced.

CONCLUSION

The proposed a Hexagon based Adaptive Medium Access Control Layer integrates different wireless networks. The HMAC is incorporated in the next generation wireless terminal. This HMAC has three-layered architecture. It provides seamless access through the access sub-layer. It achieves high network utilization by selecting a suitable resources using decision sub-layer. And also guarantees QoS requirement through scheduling sub-layer. The system performance is analyzed by the simulation software. Thus, HMAC addresses these challenges without any modification in the existing structure.

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A STUDY ON CONSUMERS PERCEPTION TOWARDS THE PURCHASE DECISION OF TWO WHEELER MOTORCYCLES IN NELLORE DISTRICT, ANDHRA PRADESH

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ABSTRACT

Successful marketing requires that companies must fully relate themselves to their customers and adopt a holistic marketing orientation towards their consumers and should gain a 360 degree view of both their daily lives and the changes that occur during their lifetimes. Gaining a thorough in-depth consumer understanding helps to ensure that the right products are marketed to the right customers in the right way. India is the second largest producer of two wheelers in the world. It stands next only to Japan in terms of number of two-wheelers produced, with the entry of multinational players the competition in the two wheeler segment is increasing. As a result customers are getting a wider choice of brands at different price slots and at high standards of quality. Under this scenario this study explores individual consumer buying dynamics and consumer buying behavior of motorcycle users and allows the marketers to gain insights into why individuals act in certain consumption related ways and with learning what internal and external influences compel them to act as they do. It will be helpful to producers to design and redesign marketing strategies to influence consumption decision of buyer. The present study is undertaken to access the most influencing factors of the motorcycle and its response over the respondents, and to understand their perceptions about different motorcycle brands in the market. Analytical study was carried out by using a questionnaire and the collected data were analyzed by using percentage, factor and ANOVA. The study reveals that Hero Honda is the most preferred brand followed by Bajaj. And it highlights that there is significant influence of demographic factors over the purchase decision of customers.

KEYWORDS

Buying Behavior, Factor analysis, Motivating factors. Purchase decision. Analysis of variance. Chi-square.

INTRODUCTION

With the liberalization, privatization and globalization of Indian economy and with the entry of many multinational players the competition in the two wheeler segment is reaching summit. As a result customers are getting a wider choice of brands at different price slots and at high standards of quality. Under this scenario understanding the consumer buying behavior of motorcycle users allows the marketers to gain insights into why individuals act in certain consumption related ways and with learning what internal and external influences compel them to act as they do. So the study of consumer buying behavior of motorcycles users will be helpful to producers to design and redesign marketing strategies to influence consumption decision of buyer. At the same time it will be very useful to customers while making their purchase decision. The study of buying behavior of motor cycle users is felt relevant in today's changing market environment of two-wheelers. Because the two wheeler sales in the country have sky rocketed in the recent years and the annual sales of motorcycles in India is expected to cross the 16 million mark by 2016 (FICCI, Arun Firodia, chairman (Kinetic Engineering)), as there is low penetration of two wheelers in the country at 68 two wheelers per 1000 citizens (2008). And India has 500 millions of middle class population waiting to buy two wheelers, which leaves immense scope for growth of the market.

REVIEW OF LITERATURE

The review of literature available on the consumer buyer behavior of two wheeler automobiles with main emphasis on motor bikes was carried out.

O'Brien¹ (1987) examined in his study four factors namely demographic, personality, sources of message, and product class and their effect on information handling. The products chosen for the study were cars and breakfast. It was found that the factors had varying effects on information handling; search initiation had no effect which suggested that substantial number of consumers failed to engage in extensive search prior to purchase. But unlike previous search, his study focused on incentives for information seeking for a given product, how much would a utility maximizing consumer with a given preference gain from search.

Hill (1987)² made a study on the mood of consumer with the objectives of looking at the mood literature and its development thereof.

Ravichandran (1988)³, in his research work, examined information sources used, choice marking and discrimination between urban and semi-urban population with reference to purchase of durable goods with 550 sample consumers from Chennai city and four other towns. The products chosen were refrigerators, television, ceiling fans and domestic mixers. The findings revealed that urban consumers made use of commercial sources, and semi urban, personal sources. They showed significant differences in the time taken for decision.

Sekar.S⁴ examined the "consumer values in product consumption patterns", among the consumers in the city of Chennai (1995), the consumers for the purpose of the study were classified into 'higher income', 'middle income' and 'lower income' groups. the results revealed that the product consumption patterns of lower income group of consumers appeared to be more influenced by their "physical value" while that of the middle income group was more influenced by their epistemic value and that of higher Income consumers were influenced by their "social values", hence the author concluded that the product consumption patterns of the three income groups differed to their value orientation.

Duncan and Olshavslay (1992)⁵ In a survey of 164 recent purchases of two wheelers showed that consumer beliefs about the market place and about their capabilities as consumer accounted for 50 percent of the variance in extent of external search. The types of brand (domestic, foreign, or local) considered by a consumer were found to be significantly related to the belief. The main objective of this research was to study the degree of relationship between market place related beliefs and pre-purchase external information search behavior. The extent of external search for information exhibited by consumers prior to purchase typically had been found to be very limited. In some cases little or no external search occurred.

IMPORTANCE OF THE STUDY

India has become world number two in two wheeler manufacturing. Because two-wheeler is really a common man's vehicle offering an affordable solution for personal mobility and a status symbol. The two wheeler sales in the country have tremendously increased in the recent years and the annual sales of motorcycles in India is expected to cross the 16 million mark (as per FICCI and SIAM) by 2016, leaves immense scope for the growth of the market. The two wheeler population has gone up to over 70 millions (as per estimates of NCAER) still there is a big potential to be tapped. The two wheelers have penetrated 7% of rural households and 24% of urban markets (NCAER), thus it leaves an immense scope for the market to grow in rural areas. With the opening up of rural markets, improved road connectivity and higher disposable incomes one can expect excellent prospects for two wheelers in rural area.

STATEMENT OF THE PROBLEM

Due to the stiff competition in the two wheeler segment customers have a wider choice in terms of number of brands, models and features at different price slots, and all these transformed the expectations of the customers. Now the customers are expecting the manufacturers to provide the products as per their tastes, preferences, habits, and lifestyles. The study of buying behavior of motorcycle users is more appropriate to today's marketing environment because customers are more conscious and particular about the products and services they want to have. If the firm/marketer fails to understand what their customers want, the products launched by the firm will be rejected in the market. In order to improve the new product success rate and to ensure customer acceptance one has to make an effort to learn everything what one could about their prospective customers regarding their needs, preferences, changing lifestyles, income levels and their purchasing patterns.

OBJECTIVES OF THE STUDY

1. To identify the relationship between the current brand of motorcycle being used by respondents and **demographic** characteristics of consumers.
2. To analyze the factors/attributes influencing the **purchase decision** of motor cycle users while making the purchase decision.

HYPOTHESES

1. There is no significant relationship between age, annual income, occupation and education and the current brand being used.
2. There is no significant variation in attributes of motorcycle in influencing the purchase decision of the respondent.

RESEARCH METHODOLOGY

The study is descriptive in nature. The researcher used a structured schedule to collect data from the respondents. Convenience sampling method is used. Respondents are divided into three parts consisting of three revenue divisions.

SAMPLING DESIGN AND STATISTICAL TOOLS

The study was confined to Nellore District in Andhra Pradesh. The sample consists of 252 customers, Convenience sampling was used. The study was conducted during the month of May-July 2012. The collected data were tabulated and analyzed by using percentage, factor analysis and ANOVA.

DATA ANALYSIS AND INTERPRETATION

The data collected from the respondents were systematically analyzed and presented under the following heads

Part A: Demographic profile of the respondents is provided.

Part B: Influence of the demographic factors over the purchase decision of the consumers is presented, and most influencing attributes of the motorcycle over the purchase decision of customer are analyzed.

Part A: Demographic profile of the respondents

TABLE 01: DEMOGRAPHIC PROFILE OF THE RESPONDENTS

Age of Respondents	Percentage	Education	Percentage	Occupation	Percentage
Below--26	27.8	Up to tenth	10.70	Student	19.0
26--35	40.5	Intermediate	16.67	Business	22.2
36--45	20.2	Degree	35.31	Private employee	46.8
Above 45	11.5	Post Graduation	28.57	Government employee	7.1
Total	100.0	Others	8.70	Agriculture	2.0
		Total	100.0	Professional	2.8
				Total	100.0
Gender	percentage	Income (Rs/month)	Percentage	Marital Status	Percentage
Male	98.0	Below-- 10,000	21.0	Married	57.9
Female	2.0	10,001--20,000	35.3	Unmarried	42.1
Total	100.0	20,001--30,000	22.2	Total	100.0
		Above 30,000	2.4		
		No income	19.0		
		Total	100.0		

From the above table it is observed that there are 60.7% of the respondents between 26-45 years old. 63.88% of the respondents are graduates, 27.37% are under graduates. 46.8 % of the respondent are private employees, and 22.2% are business people.57.5% of the respondents' income is between Rs 10,000 to 30,000. 47.9% respondents are married and remaining is unmarried.98% of the respondents are male.

PREFERENCE OF CURRENT BRAND (i.e. BRAND BEING USED) OF MOTORCYCLE

The study also intended to know what is current brand used by the respondent and the demographic factors influence over the choice of the current brand.

TABLE 02: PREFERENCE OF CURRENT BRAND OF MOTORCYCLE

Brand	No. of. Respondents	Percentage
Hero Honda	104	41.26
Bajaj	74	29.36
TVS	37	14.68
Yamaha	16	6.34
Honda	13	5.15
Suzuki	6	2.32
LML	1	0.39
Bullet	1	0.39
Total	252	100.0

Source: primary data

From the above table it is observed that 104(41.26%) respondents are using Hero Honda Motorcycles, 74(29.36%) are using Bajaj motorcycles, 37(14.68%) respondents are using TVS Motorcycles, 16(6.34%) are using Yamaha motorcycles. And only 6(2.32%) respondents are using Suzuki motorcycles; the remaining two members are using LML and Bullet each.

From the analysis it is inferred that the most trusted and preferred brands in the order of preference are Hero Honda, Bajaj, TVS, Yamaha and Honda motors.

TABLE 03: ASSOCIATION OF AGE WITH PREFERENCE OF CURRENT BRAND

Brand		Age in years				Total
		Below 26	26-35	36-45	above 45	
Chi-square = 48.643 Dof: 21 P-value = 0.001*	Hero Honda	18(17.31)	53(50.96)	21(20.19)	12(11.54)	104(100)
	Bajaj	21(28.38)	28(37.84)	11(14.86)	14(18.92)	74(100)
	TVS	16(43.24)	11(29.73)	9(24.32)	1(2.70)	37(100)
	Yamaha	7(43.75)	7(43.75)	2(12.5)	0(0.00)	16(100)
	Honda	7(53.85)	2(15.38)	2(15.38)	2(15.38)	13(100)
	Suzuki	1(16.67)	0(0.00)	5(83.33)	0(0.00)	6(100)
	LML	0(0.00)	0(0.00)	1(100)	0(0.00)	1(100)
	Bullet	0(0.00)	1(100)	0(0.00)	0(0.00)	1(100)
Total		70(27.78)	102(40.48)	51(20.24)	29(11.51)	252(100)

Source: primary data

Figures in the brackets indicate row wise percentages

The respondents' preference of brands is considered across age group. It is observed that out of 104 respondents who preferred Hero Honda, 53(50.96), 21(20.19) are in the age group of 26-35, 36-45. Out of 74 respondents who preferred Bajaj, 28(37.84), 21(28.38) are in the age group of 26-35 and below 26 years. Out of 37 respondents who preferred TVS, 16(43.24) and 11(29.73) are in the age group of below 26, and 26-35 similarly for other brands as shown in the table.

The chi-square test showed a significant effect of age group on choice of the vehicle Brand, with chi-square=48.64, at 21 dof, p=0.001.

TABLE 04: ASSOCIATION OF INCOME WITH PREFERENCE OF CURRENT BRAND

Brand		Income (in Rs)/month				Total
		below-10,000	10,001-20,000	20,001-30,000	above 30,000	
Chi-square = 41.31 Dof = 21 P-value = 0.005*	Hero Honda	25(27.47)	27(29.67)	33(36.26)	6(6.59)	91(100)
	Bajaj	12(19.05)	41(65.08)	10(15.87)	0(0.00)	63(100)
	TVS	5(22.73)	8(36.36)	9(40.91)	0(0.00)	22(100)
	Yamaha	4(33.33)	8(66.67)	0(0.00)	0(0.00)	12(100)
	Honda	3(37.5)	3(37.5)	2(25.0)	0(0.00)	8(100)
	Suzuki	4(66.67)	1(16.67)	1(16.67)	0(0.00)	6(100)
	LML	0(0.00)	0(0.00)	1(100)	0(0.00)	1(100)
	Bullet	0(0.00)	1(100)	0(0.00)	0(0.00)	1(100)
Total		53(100)	89(100)	56(100)	6(100)	204(100)

Source: primary data

Figures in the brackets indicate row wise percentages

In table 04, the respondent's preference of brands is considered across income groups. It is observed that the brand Hero Honda is preferred across all income groups, whereas Bajaj is preferred by the respondents whose income is below Rs 20,000. TVS is preferred across all income groups, similarly for other brands as shown in the table.

The chi-square test showed a significant effect of Income on choice of the vehicle Brand, with chi-square= 41.31, at 21 dof, p=0.005.

TABLE 05: ASSOCIATION OF EDUCATION WITH PREFERENCE OF CURRENT BRAND

Brands		Education					Total
		Up to tenth	Intermediate	Degree	PG & above	Others	
Chi-square= 85.513 Dof = 28 P-value= 0.000*	Hero Honda	13(12.5)	19 (18.26)	34(32.69)	30(28.84)	8(7.69)	104(100)
	Bajaj	7(9.45)	9(12.16)	29(39.18)	16(21.62)	13(17.56)	74(100)
	TVS	3(8.10)	13(35.13)	11(29.72)	10(27.02)	0(0.00)	37(100)
	Yamaha	4(25.00)	1(6.25)	6(37.5)	5(31.25)	0(0.00)	16(100)
	Honda	0(0.00)	0(0.00)	4(30.77)	9(69.23)	0(0.00)	13(100)
	Suzuki	0(0.00)	0(0.00)	5(83.33)	1(16.67)	0(0.00)	6(100)
	LML	0(0.00)	0(0.00)	0(0.00)	1(100)	0(0.00)	1(100)
	Bullet	0(0.00)	0(0.00)	0(0.00)	0(0.00)	1(100)	1(100)
Total		27(10.71)	42(16.67)	89(35.31)	72(28.57)	22(8.73)	252(100)

Source: primary data

Figures in the brackets indicate row wise percentages

In table 05 the respondent's preference was considered on education across the brands. It can be seen that out of 104 respondents who preferred Hero Honda, 34(32.69) and 30(28.84) respondents belong to Graduation and Post Graduation education respectively. Out of 74 respondents who preferred Bajaj, 29(39.18), 16(21.62), and 13(17.57) respondents belong to the education groups of Graduation, Post Graduation and others respectively. Out of 37 respondents who preferred TVS, 13(35.13), 11(29.72) and 10(27.03) respondents belong to the education groups of intermediate, Graduation and Post Graduation respectively, similarly for other brands as shown in the table.

The chi-square test showed a significant effect of education on choice of the vehicle Brand, with chi-square=85.513, at 28 dof, p=0.000*.

TABLE 06: ASSOCIATION OF OCCUPATION WITH PREFERENCE OF CURRENT BRAND

		Occupation						Total
		Student	Business	Private employee	Govt. Employee	Agriculture	Professional	
Chi-square = 151.313 Dof = 35 P-value = 0.00*	Hero Honda	12(11.54)	18(17.31)	65(62.50)	3(2.88)	4(3.85)	2(1.92)	104(100)
	Bajaj	10(13.51)	25(33.78)	31(41.89)	8(10.81)	0(0.00)	0(0.00)	74(100)
	TVS	17(45.95)	5(13.51)	9(24.32)	4(10.81)	1(2.70)	1(2.70)	37(100)
	Yamaha	4(25.0)	7(43.75)	3(18.75)	2(12.5)	0(0.00)	0(0.00)	16(100)
	Honda	5(38.46)	1(7.69)	6(46.15)	1(7.69)	0(0.00)	0(0.00)	13(100)
	Suzuki	0(0.00)	0(0.00)	2(33.33)	0(0.00)	0(0.00)	4(66.6)	6(100)
	LML	0(0.00)	0(0.00)	1(100)	0(0.00)	0(0.00)	0(0.00)	1(100)
	Bullet	0(0.00)	0(0.00)	1(100)	0(0.00)	0(0.00)	0(0.00)	1(100)
Total		48(19.05)	56(22.22)	118(46.8)	18(7.14)	5(1.98)	7(2.78)	252(100)

Source: primary data

Figures in the brackets indicate row wise percentages

In table 05 the respondent's preference of Brands was considered with respect to their occupation. It is observed that out of 104 respondents who preferred Hero Honda, 65(62.50), 18(17.31), and 12(11.54) respondents belong to the category of Private employee, Business, and Students respectively. Out of 74 respondents who preferred Bajaj, 31(41.89), 25(33.78) and 10(13.51) respondents belong to the occupation of Private employee, Business, and Students respectively. Out of 37 respondents who preferred TVS, 17(45.95) and 9(24.32) respondents belong to the occupation of student and private employees respectively, similarly for other brands as shown in the table.

The chi-square test showed a significant effect of occupation on the choice of the vehicle Brand, with chi-square=151.31, at 35 dof, p=0.00*.

FACTOR ANALYSIS

Factors influencing the purchase decision: There are different motivating factors which influence the consumer; the consumers are strongly motivated by economic, technological, and social benefits. While buying the motorcycle the factors that motivate the consumer in the study area are classified into Style, Features, Terms Of Finance, Color, Trouble freeness, Durability, Performance, Free Service Camps, Availability Of Private Service, Discounts/Special Offers, Quality, Finance Availability, Price, Dealer back ground, Resale Price, Availability of Dealer, Capacity of engine, Safety, Maneuverability, Rate of Interest, Fuel economy, Power, Service Availability, Brand Image, Maintenance Cost, Warranty, Maintenance, and Brand Ambassador. Among these factors, the dominant factors were analyzed with the help of Factor analysis

ROTATED FACTOR MATRIX FOR THE ATTRIBUTES OF MOTORCYCLE TOWARDS BUYING BEHAVIOR

The table 07 below exhibits the rotated factor loadings for the twenty eight attributes of the motorcycle as stated above. It is clear from the table that all the twenty eight statements have been extracted into nine factors, with the help of SPSS 16 version.

TABLE 07: ROTATED FACTOR MATRIXES FOR THE ATTRIBUTES OF MOTORCYCLE TOWARDS BUYING BEHAVIOR

sl.no	Attributes	Components								
		F1	F2	F3	F4	F5	F6	F7	F8	F9
1	Style	0.902	0.023	0.139	-0.03	0.033	-0.182	-0.069	-0.092	-0.13
2	Features	0.714	-0.03	-0.225	0.241	0.036	0.003	0.173	0.007	0.089
3	Terms of finance	0.702	0.065	0.154	-0.056	0.189	0.374	0.034	0.5	-0.071
4	Color	0.674	-0.032	-0.159	-0.451	-0.298	0.033	0.108	0.123	-0.054
5	Trouble freeness	0.624	0.154	0.196	-0.019	-0.168	0.158	0.002	0.108	0.47
6	Durability	0.522	-0.199	0.182	0.067	0.229	0.169	0.459	0.5	0.306
7	Performance	0.441	0.186	-0.138	0.065	-0.353	-0.12	0.061	0.351	0.235
8	Free service camps	-0.13	0.819	-0.13	0.015	-0.151	-0.04	0.109	0.235	0.043
9	Availability of pvt service	0.066	0.79	-0.036	-0.106	-0.08	-0.085	0.062	-0.222	-0.074
10	Discounts/spl offers	0.074	0.611	0.073	0.227	0.217	0.403	0.009	0.17	0.133
11	Quality	0.405	0.521	-0.242	0.134	-0.16	0.311	0.13	0.149	0.031
12	Finance availability	-0.075	-0.03	0.853	0.042	-0.035	-0.053	0.186	0.124	0.001
13	Price	0.029	-0.257	0.733	0.056	-0.023	-0.111	-0.128	-0.115	-0.027
14	Dealer back ground	-0.01	0.07	0.576	-0.232	0.412	0.233	-0.216	-0.121	-0.208
15	Resale price	0.391	0.151	0.547	0.308	-0.141	0.088	-0.419	0.096	0.272
16	Availability of dealer	0.023	0.12	-0.097	-0.863	0.279	-0.051	-0.179	-0.024	0.117
17	Capacity of engine	0.445	0.519	-0.088	0.617	-0.015	0.065	-0.011	-0.104	0.001
18	Safety	-0.023	0.434	-0.013	0.492	0.7	0.164	-0.215	-0.142	0.399
19	Maneuverability	-0.071	-0.117	-0.08	-0.14	0.884	0.027	-0.013	-0.056	-0.004
20	Rate of interest	0.398	0.047	0.249	0.278	0.464	0.437	0.11	0.009	-0.257
21	Fuel economy	-0.111	0.014	-0.059	-0.041	0.164	0.809	0.0	-0.227	0.293
22	Power	0.496	-0.012	-0.153	0.243	-0.287	0.585	0.201	0.092	-0.204
23	Service availability	0.096	0.069	-0.004	-0.022	-0.075	0.031	0.754	-0.259	0.288
24	Brand image	0.306	0.2	-0.086	0.148	0.042	0.192	0.676	0.337	-0.077
25	Others	0.255	-0.357	0.07	-0.382	0.389	0.075	-0.53	-0.006	0.234
26	Warranty	0.338	0.27	-0.073	-0.037	-0.186	0.083	0.056	0.766	-0.11
27	Maintenance cost	-0.101	-0.256	0.103	-0.077	0.054	-0.437	-0.145	0.770	-0.021
28	Brand ambassador	0.021	0.011	0.074	0.061	0.037	-0.078	-0.134	0.069	-0.85

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 15 iterations.

Source: primary data

Using SPSS-16 version

The rotated factor matrix, for the buying decision factors or attributes of motorcycle towards buying behavior is given in the results.

RESULTS AND DISCUSSION

Hypothesis 1: There is no significant relationship between age, annual income, occupation and education and the current brand being used.

TABLE 08: SUMMARY OF ASSOCIATION BETWEEN THE BRAND BEING USED AND DEMOGRAPHIC FACTORS (CHI-SQUARE TEST @ 5% LEVEL)

Sl. No	Factors	Statistical values			Result
		Chi-square	Dof	p-value	
1	Age	48.64	21	0.001*	Significant
2	Income	41.31	21	0.005*	Significant
3	Education	85.51	28	0.000*	Significant
4	Occupation	151.31	35	0.00*	Significant

Inference: As seen from the above table the influence of demographic factors over the choice of brand being used is significant with respect to Age, Income, Education, and Occupation at 5% level with the Chi-Square values as mentioned in the above table. So, it can be concluded that Age, Income, Education, and Occupation have impact over the choice of brand that is being used by the respondent.

FACTORS CONSIDERED IN BUYING DECISION OF A MOTORCYCLE

Factor analysis of 28 attributes relating to the buying behavior of motorcycle users were identified into nine factors and these factors are presented in the following table.

TABLE 09: BUYING DECISION FACTORS FOR MOTORCYCLE

Sl.No	Factors	Eigen value	Percentage of variance	Cumulative percentage of variance
1	Style	5.861	20.932	20.932
2	Promotional offers	3.389	12.102	33.035
3	Price	2.855	10.195	43.230
4	Capacity Of engine	2.244	8.014	51.244
5	Maneuverability	1.913	6.832	58.076
6	Fuel economy	1.744	6.227	64.303
7	Service Availability	1.466	5.234	69.537
8	Maintenance Cost	1.237	4.420	73.957
9	Brand Ambassador	1.014	3.623	77.580
KMO and Bartlett's Test				
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.				.306
Bartlett's Test of Sphericity			Approx. Chi-Square	4313.104
			Dof	378
			Significance.	.000

It is observed from the above table that the nine factors such as Style, Promotional offers, Price, Capacity of engine, Maneuverability, Fuel economy, Service Availability, Maintenance Cost, and Brand Ambassador were extracted from a total of 28 attributes. These factors account for about 77.580 percent of variance in the data. Eigen value for the first factor **style** is 5.861 which indicates that the factor contains very high information than others factors. The first factor, Style provides the maximum insights of buying decision of motorcycle users in the study area. It is very important factor, because the respondents prefer to buy the motorcycle which is **stylish in look**. To improve on these attribute, manufacturers of the two wheeler industry must concentrate on this aspect and give top priority to this factor.

The second important factor called **Promotional offers**, this include price/cash discounts, gifts, free accessories, extended warranty and free checkups, with 3.389 Eigen value and account for 12.102 percent variance. It explains that people chose to buy motorcycle if it posses the attribute of promotional offers. The third and fourth factors are **Price** and **Capacity of engine** account for 10.195 and 8.014 percent of variance with the Eigen values of 2.855 and 2.244 respectively. It indicates that price and capacity of engine are the next most important factors which govern the purchase decision. Buyers are giving importance to these factors while buying the motorcycle.

The fifth and sixth factors are called **Maneuverability** and **Fuel economy**, account for 6.832 and 6.227 percent of variance with the Eigen values 1.913 and 1.744 indicating that Maneuverability (ease of ride comfort in negotiating curves) and fuel economy (mileage) are simultaneously important for the user of the motorcycle. The seventh, eighth and ninth factors are called **Service Availability**, **Maintenance Cost** and **Brand Ambassador** with 5.234, 4.420 and 3.623 percent of variance respectively. The Eigen values for the factors are 1.466, 1.237 and 1.014 respectively. These factors are also important in buyer decision making.

High value of **Kaiser-Mayer-Olkin** (KMO) and **Bartlett's** measure of sampling adequacy (0.306) indicates the correlation between the pairs of variables explained by other variables and thus factor analysis is considered to be appropriate in this model.

Hypothesis 2: There is no significant variation in the attributes of motorcycle in influencing the purchase decision of the respondent.

Inference: From the analysis of table 09 it is clear that the significance of various attributes of motorcycle varies from person to person as seen in their Eigen values. Bartlett's test of Sphericity with 378 degree of freedom gives rise to a chi-square value of 4313.104, and the value is significant at 5% level. Therefore the degree of priority given by the respondents to various attributes of motorcycle varies.

FINDINGS

- Demographic factors showed an impact over the purchase decision of the motorcycle users
- 153(60.72%) Respondents are in the age group of 26-45 years, 104 respondents bought Hero Honda and 74 bought Bajaj motorcycles, and 32 bought TVS motorcycles. (Results showed that Hero Honda and Bajaj are the most preferred brands.)
- There are 145(71%) respondents whose income level is between Rs10, 001 to 30,000.
- Respondents who are graduates and post graduates are 161(63.8%), below intermediate are 69(27.3%).
- 118(46.82%) respondents are private employees, 56(22.22%) are business people, 48(19.04%) are students, and 18(7.14%) are government employees.
- Factor analysis reduced the 28 factors into 9 factors, which are considered to be the most influential factors of purchase decision of the buyer viz; Style, Promotional offers, Price, Capacity Of engine, Maneuverability, Fuel economy, Service Availability, Maintenance Cost, Brand Ambassador.

RECOMMENDATIONS/SUGGESTIONS

- Through the research it is evident that consumers prefer Hero Honda, Bajaj and TVS motors.
- Marketers should concentrate more on the age group of 26-45 years, because this age group is the most influencing age group while making the purchase decision of motorcycles.
- Respondents whose income per month is above Rs 10,000/ and below 30,000/ are the target group for motor cycle purchase so focus more on this.

4. Private employees and business people are the major target group for purchasing the motorcycle; hence more focus is required on this group.
5. Nine most influencing factors are found in the study by reducing the 28 factors. Therefore marketers should focus on these factors to influence the customer purchase decision.

CONCLUSION

From the Chi-Square test it is evident that demographic factors of the motorcycle buyers showed influence over the purchase decision of motorcycle, also it is evident that consumers are not giving equal priority to all the product attributes. Therefore producers and marketers should pay more attention on those factors which connect to the buyer and influence their purchase decision, consumers give importance to Style, Promotional offers, Price, Capacity Of engine, Maneuverability, Fuel economy, Service Availability, Maintenance Cost, Brand Ambassador.

SCOPE FOR FURTHER RESEARCH

The present study gives scope for further research in the area of promotion and promotional offers, what are more attractive to customers. Next one can focus on the finance schemes attractive for customers and mode of purchase customer's prefer to buy the vehicle and what is the kind of finance pattern does the buyer like. Also the occasion on which buyers like to buy the vehicle can become scope for further research.

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OPTIMIZING THE DE-DUPLICATION FOLIAGE IMAGE ACCESS IN STORAGE SYSTEMS

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ABSTRACT

We are now in the era of the Big Data revolution where nearly every aspect of computer engineering is being driven by large-data processing and analysis. The vast volume of data is used on Personalized Searches in normal or internet applications. Valid of data is important for accessing system without De-duplication. In this paper, we proposed to optimize the de-duplicated data using Map Reduce with the help of similarity based methodology that are used for comparable system. To access the data are in data storage applications using point-to-point process. The experimental results are conducting the probability testing is applied on large data sets on ternary clusters.

KEYWORDS

Big Data, De-Duplication, Foliage Images, Optimize, Point-to-Point, Probability Testing, Ternary.

INTRODUCTION

In our daily life, increasing in the business data growth rates is high, rapidly changes in coming years. Likewise, retention and retrieval requirements for new and existing data will expand, driving still more data to disk storage. The trend to larger data sets is due to the additional information derivable from analysis of a single large set of related data, which is forming Big Data. It is a collection of datasets. The data sizes are constantly moving from a few terabytes to many petabytes of data in a single data set. So it becomes difficult to process using on-hand database management tools or traditional data processing applications. With this difficulty, new platforms of "big data" tools are being developed to handle various aspects of immense quantities of data such as web logs, social networks and search indexing. Using key-based word searching we can search for words anywhere in the record.

Keyword searches are useful when we don't have complete information about what we are trying to search. For example it is a good substitute for a title or author search when we have incomplete title or author information. But by using keyword searches we can't suppress the redundant data of many users. There is ever-increasing focus on improving data storage efficiencies across the information infrastructure. Data reduction is a tactic which can decrease the disk storage; network bandwidths required and optimize use of existing storage assets. Deduplication is a well-known technique for data reduction process that means eliminating the redundant data in sequential-access disk and from active-data storage pools. One unique instance of the data is retained on storage media, and redundant data is replaced with a pointer to the unique data copy. The goal of Deduplication is to reduce the overall amount of time that is required to retrieve data by letting you store more data on disk.

The proposed system incorporates large data sets i.e., Big Data by forming three ternary clusters namely, Tag cluster, User cluster and Image data cluster. Also, all the information kept into three clusters. Clusters has played a critical role for pattern recognition, image segmentation i.e., which provides similar objects to create groups in an un-labeled data. Various clustering algorithms are created to define a partitioning of a dataset. It is importance of parameters are assigned an improper value, the clustering method results in a partitioning scheme that is not optimal for the specific data set leading to wrong decisions. The problems of deciding the number of clusters better fitting a dataset as well as the evaluation of the clustering results has been subject of many research efforts

The rest of the paper is organized as follows: Section 1 deals with present surveys of related work. Section 2 offers fuzzy classifications of decision personnel signature dataset. Section 3 contains details about support vector machine. Section 4 presents the study of foliage image using Map Reduce technique. Section 5 discussed the similarity technique applied on foliage image using Map Reduce. Section 6 presents the experimental results obtained. Finally, we conclude the conclusion and future works.

1. PERSONALIZED SEARCH

In previously discussed the personalized image search framework by various authors are simultaneously considering user and query information discussed in Learn to Personalized Image Search From the Photo Sharing Websites by Jitao Sang et al., published in IEEE Transaction Multimedia, 2012 [4]. The user's preferences over images under certain query are estimated by how probable he/she assigns the query-related tags to the images. A ranking based tensor factorization model named RMTF is proposed to predict users' annotations to the images. To better represent the query-tag relationship, we build user-specific topics and map the queries as well as the users' preferences onto the learned topic spaces. In this part, three modules are follows

1.1. USER-SPECIFIC TOPIC MODELING

User-specific information is considered to distinguish the exact intentions of the user queries and to re-rank the list results. Users may have different intentions for the same query for example; searching for "jaguar" by a car fan has a completely different meaning from searching by an animal specialist.

1.2. PERSONALIZED IMAGE SEARCH

In the research community of personalized search, evaluation is not an easy task since relevance judgment can only be evaluated by the searchers themselves. This approach is very expensive and needs large-scale real search logs. Social sharing websites provide rich resources that can be exploited for personalized search evaluation. User's social activities, such as rating, tagging and commenting, indicate the user's interest and preference in a specific document.

1.3. RANKING

Photo sharing websites differentiate from other social tagging systems by its characteristic of self-tagging: most images are only tagged by their owners. If any problem occurs to enable information propagation it calls for external resources. Here, in addition to the ternary interrelations, we also collect multiple intra-relations among users, images and tags. We assume two items with high affinities should be mapped close to each other in the learnt factor subspaces. Previous works on these lines were proposed by various authors; Jitao Sang is discussed in Learn to Personalized Image Search from the Photo Sharing Websites, IEEE Transactions on Multimedia vol.14, August 2012[4, 5, 6, and 7].

2. TERNARY CLUSTER ANALYSIS

Classification is the set of objects which are assigning to one among a set of pre-defined categories. It is a systematic approach for building classification models from an input dataset. Consider, Entire input personnel signature can be segmented into three clusters i.e., foliage (leaf) character images, users and Tagging. The cluster data is represented in the form of triplets.

Let U, I, T denote the sets of users, Images and Tags. The group of data of a cluster is denoted by $C \subset U \times I \times T$, i.e., each triplet $(u, i, t) \in C$ means that user u has annotated image i with tag t . the ternary interrelations can then constitute a three dimensional tensor $\gamma \in R^{|U| \times |I| \times |T|}$ is applied on map reduce [10].

3. SUPPORT VECTOR MACHINE

Support Vector Machine is a machine learning process. It is defined over a vector space in which the problem is to find a decision surface that “best” separates the data vectors into two classes suggested by Isabelle Moulinier et al., 1997 [4] is discussed the simplest linear form; an SVM is a hyper-plane that separates a set of positive from a set of negative with maximum margin.

The hyper-plane (dot) used on the database images and represented as linear SVMs or it can be found in a higher-dimensional space by transforming the images into a representation having more dimensions like input variables than the whole database in data images are treated as non-linear SVMs. It is used to provide simple solution by mapping the image data into a higher dimensional space and then reducing the problem to a linear.

The purpose of hyper-plane is to separates the training data by a maximal margin. All vectors lying on one side of the hyper-plane are labeled as 0, and all vectors lying on the other side are labeled as 1. The training instances that lie closest to the hyper-plane are called support vectors [1, 4 and 9].

The Linear Support Vector Machine $S = w \cdot i$ (3.1)

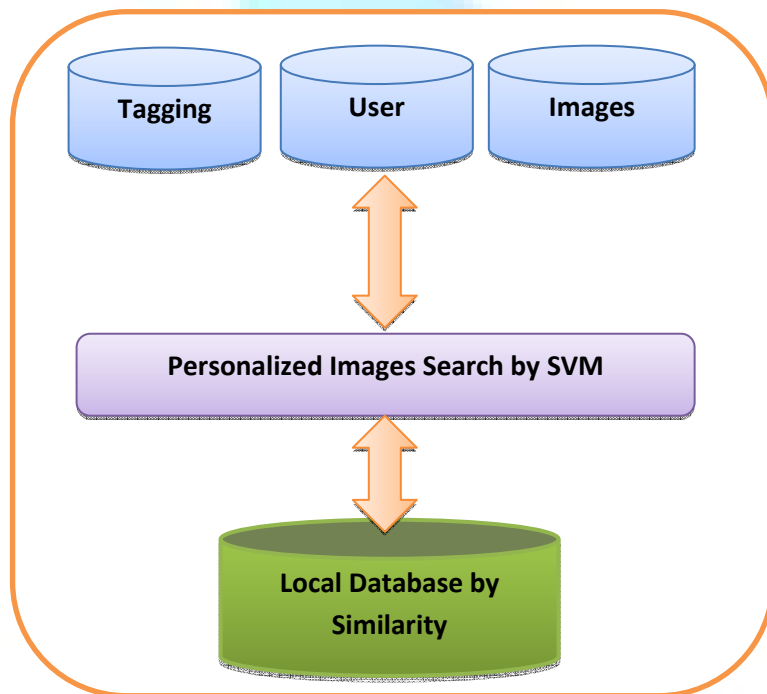
Where w is the normal vector namely called as database to the hyper-plane, and i is the input vector is known as Input Data. In the linear case, the margin is defined by the distance of the hyper-plane to the nearest of the positive and negative.

4. MAP REDUCE BASED T-NARY CLUSTER OPTIMIZATION USING SIMILARITY

The process requires validation that the target database is clean and contains the non-redundant data, from an identity perspective. The identity de-duplication process involves comparing all records of the image database among them, powered by complex mathematical algorithms that discover the some statistical study of similarity relationships within datasets.

When we send a request from local database to cloud database the requirement of basic algorithm for any recognition can be solved. The interface of classifier with the help of SVM classifier is followed by two classes namely called cloud database and local database by using map reduce classification problem; the goal is to find the image object and store to local database by a function which is induced from the mention figure below.

FIG. 4.1: MAP REDUCE BASED PERSONALIZED IMAGE SEARCHES USING SIMILARITY



MapReduce programming model is proposed. MapReduce is a functional programming model that implements for processing and generating large data sets as in [2][3]. It is well-developed technology for distributing and parallelized environments and also working on large data sets. Initially, the user makes a request to the cloud data storage about the triplets. Then the image data produces a set of intermediate key value pairs (images) with the help of map functions written by third party users. The existing cloud data storage is used to calculate the mean value for each image i.e., intermediate key value with the help of image normalization process and feature extraction values. The cloud database consisting of intermediate key values associated with the same intermediate key and passes them to the Reduce function with the help of MapReduce library by SVM classifier. Finally, the user of the reduce function is accepts an intermediate key and a set of values for that key for the database. We compare the mean value with the target image of database with the help of similarity approach to calculate the distances i.e., Euclidean distance.

$$Euclidean\ Distance = \sqrt{\sum_{i=1}^n (x - y)^2} \quad (4.1)$$

5. EXPERIMENTAL RESULTS

The experimental Results are produced on personnel signature image cluster datasets uses one of the approach test of Hypothesis (the estimating the value of a parameter we need to decide whether to accept or reject a statement about the parameter.), which is to generalize the two-sample software reliability testing if the data belong to more than two groups. The product reliability test is conducted on personnel signatures data sets to test for the equality of the means of two or more normal data set and also uses variances.

$$Pobability = \frac{\text{Number of cases when we find failure}}{\text{Total number of cases under consideration}}$$

By using this formula, to calculate the failure probability with the help of testing from input images. To find reliability of software, we need to find the respect is done or not from given input datasets [11].

In the above case tagging, user and images are ternary relations data sets. The three equivalents sample data clusters using searching and comparing purposes. To conduct the test whether check the three equal relations data or not and taking the data are equal or not.

Let H_0 is the sample mean are not equal.

Let H_1 is the sample mean are equal

If $H_0 = H_1$ then, Display both are Equal mean. So test is accepted.

Otherwise both are Not Equal, so test is rejected.

6. CONCLUSION AND FUTURE WORKS

De-duplication is one of the best concepts in Data Storage and it is a kind of Cloud Computing application. In this paper, we describe the cloud storage as image data storage which shows that the proposed method can provide the reliable data, fault tolerant and can improve efficiency and scalability. This approach has several applications such as Intrusion Detection and new technologies like Biometric and Video surveillance Systems, etc. Furthermore, the magnitude of the recognition level of an image which will follow some probability distribution using de-duplication.

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A STUDY ON THE IMPACT OF E TAILERS ON UNORGANISED AND ORGANISED RETAILERS WITH REFERENCE TO ELECTRONIC GOODS

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ABSTRACT

The proliferation of internet shopping has attracted a lot of attention and has spawned a heated debate about its impact on traditional retailing. Internet has changed the methods of retailing as well as the purchasing habits of consumers. E commerce has put a significant amount of control in the hands of shoppers, who have become habituated to both the speed and convenience of purchasing online. The internet provides consumers with the capabilities to shop around the clock, from any location, as well as easily access research about products' attributes and competitive pricing. This article makes an attempt to explore the impact on both organized and unorganized retailers. It was found that the impact of e tailers on organized retailers is considerable when compared to unorganized retailers.

KEYWORDS

internet shopping, E Commerce, organized retailers, unorganized retailers.

INTRODUCTION

Retail is the sale of goods and services from individuals or businesses to the end-user. Retail comes from the Old French word *taillier*, which means "to cut off, clip, pare, divide" in terms of tailoring (1365). It was first recorded as a noun with the meaning of a "Sale in small quantities" in 1433 (from the Middle French *retail*, "piece cut off, shred, scrap, paring"). Like in French, the word *retail* in both Dutch and German also refers to the sale of small quantities of items. Retailers are part of an integrated system called the supply chain. A retailer purchases goods or products in large quantities from manufacturers directly or through a wholesale, and then sells smaller quantities to the consumer for a profit. Retailing can be done in either fixed locations like stores or markets, door-to-door or by delivery. Retailing includes subordinated services, such as delivery. The term "retailer" is also applied where a service provider services the needs of a large number of individuals, such as a public. Shops may be on residential streets, streets with few or no houses or in a shopping mall. Online retailing, a type of electronic commerce used for business-to-consumer (B2C) transactions and mail order, are forms of non-shop retailing. Shopping generally refers to the act of buying products. Sometimes this is done to obtain necessities such as food and clothing; sometimes it is done as a recreational activity. Recreational shopping often involves window shopping (just looking, not buying) and browsing and does not always result in a purchase.

THREE CATEGORIES OF RETAILERS

UNORGANIZED/TRADITIONAL RETAILER

Traditional retail refers to these thousands of small, mostly family-owned retail businesses. They are also referred to as the "unorganized" retail sector. The "organized" sector refers to large, modern regional and national retail stores.

Through the centuries, Indians have purchased goods from small local vendors, entrenching this style throughout the country. Unorganized retailing refers to the traditional formats of low-cost retailing, for example, the local corner shops, owner manned general stores, paan/beedi shops, convenience stores, hand cart and pavement vendors, etc.

ORGANIZED/MODERN RETAILERS

Organized retailing comprises mainly of modern retailing with busy shopping malls, multi-storied malls and huge complexes that offer a large variety of products in terms of quality, value for money and makes shopping a memorable experience.

Modern retail sector is at the crossroads where the growth of organized retailing and growth in the consumption by the Indian population is going to take a higher growth trajectory. It is undergoing a major transformation as entry of global players and watchful expansion by major Indian retailers has opened new vistas of joint ventures, tie-ups and franchise offering new formats, services, private labels, locations and recently to diverge from metros to smaller towns, Arvind Singhal Chairman Technopak Advisors has rightly said that, "A lot of international retailers and brands are most likely to look at India, as global markets have stabilized and the Indian economy has proved to be better than most other countries. In India the Wal-Mart model is a 20th century concept that is fast becoming obsolete in the 21st century. Internet now threatens the hyper market which may survive in small towns with low land prices, but looks doomed to becoming a minority player.

E-TAILERS/E-RETAILERS

Retailing through online domain is known as E-tailing. E-tailing can describe food retailing or service retailing or goods retailing. An online selling system can make opportunity for the organization to introduce its goods and services, advertise its new items, sell easily and quickly, and receive money online. Also, the company reaches customers in remote places and this can extend the area of its business. Four dimensions including Privacy, Fulfillment, System Availability and Efficiency are identified as the main criteria for judging e-service quality.

E-tailing offers unique advantages to the consumer that no other form of retailing can match. The hypertext nature of the medium allows for more flexible forms of transactions (growth of C2B and C2C) to flourish. It allows for easier comparisons across broad product categories with the evolution of shopping bots and similar mechanisms. The medium also offers flexible/dynamic pricing mechanisms to the consumer. These evolutions reduce any friction in the online market place and stimulate the use of the web as a retail environment. In the long-run, this will benefit the marketers as well as the consumers. Further, this will penalize the marketers who thrived in market places that had entry barriers in the form of a lack of freely available information. Earlier, such a situation restricted the customers in making informed choices and led to inefficient pricing and localized monopolies.

THE FUTURE OF INTERNET RETAILING

Whilst it may not be possible to predict with any degree of certainty how the internet will shape the design of markets, the practice of marketing or the behavior of online shoppers, in the future, it is clear that the market-share and influence of online retailing will continue to rise. For example, in the UK, it has been estimated that the number of customers being served by the UK online and catalogue retail industry, which currently stands at 26.9 million active online

consumers, will rise to around 30 million by the year 2013, representing over half of the UK population. In similar vein, statistics for the USA also provide evidence of the rapid growth of internet retailing. In recent years, and a strong expectation that this growth will continue, well into the future. The role of online retail is changing in India too. There are almost 120 million internet users in India and looking at the 2020 vision it could reach to 1 billion if it continues to grow at this rate. This continuing expansion of online retailing will inevitably draw renewed attention to its likely affect on the high street. Moreover, given the customers' desire to use the internet as a flexible tool for researching products and locating stores, as well as purchasing merchandise, it would also seem likely that the multi-channel format will be the preferred design. The established retailers will inevitably continue to face stiff competition from successful and high profile "virtual merchants" and "disintermediators", such as amazon.com, apple.com and dell.com

COMPARISON OF WEB AND TRADITIONAL RETAIL MARKET

Compared to the traditional market, the Web market differs along three main dimensions:

i) technology infrastructure; ii) channel integration; and iii) information intensity. This discussion is not meant to be complete and comprehensive, but rather a summary of some important characteristics that retailers should understand about the Web market.

1. TECHNOLOGY INFRASTRUCTURE

Advances in technology have provided useful supportive tools in the conventional market. For example, television and radio have greatly facilitated one-way communication. Various information systems can be used to process transactions, collect and analyze data. Technology-based tools have helped marketers perform their marketing strategies more efficiently and effectively in the traditional marketplace. The Web-based marketplace serves as a platform for advanced technology and applications. Marketers who pioneer new Web-based technology and commercial applications can gain substantial competitive advantage.

2. CHANNEL INTEGRATION

The powerful integrated environment of the Web can affect the marketplace in many ways. Many business models, such as those similar to TV and catalog shopping, can be implemented readily online. Different business tools and functions can be integrated. Consumer orders can be automatically processed and routed to suppliers. Information channels are integrated, with information flowing both ways between vendors and customers. This facilitates the gathering and sharing of market knowledge. For consumers, competitors are just a click away, allowing easy combined communication medium and distribution/transaction channel, which is quite different from traditional marketplaces.

3. INFORMATION INTENSITY

Information availability is limited in the traditional market. While electronic techniques, such as POS, have been used to collect information for inventory management and customer analysis, they have limited potential. First, the information collected through these systems does not tend to be extensive, since it simply includes merchandise descriptions and quantities sold. While some stores also collect customer account data, valuable information generated through personal interaction with customers, such as their preferences, is typically lost.

Surveys and analysis by stores and brand manufacturers are generally conducted, if at all, on a limited sample basis. Second, information collection and analysis in the traditional market is primarily performed from the marketer's point of view and for the marketer's use and purpose. Information that directly facilitates consumers' information searching or market evaluation is not as easily available. Electronic techniques used in the traditional retail market tend to be supportive tools, and do not emphasize the customers' views, roles or power.

The Web is a truly information-intensive environment. Vast amounts of information can be collected, integrated, processed, presented, and accessed through the Web by both marketers and consumers. Marketers now can track detailed information for all e-tailing consumer interactions, not just select samples. However, soft market features, such as reputation and reliability, may be more difficult to gather and evaluate. Consumers can gain more market knowledge for criteria comparison, however potential problems of information overload may increase perceived searching costs (Head et al. 2000). Marketers may provide tools to facilitate consumer information collection, but may have to redesign their marketing strategies since competitors can also accumulate market knowledge and match price differences.

REVIEW OF LITERATURE

RETAIL IN INDIA

India's growing retail boom is a triumph story. With strong essentials developing in the Indian economy in the liberalized environment since 1991 with changes in income levels, lifestyles, taste & habits of consumers with preference for superior quality and branded products, vast domestic market with a very competitive manufacturing base, India has also observed a major retail boom in recent years. Being encouraged by India's growing retail boom many multinational companies also started making beeline to enter India's retail market. Investment from abroad has also been hailed by Indian industry, by and large, as the same has been considered to be very vital for adding to domestic investment, addition to capacity, higher growth in manufacturing, trade, business, employment, demand, consumption and income with multiplier effects. (Amisha Gupta, 2010)

GROWTH OF RETAIL IN INDIA

Till recently, Government of India allowed 51% FDI in single brand retail and 100% in cash & carry only. One of the major steps taken by the Government recently to encourage the organized retailing in the country was the recent decision of the cabinet to allow 51% FDI in multi brand retail and 100% in single brand retail in Nov 2011. The decision was delayed and held back for some time because of the absence of political consensus. As a result of the liberalized policies & reform measures taken by the government since 1991, Indian Economy has achieved commendable growth rates over the last few years with many success stories in many fronts. India's growing retail boom is one such success story. With strong fundamentals developing in the economy with changes in income levels, lifestyles, taste & habits reflecting in strong consumerism with preference for superior quality and branded products, vast domestic market with a very competitive manufacturing base, India also observed a major retail boom in recent years (Dube, Arindrajit, Lester, T. William and Eidlin, Barry, 2007).

In the hindsight, many of the original predictions made at the dawn of the internet era have not become a reality. Retailers are not cannibalizing their own custom, virtual merchants do not dominate the market place, and the high street has not been put out of business. By contrast, other predictions have come to pass electronic intermediaries are playing an increasingly important role, "one to one" marketing has become a reality, prices are most competitive, and, perhaps most importantly, the consumer has become more powerful (Neil F Doherty And Fiona Ellis-Chadwick, 2010).

As online retailing expands on the back of customer incentives and product discounts, brick and mortar chain stores such as Shoppers Stop Ltd, Lifestyle International (P). Ltd and The Bombay Store are reworking their Internet strategies to compete with e-tailers such as flipkart.com. The retail chains are seeking to tap an e-tailing sector that is heating up. According to a November report by Avendus Capital Pvt. Ltd on the digital consumer industry, e-tailing is set to become a Rs 53,000 crore market by 2015 from the current Rs 3,600 crore, but still accounting for just around 1.4% of the Rs 36 trillion retail markets in India. (Sapna Agarwal, 2012) "Online retail will hit a \$1 billion (around Rs 4,910 crore at today's exchange rate) turnover this financial year. The one category that is getting a boost online is books, followed by electronics," said Govind Shrikhande, managing director and chief executive officer, Shoppers Stop, which runs the book retail store—Crossword. In 2011, the sales of books and electronic items in physical stores slowed as e-tailing sites grabbed market share, Shrikhande said. Towards this end, Crossword launched cross word in five months back. It has also tweaked the strategy for its book retail chain of 80 stores to grow through the franchisee route. (Livemint and Wallstreet Journal, Feb 03 2012).

"Three things important for a future bazaar consumer is price, access and convenience," said Kashyap Deorah, President of futurebazaar.com. "For every consumer who goes online and shops, there are four who go offline and buy at stores," said Deorah, who expects online sales to contribute 10-15% of the group's retail revenue in the next couple of years. (Livemint and Wallstreet Journal, Feb 03 2012) "Internet retail is going to grow. It is an important channel of distribution," said Kabir Lumba, managing director, Lifestyle. (Livemint and Wallstreet Journal, Feb 03 2012) "We are tying up almost every other day with an online retailer," said Asim Dalal, managing director, Bombay Swadeshi Stores Ltd, which runs The Bombay Store. He expects 20-25% of sales to come from its online presence in the next three years versus 10% now for the new venture. (Livemint and Wallstreet Journal, Feb 03 2012) "Retail takes time to warm up to

the online medium due to two reasons—the lack of touch and feel (resulting in a different user experience compared with physical retail) and the need to develop an ecosystem, which sometimes does not exist,” said the Aventus report, adding that savings inherent to the e-tailing model—the reduction of inventory and high-cost retail space—provides e-tailers the margins to enable such incentives for consumers. (Livemint and Wallstreet Journal, Feb 03 2012).

“Brick and mortar stores have to reinvent. Some of them are already doing it and have relaunched their websites,” said Binny Bansal, chief operations officer and co-founder of Flipkart Online Services Pvt. Ltd. (Livemint and Wallstreet Journal, Feb 03 2012) “One of the big draws to shop online is the prices. Retailers can’t compete with pure-play e-commerce companies who have lower cost of operations and a dedicated logistics support. Even if they get the pricing right, they would cannibalize their own sales further, stressing the already stretched margins,” said Arvind Singhal, chairman, Technopak Advisors Pvt Ltd, a retail consultancy firm. (Livemint and Wallstreet Journal, Feb 03, 2012)

“Last year, close to 500 e-commerce portals were launched in India of which at least a half-a-dozen odd players would have revenues of over Rs 100 crore in the next fiscal,” said Mukul Singhal, senior associate at SAIF Partners Ltd, a private equity firm which has made early stage investments in Zovi.com, Inkfruit.com and Firstcry.com. (Livemint and Wallstreet Journal, Feb 03 2012)

EMERGENCE OF E-TAILING

E-tailing is a market practice that is still in its infancy. Viewing the web as a marketing tool, marketer incorporates the web into their traditional strategies. Viewing the web as a new market place, business emerges with new product/service designs, targeted customers, and strategies. Traditional methods to evaluate the success of a business seem insufficient in the new economy. Despite increasing sales, many e-businesses are not profiting. In this developing market, many businesses aim to build a brand name and customer base, while leaving profitability a long-term consideration. (F. Wang, M. Head, N. Archer, 2002).

The proliferation of internet shopping as a viable retail format has attracted a great deal of media attention about its potential impacts on place-based shopping. Specifically, the growing estimates of online retail sales have caused the real estate industry to become increasingly, concerned about the ability of internet shopping to replace shopping at bricks-and-mortar stores. However, the current research and literature lacks a systematic assessment of the potential impacts of this emerging retail format on the traditional models of shopping. Without such an assessment planners and real estate professionals will find it difficult to navigate the various claims in the media and are faced with great uncertainty about their traditional practices. (M. K. Massagli, 2000)

Mass-customization is producing fundamental change, revolutionizing attitudes to choice, with a key role for agents (human and online) in helping people choose. Consumer power will grow and brands will be under pressure from rising consumer expectations. While retailers fight back with targeted marketing and special offers, brands will need to serve consumer needs as much as suppliers. Online shopping could transform consumer behavior, driven by cost saving and convenience and spurred on by competition. Will retailers protect their traditional channels or go online because they are afraid not to? ‘E-tailing’ will need to create consumer trust, so regulation will be critical, possibly leading to legal responsibilities for quality on Internet service providers (ISPs) and portals and with systems to help new entrants build a track record of reliability, thereby increasing competition, choice and consumer power. (Henry Stewart Publications, 2002)

The online information disclosed by electronic retailers (e-tailers) is expected to play a role in building customer relationships. The level of online information disclosure relies on the e-tailer’s discretion while unethical online information disclosure practices, such as disclosure of misleading information, may harm the entire electronic retailing industry. Information disclosure is explained significantly by the country in which an e-tailer is located, whether the business is confined to the internet, and the number of payment methods. However, no effect is found for the price level of the major product line and whether products are shipped to international customers. (Kim, Daekwan, Cavusgil, S. Tamer, 2006)

The effects of electronic Word-of-Mouth (eWOM) in the form of online customer-to customer recommendations on attitudes about the recommended product and confidence in the choice decision - the amount of eWOM has a significant impact on buyer confidence in product choice. In addition, for buyers less motivated to process information, the effect of eWOM on their choice confidence is mediated by their attitude towards the recommended product, suggesting that the amount of eWOM functions as a purchase cue. (Harris, J. Gupta, Pranjal, 2008)

Indian Retail Industry is ranked among the ten largest retail markets in the world. The attitudinal shift of the Indian consumer and the emergence of organized retail formats have transformed the face of Retailing in India. With the sign of reemergence of economic growth in India, consumer buying in retail sector is being projected as a key opportunity area. As a consequence, Indian corporate houses are refocusing its strategic perspective in retail marketing with the idea to use resources optimally in order to create core competence and gain competitive advantage. (Dr.S. Akhter, I. Equbal, 2012).

Online shopping is now an everyday part of most peoples’ lives. From the perspective of the here and now, and looking forward, there is plenty of evidence to suggest that this internet-enabled revolution has much more life in it yet. The revolution has moved from a phase in which the innovation and ideas were primarily flowing from the supply-side to one in which the innovation and ideas were primarily flowing from the supply-side to one in which the consumer, from the demand-side, is empowered to direct the way in which the revolution unfolds. (Neil F Doherty And Fiona Ellis-Chadwick, 2010).

The Indian Online Retail is a rich segment waiting to be exploited. Internet is a potent medium that can serve as a unique platform for the growth of retail brands in India. The medium holds many virtues favorable for the retail industry including a higher customer penetration, increased visibility, and convenient operations. The current web-based models for e-tailing are part of an embryonic phase preceding an era of rapid transformation, challenge, and opportunity in Indian retail market. The Indian retail market is witnessing a revolution. The growth of internet has enabled the new retail format of the virtual retailer to emerge and forced the existing retailers to consider e-tailing model of retailing as well. Online retailing or e-tailing is described as transactions that are conducted through interactive online computer systems, which link consumers with sellers electronically, where the buyer and merchant are not at the same physical location. In a short space of time, internet retailing or e-tailing has firmly established itself as a viable alternative to store based shopping. (S. Suri, P. Vij, S. Singh, 2012) FDI in multi branding retail welcomes more entrants and more competition in E-world of retail in India. E-tailing, as now, would change with the flow of time and become the most essential weapon for all retailers to stay in the competition and sustain their business. For all organized players this decision will create more challenges in the future. For unorganized the scenario will less comparatively than the organized players. (Ramakrishna H., 2013)

STATEMENT OF THE PROBLEM

The study is undertaken with the intention to understand the impact of E tailers on the unorganized and organized retailers with reference to purchase of electronic products in Bangalore .Retail sector is one of the contributing factors for the growth of our economy. The transition from unorganized to organized to E retail describes the fast growth of the retail sector. With its fast growth ,the consumer is also looking for avenues where marketing services becomes a matter of convenience .In this regard, introduction of retail with maintenance of e quality standards have attracted the consumers towards it. Due to this the consumer is slowly shifting its focus from unorganized/organized retail towards e-retail. High literacy rate in Bangalore compounded with the boom in IT sector has resulted in the consumers becoming tech savvy .Consumers are influenced to shop online, which in turn has impacted the sales of brick and mortar stores. In light of these developments the study –“A study on the impact of E tailers on traditional and organized retailers with reference to electronic goods” has become imperative.

OBJECTIVE OF THE STUDY

The main objective of the research is to study the impact of E tailers on the sale of organized and unorganized retailers with specific reference to electronic goods.

METHODOLOGY

The data was collected through both primary and secondary sources. Primary data was collected through a questionnaire and secondary data was collected through journals, books and news papers. Respondents for the survey were selected through judgmental sampling. Chi square method was used for statistical analysis.

DATA ANALYSIS

The data collected from the questionnaire has been analysed and represented in the tables given below.

TABLE 1: SHOWING THE NUMBER OF TRADITIONAL AND MODERN RETAILERS

RETAILERS	FREQUENCY	PERCENTAGE
UNORGANISED	55	51
ORGANISED	52	49
TOTAL	107	100

INTERPRETATION

Out of 107 retailers studied, 51% retailers are organised and the remaining 49% are unorganized.

UNORGANISED RETAILERS**TABLE 2: AREA OF THE RETAILERS**

AREA	FREQUENCY	PERCENTAGE
KR MARKET	20	36
NATIONAL MARKET	20	36
AGARA	5	10
J.C ROAD	10	18

Out of 55 unorganized retailers, studied, 36% of retailers are from KR Market, 36% are from National Market, 10% from Agara and 18% from J.C Road. National market and rest 50% from KR market.

Most of the respondents were chosen from K.R.Market and National market as it is the hub of unorganized market.

TABLE 3: IMPACT OF E-TAILERS ON SALES OF THEIR ELECTRONIC PRODUCTS

ANSWER	FREQUENCY	PERCENTAGE
YES	5	9
NO	44	80
NOT SURE	6	11

Out of 55 unorganised retailers, 80% of retailers disagree to the impact of e-tailers on their sales, 9% of retailers agree the fact that e-tailers have an impact on their sales and rest 9% are unsure about the impact. Most of the traditional retailers believe that e-tailers do not have any impact on their sales since they sell products at a very reasonable price.

TABLE 4: VARIETY OF ELECTRONIC PRODUCTS THE STORE HAS

ELECTRONIC PRODUCTS	FREQUENCY	PERCENTAGE OF RETAILERS
STORAGE DEVICES	33	63
HOME APPLIANCES	52	100
LAPTOP AND COMPONENTS	33	63
PHONE/TABLET AND ATTACHMENTS	39	75
SOFTWARE AND GAME DVDs	33	63
GAMING DEVICES	21	41
MOVIE AND MUSIC DVDs/CDs	12	24
CAR ELECTRONIC ACCESSORIES	9	17
PERSONAL COSMETIC GADGETS	52	100

Out of 52 stores, all stores have personal electronic gadgets and home appliances, 75% have phone and tablets, 63% have laptops, storage devices and software DVDs/CDs. 41% have gaming devices and 17% retailers have car electronic accessories.

Personal gadgets and home appliances are available in all the retail outlets as majority of consumers are in need of these products.

TABLE 5: ELECTRONIC ITEMS THAT HAVE THE MOST SALES IN A YEAR

ELECTRONIC PRODUCTS	FREQUENCY	PERCENTAGE OF RETAILERS
STORAGE DEVICES	0	0
HOME APPLIANCES	37	71
LAPTOP AND COMPONENTS	6	12
PHONE/TABLET AND ATTACHMENTS	9	17
SOFTWARE AND GAME DVDs	0	0
GAMING DEVICES	0	0
MOVIE AND MUSIC DVDs/CDs	0	0
CAR ELECTRONIC ACCESSORIES	0	0
PERSONAL COSMETIC GADGETS	0	0

Among the sale of electronic goods, the sale of home appliances with 71% forms the major product category to be sold, followed by 17% of phone/tablet and attachments and 12% of laptop and components.

TABLE 6: IMPACT OF E TAILERS ON THE SALES OF ELECTRONIC PRODUCTS OF ORGANISED RETAILERS.

OPINION	FREQUENCY	PERCENTAGE
YES	12	71
NO	0	0
PARTIALLY	5	29

71% of organized retailers are of the opinion that e-tailers have an impact on their sales and 29 % partially agree to it. Most of the organized retailers agree that e-tailers have a considerable impact on the sale of their products as the target market of both are the same.

TABLE 7: IMPACT OF E-TAILERS ON THE CATEGORY OF ELECTRONIC GOODS OF ORGANISED RETAILERS

ELECTRONIC PRODUCTS	FREQUENCY	PERCENTAGE
STORAGE DEVICES	52	100
HOME APPLIANCES	18	35
LAPTOP AND COMPONENTS	39	76
PHONE/TABLET AND ATTACHMENTS	45	88
SOFTWARE AND GAME DVDs	39	76
GAMING DEVICES	21	41
MOVIE AND MUSIC DVDs/CDs	33	64
CAR ELECTRONIC ACCESSORIES	0	0
PERSONAL COSMETIC GADGETS	27	52

100% organized retailers are of the opinion that E tailers have an impact on storage devices, 88% on mobile and tablet, 76% on laptops, components, software and game DVDs, 65% on movie and music DVDs/CDs, 52% on personal cosmetic gadgets, 41% on gaming devices and 35% on home appliances. The sale of storage devices and laptop components of organized retailers have the most impact as they are the most frequently purchased products.

TABLE 8: IMPACT OF E RETAILERS ON NATURE OF RETAIL OUTLET

NATURE OF RETAIL OUTLET	YES	NO	PARTIALLY AGREE	TOTAL
ORGANISED	37	0	15	52
UNORGANISED	5	44	6	55
TOTAL	42	44	21	107

H0: The impact of E tailers does not depend on the nature of retail outlet.

H1: The impact of E tailers depends on the nature of retail outlet.

Using chi square analysis it was found that the calculated value 71 is greater than table value.

Hence we reject the null hypothesis and accept the alternate hypothesis. From the above analysis it is found that the impact of E tailers depend on nature of retail outlet. From the study it was found that E tailers have more impact on organized retailers.

FINDINGS

UNORGANISED RETAILERS' DIMENSION

In unorganized retail shops 50-70% of foot falls get converted into actual sales of products. Most of the unorganized retailers believe that e-tailers do not have any impact on their sales as their products are reasonably priced than e-tailers and their target customers are different from modern retailers.

ORGANIZED RETAILERS' DIMENSION

In organized retail shops 10-30% of foot falls get converted into actual sales of products Majority of organized retailers agree that e-tailers have a considerable impact on the sales of their products since most of the electronic items and gadgets are comparatively less on e-tailers sites According to organized retailers, storage devices are the most salable products in e-market rather than any other product. Home appliances are least salable products in e-market since people prefer a touch and feel experience when purchasing home appliances. Organized retailers perceive that e-tailers have great impact on consumer buying process since the web sites enable them to gather information about the products and analyse the same with the help of product reviews in various social sites.

CONCLUSION

Thanks to cheap labor, small shops can provide home delivery at low cost. Many shopkeepers know their customers personally and extend them credit. For all these reasons, the am bania will easily compete with hyper markets in most locations .If India continues to grow rapidly, after some decades labor will become too expensive for small shopkeepers to offer home delivery. Other developments like goods and service tax may also reduce their ability to evade sales tax and income tax.

But long before these developments reduce the shopkeepers' edge over hypermarkets, E commerce will swamp both. E Commerce is still constrained today by limited credit card usage ,but this is expanding very fast.E tailing has become an important part of consumer shopping behavior and is here to stay in times to come. Though it might not replace brick and mortar stores completely, its impact can be significant. Hence it is important for retailers to redefine their strategies to sustain their business in the future. Fifty million small shop keepers went on strike to skotch hyper markets.But neither they nor Mamta Banerjee can stop E commerce.That's no disaster. The traditional Bania is ready to stand in his shop 12 hours a day, but not his educated children.Just as the children of educated farmers want to get out of farming ,the children of shop keepers want to get out of retail.We need economic reforms to bring in foreign hyper markets .

SUGGESTIONS**FOR ORGANIZED RETAILERS**

- Since E tailers have more impact on organized retailers than unorganized retailers, organized retailer should come up with strategies to counter the impact.
- Organised retailers should look at E tailing as an opportunity to reach out to a larger population across the market. They can do it by launching their own online sales portals or making their products available through other portals.
- The biggest crowd puller for online stores is the discounted prices as compared to physical stores. This should be kept in mind while devising the pricing strategy for brick and mortar stores.
- Retailers must extend more benefits to their consumers like free home delivery and more promotional offers.

FOR E-TAILERS

- Online retailers should make significant investment in technology to replicate the physical store experience for consumers. One such example is virtual trial rooms-'Virtual Try-on '-introduced by Fashionista.com and Tobi.com-an online fashion boutique in the USA which helps consumers try apparel in the virtual world.
- Delivery time for electronic products like pendrives and storage devices are very fast. Same speed should be maintained while delivering high end electronic goods as well.
- E tailers should continuously upgrade their existing security solutions in order to avoid fraudulent activities which can compromise the security of E tailing websites.

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A MODERN CLASSIFICATION OF PRICING STRATEGIES OF RETAILERS

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ABSTRACT

Retail is one of the fastest changing sectors in India. Price promotion tools are very integral to a retailer. The current research paper analyzes the pricing strategies of retailers in India and abroad. These strategies are categorized into shopping event pricing strategies and non-shopping event pricing strategies. By considering these various price related promotion strategies, the emerging retail calendar of Indian retailers is derived. An extensive study of foreign retailers' and Indian retailers' pricing strategies has been done through following the retail related news in Indian and Foreign retail market for a period of 3 years from 2010-13. These have helped to frame a price promotion related categorization and develop a retailer's calendar.

KEYWORDS

Retail, Pricing Strategies, Retail Price Promotions.

INTRODUCTION

The retail industry is poised to touch \$ 1.3 trillion by 2020. The estimated value of the retail sector at the present juncture is about \$ 500 billion. Penetration level of modern retail, which currently stands at 5 per cent, will grow about six times from the current \$ 27 billion to \$ 220 billion in 2020. The Indian retail industry is going through a phase of change. It is also at this time that the retailers are witnessing the advent of new and very innovative pricing strategies and price related promotional events. In India the retailers earlier identified two seasons the August to January season when the festive season begins and the February to July season when the season culminated with the stock clearance sale in the month of July. But the current retail scene has changed immensely with the entry of organized retailers.

REVIEW OF LITERATURE

Swee Hoon Ang (1997) investigated the effects of price reductions expressed in percentage terms and by using an Asian setting on consumer response where she suggested that an implausible claim produced higher shopping intention.

Srivatava Smriti (2012) studied the marketing strategies of retailers which included the promotional strategies. She concludes that that promotional offers have a strong impact.

SymphonyIRI (2012) report on Millennial Shoppers reveals that price is an important consideration for shoppers. It suggests that retailers should come up with promotional programs that reflects this generation's quest for living well with less.

Raman Swati and Radhika Neela (2005) presented the case of 'Big Bazaar', one of the constituent stores of Pantaloon Retail India Ltd (PRIL). The case study reveals that the major USP of Big Bazaar store is 'low pricing to offer best price proposition to customers'. Big Bazaar offers products at prices 5% to 60% lower than the maximum retail price. As a result of this, customers focus less on branded items (price discount normally less) and more on unbranded products (of comparable quality as branded ones) available at a cheaper rate. This shows the importance of pricing in the context of retail scene in India.

According to Erica Betts and Peter McGoldrick (1996), 'Sale' shopping as a social occasion is characterized by a more highly charged atmosphere than is shopping at other times. This first motive relates to the increased energy and enthusiasm shoppers have as a result of the atmosphere and general ambience generated largely by other shoppers. Hence shopping fests have the effect of generating interest and attracting consumers.

David R Bell (1998) analysis that stores following Everyday Low Pricing get a greater share of visits from the large basket shoppers hence it shows that the pricing policy has an effect on consumer behaviour.

Noel Muzondo (2011) concludes in his current study that price is very important in determining consumer choice of store in a hyperinflationary environment. The study has confirmed that promotion is a critical element in determining shopping behaviour in a hyperinflationary environment.

SIGNIFICANCE/NEED OF THE STUDY

The above studies covered some pricing strategies. The current study is initiated to understand the various pricing strategies which retailers have been adopting. In recent times innovative events centered on price promotions have come up. In fact these events have changed the traditional "two season calendar" followed by retailers in India. The researcher attempts to present the new retail price promotion calendar and the prevalent pricing strategies in retail sector.

OBJECTIVES OF THE STUDY

The basic objective of the study is to describe the major pricing strategies that are being used by retailers in India and abroad. This study aims to:

1. Describe the pricing strategies of retailers in India and abroad
2. To analyze these pricing strategies into Non Shopping Event Pricing Strategies & Shopping Event Pricing Strategies.

3. To analyze the traditional and new shopping events centered on price promotions.
4. To draw up the new emerging calendar of retailers in India reflecting some price centered events.
5. To make suitable suggestions to retailers on the basis of research

RESEARCH METHODOLOGY

SOURCES OF DATA

Secondary data regarding the pricing strategies followed by retailers in the retail industry was collected from various research papers, articles, newspaper articles, reports and websites. The researcher has collected retail news of India and abroad for the last three years from the websites of newspapers like The Times of India, The Economic Times, The Hindu Business Line, Mint, Business Standard, Deccan Herald, The New York Times, The Chicago Tribune, The Star Tribune, The Guardian, The Wall Street Journal etc.

ANALYSIS AND DISCUSSION

The current research paper brings forth several pricing strategies that are prevalent today. They are listed below:

- Price Advertising
- Low Price Lock
- Price Freeze
- Price Challenge
- Price Guarantee
- Individualized Prices
- Mobile Coupon Initiative
- Grocery Receipt Comparison
- Traditional Shopping Events
- Small Business Saturday
- End Of The Season Discount Sales
- Promotional Sales
- New Created Events
- Innovative Pricing Oriented Properties

These are further grouped under the following two heads:

1. Non Shopping Event Pricing Strategies like Price Advertising, Low Price Lock, Price Freeze, Price Challenge, Price Guarantee, Individualized Prices, Mobile Coupon Initiative & Grocery Receipt Comparison.
2. Shopping Event Pricing Strategies like Small Business Saturday, End of the season discount sales, Black Friday, New Created events like the Independence Day Sale, the Republic Day Sale, Innovative Pricing Oriented Properties like Future Group's 'Public Holiday Sales' etc. These shopping events can be further broken down into traditional and new shopping events centered on price promotions

THE NON SHOPPING EVENT PRICING STRATEGIES

Price Advertising is a very commonly used pricing strategy of organized retailers nowadays. It refers to advertising price reductions and advertising prices in relation to competitor's prices. Value retailers typically use this strategy to entice customers. It is now common to find newspaper inserts showing the low prices offered by retailers. Sometimes they also compare their prices with those of competitors. Consider this case for example. Publix Super Markets, Inc., commonly known as Publix, is an American supermarket chain based in Lakeland, Florida (Publix). Nearly a year after Wal-Mart began its price-comparison ad campaign against other grocers; the Lakeland-based supermarket chain i.e. Publix is battling back. Publix has launched what amounts to a "bring it on" campaign to reassure customers that the store has affordable prices — if you shop the sales and buy-one-get-one deals. The no-frills message is clear: "Wal-Mart doesn't always have the lowest price." For example, Publix came up with a price advertising campaign "two boxes of Mueller's pasta cost \$2.72 at Walmart versus \$1.37 on special at Publix. Two boxes of Duncan Hines cake mix cost \$2.48 at Walmart versus \$1.67 at Publix. Buy every item on sale, and you'd save \$97.86."

The campaign underscores what many Publix shoppers have claimed all along, that you can save money on groceries if you do a little homework. Publix spokeswoman Shannon Patten said the ads reflect the chain's stance that meeting customers' high expectations doesn't have to mean higher prices. The campaign rolled out on March 7 2013 for its stores in Florida, Georgia, Alabama, South Carolina and Tennessee. "We want our loyal and potential customers to know that we offer more than clean stores, quality products and friendly service. We offer great value," Patten said. Walmart isn't blind to Publix's counterattacks and has no plans of backing down. The Bentonville, Ark., chain is filming TV commercials about price-comparison shopping in 50 markets nationwide. It knows a lot of people don't like to bother with sales and coupons. Just give them the best price. ^(Thurston, 2013)

Following this price advertising war between Publix & Wal-Mart came Giant Eagle's response. Giant Eagle is another retailer based in Pennsylvania. It announced it was cutting the prices on more than 3,000 popular grocery items — a move expected to save customers about 15 percent on their grocery bills. ^(Lindeman, 2012)

This announcement from Giant Eagle in March 2013 is an indication for the price wars that is driven by Price Advertising (Lindeman, 2012). But price alone is unlikely to be enough for competitors in the grocery business to battle heavyweights like Wal-Mart, which has laid out a strategy of sacrificing profit margin to drive volume increases, said Jim Hertel, managing partner at consulting firm Willard Bishop in Barrington, Ill. That's why Giant Eagle is also mailing coupons and gift cards directly to customers based on their buying habits.

The same retailers also use **low price lock** strategy. The O'Hara grocer, rolled out "low price locks" on seasonal items starting in October 2012. The retailer claims to deliver more than \$70 million in annual savings to consumers through the thousands of goods included in its new "everyday price reduction effort." This new round of cuts is not tied to a particular season and should be in place indefinitely, said Rob Borella, senior director of corporate communications for Giant Eagle. ^(Lindeman, 2012)

The price lock program is meant to guarantee that cost-conscious shoppers won't see price hikes on certain items at least until after Jan. 2. The O'Hara grocer's "Low Price Lock" marketing campaign locks in prices on more than 300 items from store-brand spiral hams at \$2.29 a pound to a 100-count bag of Top Care cotton balls for \$1. The grocer said some prices were reduced before being locked. The concept of locking down grocery prices has been used by various chains around the country. The Bi-Lo chain, based in Greenville, S.C., introduced its "Price Lock" program in 2010. In that case, users of the grocer's loyalty card get a set price on certain items for an eight-week period. ^(Lindeman, 2012) This Low Price Lock strategy is specifically resorted to by retailers during inflationary times.

Price Freeze is another pricing strategy which is used by retailers like Wegman. Wegmans Food Markets, Inc. is a family-owned U.S. regional supermarket chain headquartered in Gates, New York, near Rochester. (Wegmans) In 2011, Wegmans began the program to freeze prices on food staples. The purpose of the program, company officials said, was to help consumers who struggle with rising costs. The program has been renewed several times since. The lists generally reflect seasonal shopping behaviors, with the summer list, for instance, having items suited to warm-weather diets and food preparation. The store has used consumer surveys and other outreach with shoppers to help devise the lists (Tobin, 2013).

During the Christmas Shopping Season in 2012, Wal-Mart came up with its newly rolled out (and heavily advertised) Christmas **Price Guarantee** strategy. After making a purchase, if a competitor advertises a lower price on the same product between November 1 and December 25, the big box retailer will match it. Shoppers have to bring their receipt and advertisement to a store to receive the differential refund, which is made in the form of a gift card. It also seemingly telegraphs a "we are so confident about our prices that we'll match our rivals' prices" message to consumers (Mohammed, Nov 22).

Price Challenge has also come up in a big way in India especially during these promotional sales. Hypermarkets run by retail biggies are outdoing each other with price challenges, aggressive discounts and combo offerings for the Independence Day sales. Mukesh Ambani's Reliance Retail has come out with a 10-day 'Price Challenge' from August 10-19 at its Reliance Fresh, Super and Mart stores, where it challenges customers to find a cheaper deal at other stores. If they do, Reliance Retail claims it would pay double the difference. Bharti's 'easyday' has gone a step ahead and launched 18-day 'Freedom from inflation' offer. The chain is also challenging consumers to find lower prices, saying it would match that if buyers indeed get better deals elsewhere (Kamath, 2012).

Target is using a combination of mobile advertising, SMS and its mobile site to educate consumers about the company's **mobile coupon initiative** and encourage them to save money on several of their favorite products. The company is running the mobile campaign within The Weather Channel's iPhone application. Nowadays retailers are using mobile coupons too like The Target mobile ad reads "Click to text "UPUP" to 827438 (TARGET) for coupons. When users tap on the mobile ad, they are redirected to their SMS app that already has the short code 827438 filled in. From there, consumers have the option of texting the keyword UPUP. If they choose to opt-in, users receive a message from Target that includes a link to its mobile site where they can learn more about the company's mobile coupons. When consumers click on the link, they are taken to the retailer's mobile-optimized site where they can get coupons for their favorite Up & Up products, which expire on April 27. The landing page features a mobile bar code that includes several coupons on many Up & Up products. Consumers can show their phone at a Target in-store location to redeem them at the point-of-sale (Rimma, 2013).

Grocery Receipt Comparison is a new tool in the kitty of retailers to seek the attention of price conscious consumers. Walmart is testing a program that invites consumers to send Walmart a photo of a grocery receipt from a Walmart competitor. Within a couple of days, Walmart responds with a calculation of how much the consumer would have saved at its stores. The "Walmart Receipt Comparison Tool" went live in mid-August in Albuquerque, Chicago & Atlanta. A website set up around the effort "seeforyourself.walmart.com/receiptcomparison" (Ryan, 2012).

Individualized Prices is another phenomenon in which with the use of data collected about consumers is used to generate specific offers for individual consumers. Consider this case, Grocers like Safeway and Kroger are going one step further, each offering differing methods to determine individualized prices. Hoping to improve razor-thin profit margins, they are creating specific offers and prices, based on shoppers' behaviors, that could encourage them to spend more: a bigger box of Tide and bologna if the retailer's data suggests a shopper has a large family, for example (and expensive bologna if the data indicates the shopper is not greatly price-conscious). The pricing model is expected to extend to other grocery chains — and over time could displace standardized price tags. Even though the use of personal shopping data might raise privacy concerns among some consumers, retailers are counting on most people accepting the trade-off if it means they get a better price for a product they want (Clifford, 2012).

SHOPPING EVENT PRICING STRATEGIES

There are many traditional and new shopping events which center around price promotion. In India traditionally there has the Off Season Discount Sale in July and the Festive Shopping Season around Diwali. In the US, the Festive Shopping season starts with Black Friday in the month of November. New Created events like the Independence Day Sale, the Republic Day Sale etc have also become a regular event in India. The following section details upon these Shopping Event pricing strategies.

In US the Shopping Season starts with **Black Friday** which is the day following the Thanksgiving Day. Thanksgiving Day is observed on the 4th Thursday of November. It is regarded as the beginning of the Christmas shopping season. In recent years, most major retailers have opened extremely early and offered promotional sales to kick off the holiday shopping season. Black Friday is not an official public holiday as such, but many non-retail employees and schools have both Thanksgiving and the day after off, followed by a weekend, thereby increasing the number of potential shoppers. It has routinely been the busiest shopping day of the year since 2005 (Black Friday).

Traditional Shopping Events like the Black Friday Weekend generate tremendous amount of revenue and are driven by price promotions. According to a National Retail Federation survey conducted by BIGinsight over the thanksgiving weekend, traffic and spending grew over the entire weekend. More people than ever before also shopped online and in stores on Black Friday, as 89 million shoppers braved the crowds, up from 86 million last year. According to the survey, a record 247 million shoppers visited stores and websites over Black Friday weekend, up from 226 million last year. Making sure to take advantage of retailers' promotions to the full extent, the average holiday shopper spent \$423 this weekend, up from \$398 last year. Total spending reached an estimated \$59.1 billion. "From green beans to great deals, millions of Americans found time this Thanksgiving to make the most of retailers' promotions and enjoy a special family holiday," said NRF President and CEO Matthew Shay. "To keep their customers excited about holiday shopping, retailers will continue to offer attractive promotions through December, and provide strong consumer value with low prices, enhanced mobile and online offerings, and unique product assortment." The survey was conducted on Nov. 23-24 2012 by BIGinsight for NRF in which 4,005 consumers polled ("Thanksgiving Day Promotions Win Over Millions of Holiday Shoppers, According to NRF", 2012).

After the thanksgiving shopping event held by big retailers, **Small Business Saturday** is observed in the US. Consumers are encouraged to support their local small businesses two days after Thanksgiving. Small businesses can't usually compete with big-box stores' big sales on Black Friday, so many hope to use Small Business Saturday to get a piece of the action during the biggest shopping weekend of the year (John, 2012).

In India also the shopping season starts with the festival season. There is the **Diwali Shopping Sale** run by prominent retailers like Future Group, Reliance Retail, Lifestyle etc. Lifestyle department store chain Shoppers Stop achieved its highest single-day sales on Sunday i.e. 11th Nov, 2012 at 21.59 crore.

Shoppers Stop on Monday i.e. 12th Nov, 2012, shot off an email to all its employees about the record-breaking Sunday sales. The country's largest departmental store chain also achieved its highest full price sales at Rs 74.53 crore during the last week, 31% more than the previous high of Rs 56.7 crore. Biyani says the retailer has grown sales across categories to outstrip initial estimates. Sales of key categories like food, apparel and electronics have all grown by more than 20%-25% (Mukherjee, 2012).

During the same shopping festival season, Easyday, another prominent Indian Retailer launched a festive campaign. Easyday Market stores is owned and operated by Bharti Retail. It launched a month long festive campaign, 'Kam Daam Mein Dhoomdam', - an exquisite assortment of compelling deals and offers on all merchandise at its easyday Market stores, from 13th October 2012 to 16th November 2012 ("Easyday Stores Unveil a Festive Collection at Attractive Prices", 2012).

End of the season discount sales starts in July in India. Typically, the spring-summer sale season in India kicks off in the first weekend of July and runs through the month. This is also a time of retailers offering deep discounts. For example, International youthful lifestyle brand, Esprit, kicked off the sale season by offering shoppers a discount of up to 40% in 2012 sale season (Bagchi, 2012).

But in 2012 many retailers advanced their sales in June. For example, many brands including Arrow, French Connection and Puma advanced the start of their end-of-season sales to the last week of June instead of the traditional July. Bhatia of Pantaloons says more and more customers now wait to shop during the sales seasons. Almost 30% of Pantaloons' revenues are generated during the discount seasons for the last four-five years. Lavina Rodrigues, marketing manager at Metro Shoes Ltd, which sells multi-brand footwear through 175 outlets across the country, says the company is yet to gauge the sales records for the two-day flat 50% sale this year, but indications are it is same as July last year. She says Metro is generally able to sell almost 60% of the old stocks during the sales periods. In some cities like Rajkot, where consumers are more receptive of the discount season, the company would get rid of almost 85% of the old stuff (Rasul Bailay, 2012).

The sale period was also extended by a month and was continued till August. 'Sale' season in the country started around end-May, but was extended by eight weeks. For instance, Shoppers Stop was still busy luring 'shopaholics' to stores with flat 51 per cent discount till August last year. "What typically used to be a month-long phenomenon has become a 3-month affair now. said Devangshu Dutta of retail consulting firm, Third Eyesight (Pani, 2012).

Again in January there is another round of off season sale. Last year The end-of-season sale lasted as long as seven-eight weeks, against the norm of four-five weeks (Tandon, 2013).

But the Indian retail industry has seen a lot new created events hovering around price promotion in the recent few years. Today there are promotional sales like the Independence Day Sale, The Republic Day Sales and innovative Pricing Oriented Properties like the recently concluded Public Holiday Sale.

Promotional Sales around Independence Day is held by retailers in India. For example, Top consumer electronics retailers have sold most of their months-old inventory in just one week of promotional sale around the Independence Day when consumers surprised them by flooding stores, kindling hopes of a revival in discretionary spending and forcing companies to ramp up production. Future Group's electronic retail chain eZone recorded 50% jump in sales across its 38 stores. It sold more than 25,000 mobile phones, 600 tablets, 1,800 LCD and LED televisions on I-Day alone, clearing out its inventory. Similarly, Videocon Group's electronic retail chain Next said its sales grew 30% y-o-y. These promotional sales are very relevant for items of discretionary spending. Discretionary spending includes travel, entertainment and gadgets where people spend only if they have enough disposable funds to do so (Malviya, 2012).

But Kishore Biyani has taken this concept further by launching his **Big Bazaar Maha Bachat** Program. India's largest hypermarket chain, Big Bazaar, started its annual nationwide event '6 Days MahaBachat' on the occasion of Independence Day from August 10. Commencing with a slogan "Megengai Pe HALLA BOL", the scheme is being launched at all 164 stores of Big Bazar, Food Bazaar and FBB Stores across the nation simultaneously. The MahaBachat event, which will conclude on August 15, has exciting array of attractive offers and discounts. Big Bazar scheme will have something for everyone from daily household goods to food, grocery, apparel, footwear, toys, luggage, kitchenware, bed, and bath ware, home decor, furniture, electronics and more ("Big Bazaar begins 6 days MahaBachat event across the country", 2012).

'Created events' such as Republic Week and Independence Week have helped top modern retailers record higher sales than during the Diwali week in big cities, says a study by Nielsen, the world's largest information and insights provider.

Republic Week sales grossed 9% higher sales than the Diwali week while Independence Week overtook the festive week by 6% last year, according to the study by Nielsen's analytical services Scantrack, which tracked FMCG sales of seven key modern retailers in five cities.

A combination of factors, including retailers increasingly partnering consumer goods companies to offer better deals often and nervous consumers trying to do most their shopping during sales in a slowing economy, have led to a dramatic rise in the number of discounting events created by modern retailers (Malviya S. , 2013).

Innovative Pricing Oriented Properties like Future Group's "Public Holiday Sales" is another example of a recent pricing oriented events in Indian retail sector. The four-day Mega Sale starting from April 28 to May 1 will offer deals and discounts on wide range of products across various categories. PSU employees will get a special bonanza on Labour Day, as showing their employee ID cards can help them get special offers at the retail outlet. Mr Sadashiv Nayak, CEO, Big Bazaar, said, "Big Bazaar has been a forerunner in creating a new paradigm in Indian retail sectors through properties like *Sabse Saste Din* and Republic Day Sale. Over the years these innovative properties have become industry practices and most awaited shopping days for Indian consumers ("Big Bazaar's Labour Day offer", 2013)."

These Pricing Oriented Properties have become very relevant. If Future Group ran "Public Holiday Sale" from from April 28 to May1 then reliance followed it up with the "Sabse Sachi Sale from 1st May to 6th May. A combination of factors, including retailers increasingly partnering consumer goods companies to offer better deals often and nervous consumers trying to do most their shopping during sales in a slowing economy, have led to a dramatic rise in the number of discounting events created by modern retailers. Adrian Terron, executive director, shopper and retailer, at Nielsen India, says such events mark the best opportunity to strengthen shopper loyalty. "The Indian shopper behaves differently during these bursts of modern trade events, and she is encouraged to shop differently by responding to deals and her own instincts to explore more than she would in routine shopping trips," he says. With deal-seekers turning their focus to such events, retailers are creating more such discounting weeks. Retailers are perhaps already aware of this trend and that maybe why they rolled out their latest created event on May 1. That, along with the rising number of such events, may also explain a slowdown in Republic Week sales growth to 8% this year from nearly 58% jump last year (Malviya S. , 2013).

FINDINGS AND CONCLUSIONS

There have been tremendous changes in the Indian retail sector in the recent times and with modernization of retail sector these changes will keep on increasing. These changes are in terms of the price oriented pricing strategies being adopted by retailers, the shopping events conducted by the retailers and the calendar followed by retailers.

The current section brings out these major strategies, their categorization into Non-shopping Event Pricing Strategies and Shopping Event Pricing Strategies. This categorization is further followed through the breaking up of Shopping Event Pricing Strategies into Traditional Pricing Events and New Pricing Events.

The major findings of the current study are listed below:

1. The pricing related strategies of retailers as per the timing of occurrence may be broadly classified into two categories; The Non Shopping Event Pricing Strategies and the Shopping Event Pricing Strategies as given in the following figure.

FIG 1: CLASSIFICATION OF PRICING STRATEGIES



2. The Non Shopping Pricing Strategies are mainly influenced to entice consumers from competitors or to provide a reason to shop during inflationary times or to make people buy more like price advertising, low price lock, price freeze, price challenge, price guarantee, individualized prices, mobile coupon initiative and grocery receipt comparison. These strategies are adopted by the western retailers like Wegmans, Wal-Mart.
3. The shopping events may also be further categorized into the traditional and the nontraditional events.
4. Traditional shopping events are Black Friday Sale, Off Season Discount Sale, Diwali Festive Season Sale. These are used to either clear old inventories like in the case of off-season discount sale during July. During this time, retailers offer deep discounts exceeding 40% or more. During Festive Season sale, the objective varies within cultural contexts. In US where the shopping season culminates with the Christmas Sale it is held more for gifting purposes. In India, the Diwali Festive Season Sale is held more for family consumption as well as for gifting purposes. Traditional shopping events have been in vogue for a long time. These are usually associated with a country's festive season or changes in season.
5. Nontraditional shopping events are a relatively new phenomenon especially in the Indian context. These Nontraditional Shopping Events include created events like Independent Day Sale, Republic Day Sale and Public Holiday Sales. These are held by big retailers like Reliance and Future Group's Big Bazar. The main idea of big retailers behind these events is to attract the first time shoppers. In these events deep discounts are offered. These events are highly publicized through print media like newspapers and pamphlets as also broadcast media like radio.
6. The earlier retail calendar in India consisted of primarily two events i.e.
 - the off season discount sale in July and in January.
 - and the Festive Shopping Season starting in August with Raksha Bandhan and culminating with Diwali in October or November.
 - Traditional Retail Calendar vs the Modern Retail Calendar

FIG. 2: TRADITIONAL RETAIL CALENDAR VS THE MODERN RETAIL CALENDAR

the off season discount sale in July & January.	Modern Retail Calendar
<ul style="list-style-type: none"> • and the Festive Shopping Season starting in August with Raksha Bandhan and culminating with Diwali in October or November. 	<ul style="list-style-type: none"> • Innovative Pricing Properties are lined up in the month of May like Future Group's Public Holiday Sale and Reliance's Sabse Sachi Sale. These events also offer huge discounts on monthly grocery items as well as other consumer durables. • The off season discount sale of July is preponed to June and may be extended till August • August has the promotional sales running in the form of Independence Day sale wherein monthly grocery items like atta, rice, dal and personal care items like soap, shampoos as well as toiletries are included. There are many buy 1 get offers. • Come January and there is again off season sale for 4-5 weeks which was extended till March in 2012.

7. The modern retail calendar in India is jam-packed
 - Innovative Pricing Properties are lined up in the month of May like Future Group's Public Holiday Sale and Reliance's Sabse Sachi Sale. These events also offer huge discounts on monthly grocery items as well as other consumer durables.
 - The off season discount sale is preponed to June and may be extended till August
 - August has the promotional sales running in the form of Independence Day sale wherein monthly grocery items like atta, rice, dal and personal care items like soap, shampoos as well as toiletries are included. There are many buy 1 get offers, multiple product bundles available at lower rates. Consumer durables are also having price discount offers.
 - October, November is time for Festive Sale of Diwali. Earlier consumer durable were only the items showing price discounts but now monthly groceries are also included. Like Easyday's Kam Daam Mein Dhoom Dhaam which offered deals and offers on all merchandise at its easyday Market stores
8. Price Advertising is a tool in the hands of big retailers like Wal-Mart. These retailers have the advantage of being national retailers and hence they have huge volumes. Regional retailers may adopt low price lock strategy in times of inflation like Giant Eagle did in October 2012. They can also use Price Freeze strategy during inflationary times. Consumers would not have to compare prices on a daily basis as they will be assured that prices shall stay constant over a period of time. This will ensure a more stable demand for the retailers too.
9. Big national level retailers like Target and Wal-Mart use internet for price related strategies like Mobile Coupons and Grocery Receipt Comparison. These are relatively new pricing initiatives.

SUGGESTIONS

1. The Non Shopping Pricing Strategies like price advertising, low price lock, price freeze, price challenge, price guarantee, individualized prices, mobile coupon initiative and grocery receipt comparison are used mainly by foreign retailers. These are used to mainly entice consumers from competitors or to provide a reason to shop during inflationary times or to make people buy more. These strategies are adopted by the western retailers like Wegmans, Wal-Mart. These strategies can also be used by Indian retailers.
2. Big retailers have used Nontraditional shopping events in the form of Created events like Independent Day Sale, Republic Day Sale and Public Holiday Sales to attract the first time shoppers. Small retailers can also tie-up with companies to offer such event based shopping events or better still they may follow it up with an event like on the lines of **Small Business Saturday** which is observed in the US after the Thanksgiving event of big retailers. Consumers are encouraged to support their local small businesses two days after Thanksgiving as the small retailers can not compete with big-box stores' big sales on Black Friday. In Indian context also this can be used as a pricing based event by the small retailers.
3. Internet is unavoidable for the present day retailers. Big national level retailers of U S like Target and Wal-Mart use internet for price related strategies like Mobile Coupons and Grocery Receipt Comparison. These are relatively new pricing initiatives. Regional retailers should also match up such initiatives.

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LEADERSHIP CONCEPT: AN OPINION SURVEY IN A PRIVATE SECTOR AND GOVERNMENT SECTOR**DR. E. LOKANADHA REDDY****PROFESSOR****SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY
CHITTOOR****DR. G HARANATH****ASST. PROFESSOR****DEPARTMENT OF COMMERCE
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KADAPA****ABSTRACT**

The importance of leadership has been realized by the management owing to various revelations brought out by different researchers in various related fields of management. The present study is conducted in Government General Hospital and Indo National Limited in Nellore district. The objective of the study is to examine the views of the employees on leadership, an ideal leader and leadership qualities. The study is mainly based on primary data collected from the employees of Government General Hospital and Indo National Limited in Nellore district, by making personal visits through a schedule prepared for this purpose. The present study confines to doctors, managers, assistant officers and clerical staff employees. The data collected through the schedules from primary source have been processed and the results obtained by employing appropriate statistical tool like percentage. It is found that 'guiding' is the preferred meaning for the leadership; 'father' was preferred as leader; the desirable quality of a leader is knowledge and undesirable quality of a leader is pride.

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Leadership, Leadership Traits, Ideal Leader, Government Employees, Private Employees.

INTRODUCTION

The importance of leadership has been realized by the management owing to various revelations brought out by different researchers in various related fields of management. It is presumed that satisfaction is the cause for increasing the productivity while dissatisfaction for industrial strife and poor performance. The satisfaction and dissatisfaction among people in the organizations are related to leadership directly and indirectly. As such, the studies related to the concept would be of much importance to the managers, employees and academicians alike. The present study is conducted in Government General Hospital and Indo National Limited in Nellore district.

CONCEPT OF LEADERSHIP

There are as many definitions of leadership as there are scholars who have attempted to analyze and understand the concept, but there is no universally accepted definition of it¹. The word 'leader' stems from the root *leden* meaning 'to travel' or 'show the way'. It has been derived from the verb "to lead." This also implies "to advance," "to expel," "to stand out," to guide and govern the actions of others. A leader is a person who leads a group of followers.

The Oxford English Dictionary (1933) notes that the word "leader" appeared in the English language as early as 1300 A.D. However, the word "leadership" did not appear until about 1800 A.D.² Albeit, leadership appears to be a rather sophisticated concept, words meaning 'chief' or 'king' are the only ones found in many languages to differentiate the ruler from other members of society. A preoccupation with leadership occurred predominantly in countries with Anglo-Saxon heritage. However, leaders have always been there in all cultures throughout history and the practice and philosophy of leaders and leadership can be gleaned from well-known writings as diverse in content, philosophy, and time as the Greek classic Homer's Iliad, the Old and New Testaments of the Bible, the Mahabharata, the Ramayana, the Bhagavatha and the Kautilya's Arthashastra in India, essays of Confucius in China, Machiavelli's The Prince which is concerned with rules and principles for obtaining and holding power.

But, the understanding, developing, predicting and managing the behaviour of leaders is still an enigma, despite the fact there are about 33,000 articles and books have been written about so far in 20th century. The basic question is 'what in fact constitutes leadership?' While Gore and Silander³ have mentioned about five thousand entries on the concept of leadership, Stogdill⁴ reviewed seventy two definitions of leadership. Karmel⁵ is of the opinion that it is very difficult to settle on a single definition of leadership that is general enough to accommodate these many meanings and specific enough to serve as an operationalisation of the variable. However, there is a certain underlying unity among the various conceptualizations made in this area.

According to *Management Guru*, Peter F. Drucker⁶, "Leadership is the lifting of man's visions to higher sights, the raising of a man's performance to a higher standard, the building of a man's personality beyond its normal limitations."

Different scholars have focused on multiple aspects of leadership like: the creative and directive force of morale (Munson⁷, 1981); the process by which an agent induces a subordinate to behave in a desired manner (Bennis⁸, 1959); the presence of a particular influence relationship between two or more persons (Hollander and Jullian⁹, 1969); directing and coordinating the work of group members (Fiedler¹⁰, 1967); an interpersonal relationship in which others comply because they want to, not because they have to (Merton¹¹, 1969); transforming followers, creating visions of the goals that may be attained, and articulating for the followers the way to attain these goals (Bass¹², 1985; Tichy and Devanna¹³, 1986); the process of influencing an organised group toward accomplishing its goals (Roach and Behling¹⁴, 1984); actions that focus resources to create desirable opportunities (Campbell¹⁵, 1991); the leaders job is to create conditions for the team to be effective (Ginnett¹⁶, 1996); etc. According to Andrew¹⁷ (1998), some view leadership as the personal relationship between the individual and the group; others as the process of striving toward common goals and values; still others, as aspects of behaviour, whether desired and in control of the individual or, alternatively, reactive and driven by forces in the environment.

Various definitions and concepts of leadership have been reviewed by a number of scholars including Morris and Seeman¹⁸; Shartle¹⁹; Carter²⁰; Gibb²¹ and Bass²². From such syntheses the leadership has been defined as an initiation of structure; a locus of group processes; as an art of inducing compliance; as an exercise of influence; as an actor behaviour; as a goal achievement; as an effect of interaction; as a differentiated role, and as a personality and its effects.

The functions of leadership however cover a wide range of activities like coordination, decision making, policy making, group representing, controlling, arbitrating etc. Leadership, not being a single phenomenon, is affected by many variables and involves with several skills like technical, human, conceptual, designing, creative, communicative and designing. The main aspect of influencing people by a leader is the power which has many sources. The leadership

effectiveness covers the personality of a leader, his past experience; his expectations of superiors; the characteristics of subordinates; the requirements of the task; and the organizations.

Twentieth century has witnessed several theories on leadership which is a complex concept having a bearing on motivation morale, organization climate, human relations, and communication. The ability to influence people in a group is indispensable in organizations. Beginning with scientific management the evolutionary process of leadership can be traced with three theories viz., trait theory, behavioural theory and contingency theory. The trait theory has been put to rigorous research by Byrd, Jennings, Gheselli, Stogdill etc., and resulted in the development of behavioural theory. Likert's system 4 theory, Mc Gregor x and y theory, continuous theory of Tennenbaum and Schmidt, etc. has opened new vistas on the behavioural dimensions of leadership. The confusion and controversy of trait and behavioural theories have given way to the contingency model of leadership like Fielder's contingency model, known and Yetton contingency model, path goal theory, life cycle theory, tri-dimensional model, learning model, etc.

TRAIT APPROACH TO LEADERSHIP

Early studies of leadership in the 1940s and the 1950s concluded that leadership is largely a matter of personality, a function of specific traits. A successful leader not only secures the desired behaviour from his followers but succeeds in creating a sense of satisfaction among them. Leadership traits cannot be fixed with certainty for all leaders. But a leader cannot be effective unless he possesses certain basic qualities. The following are some of the studies that attempted to identify these traits:

Ordway Tead²³ has suggested ten qualities of a good leader: 1. Physical and nervous energy, 2. Sense of purpose and direction, 3. Enthusiasm, 4. Friendliness and affection, 5. Integrity, 6. Technical mastery, 7. Decisiveness, 8. Intelligence, 9. Teaching skill, and 10. Faith.

Chester I. Barnard²⁴ has indicated two aspects of leadership traits: 1. Commanding subordinates admiration includes outstanding qualities in respect of physique, skill, technology, perception, knowledge, memory and imagination, and 2. Individual superiority in determination, persistence, endurance and courage.

Henry Fayol²⁵ regards the qualities of a good leader as: 1. Health and physical fitness, 2. Intelligence and mutual vigour, 3. Moral qualities, 4. Knowledge, and 5. Managerial ability.

George R. Terry²⁶ has suggested the qualities as: 1. Energy - both mental and physical, 2. Emotional stability, 3. Knowledge of human relations, 4. Empathy, 5. Objectivity, 6. Personal motivation, 7. Communication skills, 8. Teaching ability, and 9. Social skills and technical competence.

Stogdill²⁷ identifies through research the traits as: 1. Physical characteristics such as age, appearance, height and weight; 2. Social background-education, social status and mobility; 3. Intelligence-superior judgement, decisiveness, knowledge and fluency of speech; 4. Personality-alertness, self-confidence, personal integrity, self-assurance and dominance needs; 5. Task related characteristics-high need for achievement and responsibility, initiative and a high task orientation; and 6. Social characteristics.

Keith Davis²⁸ lists the characteristics of leadership as: a) Intelligence, b) Social maturity and breadth, c) Inner motivation and achievement drives, d) Human relations attitudes:

LEADERSHIP SKILLS

Some researchers have mixed the skills with the traits resulting from the development of human relations by a leader with the subordinates.

Chris Argyris²⁹ mentions the characteristics of a leader as: 1. The leader is constantly interacting and commanding, 2. The leader makes the organization a part of his self image, 3. The leader's personal goals, values and feeling the organizationally centred, 4. The leader handles the supervisors as individuals, 5. The leader controls the transmission of important information, 6. The leader emphasizes the present, and 7. The leader sets realistic goals.

According to Harold Koontz³⁰, every group of people that performs near its total capacity has some person as its head who is skilled in the art of leadership. This skill seems to be a compound of at least four major ingredients: (1) the ability to use power effectively and in a responsible manner, (2) the ability to comprehend that human beings have different motivation forces at different times and in different situations, (3) the ability to inspire followers, and (4) the ability to act in a manner that will develop a climate conducive to responding to and arousing motivations.

Katz³¹, in his classic study of managers identifies three important types of managerial skills: technical, interpersonal, and conceptual. Diagnostic skills are also prerequisites to managerial success.

Gary Yukl³² (1981) summarising the research in the field till his times, identified following traits and skills as characteristic of successful leaders:

Traits Characteristic of Successful Leaders: Adaptable to situations, Alert to the social environment, Ambitious and achievement-oriented, Assertive, Cooperative, Decisive, Dependable, Dominant (the desire to influence others), Energetic (high activity level), Persistent, Self-confident, Tolerant of stress, and Willing to assume responsibility.

Skills Characteristic of Successful Leaders: Clever (intelligent), Conceptually skilled, Creative, Diplomatic and tactful, Fluent in speaking, Knowledgeable about the group task, Organized (administrative ability), Persuasive and Socially skilled.

Michael and Dean³³ suggest a number of leadership skills critical to success in the global economy. They include: *Cultural flexibility, Communication skills, Human resource development (HRD) skills, Creativity, and Self-management of learning.*

An academic analysis made by Kanungo and Misra³⁴ noted "the prevailing conceptualizations of skills required for successful managerial performance hinders our understanding of the phenomenon". To get over this problem, Whetten and Cameron³⁵ provide a more empirical derivation of effective leadership skills. On the basis of an interview study of over 400 highly effective managers, the following ten skills were identified as Verbal communication (including listening), Managing time and stress, Managing individual decisions, Recognizing, defining, and solving problems, Motivating and influencing others, Delegating, Setting goals and articulating a vision, Self-awareness, Team building, Managing conflict.

Follow-up studies and related research have found skills similar to the ten above. Through statistical techniques, the results of various research studies were combined into the following four categories of effective leadership skills: Participative and human relations; Competitiveness and control; Innovativeness and entrepreneurship; and Maintaining order and rationality

TRAITS RESEARCH AND RESULTS

In general, the search for leadership traits has been largely unsuccessful. It has failed to demonstrate a consistent and definite relationship between leadership ability on one hand and physical traits or personality characteristics or a combination of the two on the other³⁶. Byrd³⁷, in a critical assessment of research on Trait theory upto 1940, identified a long list of traits made by studies, which had differentiated between leaders and the led. He found that only 5 per cent of the traits listed in them were common to four or more of the studies. Another study by Jennings³⁸, concluded: 'fifty years of the study have failed to produce one personality trait or set of qualities that can be used to discriminate between leaders and non-leaders'.

Later studies identified some correlation between leadership and certain personality traits; for example a significant correlation was seen between leadership effectiveness and such traits as intelligence, supervisory ability, initiative, self-assurance and individuality³⁹. A definite correlation was observed in some cases between the traits of intelligence, scholarship, dependability, responsibility, social participation and socio-economic status of leaders, as compared with non-leaders⁴⁰. But even these correlations between traits and leadership are not really pervasive. Most of the so-called traits are in essence the pattern of behaviour that one would expect from a leader, particularly in a managerial position⁴¹.

In general, studies of leader's traits have not been a very fruitful approach to explain leadership. Not all leaders possess all the traits, and many non-leaders may possess most or all of them. Also, the trait approach gives no guidance as to how much of a particular trait a person should have to be a leader. Furthermore, the dozens of studies that have made do not agree as to what traits are leadership traits or what their relationships are to actual instances of leadership. Most of these so-called traits are really patterns of behaviour.

REVIEW OF LITERATURE

Some of the studies made by different authors in both theoretical and empirical spheres are presented hereunder.

The research conducted in the early part of 19th century is replete with identification of certain personality traits essential for leadership. Research studies conducted at the Bureau of Business Research, Ohio State University have attempted to identify initiating structure and consideration⁴².

Krech and Crutchfield⁴³ (1948) proposed a number of leadership functions. These are executive, planner, policy maker, 'expert' external group representative, controller of internal relationships, purveyor of rewards and punishments, arbitrator and mediator, exemplar, symbol of the group, surrogate for individual responsibility, ideologist, father figure and scapegoat.

Hemphill⁴⁴ (1949) and his associates at Ohio State Leadership Studies developed a list of approximately 1,800 items describing different aspects of leader behaviour. The items were sorted by the research team into nine different categories or hypothetical subscale, with most items assigned to several subscales. However, 150 items were found on which sorters were agreed to subscale for assigning an item. These items were used to develop the first form of the Leader Behaviour Description Questionnaire (LBDQ)

Harding⁴⁵ (1949) enumerated twenty types of educational leaders as follows: autocrat, cooperator, elder statesman, eager beaver, pontifical, muddled, loyal staff man, prophet, scientist, mystic, dogmatist, open-minded, philosopher, business expert, benevolent despot, child protector, community-minded, cynic, optimist and democrat.

A study by Katz, Maccoby, and Morse⁴⁶ (1950) investigated the relationship between the productivity of clerks in an insurance company and various leadership characteristics. Twelve pairs of work groups which performed the same type of work but which differed in their productivity were studied. The supervisors of the high producing groups employed were rated as less 'production centered' and more 'employee centered'; exercised better judgment; were more rational and less arbitrary, and were more democratic and less authoritarian than supervisors of low-producing sections.

Bales⁴⁷ (1950) at Harvard and Hare⁴⁸ et. al. (1955) had done work on the study of small group. They found that in small groups two different kinds of leaders emerge. One kind was the task-leader characterized by those who talk more and who offer suggestions, and the other kind was called socio-emotional leader represented by those who make it easier for others to talk and offer psychological support.

Haiman⁴⁹ (1951) suggested that five types of leaders are needed in a democracy. These are: 1. The executive, 2. The judge, 3. The advocate, 4. The expert, and 5. The discussion leader.

Cattell⁵⁰ (1954) explored four types of leaders in experimental groups. These are: (1) persistent-momentary problem solvers, high in interaction rate, (2) salient leaders-picked up by observers as exerting the most powerful influence on the group, (3) socio-metric leaders-nominated by their peers and (4) elected leaders-attaining office by election.

Stogdill⁵¹ (1959) suggested that it is the function of the leader to maintain group structure and goal direction and to reconcile conflicting demands arising outside the group.

Douglas McGregor⁵² (1960) states that there are four variables involved in leadership: Characteristics of the leader; attitudes, needs and personal characteristics of followers; characteristics of the organization; and the social, economic and political milieu. He also notes that leadership is not a property of the individual, but a complex relationship among these variables. He identifies two major perpetual structures, which are labelled Theory X for the authoritarian approach and Theory Y for the participative approach.

Bhatt and Pathak⁵³ (1962) found high intelligence and dependability as important perceived characteristics of effective supervision.

Sequeria⁵⁴ (1962), who worked with Ganguli, has outlined the characteristics of the effective supervision. He has come to the conclusion that effective supervisory practice is less ambiguous and less relative. The main criterion seems to be the level of supervisor in the hierarchy.

Amin⁵⁵ (1963) reports on the behaviour and traits of jobbers who were liked by the workers. Qualities perceived in successful jobbers were high technical knowledge and ability to co-ordinate supply of materials, good behaviour, politeness and straightforward and persuasive approach. They were not expected to pass on duties to workers under them but were expected to give freedom to workers in their work.

Apple White⁵⁶ (1965) had summarized much of the research on leadership roles and functions, the question of why people attempt to lead, leadership under stress conditions, the relationship of communication to leadership, the problem of leader assessment and the concept of leadership styles.

Sinha and Kumar⁵⁷ (1966) found student leadership to be related to anxiety and dominance and not to extroversion, neuroticism, adjustment, rigidity and ambiguity tolerance.

Bayati⁵⁸ (1969) investigated into the leader behaviour characteristics of school pupils. He found significant relationship of children's age, parents income and occupations to the patterns of nursery school behaviour.

Thiagarajan and Deep⁵⁹ (1970) found that authoritarian leaders as more influential than the persuasive, and the persuasive more than participative.

Habibullah and Sinha⁶⁰ (1980) studied five hundred and twenty-three executives of the Bharath Heavy Electrical Limited to find out various factors of leader behaviour. The responses of the executives to the leadership styles scales were factor analyzed by the principal component method and varimax rotation was used. Resultantly, they found the following ten usable factors: subordinate based participation; leader centered nurturance; authoritarianism; guidance and encouragement; direction; task-orientation; friendly-orientation; power; role performance, distance and discipline.

Ramakanth⁶¹ (1985) has made an attempt to know the attitudes of managers in different manufacturing organizations with regard to the classical or modern point of view. He has used a questionnaire covering four distinct areas: 1. Capacity for leadership initiative 2. sharing information and objectives, 3. Participation and 4. Internal control. On the basis of responses, he concludes that in the areas of capacity for leadership initiative, sharing information and objectives and participation, the managers are in favour of modern approach and in the area of internal control, they are in favour of classical approach.

Rajinder Kaur⁶² (1993) has designed a study to investigate the psychological characteristics of democratic and autocratic managers as well as to find out the relationship between managerial styles and managerial success. 325 managers from Bharat Electronics Limited, Banaglore comprised the sample. The study indicates that managerial success is not associated with managerial styles. A tendency towards the autocratic style prevails among the Indian managers. The psychological correlates reveal a qualitative difference in the characteristics of the democratic and the autocratic managers.

V. Ravichandran and D.Nagabrahmam's⁶³ (1997) study attempted to explore the effectiveness of leadership in a transitory environment. A list of 15 traits/skills such as vision, expertise, motivation, calculated-risk, innovativeness, exemplary, assertion, integrity, charisma, interpersonal skills, initiativeness, ambition, altruism, commitment and empathy were identified through interaction process based on which a questionnaire was constructed and rated on five-point Likert scale. Data were collected from 299 managers representing 8 nationalized banks and their branches. The study states that effective leadership was perceived to be related to the person and his character such as one's expertise with interpersonal capabilities and empathy. The study also suggests that effective leaders are those with vision and having noble and altruistic goals. It is also noted that the ideal of leadership in everybody's mind has influencing effect on leadership in organizations if it is properly communicated and shared among top echelons.

STATEMENT OF THE PROBLEM

Leadership is the crucial issue in all organizations, as every manager has to deal with this aspect in order to succeed in the organizational mission. Though there are many independent theories leadership, no single theory is relevant to all the situations. Thus, the search for understanding new dimensions of leadership has been continuing. Normally the success and failure of organizations have been attributed to the effectiveness of leaders in organizational setting. As such the topic of leadership welcomes the research studies without limitations so as to add a new dimension to leadership theory and practice. This is due to the fact that each organization has its own personality. That is, organizations vary widely both structurally and functionally. As such, the specific findings of one research in a particular area and in a particular organization may not be totally relevant to other organizations. Hence, there is a need for the investigation of the problems like Leadership. The present empirical research study of Government General Hospital (GGH) and Indo National Limited (INL) addresses to the issue of leadership concept.

OBJECTIVE OF THE STUDY

The specific objective of the study is to examine the views of the employees in Government General Hospital and Indo National Limited on leadership, an ideal leader and leadership qualities.

METHODOLOGY

The study is mainly based on primary data collected from the employees of Government General Hospital and Indo National Limited in Nellore district, by making personal visits through a schedule prepared for this purpose. The present study confines to doctors, managers, assistant officers and clerical staff employees. Their opinions of employees on leadership concept, leadership idealism and leadership qualities, are taken. The total census consists of employees from grade-I to grade-III in Government General Hospital is 103, and I.N. Ltd., is 149 with the departments covered at different levels.

TOOLS FOR DATA COLLECTION

In the present study, two schedules were used for the data collection. Schedule-I is designed to elicit the information relating to SEOP variables viz., name, designation, age, experience, education qualifications economic background, social background, family profession. Schedule-II is designed to study the opinion on leadership concept, leadership idealism and leadership qualities.

TOOLS FOR ANALYSIS

The data collected through the schedules from primary source have been processed and the results obtained by employing appropriate statistical tool like percentage.

RESULTS AND DISCUSSIONS**LEADERSHIP CONCEPT**

The concepts and constructs of leadership reveal the opinions of the employees in Government General Hospital and Indo National Limited, in terms of their inner feelings about the meaning of leadership, leadership idealism, qualities, undesirable qualities of leaders which attracted them to recognize their leadership. The present study examine the view point of the employees of Government General Hospital and Indo National Limited on leadership concepts and constructs in their organization.

TABLE 1: CONCEPT OF LEADERSHIP ACCORDING TO EMPLOYEES OF GGH & INL (N=103,149)

Ranks	Leadership Meaning	Number of responses		Responses in percentage	
		GGH	INL	GGH	INL
1	Guiding	98	138	95	92
2	Controlling	84	131	82	88
3	Protecting	82	122	80	82
4	Helping	51	94	50	63
5	Influencing	39	54	38	36
6	Loving	22	48	21	32

Source : Compiled from field survey.

Guiding: It is evident from the table 1 that the Government General Hospital employees have shown higher meaning of leadership as 'guiding' than the Indo National Limited employees as the meaning percentage of Government General Hospital employees (95%) is being higher than the meaning percentage of Indo National Limited employees (92%).

Controlling: It is evident from the table 1 that the Indo National Limited employees have shown higher meaning of leadership in 'controlling' than the Government General Hospital employees as the meaning percent of Indo National Limited employees (88%) is being higher than the meaning percentage of Government General Hospital employees (82%).

Protecting: It is evident from the table 1 that the Indo National Limited employees have shown higher meaning of leadership in 'protecting' than the Government General Hospital employees, as the meaning percentage of Indo National Limited employees (82%) is being higher than the meaning percentage of Government General Hospital employees (80%).

Helping: It is evident from the table 1 that the Indo National Limited employees have shown higher meaning of leadership in 'Helping' than the Government General Hospital employees, as the meaning percentage of Indo National Limited employees (63%) is being higher than the meaning percentage of Government General Hospital employees (50%).

Influencing: It is evident from the table 1 that the Government General Hospital employees have shown higher meaning of leadership in 'influencing' than the Indo National Limited employees, as the meaning percentage of Government General Hospital employees (38%) is being higher than the meaning percentage of Indo National Limited employees (36%).

Loving: It is evident from the table 1 that the Indo National Limited employees have shown higher meaning of leadership in 'loving' than the Government General Hospital employees, as the meaning percentage of Indo National Limited employees (32%) is being higher than the meaning percentage of Government General Hospital employees (21%).

TABLE 2: IDEAL LEADER ACCORDING TO EMPLOYEES OF GGH & INL (N=103,149)

Ranks	Ideal leader	Number of responses		Responses in %	
		GGH	INL	GGH	INL
1	Father	85	135	82	91
2	Mother	64	91	62	61
3	Boss (supervisor)	56	86	56	56
4	Teacher	41	68	40	46
5	Friend	38	61	37	41
6	Spouse	31	59	30	40
7	Politician	24	42	23	28
8	Uncle	20	26	19	17
9	Religious priest Master, Swamiji, etc	12	18	11	12

Source : Compiled from field survey.

Father: It is evident from the table 2 that the Indo National Limited employees have shown higher Ideal leader as 'Father' than the Government General Hospital employees as the Ideal leader percent of Indo National Limited employees (91%) is being higher than the Ideal leader as father percent of Government General Hospital employees (82%).

Mother: It is evident from the table 2 that the Government General Hospital employees have shown higher Ideal leader as 'Mother' than the Indo National limited. employees as the Ideal leader percent of Government General Hospital employees (62%) is being higher than the Ideal leader as father percent of Indo National Limited employees (61%).

Boss (Superior): It is evident from the table 2 that the Government General Hospital and Indo National Limited employees of Ideal leaders as 'Boss' percent have equal (56% and 56%).

Teacher (Guru): It is evident from the table 2 that the Indo National Limited employees have shown higher Ideal leader as 'Teacher' than the Government General Hospital employees as the Ideal leader percent of Indo National Limited employees (46%) is being higher than the Ideal leader as father percent of Government General Hospital employees (40%).

Friend: It is evident from the table 2 that the Indo National Limited employees have shown higher Ideal leader as 'Friend' than the Government General Hospital employees as the Ideal leader percent of Indo National Limited employees (41%) is being higher than the Ideal leader as father percent of Government General Hospital employees (37%).

Spouse: It is evident from the table 2 that the Indo National Limited employees have shown higher Ideal leader as 'Spouse' than the Government General Hospital employees as the Ideal leader percent of Indo National Limited employees (40%) is being higher than the Ideal leader as father percent of Government General Hospital employees (30%).

Politician: It is evident from the table 2 that the Indo National Limited employees have shown higher Ideal leader as 'Politician' than the Government General Hospital employees as the Ideal leader percent of Indo National Limited employees (28%) is being higher than the Ideal leader as father percent of Government General Hospital employees (23%).

Uncle: It is evident from the table 2 that the Government General Hospital employees have shown higher Ideal leader as 'Uncle' than the Indo National limited employees as the Ideal leader percent of Government General Hospital employees (19%) is being higher than the Ideal leader as father percent of Indo National Limited employees (17%).

Religious priest: It is evident from the table 2 that the Indo National Limited employees have shown higher Ideal leader as 'Religious priest' than the Government General Hospital employees as the Ideal leader percent of Indo National Limited employees (12%) is being higher than the Ideal leader as father percent of Government General Hospital employees (11%).

TABLE 3: THREE IMPORTANT QUALITIES OF LEADERS ACCORDING TO EMPLOYEES OF GGH & INL (N=103,149)

Ranks	Leadership qualities	Number of responses		Responses in %	
		GGH	INL	GGH	INL
1	Knowledge	91	133	88	89
2	Sincerity	83	119	81	80
3	Passion for success	69	105	67	70
4	Self confidence	52	96	50	64
5	Ambition	44	63	43	42
6	Intelligence	40	51	39	34
7	Perseverance	33	39	32	26
8	Industry	21	26	20	17
9	Courage	19	20	18	13
10	Sociability	17	16	16	11
11	Democracy	14	12	13	8
12	Optimism	11	10	10	7
13	Humility	8	7	7	5
14	Open mindedness	6	6	5	4
15	Sympathy	5	0	4	0
16	Empathy	3	0	2	0

Source : compiled from field survey

Knowledge: The first preference to the leadership qualities of 'Knowledge' it is evident from the table 3 reveals that the Indo National Limited employees have shown major contribution of their leaders is knowledge than the Government General Hospital employees, under major contribution of their leaders is knowledge as the percent of Indo National Limited employees 183(89) is more than the percent of Government General Hospital employees 91(88).

Sincerity: The second preference to the leadership qualities of sincerity it is evident from the table 3 reveals that the Government General Hospital employees have shown major contribution of their leaders is sincerity than the Indo National Limited employees, under major contribution of their leaders is sincerity as the percent of Government General Hospital employees 83(81) is more than the percent of Indo National Limited employees 119(80).

Passion for success: The third preference to the leadership qualities of passion for success it is evident from the table 3 reveals that the Indo National Limited employees have shown major contribution of their leader is passion for success than the Government General Hospital employees, under major contribution of their leader is passion for success as the percent of Indo National Limited employees 105(70) is more than the percent of Government General Hospital employees 69(67).

The other leadership qualities like self confidence, ambition, intelligence, perseverance, industry(Hard working), courage, Sociability, Democracy, Optimism, Humility, Open mindedness, Sympathy, Empathy, have not been considered as important factors by the both Government General Hospital and Indo National Limited employees.

TABLE 4: THREE UNDESIRABLE QUALITIES OF A LEADERS ACCORDING TO EMPLOYEES OF GOVERNMENT GGH & INL (N=103,149)

Ranks	Leadership undesirable Qualities	Number of responses		Responses in %	
		GGH	INL	GGH	INL
1	Ego	79	125	77	84
2	Pride	64	111	62	74
3	Jealousies	60	103	58	69
4	Laziness	57	92	55	62
5	Harshness	51	89	50	60
6	Hypocrisy	50	72	49	48
7	Cunningness	44	66	43	44
8	Selfishness	36	60	35	40
9	Anger	31	51	30	34
10	Pomp	20	43	19	30
11	Envy	16	38	15	26
12	Arrogance	16	32	15	21
13	Rudeness	12	32	12	21
14	Democracy	10	23	10	15
15	Timidity	8	20	8	13
16	Innocence	8	16	8	11
17	Dullness	8	0	8	0
18	Insincerity	4	0	4	0
19	Ignorance	4	12	4	8
20	Shyness	0	10	0	7
21	Pessimism	3	0	3	0
22	Indifference	3	8	3	5
23	Autocracy	0	6	0	4
24	Greed	3	0	3	0

Source: compiled from field survey

Ego : The first preference to the leaders undesirable qualities of 'ego' it is evident from the table 4 reveals that the Indo National Limited employees have shown major contribution of their leaders is ego than the Government General Hospital employees, under major contribution of their leaders is ego as the percent of Indo National Limited employees 125(84) is more than the percent of Government General Hospital employees 79(77).

Pride : The second preference to the leaders undesirable qualities of 'pride' it is evident from the table 4 reveals that the Indo National Limited employees have shown major contribution of their leaders is pride than the Government General Hospital employees, under major contribution of their leaders is pride as the percent of Indo National Limited employees 111(74) is more than the percent of Government General Hospital employees 64(62).

Jealousy (Envy) : The third preference to the leaders undesirable qualities of 'jealousy' it is evident from the table 4 reveals that the Indo National Limited employees have shown major contribution of their leaders is pride than the Government General Hospital employees, under major contribution of their leaders is jealousy as the percent of Indo National Limited employees 103(69) is more than the percent of Government General Hospital employees 60(58).

The other leaders undesirable qualities like laziness, harshness, hypocrisy, cunningness, selfishness, angry, pomp, envy, arrogance, rudeness, democracy, timidity, innocence, dullness, insincerity, ignorance, shyness, pessimism, indifference, autocracy, greed, have not been considered as important factors by the both Government General Hospital and Indo National Limited employees.

FINDINGS AND CONCLUSIONS

The following are the major findings of the concepts and constructs of leadership.

1. The analysis relating to the concept of leadership basing on the perceptions of 103, and 149 employees of GGH and INL respectively reveals that 'guiding' is the preferred meaning for majority of the respondents followed by controlling, protecting, helping, influencing and loving.
2. The analysis reveals that 'father' was preferred as leader by majority followed by mother, boss (supervisor), teacher, friend, spouse, politician, uncle, religious guru.
3. The opinions expressed by employees about the three important qualities of leaders, knowledge was preferred by majority followed by sincerity, passion for success.
4. The opinion expressed by employees about the three important undesirable qualities of leaders, Ego was preferred by majority followed by pride, jealousies.

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MARKETING MIX: A REVIEW ON THE 'P'S OF MARKETING

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ABSTRACT

The marketing mix concept is an essential part of marketing theory. Marketing mix is the vehicle through which the marketers' strategies are delivered to the customers. Marketers should design the marketing mix effectively to create and sustain competitive advantage in addition to customer satisfaction. The main focus of this article is to identify the elements of marketing mix in the perspective of different authors. The study has examined the views of eminent personalities and experts in marketing with respect to the number of elements that is 'P's of marketing mix. The study presents an idea to the marketers regarding the marketing mix elements while designing the marketing mix.

KEYWORDS

Marketing Mix, Elements (Ps).

INTRODUCTION

The organizations in the current scenario focus on achieving certain predetermined objectives. In order to achieve the same, a number of actions are to be performed including production, marketing, human resource, finance, logistics, purchasing, storage, trading, assembling, distribution etc. Such activities are interrelated to each other. Marketing is one of the most important activities of an organization. Marketing mix includes all the necessary elements that a marketing campaign should encompass to enhance sales and efficiency of the marketing programme.

According to Chong (2003), Marketing mix has originated from the single P (price) of microeconomic theory. In the view of Hodder Education, n.d, the idea of designing the marketing mix is similar to mixing a cake. The proportions of ingredients in a cake is altered by the baker based on the cake the consumer demands, similarly the elements in the marketing mix can be altered based on the products. Bennett (1997) emphasizes that marketing mix is a conceptual framework that helps the managers in configuring their offerings to suit consumers' needs.

THE HISTORY

Borden (1965) is identified to have used the term marketing mix firstly. The marketing mix elements of Borden consisted of 12 elements namely, product planning; pricing; branding; personal selling; channels of distribution; advertising; promotions; packaging; display; servicing; physical handling; and fact finding and analysis. Lazer and Kelly (1962) and Lazer, Culley and Staudt (1973) categorized the elements of marketing mix into three groups as follows: the Products and services mix, the communication mix and the distribution mix. Further Borden's idea was refined by McCarthy (1964) and he reframed the 12 elements to four elements or 4Ps, namely product, price, place and promotion.

ELEMENTS OF MARKETING MIX – VARYING VIEWS ON THE NUMBER OF Ps

As highlighted before, Borden's 12 elements of marketing mix was reconfigured into 4Ps by Mc Carthy. Booms and Bitner (1980) added 3 Ps to the original 4 Ps extending the concept of product marketing mix (the 4Ps) to the concept of services (product, price, place and promotion + participants, physical evidence and process). The fifth P (People) was proposed by Judd (1987). Kotler (1986) included political power and public opinion to the concept of the elements of marketing mix. 3 Ps (personnel, physical facilities and process management) were added by MaGrath (1986). Baumgartner (1991) introduced the concept of 15Ps.

Table I.
The Marketing Mix and Proposed Extensions of the 4Ps

4Ps McCarthy (1960)	5Ps Judd (1987)	6Ps Kotler (1984)	7Ps Booms and Bitner (1981)	15Ps Baumgartner (1991)
Product Price Promotion Place	Product Price Promotion Place People	Product Price Promotion Place Political power Public opinion formation	Product Price Promotion Place Participants Physical evidence Process	Product/service Price Promotion Place People Politics Public relations Probe Partition Prioritize Position Profit Plan Performance Positive implementations

Source: Gummesson (1994)

Vignalis and Davis (1994) included S (service) to the marketing mix. Goldsmith (1999) highlighted the 8 Ps (product, price, place, promotion, participants, physical evidence, process and personalisation) as the elements of marketing mix.

MARKETING MIX – INTERESTING INCLUSIONS, EXCLUSIONS & SUBSTITUTES

- Ohmae (1982) introduced three Cs in the strategy of any marketing programme: Customers, Competitors, and Corporation.
- Robins (1991) added Capabilities to the previous discussion of Ohmae.
- Doyle (1994) emphasized the inclusion of two more factors to the 4P mix: Staff, and Services.
- Yudelson (1999) transformed the traditional 4Ps based on the trends in 21st century marketing.
 - Product - Performance
 - Price - Penalty
 - Promotion - Perceptions
 - Place – Process
- Lauterborn (1990) - Four Cs replace the 4Ps, representing the customer orientation: Customer needs, Convenience, Cost (customers’), and Communication to the consumers.
- Rozenberg and Czepiel (1992) stressed the retention of customers through the retention marketing mix: Product extras, Sales-force connections, Specialized distribution, Reinforcing promotions, and Post-purchase communication.
- Patterson and Ward (2000) suggested the information-intensive strategies that form the “new Cs” of Marketing: Communication, Customization, Collaboration and Clairvoyance.
- Booms and Bitner (1981) The Services Marketing Mix includes three more P’s: Process, Participants, Physical Evidence.
- Brunner (1989) emphasized the addition of Concept Mix, Cost Mix, Channels Mix, and Communication Mix to the service marketing mix.
- Heuvel (1993) suggested the following elements to the service marketing mix: The Services Marketing Mix: Personnel, Product, Place, Price, Promotion
- According to Doyle (1994) the service marketing mix includes Product, Price, Communication and Distribution.
- Stervander (1993) derived the elements of retail marketing mix as follows: The Logistics Concept: Place mix, Physical distribution mix, and Personnel mix, The Commercial Concept: Product mix, Presentation mix, Price mix, and Promotion mix.
- Boekema et al. (1995) expressed his views on the elements of retail marketing mix that includes Place, Assortment, Shop Presentation, Price Policy, Personnel and Promotion.
- Rousey and Morganosky (1996) suggested that the 4Ps should be replaced with the 4 C’s: Customer needs, Convenience, Customers’ cost, and Communication to the customers.
- Mulhern (1997) emphasized the following elements for the integrated retailing strategy: Store location, Positioning, Image of the store, Physical environment of the store, Retail service.
- Wang et al. (2000) introduced the following components to web retail: Database, Interaction and Network.
- Kotler (2003) discussed about the inclusions in the retailers’ marketing decisions: Product assortment and Procurement, Target Market, Services and Store Atmosphere, Price Decision, Place Decision, Promotion decision.
- Peattie (1997) highlighted the new roles of the elements of marketing mix:
 - Product: Co-design and production
 - Price: More transparency
 - Place: Keeping direct contact with customers
 - Promotion: Interaction and more control of the customer,
- Mosley- Matchett (1997) introduced 5 Ws for internet marketing mix, Who: Target audience / market, What: Content, When: Timing and updating, Where: Source, Why: Unique Selling Proposition.
- Chaffey et al. (2000) gave eight factors for internet marketing: Potential Audience, Integration, Marketing Support, Brand migration, Strategic Partnerships, Organisational Structure, Budget.

CONCLUSION

Marketing mix is one of the prominent decisions of the marketer. Special attention is required in deciding on the elements of marketing mix. The present article discusses on the varieties of elements that are included in the marketing mix corresponding to the respective marketing programmes. An innovative marketing idea always attracts customers and also paves way for customer retention. Any marketing campaign in turn should be enriched with the efficient marketing mix that includes careful selection and combination of the elements of marketing mix.

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SECURING A BIOMETRIC TRAIT: A CASE STUDY ON FINGER PRINTS

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ABSTRACT

Today's inevitable need is getting the correct information within specified time frame. For satisfying our requirement, it is very important to make the information secured from being damaged or tempered by any unauthorized user. There are many upcoming techniques in the field of information security. This paper enlightens us about possible methods of securing an information, starting from the most basic and traditional method i.e. password based, ID based and biometric trait based. As we all know that there are various possible biometric traits like fingerprint, hand recognition, iris based, retina scan, face recognition etc. In this paper we have chosen finger print for further research. Based on the study about these methods i.e. password based, ID based and biometric trait based, the better method is also suggested. We also discuss various threats prevailing in the field of securing a biometric trait like latent print attacks, Trojan horse and fake feature attacks. We also state literature review as much of the work is already done in this field. After mentioning the already existing work, we discuss the current issues and challenges like robustness, performance, interoperability etc. We also discuss research objective to elaborate the work done in field of securing a biometric trait, followed by future scope and conclusion.

KEYWORDS

Physical Trait, Authentication, Steganography, Cryptography, Watermarking.

INTRODUCTION

From past many years, security has been a major concern, whether we talk about securing any product, information or identity of a person. Although many methods, techniques and algorithms are being implemented, some of them are good to a large extent but threats are still prevailing. Here, in this paper we will be concentrating on securing identity of a person. Again many minds are on their tracks to design a foolproof technique for the same.

As we know that there are various schemes like password based, ID based and physical trait¹ based.

In the password based scheme, every user is provided with a password. When he wants to access any resource, he is asked to submit the password which is matched with the one, stored in the database. Once there is a match the resource is accessible to the user, else not.

In case of ID based security, the person is given an Identity Card. This card contains the information about the person. At the time of request for any resource the user has to show the card, after checking the required credentials, user is authenticated to use that resource.

In physical trait¹ scheme the user provide an impression of finger print on the sensor which, along with the person's details, is saved as a template in the database. At the time of verification, the user is again asked to give the fingerprint sample which is then matched with already saved template. Depending on the result, the user is allowed to access the resources.

Apart from matching the sample, there are measures to check the authentication accuracy, namely FRR² and FAR³.

As per the above discussion, it is analyzed that a system using physical trait is better as compared to password or ID based systems. Biometric systems possess a complicated architectural design, incorporating complex modules as it deals with different kind of data. Apart from being complicated these types of system face major problems, and root of all is Security. Securely saving a template, protecting it from unauthorized access, transferring the template without any errors and many more aspects are to be worked upon.

¹Here physical trait means Finger print Sample

²FRR means that a genuine person is denied to access the resources

³FAR means that a fake person is given the access to the resources

EXISTING WORK DONE

Fengling Han et al. [11], discuss a chaotic approach for encrypting fingerprint images by using a 2D chaotic sequence which is obtained from multi scroll chaotic attractors. For generating the private key, initial values of chaotic attractors are used.

Before the actual work is done, a large number of features of fingerprints including overall ridge flow pattern, ridge frequency, location and position of singular points, minutiae points, location of pores etc. she proposed two fingerprint authentication schemes. The first one is local fingerprint matching scheme where images are captured and processed at local system. Second is centralized matching scheme where image is captured at local site and are sent to central point via network, also used in ATM banking systems.

They also suggest different schemes that can be used to protect digital image/video from attacker i.e. digital watermarking and encryption. They also state that normal encryption algorithms like DES, IDEA and RSA are not suitable for biometric image encryption.

Juan M. Vilaridy et al. [14], in their paper discuss a digital algorithm i.e. fractional fourier transform to encrypt fingerprint data samples. In the process of encryption, a grayscale image of fingerprint is taken and it's placed as the phase of a complex exponential, then is transformed five times and multiplied in intermediate steps by four random phase masks statistically independent, thus to obtain the encrypted fingerprint.

On the other hand, in the process of decryption, the encryption procedure is applied in the inverse sense to the conjugated complex of the encrypted fingerprint, then is taken the negative of the phase of the resulting image of the decryption process and the original fingerprint is obtained this way that had been encrypted.

In the complete process nine keys are used constituted of five fractional orders and four random phase masks.

The Mean Square Error (MSE) between the input fingerprint and our decrypted fingerprint is calculated to validate the reliability of this algorithm.

Colin Soutar et al. [9] emphasized on understanding the interface between biometric systems and general security systems is critical for the successful deployment of biometric technologies. They states that at the time of sending private/ confidential data, the problems such as identity, replay and hill climbing attacks must be avoided.

Daesung Moon et al. [10], state that biometric-based authentication can provide a strong security guarantee of the identity of users. They propose a secure and efficient protocol to transmit fingerprint images from a fingerprint sensor to a client by exploiting the characteristics of the fingerprint images. To reduce the computational workload of applying the algorithm on full finger print sample, they suggest to apply the encryption algorithm to a nonce for integrity and to a specific bitplane of each pixel of the fingerprint image for confidentiality. Experimental results show that the integrity and confidentiality of the fingerprint images can be guaranteed without any leakage of the fingerprint ridge information and can be completed in real-time on embedded processors.

TYPE OF ATTACKS

There are various types of severe attacks to the components of biometric systems.

Latent print attacks. Sometimes, we can extract previous finger print features from the sensor itself, as the impression of finger is left on the surface of sensor which can be activated at later point of time.

Trojan horse virus may also attack computer systems, therefore it is advisable to perform any kind of biometric processing in a separate hardware outside the system.

Fake feature attack, more commonly known as Spoofing, is also a kind of attack in which mechanical copies of the feature are designed, which is shielded by liveness detection technique to a large extent.

Irrespective of the sensor, a stored template can be replayed into the system i.e. a copy of finger print can be replayed in the database.

Being easy to use, easy to install and of requiring less investment, fingerprint analysis is majorly in practice as compared to other biometric techniques. In order to promote this technique and for enhancing its reach to many other areas, first an increased security is demanded.

There are various techniques to provide impart security such as cryptography, watermarking and steganography.

S.Brindha and Ila.Vennila (2011), states that Cryptography is a process of hiding information into an unintelligible (encrypted) form for the purposes of secure transmission. Through the use of a "key" the receiver can decode the encrypted message (decrypting) to retrieve the original message.

Steganography improves on this by hiding the fact that a communication even occurred. The message m is imbedded into a harmless message c which is defined as the cover-object. The message m is then embedded into c , generally with use of a key k that is defined as the stego-key. The resulting message is then embedded into the cover-object c , which results in stego-object s . Ideally the stego-object is indistinguishable from the original message c , appearing as if no other information has been encoded.

While cryptography focuses on methods to make encrypted information meaningless to unauthorized parties, steganography is based on concealing the information itself.

Watermarking is very similar to steganography in a number of respects. Both seek to embed information inside a cover message with little to no degradation of the cover-object. Watermarking however adds the additional requirement of robustness. An ideal steganographic system would embed a large amount of information, perfectly securely with no visible degradation to the cover object. An ideal watermarking system however would embed an amount of information that could not be removed or altered without making the cover object entirely unusable.

Watermarking technique provides solution to ensure the validity of biometrics; proposed scheme is composed of three parts: watermark embedding, data embedding and data extraction. They also states the difference between encryption and watermarking highlighting the advantages of using watermarking. Firstly, watermark is imperceptible. Secondly, the watermarks and the works they embedded in are inseparable.

CURRENT ISSUES AND CHALLENGES

As we all know that, the output of any system depends upon the input provided. Similarly, the result of a fingerprint recognition system depends on the quality of fingerprint sample inputted. The fingerprint image depends on various factors like skin conditions, sensor conditions etc. A poor quality image results in missed features which in turn along with lack of robustness, degrade the performance of the system. Thus accepting a sample of good quality and maintaining its validity is a major challenge.

Sensor interoperability is also a major area of concern. Different vendors are designing different kind of sensors on the basis of customer's needs and preferences. But once we talk about comparing the samples taken from different sensors, we are restricted to do so. Thus changing a sensor may affect performance of the system. Thus to solve this issue, common data exchange formats should be developed to facilitate the exchange of feature sets between vendors.

Today, the fingerprint sensors are embedded in various devices like mobile phones and PDAs to provide security. But the sensor, being of small in area leads to less overlap between fingerprint positions of same finger which hampers performance of the system.

RESEARCH OBJECTIVE

After studying all the aspects, we have analyzed that there are many algorithms designed in this filed. I have decided to study Multi-algorithm multibiometrics System, where as the name suggest, more than one algorithm is implemented to identify the user. Based on the study, my aim is to design an optimized algorithm to make a finger print sample more secure, so that the scope of finger print recognition system could be widened.

FUTURE SCOPE

There are some high security areas where security based on one trait is not sufficient. The logic behind is, if anyone loose the particular trait e.g. person loose his hand then the system will not be able to recognize the user, even if he is the authorized one. In this paper we have emphasized on security aspect of Finger prints which could be extended to providing security on the basis of other Biometric traits like hand, face, iris, retina etc. Work can also be extended to combining more than one physical feature, depending on the requirement, to provide security.

CONCLUSION

As we have seen that out of many possible methods of information security i.e. password based, ID card based and biometric based, later is better. On one hand, if we consider simplicity and installation, then former method is chosen. But we consider better security, then biometric method should be the choice. Thus the implementation of technique depends upon granularity of secrecy of information and the level of security needed. Apart from the fact that in biometric trait method there are some threats, we can believe that those can be worked upon. There are many great minds which are trying to impart security with the techniques like watermarking, steganography and cryptography. On the basis of literature survey we can conclude that watermarking is comparatively simple to implement. If anyone wants to implement any of the biometric trait method then there is different kind of data would be studied. Such as, in fingerprints, to understand the features one should have in depth knowledge of minutiae, ridges patterns etc. We have also discussed the current issues and challenges, which emphasized on robustness, performance and interoperability. The day when all hindrances are over, biometric technique will be used all over the world and that too in all the fields.

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INFORMATION AND COMMUNICATION TECHNOLOGY AND THE PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES IN NASARAWA STATE, NIGERIA

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ABSTRACT

The adoption of Information and Communication Technology (ICT) has precipitated accelerated performance in the Small and Medium Enterprises (SMEs) sub-sector despite its disadvantage of pushing people out of job. It has made rapid changes in global production, work and business methods, and trade and consumption patterns in and between enterprises and consumers. This study examines the impact of ICT on the Performance of SMEs in terms of productivity, profitability, turnover, efficiency, customer's satisfaction, employment opportunity, cost reduction and time saving. Questionnaires were administered to 100 SMEs in Nasarawa State which were randomly selected as the study sample and Pearson Product Moment Correlation Coefficient (PPMCC) was used as the method of analysis to find the correlation between ICT and the performance indicators in addition to the descriptive statistics. The findings of the study showed that, the adoption of ICT is positively and significantly correlated to productivity, profitability and employment generation but, negative and significant relationship to cost savings. This means that the adoption of ICT increases productivity, profitability and employment generation by the SMEs and decreases operation costs. The study concludes a significant correlation between the adoption of ICTs and the performance of SMEs in Nasarawa State. This inspires the study to recommend for the future an integration of ICT in day-to-day activities and/or general operations of the SMEs in Nasarawa state.

KEYWORDS

Information and Communication Technology, Small and Medium Enterprises, Performance Indicators.

1. INTRODUCTION

Today's business world has been deeply influenced by Information and Communication Technology (ICT) and the application of ICT among business is widespread. ICT is rapidly changing global production, work, business methods, trade and consumption patterns in and between enterprises and consumers. It has provided new ways to store, process, distribution and exchange information within companies and with customers (Kollberg & Dreyer, 2006). The recent ICT developments have enormous implications for the operation, structure and strategy of organizations (Buhalis, 2003). Organizations of all types around the globe are currently utilizing ICT, not only to cut costs and improve efficiency, but also to provide better customer service (Ashrafi & Murtaza, 2008). Spanos et al, (2002) state that ICT has the ability to enhance, coordinate and control the operations of many organizations and can increase the use of management systems.

On the other hand, Ongori and Migiro (2010) state that the impact of globalization has obliged many SMEs to adopt ICT in order to survive in the present competitive era especially in competing with large organizations. Bresnahan et al. (2002) argued that durable productivity gains have been achieved in enterprises that use ICT. ICT helps in the effective flow of data in organizations thereby assisting organizations to obtain information at any given time which in turn, helps these organizations to reach their desired targets. In addition, ICT brings about change in businesses and helps to create competitive advantage hence, organizations of all types including SMEs adopt ICT.

Information and Communication Technology (ICT) is considered to be a powerful tool for socio-economic development. Effective ICT-utilisation, appropriate applications, and individually tailored solutions, can create cross-sectoral opportunities and, thus, ICT can play a substantial role to address a number of goals on the development agenda. In an attempt to identify sectors that are likely to be responsive to technological change with high return on investment, Small and Medium Enterprises (SMEs) have materialised as one potential target sector to harness ICT for development.

Small and Medium Enterprises (SMEs) play an important role in economic development of a country. Several theories elaborate on the connection between information technology, economic development and social change. Almost all agree on the importance of information and communication technology adoption in SME, while the importance of SME as the engine to economic growth is well acknowledged worldwide.

Information and communication technology, particularly the "Internet" is having a significant impact on the operations of SMEs and essential for the survival and growth of the nation's economy in general and SMEs in particular. Information technology is changing the economy and traditional businesses have become more dependent on new technologies. New technologies facilitate increased interactivity, flexibility, cheap business transactions as well as improve interconnectivity with business partners and customers. Information technology is having a significant impact the sector of Small and Medium Enterprises (SMEs), especially where industries are in decline with high levels of unemployment. In spite of all the advantages accrued by ICTs, it is capable of rendering people jobless as works that are required to be done manually are replaced with computers.

This study focus on the impact of the adoption of ICT on the performance of SMEs in Nigeria, particularly in Nasarawa State. Thus, the study addresses the following questions; does the adoption of ICT increase productivity, profitability, turnover, efficiency and customer's satisfaction? Does it reduce operation cost, and saves time? What is the effect of the adoption of ICT on employment opportunity?

RESEARCH HYPOTHESES

The study assumed the following answers to the research problem that informed the study:

- H0₁:** There is no significant correlation between the adoption of ICT and the productivity of SMEs in Nasarawa State.
H0₂: There is no significant correlation between the adoption of ICT and the profitability of SMEs in Nasarawa State.
H0₃: There is no significant correlation between the adoption of ICT and cost reduction of SMEs in Nasarawa State.
H0₄: There is no significant correlation between the adoption of ICT and employment generation in SMEs in Nasarawa State.

2. LITERATURE REVIEW

2.1 EXPLORING THE IMPACT OF ICT

Adeosun, et al,(2009) state that, the use of ICT enables strategic management, communication, collaboration, information access, decision making, data management and knowledge management in organizations. ICT causes fundamental changes in the nature and application of technology in businesses. ICT can provide powerful strategic and tactical tools for organizations, which, if properly applied and used, could bring great advantages in promoting and strengthening their competitiveness (Buhalis, 2003). Hengst and Sol (2001) state that ICT enables organizations to decrease costs and increase capabilities and thus assist to shape inter-organizational coordination. The use of ICT can assist to lower coordination cost and increase outsourcing in organizations.

ICT is used to exchange information and it provides a medium for learning. Ramsey, et al, (2003) note that organizations generally stand to gain from ICT in areas such as reduced transaction costs, information gathering and dissemination, inventory control, and quality control. Fink and Disterer, (2006) argue that ICT not only help organizations to become more efficient and effective but also help them to become competitive. Pavic et al. (2007) state that organizations have the opportunity to achieve a competitive advantage from the advances in ICT through innovation, marketing, efficiency gains, better quality and customer responsiveness. Lal,(2004) further states that web-enabled services increase the competitiveness of organizations as they change the relationship with customers and also assist to create stronger link between firms and clients. ICT helps to increase business competitiveness and enhance enterprise performance through indirect cost savings such as labour costs and increased labour productivity and direct cost such as reduction of firm's input (Chowdhury & Wolf, 2003; Love et al., 2006). In order words, ICT can influence the performance of an enterprise in multifaceted ways. Hence, ICT can bring about change in organizations and make them more competitive, innovative and generates growth (Obijiofor et al., 2005).

2.2 THE ROLE AND BENEFITS OF ICT IN SMEs

The definition of SMEs varies from country to country but is often based on employment, assets or a combination of the two. The Small and Medium Development Agency of Nigeria (SMEDAN) defines SMEs based on the following criteria: a micro enterprise as a business with less than 10 people with an annual turnover of less than 5 million Naira, a small enterprise as a business with 10-49 people with an annual turnover of 5-49 million Naira while a medium enterprise as a business with 50-199 people with an annual turnover of 50-499 million Naira. In Nigeria, SMEs cover the entire range of economic activity within all sectors (SMEDAN, 2005).

In the present knowledge-based economy, it is important for SMEs to adopt processes that enable them to provide services that will bring about competitive advantage. ICT has a significant positive impact on organizational performance (Maldeni & Jayasena, 2009) and is vital to SMEs. Without the use of ICT, modern businesses are not possible as ICT has a significant impact on SMEs operations and crucial for the survival and growth of economies in general (Berisha-Namanil, 2009). ICT provide opportunities for business transformations (Chibelushi, 2008) and provide SMEs the opportunity to conduct business anywhere (Jennex et al., 2004). The European Commission (2008), states that SMEs could use ICT in order to grow and to become more innovative. Love et al; (2004) also ascertain that the use of ICT offers many benefits to SMEs at different levels (operational level, tactical level and strategic level). The benefit of ICT cuts across all sectors of the economy and all the fields of human activities.

According to Fullanteli and Allegra, (2003), ICT offers to enterprises a wide range of possibilities for improving SME's competitiveness. It provides mechanisms for getting access to new market opportunities and specialized information services such as distance consulting, continuous training, and new advisory modes.

Organizations can exchange real-time information and build closer relationships with their customers, suppliers and business partners. Customers can receive immediate feedback that allow companies to react fast to changing customers' demands and recognizing new market niches. This implies that organizations that are able to exploit the potentials offered by ICT can handle innovative processes such as Supply Chain Management (SCM), Customer Relationship Management (CRM) and Knowledge Management (KM) more effectively (Fullanteli and Allegra, 2003). Also, Swift, (2009) argues that SMEs benefit from the use of ICT as it connects them more easily and cheaply to external contacts. Through the use of ICT infrastructures, SMEs can engage in e-commerce.

Electronic commerce will aid them in increasing their efficiency in their day-to-day business operations and sustain their business growth through the opening of new market channels, and to increase the flow of information (Ongori & Migiro, 2010). ICT enable SMEs to have access to robust business information that lead to organizational effectiveness (Irani, 2002). Hence, ICT is now viewed as a vital resource that enhances the competitiveness of SMEs in any business environment.

2.3 ICT ADOPTION AND FIRM PERFORMANCE

Despite the potential benefits of ICT and e-commerce, there is debate about whether and how their adoption improves firm performance. Use of and investment in ICT requires complementary investments in skills, organisation, innovation, investment and change entails risks and costs as well as bringing potential benefits. While many studies point to the possibility of market expansion as a major benefit for SMEs, larger businesses can also expand into areas in which SMEs dominated. Moreover, it is not easy for SMEs to implement and operate an on-line business, as this involves complementary costs for training and organisational changes as well as direct costs of investing in hardware and software solutions.

While many studies provide evidence of the positive effects of ICT adoption on firm performance, others have shown no relation between computer use and firm performance. A study of Canadian manufacturing establishments (plants) with ten or more employees (excluding food processing establishments) drawn from the Statistics of Canada's business register, shows that those with high productivity growth are more likely to be using greater numbers of advanced ICT (Baldwin, 2002). Between 1988 and 1997, advanced technology users grew more in terms of both productivity and profitability than non-ICT users, especially when they use communication technologies, including company-wide and/or inter-company computer networks.

Recently, Organisation and Economic Cooperative Development (OECD) analysis shows the impacts of ICT and e-business strategies on firm performance as being positive in the overall, but that ICT are not a panacea in themselves. The OECD's Electronic Commerce Business Impacts Project (EBIP) studied a set of 220 early successful adopters of e-business strategies in a range of established sectors in eleven different countries. This study showed the positive impacts of e-commerce on their turnover and profitability and to a lesser extent on employment, most notably when e-commerce is part of larger business strategies of firms (OECD, 2002). Further work by researchers in 13, OECD countries, based on large scale statistical surveys provides, evidence that the use of ICT can contribute to improved firm performance, in terms of increased market share, expanded product range, customised products and better response to clients demand. Moreover, it indicates that ICT may help reduce inefficiency in the use of capital and labour, e.g. by reducing inventories, and that the more customers or firms are connected to the network, the greater the benefits (spillover effects). However, the analysis shows that complementary investments in skills, organisational change and innovation are key to making ICT work, and that the use of ICT affects firm performance primarily when accompanied by other changes and investments and that without these, the economic impact of ICT may be limited.

Denni, (1996) stresses that every business must bring ICT into their business operation and take advantage of the benefits they offer. Small businesses are increasingly using and adopting information and communication technology due to the advent of Personal Computers, (PCs), cost-effectiveness and cheaper ICT products. Alberto and Fernando, (2007) argue that the use of ICT can improve business competitiveness with internet providing numerous opportunities for SMEs to compete equally with large corporations. Apulu and Latham (2010) state that appropriate use of ICT can assist SMEs gain competitive advantage by reducing costs and improving core business processes. ICT improves business competitiveness and enhances enterprise performance through indirect cost savings such as labour cost and increased labour productivity and direct cost such as reduction of firms input (Chowdhury & Wolf, 2003). According to Brynsolfsson and Hitt (2000), the use of ICT can help to cut down the cost of coordination, communication, information processing and also enable efficient service provision at lower cost.

As the world economy continues to move toward increased integration as a result of advances in information communications technology, and the increasing reduction in trade barriers, some of the greatest opportunities for small businesses will derive from their ability to participate in the regional and international markets (Mutula & Brakel, 2006). Adoption of the ICT is considered to be a means to enable these businesses to compete on a global scale, with improved efficiency, and closer customer and supplier relationships (Chong et al., 2001). In this respect, SMEs should consider information and communication technology (ICT) as an important approach in their business to take competitive advantage from the global markets (Mutsaers et al., 1998). Moreover, ICT is a resource of SME which may help them to access and contribute to in order to enhance its competitiveness (Swash, 1998).

Some empirical studies by Bartelsman and Doms (2000), Brynjolfsson and Yang (1996), Dedrick et al. (2003), Kohli and Devaraj (2003) and Melville et al. (2004) confirm the positive effect of information and communication technology (ICT) on firm performance in terms of productivity, profitability, market value and market share. Their study also reveals that ICT has some effect in terms of intermediate performance measures, such as process efficiency, service quality, cost savings, organization and process flexibility and customer satisfaction. The introduction of ICT will offer various new investment opportunities within local industries, particular in the area of SMEs. Industries that are developing may take advantage of ICT which are being recognized by many previous studies. In fact, there is a need to accelerate the implementation of ICT to improve business performance.

3. RESEARCH METHODOLOGY

This study is essentially investigative and explanatory and seeks to know the effectiveness of the adoption of ICT on the performance of SMEs in Nasarawa State. The structure of its process and procedure is therefore descriptive. This study belongs to the generic family research design type called survey design.

Due to the technical nature of the topic of study, coupled with the need to ensure that the responses obtained are representative and reliable enough, the population of this study was narrowed to Nasarawa State, Nigeria with 100 SMEs randomly selected as sample. A questionnaire (or the research instrument) was administered to each of the sampled firms but only 96 were retrieved and analysed, 4 were not returned. The copies of the 100 questionnaires were given to managers and/or owners of the respective sampled SMEs in the 13 Local Government Areas (LGAs) of Nasarawa State.

The questionnaire was designed in such a way as to provide vital answers for the research questions and hypotheses tested. The questionnaire contained a set of questions classified into two major sections; section "A" and section "B". Section "A" featured questions on bio-data of the respondents, while Section "B" contained numerous statements of assertion and closed-ended questions. These were designed primarily to provide information for testing the hypotheses using Pearson Product Moment Correlation Coefficient (PPMCC) with the aid of SPSS in addition to descriptive statistics to analyse the differences in mean and standard deviation of the numerous statements of assertion. The opinions of respondents to these statements were sought out through likert scale format which is a psychometric scale commonly used in questionnaires, being the most widely used scale in survey researches.

4. RESULTS AND DISCUSSION

The results and discussion of this study were analysed based on the hypotheses of the study. Descriptive and inferential statistics such as Pearson Product Moment Correlation Coefficient adopted as analytical tools. The table is the result of the computation of the mean and standard deviation from the responses collected from the sample studied.

DESCRIPTIVE STATISTICS

	N	Mean	Std. Deviation
Adoption of ICTs	94	4.8404	.36817
Productivity of SMEs	96	3.4896	1.45815
Profitability of SMEs	94	3.5319	1.41954
Turnover of SMEs	96	3.5313	1.40640
Efficiency of SMEs	94	3.5213	1.41215
Customer's Satisfaction in SMEs	93	3.5054	1.41132
Cost Reduction in SMEs	96	4.6979	.46157
Employment Generation in SMEs	95	4.2211	.96952
Time Savings in SMEs	95	3.5368	1.41279
Valid N (listwise)	90		

Source: SPSS Output, 2013

The above table confirms the effectiveness of the adoption of ICTs in SMEs given the high mean score of above 4.84. This follows that the adoption of ICT in SMEs has more influence on cost reduction and employment generation with a high mean score of above 4.69 and 4.22 respectively. This means, they are rated high compared to profitability, turnover, efficiency, customer's satisfaction and time saving with respective mean scores of above 3.53, 3.53, 3.52, 3.50 and 3.53 respectively. Question on whether the adoption of ICT increases productivity scored the lowest mean score of about 3.49 from the study. This implies there is not enough productivity in SMEs in Nasarawa State to justify the cost savings and employment generations.

CORRELATIONS

		Adoption of ICTs	Productivity of SMEs
Adoption of ICTs	Pearson Correlation	1	.364(**)
	Sig. (2-tailed)		.000
	N	94	94
Productivity of SMEs	Pearson Correlation	.364(**)	1
	Sig. (2-tailed)	.000	
	N	94	96

Source: SPSS Output, 2013

**Correlation is significant at the 0.01 level (2-tailed).

From the above Pearson's results, it is clearly indicated that the adoption of ICT in SMEs Nasarawa State has significant positive correlation with productivity. This implies that productivity in SMEs increases with increase in the adoption of ICTs. The correlation is low because it is only significant at 0.01 levels but it is positive and direct. The Null hypothesis that states that, there is no significant correlation between the adoption of ICTs and the productivity of SMEs in Nasarawa State is rejected.

CORRELATIONS

		Adoption of ICTs	Profitability of SMEs
Adoption of ICTs	Pearson Correlation	1	.249(*)
	Sig. (2-tailed)		.016
	N	94	93
Profitability of SMEs	Pearson Correlation	.249(*)	1
	Sig. (2-tailed)	.016	
	N	93	94

Source: SPSS Output, 2013

*Correlation is significant at the 0.05 level (2-tailed).

The above Pearson's results indicate that the adoption of ICTs in Nasarawa State SMEs has significant positive correlation with profitability. This implies that profitability in SMEs increases with increase in the adoption of ICTs. The correlation is significant at 0.05 levels. Thus, the Null hypothesis that states that, there is no significant correlation between the adoption of ICTs and the profitability of SMEs in Nasarawa State is rejected.

CORRELATIONS

		Adoption of ICTs	Cost Reduction in SMEs
Adoption of ICTs	Pearson Correlation	1	-.228(*)
	Sig. (2-tailed)		.027
	N	94	94
Cost Reduction in SMEs	Pearson Correlation	-.228(*)	1
	Sig. (2-tailed)	.027	
	N	94	96

Source: SPSS Output, 2013

*Correlation is significant at the 0.05 level (2-tailed).

From the above Pearson’s results, it is clearly indicated that the adoption of ICTs in Nasarawa State SMEs has significant negative correlation with cost savings. This implies that cost of expenditures in SMEs decreases with increase in the adoption of ICTs. The correlation is significant at 0.05 levels. Thus, the Null hypothesis that states that, there is no significant correlation between the adoption of ICTs and the cost reduction of SMEs in Nasarawa State is rejected.

CORRELATIONS

		Adoption of ICTs	Employment Generation in SMEs
Adoption of ICTs	Pearson Correlation	1	.220(*)
	Sig. (2-tailed)		.033
	N	94	94
Employment Generation in SMEs	Pearson Correlation	.220(*)	1
	Sig. (2-tailed)	.033	
	N	94	95

Source: SPSS Output, 2013

*Correlation is significant at the 0.05 level (2-tailed).

From the above Pearson’s results, it is clearly indicated that the adoption of ICT in Nasarawa State SMEs has significant positive correlation with employment generation. This implies that employment generation in SMEs increases with increase in the adoption of ICT. The correlation is significant at 0.01 levels. Thus, the Null hypothesis that states that, there is no significant correlation between the adoption of ICT and the employment opportunity in SMEs in Nasarawa State is rejected.

It suffices to say from the above results that, the adoption of ICT has positive and significant correlation with the productivity of SMEs in Nasarawa State given the coefficient and level of significant of 0.364 & 0.000 respectively. Thus, our hypothesis that says, there is no significant correlation between the adoption of ICT and the productivity of SMEs is rejected. This implies that adoption of ICT by SMEs in Nasarawa State could lead to massive productivity. This is consistent with the findings in previous studies such as Brynjolfsson and Yang (1996), Bartelsman and Doms (2000), Baldwin (2002), Dedrick et al. (2003), Kohli and Devaraj (2003). Thus, the adoption of ICTs by SMEs in Nasarawa State has not led to increased productivity given the lowest mean score of about 3.49 to commensurate the employment target of the SMEs.

Similarly, the adoption of ICTs has positive and significant correlation with the profitability of SMEs in Nasarawa State given the coefficient and level of significant of 0.249 & 0.016 respectively. Thus, the Null hypothesis is rejected by accepting the alternate hypothesis that the correlation between the adoption of ICT and the profitability of SMEs in Nasarawa State is significant. This means that the adoption of ICT by SMEs in Nasarawa State has increased the profitability. This is consistent with the findings in previous studies such as Brynjolfsson and Yang (1996), Bartelsman and Doms (2000), Dedrick et al. (2003), Kohli and Devaraj (2003) and Melville et al. (2004). It follows that the adoption of ICT by SMEs in Nasarawa State would increase profitability in collaboration with increased turnover, cost reduction, efficiency and customer’s satisfaction.

It is also evident from the above results and analysis that, the adoption of ICT has negative and significant correlation with cost savings of SMEs in Nasarawa State given the coefficient and level of significant of -0.228 & 0.027 respectively. Thus, the Null hypothesis is rejected by accepting the alternate hypothesis that the correlation between the adoption of ICT and the cost savings of SMEs in Nasarawa State is significant. This means that, the adoption of ICT by SMEs in Nasarawa State has significantly reduced cost of expenditure. This is consistent with the findings in previous studies of Brynjolfsson and Hitt (2000) who argued that the use of ICT can help to cut down the cost of coordination, communication, information processing and also enable efficient service provision at lower cost, Chowdury and Wolf (2003) and more recently Apulu and Latham (2010) confirmed the above finding in the studies.

The result also shows that, the adoption of ICT is significantly positively correlated to employment generation in SMEs in Nasarawa State given the coefficient and level of significance of 0.220 and 0.033 respectively. Thus, the Null hypothesis is rejected by accepting the alternate hypothesis that the correlation between the adoption of ICT and employment generation in SMEs in Nasarawa State is significant at 5%. This means that the adoption of ICTs by SMEs in Nasarawa State would significantly increase employment opportunities. This is consistent with the findings in previous studies such as Denni (1996), Swift (2009). The results revealed that the employment opportunities in SMEs suffer a setback because of the defective productivity in the SMEs that could not commensurate the needed target.

5. CONCLUSIONS AND RECOMMENDATIONS

From the study conducted and the findings obtained, the following conclusion were reached, the adoption of ICT is positively correlated to productivity, profitability and employment generation with statistical significance. The cost savings correlation is negative and statistical significance. This implies that productivity, profitability and employment opportunities of SMEs in Nasarawa State increase with an increase in the adoption of ICT but, cost saving decreases with an increase in the adoption of ICT. That is, the correlation between the adoption of ICTs, and productivity, profitability and employment generation is positive and significant, but that of cost savings is inverse. Thus we conclude that, the adoption of ICTs could exert positive impact on the performance of SMEs in Nasarawa State by reducing cost of expenditure, and increasing productivity, profitability and employment opportunities. The study also concludes that ICT adoption amongst SMEs in Nasarawa State have competitive advantage, satisfy their customers, and saves time and cost. The significance of this study is of value to SME owner-managers and IT professionals as it could encourage them to intensify their efforts in deploying ICT in their various organizations and enlightening employees on the benefits that is associated with the adoption of ICT.

The study recommends, based on the conclusions reached that; Nigerian SMEs should develop better organizational capabilities by integrating ICT in their day-to-day activities as it could enable them to effectively benefit from the opportunities that are associated with the use of ICT in the current knowledge based economy. Also, in order for SMEs in Nigeria to keep up with competitions in the present era of technological advancements, ICT awareness should be increased and the Nigerian government should put in place viable frameworks that could support these SMEs and Nasarawa State government should throw its weight fully to support SMEs in the state.

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APPENDIX

QUESTIONNAIRE

Please, TICK () where appropriate

SECTION A: BIO DATA

1. Sex: Male () Female ()
2. Age: 18-25 () 26-30 () 31-40 () 41-50 () 51-60 () 61 & above ()
3. Marital Status: Single () Married ()
4. Educational Qualifications:

WASC/SSCE	()
OND/HND/Bachelors' Degree	()
Post-Graduate Qualifications	()
Others/specified	()

SECTION B: ADOPTION OF ICT AND SMEs PERFORMANCE

5. Do you agree that the adoption of Information and communication Technology (ICT) has great influence on the general performance of Small and Medium Enterprises (SMEs) in Nasarawa State?
 - i. Strongly Agree () ii. Agree () iii. Undecided () iv. Disagree () v. Strongly Disagree
6. Do you agree that increase in productivity increases the profitability of SMEs?
 - i. Strongly Agree () ii. Agree () iii. Undecided () iv. Disagree () v. Strongly Disagree
7. To what extent do you agree that increase in productivity reduces cost?
 - i. To a great extent () ii. To somewhat extent () iii. Undecided () iv. To a little extent () v. To no extent at all
8. Do you agree that internet facilities have significant impact on SMEs sales turnover?
 - i. Strongly Agree () ii. Agree () iii. Undecided () iv. Disagree () v. Strongly Disagree
9. Do you agree that the profitability of SMEs in Nasarawa State increases with the adoption of ICTs?
 - i. Strongly Agree () ii. Agree () iii. Undecided () iv. Disagree () v. Strongly Disagree
10. Do you agree that employment opportunity in SMEs in Nasarawa State is influenced by the adoption of ICT?
 - i. Strongly Agree () ii. Agree () iii. Undecided () iv. Disagree () v. Strongly Disagree
11. What is the effect of ICT on the efficiency of SMEs?
 - i. Avery great effect () ii. Great effect () iii. Undecided () iv. Little effect () v. No effect
12. What is the effect of ICT on customer's satisfaction in SMEs products and services?
 - i. Avery great effect () ii. Great effect () iii. Undecided () iv. Little effect () v. No effect
13. Do you agree that ICT provides information that satisfies the need of the customers?
 - i. Strongly Agree () ii. Agree () iii. Undecided () iv. Disagree () v. Strongly Disagree
14. To what extent do you agree that the adoption of ICT in SMEs has reduced cost?
 - i. To a great extent () ii. To somewhat extent () iii. Undecided () iv. To a little extent () v. To no extent at all
15. Do you agree that the adoption of ICT saves time in SMEs operations?
 - i. Strongly Agree () ii. Agree () iii. Undecided () iv. Disagree () v. Strongly Disagree ()

RELIABILITY TEST PLANS BASED ON LOG-LOGISTIC DISTRIBUTION

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ABSTRACT

The well known Log-Logistic Distribution as suggested by Balakrishnan *et al.*(1987) is considered with a known shape parameter($\beta = 3$). In reliability studies the item that are put to test, to collect the life of the items in order to decide upon accepting or rejecting a submitted lot, are called reliability test plans. For a given producer's risk, sample size, termination number and waiting time to terminate the test plan are computed. The preferability of the test plan over similar plans existing in the literature are established.

KEYWORDS

Log-Logistic distribution ($\beta = 3$), Reliability test plan, Producers risk, Acceptance sample number.

1. INTRODUCTION

A life test is an experiment that is conducted to determine whether or not a product needs the specified requirements for average life. Generally in such a test fixed number of products taken as a sample out of a submitted lot of those products. To decide upon acceptance or otherwise of the lot on the basis of the observed life times of sampled test procedure requires a specification of sample size, a terminating rule to arrive at a decision, the criterion that defines, the preferability or otherwise of the lot and above all the risks associated with the decisions. Since exponential distribution the CFR model the central distribution in reliability studies, Epstein (1954) developed reliability test plans for exponential distribution. Truncated live of this type are developed by Sobel & Tischendorf (1959) for exponential distribution. Gupta & Groll (1961) constructed similar sampling plans based gamma life test sample data. Goode & Kao (1961) constructed sampling plans based on Weibull distribution. Kantam & Rosaiah (1998) suggested acceptance sampling plans based on life tests when the failure density model of the products is half-logistic distribution. The reliability test plans based on gamma variate was suggested by Kantam & SriRam (2010). Kantam *et al.* (2012) constructed similar reliability test plans for exponentiated exponential distribution.

In this paper we present a different approach to the construction of sampling plans for Log logistic distribution with shape parameter ($\beta = 3$) following Braverman (1981, Ch II). By considering the Log logistic distribution ($\beta = 3$) as the failure density governing the life times of the product in the submitted lot and made an attempt to construct the necessary test plan that can be used to decide upon accepting or otherwise of the submitted lot of product. Rosaiah *et al.* (2008) suggested similar plans for Inverse Rayleigh distribution, the operating characteristic of such plan are also presented. The necessary theory of the present plan is given in Section 2, the operating characteristics are given in Section 3, and comparative study is presented in Section 4.

2 RELIABILITY TEST PLANS

Let a lot of products of indefinitely large size be submitted for sampling inspection and decision to reject or accept. Let us assume that the probability density function of life of a product is a Log Logistic distribution ($\beta = 3$) with scale parameter σ , whose probability density function $f(x, \sigma)$, cumulative distribution function $F(x, \sigma)$ are given in equations

$$f(x) = \frac{3}{\sigma} \frac{\left(\frac{x}{\sigma}\right)^2}{\left(1 + \left(\frac{x}{\sigma}\right)^3\right)^2}; x > 0, \sigma > 0 \quad (2.1)$$

$$F(x) = \frac{\left(\frac{x}{\sigma}\right)^3}{\left(1 + \left(\frac{x}{\sigma}\right)^3\right)}; x > 0, \sigma > 0 \quad (2.2)$$

Let ' α ' be the probability of rejecting the submitted lot that is truly good in some sense- known as producer's risk. Naturally ' α ' should be as small as possible. We can think of the decision making in two different ways.

(i) Let σ_0 be a specified value of σ representing the mean life of the product and ' t_0 ' be pre-assigned time at which the life testing experiment of sample products is designed to be terminated. Hence ' t_0 ' may be called "Terminating time". Gupta & Groll (1961) suggested the minimum sample size required is ' n ' and an acceptance number c , such that if c or less failures occur out of ' n ', before the time ' t_0 ', the lot would be accepted with a probability $(1 - \alpha)$. This approach is basically counting number of failures out of n , with in the terminating time ' t_0 ' and hence the life testing experiment would be stopped as soon as the time ' t_0 '

is reached or $(c+1)^{st}$ failure is realized whichever is earlier. A typical table of Srinivasa Rao (2001) is reproduced here in order to illustrate by an example and presented in Table 2.1

Suppose an experimenter wishes (Gupta & Groll 1961, p.g. 952) to know that the true mean life $1.5\sigma_0$ is atleast 5000 hours with probability 0.95 and the experiment designed to stop at 1000 hours after starting. For an acceptance number $c = 2$ from the above table the minimum sample size required is the entry corresponding to $c = 2$, $t_0/\sigma_0 = 0.5995$ and this is 34. Hence it is suggested that if 34 products are put to test at time "0" with an aim of stopping the test at the 1000th hour, we accept the lot with probability of 0.95, if the number of failures before the 1000th hour is less than or equal to 2. The lot shall be rejected if the number of failures with in 1000th hour is 3 or more.

(ii) Alternatively one can think of another reliability test plan. Let 'n' stand for the number of sampled items to be inspected and 'r' be natural number such that if 'r' failures are realized before the termination time 't₀' the lot would be rejected, that is the experiment is stopped as soon as rth failure is reached or termination time 't₀' is reached whichever is earlier and in this sense 'r' is called termination number. The sample size naturally depends on cost considerations and expected waiting time to reach a decision. Large sample sizes may decrease expected waiting time but increase cost of experimentation. As a balance between these two aspects, let us consider the sample size as a multiple of termination number.

We know that the probability of 'r' failures out of 'n' tested items is given by

$\binom{n}{r} p^r q^{n-r}$ where $p = F(x, \sigma)$ the cumulative distribution function of the log-logistic distribution, hence acceptance probability of lot is

$$P_a = \sum_{i=0}^{r-1} \binom{n}{i} p^i q^{n-i} \tag{2.3}$$

For specified producer's risk say α , termination number r, sample size 'n' as a multiple of 'r' we can write the above equation as

$$\sum_{i=0}^{r-1} \binom{kr}{i} p^i q^{kr-i} = 1 - \alpha \tag{2.4}$$

Using the cumulative probability of binomial distribution the above equation can be solved for p. Equating $F(x, \sigma)$ to p we can get the value of x/σ corresponding to p, that is x/σ is the solution of

$$F(x; \sigma) = \frac{\left(\frac{x}{\sigma}\right)^3}{\left(1 + \left(\frac{x}{\sigma}\right)^3\right)} = p \tag{2.5}$$

As an example suppose we have to construct a life test sampling plan with an acceptance probability of 0.95 for lots with an acceptable mean life of 1000 hours and termination number 5, sample size 10. From Table 2.2 the entry against $r = 5$ under the column $2r$ is 0.241702, since the acceptable mean life is given to be 660 hours. For a log-logistic distribution this implies $\sigma_0 = 660$. If the termination time is given by 't₀' the table value says that $t/1.5\sigma_0 = 0.241702$, ie., $t_0 = 660 \times 0.241702 = 158.5232 = 159$.

This test plan will be implemented as follows: Select 10 items from the submitted lot and put them to test if the 5th failure is realized before 159th hour of the test reject the lot, otherwise accept the lot in either case terminating the experiment as soon as the 5th failure is reached or 159th hour of the test time is reached whichever is earlier. In the case of acceptance the assurance is that the average life of the submitted products is at least 660 hours.

As a comparison of our test plan with that of Srinivasa Rao (2001) for $\alpha = 0.25, 0.10, 0.05, 0.01$. Using the common entries for n, r (=c+1) in both approaches. The termination times for average life are given in Table 2.3.

We have tabulated from the above Equations 2.2, 2.3 the values of x/σ for $\alpha = 0.25, 0.10, 0.05, 0.01$; $r=1(1)10, k=2(1)10$, in Table 2.2 for log-logistic distribution and these tables can be another reliability test plans. These tables show that for the same α , sample size acceptance number, termination time of second approach is much earlier than in the first approach. Resulting in a considerable saving in the waiting time to come to a decision for any specified value of ' σ '.

3 OPERATING CHARACTERISTIC CURVE

If the true but unknown life of the product deviates from the specified life of the product, it should result in a considerable change in the probability of acceptance of the lot based on the sampling plan. Hence the probability of acceptance can be regarded as a function of the deviation of specified average from the true average. This function is called operating characteristic function of the sampling plan, hence the operating characteristic lies between 0 and 1. Specifically if $F(T/\sigma)$ is the cumulative distribution function of the life time random variable of the product, σ_0 corresponds to specified life, we can write

$$F\left(\frac{T}{\sigma}\right) = F\left(\frac{T}{\sigma_0}, \frac{\sigma_0}{\sigma}\right) \tag{3.1}$$

where σ corresponds to true but unknown average life. The ratio σ_0/σ in the R.H.S of above equation can be taken as a measure of changes between true and specified lives. For instance $\sigma_0/\sigma < 1$ implies true mean life is more than the declared life leading to more acceptance probability or less failure risk. Similarly $\sigma_0/\sigma > 1$ implies less acceptance probability or more failure risk. Hence giving a set of hypothetical values say $\sigma_0/\sigma = 0.1(0.1)0.9$ we can have the corresponding acceptance probabilities of acceptance given by Equation (2.3) for a sampling plan forms the O.C. curve of the plan. Here we have selected some plans and O.C. values of these plans are given in Tables 3.1 to 3.8 and the graph between σ_0/σ , the probability of acceptance given by Equation 3.1 for a sampling plan forms the O.C. curve of the plans and were given by the Figures 1 to 8.

4 COMPARATIVE STUDY

The upper entry in each occupied cell of Table (4.1) corresponds to the proportion of termination time of the test plan in the present paper. The lower entry corresponds to the similar quantity of the sampling plan of Srinivasa Rao (2001). These entries reveal that the terminating time of this test plan is uniformly smaller than the corresponding time of the plan in Srinivasa Rao (2001). Therefore, the present test plans would result in saving the experimental time in order to decide to accept or reject a submitted lot on the basis of the sample times taken from the lot.

TABLE 4.1: LLD COMMON ENTRIES OF SCALED TERMINATION TIME (t/σ_0)

	n	2r	3r	4r	5r	6r	8r
	r	c					
(1- α)=0.25	1	0	261	94			36
			1200	899			599
	2	1	267	171			
			1200	899			
	3	2	337	210			
			1200	899			
0.1	1	0	52	35		21	
			1500	1200		899	
	2	1	150		71		
			1500		899		
0.05	1	0	25	17			8
			2249	1200			899
	2	1	101	64		37	
			1500	1200		899	
0.01	1	0	5		27	20	
			2249		1500	1200	
	2	1	43	27	20		
			2249	1500	1200		

The first entry in above table corresponds to test plan by our approach and the second one relates to that of Srinivasa Rao (2001).

CONCLUSION

In this paper an acceptance decision rule is developed based on the life test when the life distribution of test items follows log-logistic distribution, its shape parameter ($\beta = 3$), for the use of plans by the practitioners.

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TABLES

TABLE 2.1: LOG LOGISTIC DISTRIBUTION RELIABILITY TEST PLANS GIVES CONSUMERS RISK

P*	c	t/σ ₀ 0.5995	0.8994	1.2	1.5	2.2494	2.9991	3.7495	4.4991
0.75	0	8	3	2	1	1	1	1	1
	1	15	6	4	3	2	2	2	2
	2	22	9	6	4	3	3	3	3
	3	38	11	7	6	5	4	4	4
	4	35	14	9	7	6	5	5	5
	5	41	17	11	9	7	6	6	6
	6	47	19	13	10	8	7	7	7
	7	54	22	14	11	9	9	8	8
	8	60	25	16	13	10	10	9	9
	9	66	27	18	14	11	11	10	10
	10	72	30	19	15	13	12	11	11
	11	79	32	21	17	14	13	12	12
	12	85	35	23	18	15	14	13	13
	13	91	37	24	20	16	15	14	14
	14	97	40	26	21	17	16	15	15
	15	103	42	28	22	18	17	17	16
0.90	0	12	5	3	2	1	1	1	1
	1	21	8	5	4	3	2	2	2
	2	29	11	7	5	4	4	3	3
	3	36	14	9	7	5	5	4	4
	4	44	17	11	8	6	6	5	5
	5	51	20	13	10	8	7	7	6
	6	58	23	14	11	9	8	8	7
	7	64	26	16	13	10	9	9	8
	8	71	29	18	14	11	10	10	9
	9	78	31	20	16	12	11	11	11
	10	84	34	22	17	13	12	12	12
	11	91	37	23	18	14	13	13	13
	12	98	40	25	20	16	14	14	14
	13	104	42	27	21	17	15	15	15
	14	111	45	29	23	18	17	16	16
	15	117	48	30	24	19	18	17	17
0.95	0	16	6	3	3	2	1	1	1
	1	25	10	6	4	3	3	2	2
	2	34	13	8	6	4	4	4	3
	3	42	16	10	8	6	5	5	4
	4	49	19	12	9	7	6	6	6
	5	57	22	14	11	8	7	7	7
	6	64	25	16	12	9	8	8	8
	7	71	28	18	14	10	9	9	9
	8	79	31	19	15	12	10	10	10
	9	86	34	21	17	13	12	11	11
	10	93	37	23	18	14	13	12	12
	11	99	40	25	19	15	14	13	13
	12	106	43	27	21	16	15	14	14
	13	113	45	29	22	17	16	15	15
	14	120	48	30	24	19	17	16	16
	15	127	51	32	25	20	18	17	17
0.99	0	24	9	5	4	2	2	2	2
	1	35	13	8	6	4	3	3	3
	2	45	17	10	7	5	4	4	4
	3	54	20	12	9	6	6	5	5
	4	62	24	14	11	8	7	6	6
	5	70	27	16	12	9	8	7	7
	6	78	30	18	14	10	9	8	8
	7	86	34	20	15	11	10	10	9
	8	94	37	22	17	13	11	11	10
	9	101	40	24	19	14	12	12	11
	10	109	43	26	20	15	14	13	12
	11	116	46	28	22	16	15	14	13
	12	124	49	30	23	17	16	15	14
	13	131	52	32	25	19	17	16	16
	14	138	55	34	26	20	18	17	17
	15	145	57	36	28	21	19	18	18

TABLE 2.2: LOG-LOGISTIC DISTRIBUTION RELIABILITY TEST PLAN GIVEN PRODUCER'S RISK

(1- α)	r\ n	2r	3r	4r	5r	6r	7r	8r	9r	10r
0.75	1	0.260613	0.094470	0.071313	0.057019	0.04781	0.040841	0.035877	0.031965	0.028768
	2	0.267056	0.171122	0.126048	0.100004	0.082655	0.070387	0.061592	0.044635	0.049072
	3	0.333710	0.210630	0.153795	0.121295	0.100472	0.085635	0.074460	0.065982	0.059106
	4	0.375902	0.234647	0.171121	0.134758	0.111110	0.094470	0.082235	0.072877	0.065259
	5	0.404641	0.251320	0.182848	0.143804	0.118184	0.100942	0.087799	0.077682	0.069767
	6	0.426695	0.263690	0.191613	0.150224	0.123922	0.052300	0.091769	0.080979	0.072877
	7	0.443546	0.273013	0.197829	0.155600	0.128194	0.109126	0.094924	0.083925	0.075259
	8	0.455909	0.280803	0.203457	0.159857	0.120295	0.111601	0.097215	0.086065	0.077275
	9	0.467276	0.286964	0.207742	0.162940	0.134203	0.114108	0.099069	0.087799	0.078910
	10	0.476279	0.292318	0.211356	0.166058	0.136428	0.116136	0.100942	0.089111	0.080148
0.90	1	0.052305	0.035076	0.026430	0.021046	0.017572	0.015857	0.013147	0.011776	0.010628
	2	0.150224	0.095237	0.070538	0.055650	0.045949	0.039182	0.034283	0.030467	0.027352
	3	0.216481	0.135870	0.099069	0.078090	0.064501	0.054972	0.047810	0.042346	0.037786
	4	0.262853	0.163561	0.118699	0.093114	0.076870	0.065239	0.057019	0.050352	0.045034
	5	0.296831	0.183514	0.133099	0.104269	0.086065	0.073271	0.063401	0.056332	0.050352
	6	0.323000	0.198527	0.143804	0.113018	0.093114	0.078910	0.068620	0.060876	0.054630
	7	0.343664	0.211356	0.152599	0.119734	0.098603	0.083950	0.072877	0.064501	0.057710
	8	0.361079	0.221684	0.159857	0.125514	0.103312	0.087799	0.076060	0.067483	0.060519
	9	0.375902	0.230018	0.166058	0.130361	0.107168	0.090877	0.079321	0.070152	0.062674
	10	0.387864	0.236984	0.171760	0.134203	0.110607	0.094017	0.081396	0.072093	0.064501
0.95	1	0.025749	0.017207	0.012835	0.010351	0.008650	0.007345	0.006064	0.005763	0.005194
	2	0.101414	0.064503	0.047185	0.037235	0.030962	0.026431	0.022291	0.020443	0.018315
	3	0.162321	0.101414	0.073667	0.058057	0.047810	0.040892	0.035610	0.031461	0.028292
	4	0.207742	0.128730	0.093115	0.073271	0.060520	0.051232	0.044731	0.039464	0.035342
	5	0.241702	0.149045	0.108144	0.084778	0.069767	0.059457	0.051651	0.045643	0.040891
	6	0.269598	0.165432	0.119734	0.094017	0.077275	0.065610	0.057019	0.050353	0.045338
	7	0.292318	0.178887	0.129275	0.090070	0.083501	0.070925	0.061592	0.054299	0.048756
	8	0.310658	0.190248	0.136968	0.107656	0.088673	0.075259	0.065239	0.057710	0.051651
	9	0.326866	0.199282	0.144381	0.113101	0.092665	0.078910	0.068620	0.060520	0.054299
	10	0.340656	0.207742	0.150224	0.117670	0.096755	0.081815	0.071313	0.063037	0.056332
0.99	1	0.005103	0.003350	0.002542	0.002036	0.017039	0.001435	0.001276	0.001204	0.001006
	2	0.042641	0.027120	0.019851	0.157880	0.012990	0.011051	0.009677	0.008527	0.007690
	3	0.087364	0.069147	0.039747	0.031212	0.025749	0.021863	0.019075	0.016846	0.015103
	4	0.138038	0.078090	0.056675	0.044429	0.036417	0.030962	0.027120	0.026022	0.021453
	5	0.159244	0.097676	0.070538	0.055310	0.045643	0.038620	0.033501	0.029732	0.026660
	6	0.186190	0.114108	0.080230	0.064501	0.052965	0.045034	0.039181	0.034546	0.030962
	7	0.201983	0.128194	0.092216	0.072485	0.058396	0.050352	0.043829	0.038620	0.034811
	8	0.229252	0.139804	0.100942	0.078910	0.063606	0.054064	0.047810	0.042346	0.037786
	9	0.246481	0.150224	0.108144	0.084778	0.069767	0.059106	0.051324	0.045338	0.040604
	10	0.262018	0.159245	0.115119	0.089992	0.072037	0.062674	0.054299	0.048124	0.043233

TABLE 3.1: LOG-LOGISTIC DISTRIBUTION O.C. VALUES OF SELECTED RELIABILITY TEST PLANS FOR A GIVEN CONSUMER'S RISK

	n=2,r=1	n=3,r=1	n=8,r=1	n=4,r=2	n=6,r=2	n=6;r=3	n=9;r=3
	t/σ ₀ =1.2	t/σ ₀ =0.8994	t/σ ₀ =0.5995	t/σ ₀ =1.2	t/σ ₀ =0.8994	t/σ ₀ =1.2	t/σ ₀ =0.8994
	P _a	P _a	P _a	P _a	P _a	P _a	P _a
σ ₀ /σ	1-α=0.75	1-α=0.75	1-α=0.75	1-α=0.75	1-α=0.75	1-α=0.75	1-α=0.75
0.1	0.996553	0.997821	0.998278	0.999982	0.999992	1.000000	1.000000
0.2	0.972915	0.982740	0.986317	0.998905	0.999505	0.999951	0.999984
0.3	0.912835	0.943311	0.954656	0.988775	0.994713	0.998400	0.999449
0.4	0.810757	0.872377	0.896227	0.948108	0.973659	0.984333	0.993958
0.5	0.676290	0.770183	0.808471	0.852534	0.916856	0.926653	0.966817
0.6	0.530276	0.645404	0.694953	0.701011	0.809307	0.794636	0.888088
0.7	0.394212	0.512557	0.565301	0.523835	0.656072	0.601939	0.738963
0.8	0.281513	0.386777	0.432940	0.359710	0.483947	0.402688	0.540869
0.9	0.195837	0.278999	0.311258	0.231602	0.325551	0.243057	0.345314
1	0.134373	0.193961	0.209929	0.142859	0.201845	0.136252	0.194123
1.1	0.091829	0.131125	0.133037	0.086011	0.117093	0.072904	0.098012
1.2	0.062940	0.086955	0.079500	0.051277	0.064596	0.038063	0.045507
1.3	0.043468	0.057000	0.045031	0.030552	0.034409	0.019709	0.019883
1.4	0.030334	0.037172	0.024330	0.018372	0.017932	0.010235	0.008343
1.5	0.021424	0.024237	0.012627	0.011166	0.009242	0.005371	0.003419
1.6	0.015325	0.015862	0.006340	0.006884	0.004750	0.002861	0.001387
1.7	0.011104	0.010447	0.003101	0.004311	0.002450	0.001551	0.000562
1.8	0.008149	0.006938	0.001487	0.002743	0.001274	0.000858	0.000230
1.9	0.006054	0.004652	0.000704	0.001774	0.000670	0.000484	0.000000

TABLE 3.2 LOG-LOGISTIC DISTRIBUTION O.C. VALUES OF SELECTED RELIABILITY TEST PLANS FOR A GIVEN PRODUCER'S RISK

	n=2,r=1	n=3,r=1	n=8,r=1	n=4,r=2	n=6,r=2	n=6;r=3	n=9;r=3
	t/σ ₀ =0.260613	t/σ ₀ =0.09947	t/σ ₀ =0.035877	t/σ ₀ =0.267056	t/σ ₀ =0.171122	t/σ ₀ =0.333710	t/σ ₀ =0.210630
	P _a	P _a	P _a	P _a	P _a	P _a	P _a
σ ₀ /σ	1-α=0.75	1-α=0.75	1-α=0.75	1-α=0.75	1-α=0.75	1-α=0.75	1-α=0.75
0.1	0.999965	0.999997	1.000000	1.000000	1.000000	1.000000	1.000000
0.2	0.999717	0.999980	0.999997	1.000000	1.000000	1.000000	1.000000
0.3	0.999045	0.999932	0.999990	0.999998	1.000000	1.000000	1.000000
0.4	0.997738	0.999838	0.999976	0.999991	0.999998	1.000000	1.000000
0.5	0.995589	0.999684	0.999954	0.999966	0.999994	0.999998	1.000000
0.6	0.992397	0.999454	0.999992	0.999900	0.999998	0.999990	0.999999
0.7	0.987967	0.999133	0.999873	0.999749	0.999996	0.999961	0.999997
0.8	0.982118	0.998706	0.999811	0.999448	0.999902	0.999875	0.999991
0.9	0.974684	0.998158	0.999731	0.998895	0.999803	0.999654	0.999975
1	0.965517	0.997475	0.999631	0.997560	0.999632	0.999152	0.999936
1.1	0.954495	0.996641	0.999508	0.996452	0.999353	0.998120	0.999853
1.2	0.941523	0.995642	0.999362	0.994164	0.998920	0.996174	0.999686
1.3	0.926536	0.994464	0.999189	0.990832	0.998272	0.992773	0.999376
1.4	0.909504	0.993092	0.998987	0.986161	0.997359	0.987213	0.998828
1.5	0.890434	0.991512	0.998754	0.979835	0.996032	0.978658	0.997910
1.6	0.869369	0.989711	0.998488	0.971527	0.994251	0.966198	0.996440
1.7	0.846390	0.987676	0.998187	0.960921	0.991880	0.948942	0.994182
1.8	0.821614	0.985393	0.997848	0.947727	0.988794	0.926130	0.990838
1.9	0.795193	0.982850	0.998747	0.931704	0.984852	0.897245	0.986058

TABLE 3.3 LOG-LOGISTIC DISTRIBUTION O.C. VALUES OF SELECTED RELIABILITY TEST PLANS FOR A GIVEN CONSUMER 'S RISK

	n=2,r=1	n=3,r=1	n=5,r=1	n=4,r=2	n=8,r=2
	t/σ ₀ =1.5	t/σ ₀ =1.2	t/σ ₀ =0.8994	t/σ ₀ =1.5	t/σ ₀ =0.8994
	P _a	P _a	P _a	P _a	P _a
σ ₀ /σ	1-α=0.90	1-α=0.90	1-α=0.90	1-α=0.90	1-α=0.90
0.1	0.993284	0.994834	0.996370	0.999932	0.999985
0.2	0.948111	0.959649	0.971400	0.995997	0.999084
0.3	0.839945	0.872144	0.907315	0.962666	0.999038
0.4	0.67629	0.730023	0.796478	0.852534	0.953654
0.5	0.494626	0.556159	0.647128	0.657511	0.861019
0.6	0.334511	0.386147	0.482007	0.438190	0.702189
0.7	0.214807	0.247511	0.328274	0.259802	0.504168
0.8	0.134373	0.149365	0.205322	0.142859	0.316068
0.9	0.083513	0.086664	0.119126	0.075613	0.174257
1	0.052245	0.049257	0.064991	0.039578	0.085976
1.1	0.033153	0.027827	0.033844	0.020848	0.038817
1.2	0.021424	0.01579	0.017067	0.011166	0.016410
1.3	0.014122	0.009063	0.008442	0.006115	0.006635
1.4	0.009498	0.005283	0.004140	0.003432	0.002612
1.5	0.006513	0.003136	0.002030	0.001975	0.001016
1.6	0.004551	0.001897	0.001001	0.001166	0.000395
1.7	0.003235	0.00117	0.000499	0.000705	0.000154
1.8	0.002338	0.000736	0.000252	0.000436	0.000000

TABLE 3.4 LOG-LOGISTIC DISTRIBUTION O.C. VALUES OF SELECTED RELIABILITY TEST PLANS FOR A GIVEN PRODUCER'S RISK

	n=2,r=1	n=3,r=1	n=5,r=1	n=4,r=2	n=8,r=2
	t/σ ₀ =0.052305	t/σ ₀ =0.035076	t/σ ₀ =0.021046	t/σ ₀ =0.150224	t/σ ₀ =0.070538
	P _a	P _a	P _a	P _a	P _a
σ ₀ /σ	1-α=0.90	1-α=0.90	1-α=0.90	1-α=0.90	1-α=0.90
0.1	1.000000	1.000000	1.000000	1.000000	1.000000
0.2	0.999998	0.999999	1.000000	1.000000	1.000000
0.3	0.999992	0.999997	0.999999	1.000000	1.000000
0.4	0.999982	0.999992	0.999997	1.000000	1.000000
0.5	0.999964	0.999984	0.999994	0.999999	1.000000
0.6	0.999938	0.999972	0.999990	0.999997	1.000000
0.7	0.999902	0.999956	0.999984	0.999992	1.000000
0.8	0.999853	0.999934	0.999976	0.999982	0.999999
0.9	0.999791	0.999906	0.999966	0.999964	0.999998
1	0.999714	0.999871	0.999953	0.999932	0.999997
1.1	0.999619	0.999828	0.999938	0.999880	0.999994
1.2	0.999506	0.999776	0.999919	0.999798	0.999990
1.3	0.999372	0.999716	0.999898	0.999675	0.999983
1.4	0.999215	0.999645	0.999872	0.999497	0.999974
1.5	0.999035	0.999563	0.999843	0.999244	0.999961
1.6	0.998829	0.999470	0.999809	0.998895	0.999943
1.7	0.998595	0.999364	0.999771	0.998425	0.999918
1.8	0.998333	0.999245	0.999728	0.997803	0.999884
1.9	0.998040	0.999113	0.999680	0.996995	0.999840

TABLE 3.5 LOG-LOGISTIC DISTRIBUTION O.C. VALUES OF SELECTED RELIABILITY TEST PLANS FOR A GIVEN CONSUMER'S RISK

	n=2,r=1	n=3,r=1	n=6,r=1	n=4,r=2	n=6,r=2	n=10,r=2
	t/σ ₀ =2.2496	t/σ ₀ =1.2	t/σ ₀ =0.8994	t/σ ₀ =1.5	t/σ ₀ =1.2	t/σ ₀ =0.8994
	P _a	P _a	P _a	P _a	P _a	P _a
σ ₀ /σ	1-α=0.95	1-α=0.95	1-α=0.95	1-α=0.95	1-α=0.95	1-α=0.95
0.1	0.977613	0.994833	0.995645	0.999782	0.999994	0.999976
0.2	0.840020	0.959648	0.965778	0.988531	0.996288	0.998539
0.3	0.585051	0.872143	0.889834	0.903477	0.964186	0.984930
0.4	0.334661	0.730022	0.761042	0.677225	0.851290	0.929760
0.5	0.170321	0.556139	0.593182	0.388282	0.639060	0.799619
0.6	0.083556	0.386147	0.416547	0.175065	0.392276	0.597436
0.7	0.041566	0.247511	0.262714	0.067431	0.198105	0.376686
0.8	0.021444	0.149360	0.149596	0.024212	0.085164	0.199193
0.9	0.011564	0.086664	0.077840	0.008633	0.032610	0.089457
1	0.006519	0.049250	0.037620	0.003171	0.011650	0.034954
1.1	0.003832	0.027827	0.017194	0.001219	0.004010	0.012237
1.2	0.002339	0.015790	0.007561	0.000493	0.001371	0.003953
1.3	0.001479	0.009060	0.003490	0.000210	0.000400	0.001210
1.4	0.000962	0.005280	0.001381	0.000000	0.000160	0.000359
1.5	0.000643	0.003135	0.000587	0.000000	0.000000	0.000105
1.6	0.000440	0.001897	0.000251	0.000000	0.000000	0.000000
1.7	0.000308	0.001170	0.000109	0.000000	0.000000	0.000000
1.8	0.000220	0.000736	0.000000	0.000000	0.000000	0.000000
1.9	0.000160	0.000471	0.000000	0.000000	0.000000	0.000000

TABLE 3.6 LOG-LOGISTIC DISTRIBUTION O.C. VALUES OF SELECTED RELIABILITY TEST PLANS FOR A GIVEN PRODUCER'S RISK

	n=2,r=1	n=3,r=1	n=6,r=1	n=4,r=2	n=6,r=2	n=10,r=2
	t/σ ₀ =0.002749	t/σ ₀ =0.0170207	t/σ ₀ =0.008650	t/σ ₀ =0.10140	t/σ ₀ =0.064503	t/σ ₀ =0.037235
	P _a	P _a	P _a	P _a	P _a	P _a
σ ₀ /σ	1-α=0.95	1-α=0.95	1-α=0.95	1-α=0.95	1-α=0.95	1-α=0.95
0.1	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
0.2	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
0.3	0.999999	1.000000	1.000000	1.000000	1.000000	1.000000
0.4	0.999998	0.999999	1.000000	1.000000	1.000000	1.000000
0.5	0.999996	0.999998	1.000000	1.000000	1.000000	1.000000
0.6	0.999993	0.999997	0.999999	1.000000	1.000000	1.000000
0.7	0.999990	0.999995	0.999999	0.999999	1.000000	1.000000
0.8	0.999984	0.999992	0.999998	0.999998	1.000000	1.000000
0.9	0.999978	0.999989	0.999997	0.999997	0.999999	1.000000
1	0.999970	0.999985	0.999996	0.999993	0.999999	1.000000
1.1	0.999960	0.999980	0.999995	0.999988	0.999998	1.000000
1.2	0.999948	0.999974	0.999993	0.999981	0.999997	1.000000
1.3	0.999933	0.999966	0.999991	0.999969	0.999995	0.999999
1.4	0.999917	0.999958	0.999989	0.999951	0.999992	0.999999
1.5	0.999898	0.999948	0.999987	0.999927	0.999988	0.999999
1.6	0.999876	0.999937	0.999984	0.999892	0.999982	0.999998
1.7	0.999851	0.999925	0.999981	0.999845	0.999974	0.999997
1.8	0.999823	0.999911	0.999977	0.999782	0.999964	0.999996
1.9	0.999792	0.999895	0.999973	0.999700	0.999950	0.999994

TABLE 3.7 LOG-LOGISTIC DISTRIBUTION O.C. VALUES OF SELECTED RELIABILITY TEST PLANS FOR A GIVEN CONSUMER'S RISK

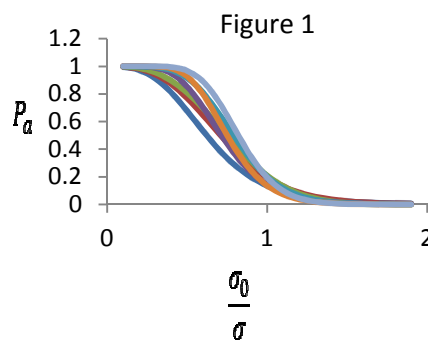
	n=2,r=1	n=4,r=1	n=5,r=1	n=4,r=2	n=6,r=2	n=8,r=2
	t/σ ₀ =2.24964	t/σ ₀ =1.5	t/σ ₀ =1.2	t/σ ₀ =2.2494	t/σ ₀ =1.5	t/σ ₀ =1.2
	P _a	P _a	P _a	P _a	P _a	P _a
σ ₀ /σ	1-α=0.99	1-α=0.99	1-α=0.99	1-α=0.99	1-α=0.99	1-α=0.99
0.1	0.977620	0.986613	0.991405	0.999252	0.999832	0.999917
0.2	0.840057	0.898914	0.933647	0.962717	0.990338	0.995071
0.3	0.585125	0.705508	0.796123	0.763216	0.916586	0.953492
0.4	0.334736	0.457368	0.591871	0.438520	0.710183	0.814356
0.5	0.170374	0.244655	0.376125	0.194216	0.427327	0.570658
0.6	0.083608	0.111897	0.204765	0.075730	0.201154	0.315169
0.7	0.041584	0.046142	0.097572	0.028732	0.078755	0.138661
0.8	0.021453	0.018056	0.042048	0.011188	0.027581	0.050733
0.9	0.011569	0.006974	0.016972	0.004576	0.009181	0.016294
1	0.006523	0.002730	0.006619	0.001980	0.003030	0.004833
1.1	0.003835	0.001099	0.002555	0.000906	0.001019	0.001379
1.2	0.002341	0.000459	0.000994	0.000437	0.000354	0.000391
1.3	0.001479	0.000199	0.000394	0.000221	0.000128	0.000112
1.4	0.000963	0.000000	0.000160	0.000117	0.000000	0.000000
1.5	0.000644	0.000000	0.000000	0.000000	0.000000	0.000000
1.6	0.000441	0.000000	0.000000	0.000000	0.000000	0.000000
1.7	0.000309	0.000000	0.000000	0.000000	0.000000	0.000000
1.8	0.000220	0.000000	0.000000	0.000000	0.000000	0.000000
1.9	0.000160	0.000000	0.000000	0.000000	0.000000	0.000000

TABLE 3.8 LOG-LOGISTIC DISTRIBUTION O.C. VALUES OF SELECTED RELIABILITY TEST PLANS FOR A GIVEN PRODUCER'S RISK

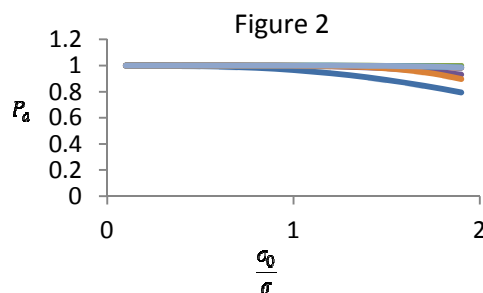
	n=2,r=1	n=4,r=1	n=5,r=1	n=4,r=2	n=6,r=2	n=8,r=2
	t/σ ₀ =0.005103	t/σ ₀ =0.002542	t/σ ₀ =0.002036	t/σ ₀ =0.042641	t/σ ₀ =0.027120	t/σ ₀ =0.019851
	P _a	P _a	P _a	P _a	P _a	P _a
σ ₀ /σ	1-α=0.99	1-α=0.99	1-α=0.99	1-α=0.99	1-α=0.99	1-α=0.99
0.1	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
0.2	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
0.3	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
0.4	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
0.5	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
0.6	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
0.7	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
0.8	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
0.9	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
1	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
1.1	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
1.2	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
1.3	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
1.4	0.999999	1.000000	1.000000	1.000000	1.000000	1.000000
1.5	0.999999	1.000000	1.000000	1.000000	1.000000	1.000000
1.6	0.999999	1.000000	1.000000	0.999999	1.000000	1.000000
1.7	0.999999	1.000000	1.000000	0.999999	1.000000	1.000000
1.8	0.999998	1.000000	1.000000	0.999999	1.000000	1.000000
1.9	0.999998	1.000000	1.000000	0.999998	1.000000	1.000000

FIGURES

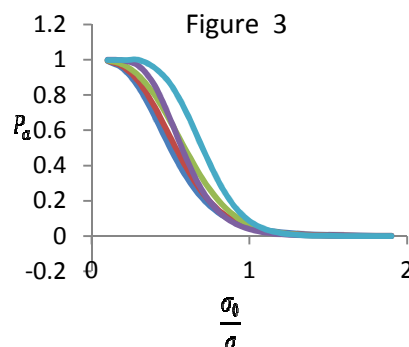
LOG-LOGISTIC DISTRIBUTION O.C. CURVES OF TABLE 3.1 (1-α=0.75) FOR A GIVEN CONSUMER'S RISK



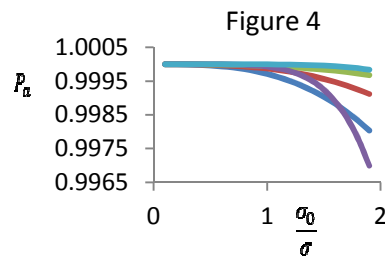
LOG-LOGISTIC DISTRIBUTION O.C. CURVES OF TABLE 3.2 (1-α=0.75) FOR A GIVEN PRODUCER'S RISK



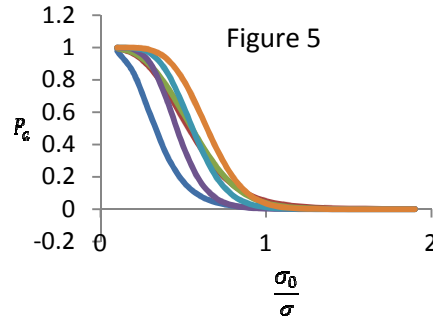
LOG-LOGISTIC DISTRIBUTION O.C. CURVES OF TABLE 3.3 (1-α=0.90) FOR A GIVEN CONSUMER'S RISK



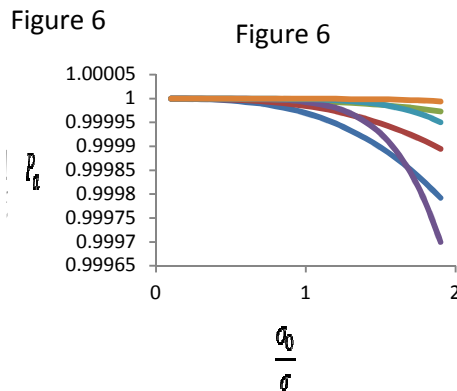
LOG-LOGISTIC DISTRIBUTION O.C. CURVES OF TABLE 3.4 ($1-\alpha=0.90$) FOR A GIVEN PRODUCER'S RISK



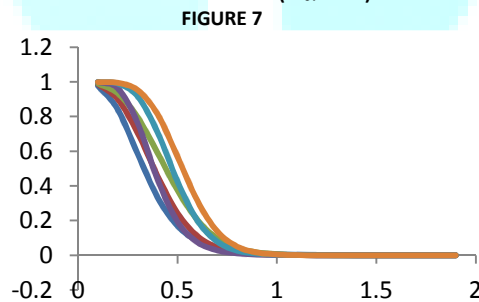
LOG-LOGISTIC DISTRIBUTION O.C. CURVES OF TABLE 3.5 ($1-\alpha=0.95$) FOR A GIVEN CONSUMER'S RISK



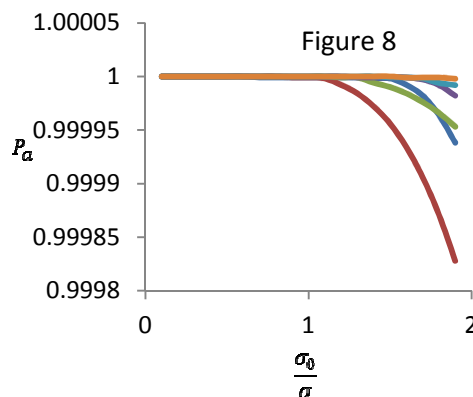
LOG-LOGISTIC DISTRIBUTION O.C. CURVES OF TABLE 3.6 ($1-\alpha=0.95$) FOR A GIVEN PRODUCER'S RISK



LOG-LOGISTIC DISTRIBUTION O.C. CURVES OF TABLE 3.7 ($1-\alpha=0.99$) FOR A GIVEN CONSUMER'S RISK



LOG-LOGISTIC DISTRIBUTION O.C. CURVES OF TABLE 3.8 ($1-\alpha=0.99$) FOR A GIVEN PRODUCER'S RISK



MIGRATION AND SUSTAINABLE DEVELOPMENT

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ABSTRACT

Migration process is one of common trends in globalized economy. It may be international or internal migration, migration helpful to the improve the living standard as individual and achieving development and growth of the economy. In this paper try to analyze the relationship between regional migration and sustainable development .

KEYWORDS

Migration, Rural, urban, sustainable development.

INTRODUCTION

As discussed in Rio+20, migration has been recognized for its increasing importance and relevance to the social, economic and environmental dimensions of sustainable development. Although the share of international migrants in the world's population has remained at Approximately 3 per cent for more than 20 years, their absolute numbers have increased significantly: in 1990, approximately 156 million people lived outside their country of birth, but today this figure has increased to approximately 215 million. At the same time, today approximately 740 million internal migrants are estimated to have moved away from their places of birth within the borders of their own countries.

Economic migrants are the world's fastest growing group of migrants. At the micro level, individual migrants can be motivated to leave their homes in pursuit of what are perceived to be better economic and social opportunities elsewhere. On a macro-level, migration is stimulated by the globalization of trade, transport and communications technologies, as well as by demographic dynamics.

Like international migration, movement within the borders of a country is driven by the search for better opportunities. Rural-urban and urban-urban migration is primarily driven by economic and social causes, with environmental change increasingly influencing movement. In Asia, workers are increasingly moving to cities and manufacturing centers due to wage differentials and labour opportunities. Rural-urban and urban-urban migration is expected to contribute to the significant urbanization of Africa and Asia in coming decades, with most growth taking place in medium-sized cities (those with populations between 500,000 and 1 million people).

An increasingly urban population provides many opportunities for achieving poverty reduction and sustainable development. When migrants are attracted to cities because of employment opportunities, net benefits are likely to accrue as the concentration of ideas, skill, and capital lead to positive spill-over. Cities have the potential to concentrate and make education, health, finance and other services more accessible, and communication and transport networks contribute to engagement in public life. Remittances - a portion of migrant earnings. Also help lift families out of poverty in migrant-sending communities.

Agricultural labourers, especially in smaller villages away from towns and cities, are generally unskilled workers carrying on agricultural operation in the centuries old traditional ways. Most agricultural workers belong to the depressed classes, which have been neglected for ages. The low caste and depressed classes have been socially handicapped and they never had the courage to assert themselves. In some parts of India, agricultural labourers are migratory; moving in search of jobs at the time of harvesting. This movement has some time helped them to get the benefits of growth and development.

DEFINITIONS

Sustainable development: The Brundtland Commission Report entitled Our Common Future (1987) defined sustainable development as "development, which meets the needs of the present without compromising the ability of future generations to meet their own needs". The 1992 Earth Summit in Rio de Janeiro put the concept of sustainable development on national and international policy agendas.

Migration: Migration is the crossing of the boundary of a political or administrative unit for a certain minimum period of time. It includes the movement of refugees, displaced persons, uprooted people as well as economic migrants.

RESEARCH GAP

Migration is one of the common trends in these days. In the same way agriculture labour migration is also common in these days. Agriculture labourer face so many problems in his living condition and these problems push him from his native place and migrate to other places where he get good employment and income opportunity. In Karnataka there is lot of disparities between North and South Karnataka and the drought is more prevalent in North which has led to the migration of agricultural labourers from north to south Karnataka in search of jobs. This study focuses on this type of migrant labourers who have migrated from north Karnataka to south Karnataka for employment in construction fields, and tries to prove that this type of migration of the marginalized section has helped in their Sustainable development.

OBJECTIVES OF THE PAPER

- 1) To analyze the socio economic conditions of migrant labourers from south Karnataka to north Karnataka.
- 2) To examine the link between migration and sustainable development.

HYPOTHESES

H₀=there is no change in labourers income after the migration.
 H₁ = there is a significant change in income after the migration.

METHODOLOGY

Details regarding the socio-economic conditions of the selected laborers are based on the information collected through interview schedule. 200 respondents are selected from different construction fields in Mysore. Primary data collected from the respondents with the help of questionnaire. SPSS package is used for data analysis. Paired T test method was used to analyze wage differences before and after migration. Excel is used for tabulation and construction of Chart. The analysis of the socio-economic background of the selected seasonal migrant laborers has helped to explain the situational factors at the place of origin which make them to migrate. The specific focus of the paper is to understand the socio-economic background of migrant labourers and sustainable development of the migrant labourers through migration to other sector for better livelihood.

TABLE 1: AGE OF THE LABOURERS

Age	Frequency	percent
11-20	26	13.0
21-30	64	32.0
31-40	70	35.0
41-50	40	20.0
TOTAL	200	100.0

Table 1 has classified these labourers on the basis of age. As shown in the table it is middle age group which is showing more inclination towards migration to improve their economic status. 32% of labourers are 21-30 age group, 35% of labourers are 31-40 age group and other remaining part fall in low and higher age group. It is clear from the table that the migration is very pronounced in the highly productive age group is 20-40 years

TABLE 2: MALE AND FEMALE RATIO

Gender	Frequency	Percentage
Female	64	32.0
Male	136	68.0
Total	200	100

The data has been classified on the basis of gender also. And it is men who are more migratory in this group. And the 32% of female population is normally the dependent wife who follows husband to his working place. In most of the cases they are also joining the hands of their husbands to improve the family income and they expressed their willingness to work in an alien place than in their native.

TABLE 3: CATEGORY WISE MIGRANT LABOURERS

Category	Frequency	Percentage
2A	68	34.0
2B	26	13.0
3A	2	1.0
3B	2	1.0
CAT I	22	11.0
SC	36	18.0
ST	44	22.0
TOTAL	200	100.0

The result shows the socio – economic conditions of the migrant labourers, table 3 refers the category wise migrated laborers and their percentage. According to this table the migrated laborers from north Karnataka has been classified into SC and STs, OBCs and others and it is very clear that out of the total more than 40% are SCs and STs, 34 % belong to 2A(kuraba). This clearly shows that the majority of the poor agricultural labourers, who migrate for their livelihood, are from this marginalized group.

TABLE 4: EDUCATIONAL LEVELS OF MIGRANT LABOURERS

Education level	Frequency	Percentage
Illiterate	124	62
Primary/higher primary	50	25
High school	26	13
TOTAL	100	100

Education is very crucial for inclusive growth and this has been tested in this research paper and as expected the number of illiterates is very high (62%). 25% of the labourers are having higher primary school level and the maximum level of education among these people is high school level(13%). This works like a vicious circle for these people. They are poor and are not able to get good education and they are not getting good education because they are poor.

TABLE 5: WORKING STATUS OF MIGRANTS

Status	Frequency	Percent
Helper	8	4.0
Labour	176	88.0
Mason	16	8.0
Total	200	100.0

Above table shows that 88% of migrants are working as labourers, they are unskilled hence they draw lower wages compare to mason and other workers who are working in construction fields.

TABLE 6: PAIRED SAMPLE T TEST

Paired Differences						
After And Before Migration	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
	-4110.000	4309.620	430.620	9.537	99	.000

Above Table 6 refers to the wage earning status of the migrant labourers before and after their migration from north to south Karnataka. As shown above, the table value is greater than calculated value (9.537 > 1.984). therefore the null hypothesis is rejected. Rejecting null hypothesis shows that the test is statically significant. There is a significant difference between income level of the migrated labourers before and after their migration. The income has actually increased.

This type of migration not only helped to improve the standard of living of the migrant labourers, but also made them economically and socially included as majority of them belongs to the marginalized communities.

FINDINGS AND CONCLUSION

The above study helps us to make some observation as below.

The migrant labourers from North Karnataka are becoming the main labour source to the construction sector in the cities and the construction works of the cities are pulling these labourers because of high wages. Migrated labourers are coming to southern region in good number for employment to fulfilling their financial as well as social needs. Most of the labourers have own land holding but they find it very difficult to survive because of this adverse environment in agriculture sector, Therefore they migrate to other sectors where they are got higher wages, Since majority of these migrant labourers have come from poor background and low socio economic status, the migration has helped them to improve not only their financial status but also their educational, social status. In this way they felt that the migration has helped them to get included in the sustainable development process. In this type they earn more money with migration and fulfill their financial needs and contribute to the sustainable development of the country and their social- economic development.

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THE ANTECEDENTS OF BRAND LOYALTY: AN EMPIRICAL STUDY ON AIRTEL CELLULAR SERVICES**DR. P. SUJATHA****HEAD****DEPARTMENT OF MANAGEMENT STUDIES****ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES****TIRUPATI****ABSTRACT**

The Mobile market in India is very robust and is the second largest mobile telecom market in the world, adding nearly 20million subscribers every month. This rapid growth in the mobile segment has been driven by an enabling policy framework and intense competition. With up to 12 competing operators in a circle, the tariffs in India are the lowest as compared to global benchmarks. In such a hyper-competitive scenario service providers make an all out effort to attract and retain customers. There is an ongoing effort from the service providers to improve the service and enhance customer delight. Even though the literature on customer satisfaction is normally related to customer loyalty, a formal model explaining the steps between customer satisfaction and customer loyalty is missing. It has been mentioned that customer satisfaction is necessary, but not a sufficient condition for improving customer loyalty. There are evidences that despite favorable customer satisfaction, companies are losing important buyers of their products and services every day. If there is no straight forward relationship between customer satisfaction and customer loyalty, then what is there in the middle? How can we explain that customer satisfaction does not always lead to customer loyalty? The present study will address these primary problems by establishing relationship between mobile service quality, customer satisfaction, switching costs and brand loyalty.

KEYWORDS

Brand Loyalty, Customer Satisfaction, Service Providers, Switching Costs, Telecom Industry.

INTRODUCTION

The service sector is growing at a faster rate than any other sector of the economies in both developed and developing countries. The most marked change in the twentieth century, particularly in the later half, has been the economic transformation from the manufacturing sector to the service sector in almost all the countries in the world. India is not exception to this change. Liberalization of Indian economy, during the 1990s, has given momentum to the service sector. While, during the previous decades, the three main sectors of economic activity- agriculture, industry and service- have roughly equal contribution to the gross domestic product (GDP) of India. According to the statistics of Central Statistical organization (CSO) data for 1999-2000, the service sector accounts for more than 53 percent of Indian GDP. From 2001 onwards it has been increased gradually. Contribution of service sector to the Indian GDP reached 86.5 percent by the end of the financial year 2012-13.

Among the various service sub-segments, the main growth driver of the sector is telecommunication services, apart from Information Technology (IT), Information Technology-Enabled Services (ITES), and tourism. Since 1990s, the telecommunications sector has been a key area for the economic advancement of developed as well as developing countries. In addition to this, the changing economic conditions, changing needs of customers and competition among the telecom companies have made the field, a dynamic service sub-sector for economic development. So marketing orientation has become main strategy of telecommunication services firms in India.

Because of heavy competition in Indian cellular services market, Airtel cellular services, the market leader is facing the threat of losing subscriber base. Though Airtel has nation-wide network, the performance of the company with regard to service provision is not on par with other service providers in few areas.

The general purpose of this study is to reconceptualise a traditional model of consumer loyalty in the mobile services context. The importance of consumer loyalty in the services industry cannot be overstated. As consumer's controlling power over the market increases, the marketing effort is shifting from satisfying customers to retaining customers.

This paper is mainly focused on assessing the relationship between mobile service quality, perceived value, customer satisfaction, switching costs and customer loyalty. For the analysis of data, SPSS 11.5 software package and excel are used.

COMPANY PROFILE: AN OVERVIEW

Bharti Airtel Limited formerly known as Bharti Tele-Ventures LTD (BTVL) is an Indian company offering telecommunication services in 18 countries. It is the largest cellular service provider in India, with more than 197 million subscriptions as of April 2013. Bharti Airtel is the world's third largest, single-country mobile operator and fifth largest telecom operator in the world in terms of subscriber base. It also offers fixed line services and broadband services. It offers its telecom services under the Airtel brand and is headed by Sunil Bharti Mittal. The company also provides telephone services and broadband Internet access (DSL) in over 89 cities in India. It also acts as a carrier for national and international long distance communication services.

Brand Airtel was born free, a force unleashed into the market with a relentless and unwavering determination to succeed. A spirit charged with energy, creativity and a team driven to seize the day, with an ambition to become the most globally admired telecom service.

It is the first service provider to introduce life-time prepaid and e-recharge system. AirTel has launched a new logo. The new logo would symbolise innovation, energy and friendliness. It has also introduced 32K SIM card with DP5 server to its post-paid customers. A London based company which goes by the name Brand Union has designed the new logo of Airtel. The new logo is the letter a in lowercase, and has airtel written in lowercase under the logo. Brand Union the company that designed the new logo is also associated with the logo of Vodafone.

AIRTEL LOGO

The company is structured into four strategic business units - Mobile, Telemedia, Enterprise and Digital TV. The mobile business offers services in 18 countries across the Indian Subcontinent and Africa. The Telemedia business provides broadband, IPTV and telephone services in 89 Indian cities. The Digital TV business provides Direct-to-Home TV services across India. The Enterprise business provides end-to-end telecom solutions to corporate customers and national and international long distance services to telcos.

Globally, Bharti Airtel is the 3rd largest in-country mobile operator by subscriber base, behind China Mobile and China Unicom. In India, the company has a 30.7% share of the wireless services market.

STATEMENT OF THE PROBLEM

Mobile market in India is very robust and is the second largest mobile telecom market in the world, adding nearly 20million subscribers every month. This rapid growth in the mobile segment has been driven by an enabling policy framework and intense competition. With up to 12 competing operators in a circle, the tariffs in India are the lowest as compared to global benchmarks. And with Mobile Number Portability introduced in India, the competition has increased further. In such a hyper-competitive scenario service providers make an all out effort to attract and retain customers. There is an ongoing effort from the service providers to improve the service and enhance customer delight. All service providers have made huge investments towards setting up sophisticated, state-of-the-art customer care centers, Interactive Voice Response (IVR) systems with consumer friendly, menu driven options that can easily cater to an entire gamut of services.

Despite this new emphasis on customer retention and the acceptance that managers need to understand and know how customer retention can be achieved, marketing researchers did not have advanced studies on the antecedents of customer retention in telecommunication services. Some authors of marketing textbooks have linked customer retention to customer satisfaction (Kotler (1997), Kurtz and Clow (1998), Rust, Zahorik and Keiningham (1996), Zeithmal and Bitner (1996) under the assumption that a satisfied customer may be prone to repeat purchases, whereas an unsatisfied customer may tend to defect. Similarly, some marketing researchers have underscored the direct relationship between customer loyalty and customer satisfaction (Hallowel (1996), Heskett (1994)). Even though the literature on customer satisfaction is normally related to customer loyalty, a formal model explaining the steps between customer satisfaction and customer loyalty is missing. It has been mentioned that customer satisfaction is necessary, but not a sufficient condition for improving customer loyalty. There are evidences that despite favorable customer satisfaction, companies are losing important buyers of their products and services every day.

If there is no straight forward relationship between customer satisfaction and customer loyalty, then what is there in the middle? How can we explain that customer satisfaction does not always lead to customer loyalty? The present study will address these primary problems.

OBJECTIVES OF THE STUDY

In order to get answers to the above questions, the present research is designed to achieve the following objectives:

- To find out the antecedents of Brand Loyalty.
- To find out the impact of Antecedents of Brand Loyalty (BL) on the loyal behavior of customers.

HYPOTHESES OF THE STUDY

On the basis of the theoretical framework and review of literature, the following hypotheses were developed.

H₁: There is no significant correlation between Mobile Service Quality (MSQ) and Brand Loyalty.

H₂: There is no significant correlation between Perceived Value of mobile services (PVMS) and Brand Loyalty.

H₃: There is no significant correlation between Customer Satisfaction (CS) and Brand Loyalty.

H₄: There is no significant correlation between Switching Costs (SC) and Brand Loyalty.

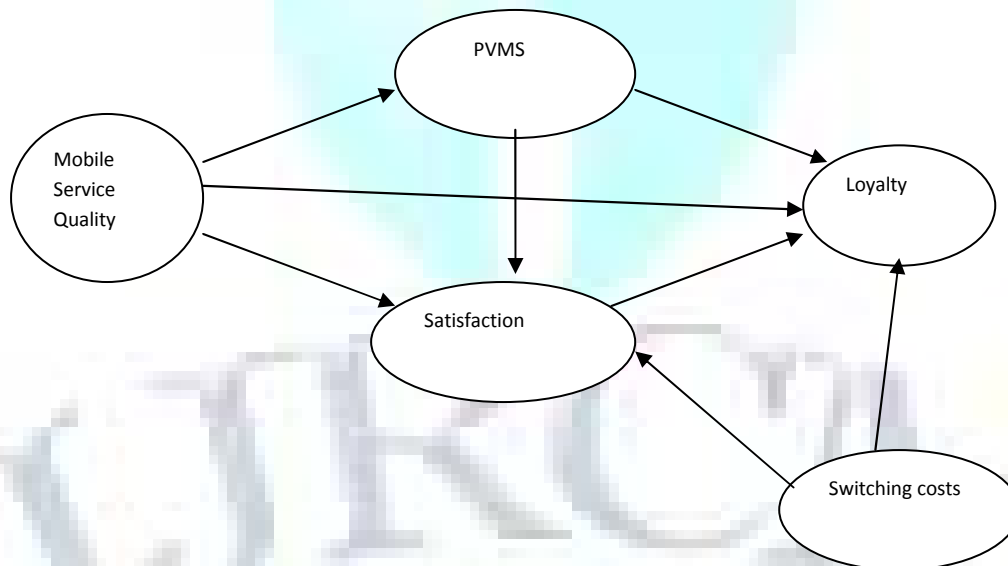
RESEARCH METHODOLOGY

The research methodology is the science of dealing with the principles of procedure in research study. It deals with the definition of the research problem, research design, and method of data collection, selection of sampling, statistical tools employed and interpretation of collected data.

(i) **Research Design:** The research design is descriptive as it provides the inventory of feelings regarding Mobile Service Quality, Customer Satisfaction and Customer Loyalty intentions of customers towards Airtel cellular service provider.

The subscriber respondents were chosen from the Airtel subscribers in Chittoor district, Andhra Pradesh

(ii) **Research Model of the Present Study:**



(iii) **Period of Study:** The study of this type requires at least a decade period to observe the trend and draw valid conclusions from the analysis. Now, the present study covers a period of 10 years starting from 2002-2003 to 2011-2012.

(iv) **Sources of Data:** The data sources required for the study include both primary and secondary. The primary data sources were the subscribers of Airtel cellular mobile telephone services in Chittoor district, Andhra Pradesh.

The secondary data sources were: relevant websites, national and international refereed journals, business magazines and news papers, working papers and monographs relevant to the area of research. Literature related data were collected from the libraries like IIM-Bangalore Library, computer centre (IIM-B), Sri Venkateswara University Central library and Digital library, etc.

(v) **Data Collection- Research Instrument:** A structured questionnaire consisting of six parts, was used as research instrument for the present study.

RELIABILITY ANALYSIS OF THE RESEARCH INSTRUMENT

Although a few measures used in this study were taken from previously published research and required only minor changes in wording, reliability of the instrument was tested using Cronbach's alpha. Cronbach's α (alpha) is a coefficient of reliability. It is commonly used as a measure of the internal consistency or reliability of a psychometric test score for a sample of examinees. It was first named alpha by Lee Cronbach in 1951.

VALIDITY ANALYSIS OF THE RESEARCH INSTRUMENT

The scale used in the present study was assessed for validity, using confirmatory factor analysis (Peter, 1981). The dimensional structure of all the items used in the present study, their difference scores were examined using a principal component factor analysis with VARIMAX rotation. The results of confirmatory factor analysis indicate an acceptable model of fit at 0.01 level of significance.

(vi) Sampling Methodology: Sampling frame comprised of the subscribers of cellular mobile services of Airtel, in Chittoor district of Andhra Pradesh. Non-Probability Quota sampling technique was used. A total of 500 customers were contacted over a 3 months period (Aug-Oct 2012) via a structured questionnaire.

(vii) Statistical Techniques: In order to test the proposed hypotheses through data analysis, correlation and regression techniques were used.

DATA ANALYSIS

H₁: There is no significant correlation between MSQ and Brand Loyalty.

This hypothesis has been tested by using correlation and regression (Table 1.1 and 1.2). It has been observed from the results of correlation coefficients matrix that there is significant positive correlation between Mobile Service Quality and Brand Loyalty. The corresponding correlation coefficient is highly significant at 1% level. Hence we can conclude that there is strong association between MSQ and Brand loyalty. But R^2 value is less. It indicates that there are many other factors other than MSQ that influence Brand Loyalty of the respondents. Only 5% of the variability in Loyalty can be predicted from MSQ. In other words, a large number of residual variability is presented in Brand Loyalty.

TABLE 1.1: CORRELATION MATRIX

		QMS
BL	Pearson Correlation	.240**
	p-value	0.0000

TABLE 1.2: REGRESSION ANALYSIS RESULTS

(a)

Model	R	R Square	Adjusted R Square
1	.240	.058	.056
2	.259	.067	.064

(b)

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.704	1	1.704	30.524	.000 ^a
	Residual	27.805	498	.056		
	Total	29.509	499			
2	Regression	1.985	2	.993	17.923	.000 ^b
	Residual	27.524	497	.055		
	Total	29.509	499			

(c)

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.060	.235		8.776	.000
	Quality	.378	.068	.240	5.525	.000
2	(Constant)	2.295	.256		8.962	.000
	Quality	.378	.068	.240	5.550	.000
	Connectivity	-.056	.025	-.098	-2.252	.025

Dependent Variable: Brand_Loyalty

H₂: There is no significant correlation between PVMS and Brand Loyalty.

From the Table 1.3, it has been observed that there is insignificant positive correlation between perceived value of mobile services and Brand loyalty. This implies that PVMS and BL are related but even if the PVMS of the respondents is low, customers may be loyal to the brand and vice-versa. Regression analysis results (Table 1.4) reveals that only 13 % of the variability in BL can be predicted from PVMS.

TABLE 1.3: CORRELATION MATRIX

		PVMS
BL	Pearson Correlation	.051
	p-value	.254

TABLE 1.4: REGRESSION ANALYSIS

(a)

Model	R	R Square	Adjusted R Square
1	0.40	.16	.13

(b)

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.077	1	.077	1.306	.041 ^a
Residual	29.432	498	.059		
Total	29.509	499			

(c)

COEFFICIENTS

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	3.280	.067		49.188	.000
PVMS	.021	.019	.051	1.143	.04

H₃: There is no significant correlation between CS and Brand Loyalty.

From the tables 1.5 and 1.6, it has been observed that there is significant positive correlation between customer satisfaction and customer loyalty. The corresponding correlation coefficient is significant at 5% level. The R² value reveals that both the variables contribute to 31% of the explained variance. We can conclude that customer satisfaction and Brand Loyalty are strongly related. Hence there is significant relationship between CS and BL.

TABLE 1.5: CORRELATION TABLE

		CS
BL	Pearson Correlation	.140*
	p-value	0.002

TABLE 1.6 : REGRESSION ANALYSIS

Model	R	R Square	Adjusted R Square
1	.6	.36	.31

(a)

(b)

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.577	1	.577	9.924	.002
Residual	28.932	498	.058		
Total	29.509	499			

(c)

COEFFICIENTS

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	3.101	.081		38.087	.000
CS	.066	.021	.140	3.150	.002

H₄: There is no significant correlation between Switching Costs and Brand Loyalty.

The results of correlation and Regression analysis (Tables 1.7 and 1.8) reveal that there is strong significant relationship between Switching Costs and Brand Loyalty. The correlation coefficient is 0.505, which indicates high association between the variables. From the table 1.8 (a), the adjusted R² value offer noteworthy insight on the overall ability of Switching costs to explain the variation in score on Brand Loyalty. Hence the relationship between SC and BL is highly significant.

TABLE 1.7: CORRELATION MATRIX

		SC
BL	Pearson Correlation	.505**
	p-value	0.0000

TABLE 1.8: REGRESSION ANALYSIS

Model	R	R Square	Adjusted R Square
1	.25	.625	.620

(a)

(b)

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	7.515	1	7.515	170.167	.000 ^a
Residual	21.994	498	.044		
Total	29.509	499			

(c)

COEFFICIENTS

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.861	.039		73.394	.000
Switching_Cost	.165	.013	.505	13.045	.000

RESULTS AND DISCUSSION

• MOBILE SERVICE QUALITY AND BRAND LOYALTY ARE RELATED

The results of the correlation and regression analysis of the study indicated a significant relationship between mobile service quality and customer loyalty. Previous studies also found that mobile service quality and customer loyalty are significantly related (Sirkit, 2000; Johnson and Sirkit, 2002; Zeithaml *et al.*, 1996). Boulding, Kalra, Staelin and Zeithaml (1993) also indicated that a perception of high mobile service quality lead to a firm's success via high loyalty and positive word of mouth.

• CUSTOMER SATISFACTION AND BRAND LOYALTY ARE RELATED

The results of the regression analysis report a significant relationship between customer satisfaction and customer loyalty in Airtel cellular services. This finding is corroborated by the previous studies of Anderson and Sullivan (1993); Bolton (1998); Cronin and Taylor (1992); Fornell (1992); Oliver (1980); Patterson and Spreng (1997); Rust and Zahorik (1993); Selnes (1998); Swan and Trawick (1981); Taylor and Baker (1994) and Woodside *et al.*, (1989). Wang and Lo (2002) found a direct relationship between customer satisfaction and Brand loyalty with evidence from China's telecommunication industry.

• MOBILE SERVICE QUALITY VARIABLES DETERMINE BRAND LOYALTY

The influence of network quality, value-added services, convenience in procedures and customer service support has strong influence on overall perceived value of mobile services and Brand Loyalty. A similar finding was reported by the previous studies of Gerpott *et al.*, (2001); Lee *et al.*, (2001); Kim and Yoon (2004), Kim *et al.*, (2004) Ahn *et al.*, (2006), Keaveney (1995), Bolton (1998), Bolton *et al.*, (2000), Kim (2000), Moer *et al.*, (2000).

• PERCEIVED VALUE OF MOBILE SERVICES, CUSTOMER SATISFACTION AND CUSTOMER LOYALTY ARE RELATED:

Studies of Wang *et al.*, (2004), Wang and Lo (2002), and Lee *et al.*, (2001) have found positive relationships between the variables. The findings of the present study are similar.

RECOMMENDATIONS

Airtel has to take steps to improve their ratings on the following:

• DEVELOP LOYALTY PROGRAMS

Loyalty programs play an important role in retaining the existing customers. We can develop loyalty programs, an offer where an operator gets free minutes, when their customers reach a certain level of usage. Airtel can also use internal scoring system to identify their high value customers and offer them on a discretionary basis, rebates, specific membership clubs and gift certificates, or free goods when they renew their subscriptions.

• CUSTOMER SUPPORT

Airtel must empower its customer service representatives to take care of the problem quickly and efficiently. They must be empowered to handle the customer complaints because customers are telling that different customer care executives are giving different responses to the same complaint. Also the procedure of connecting to call centre should be made easy and the time taken by the call centre for redressal of the complaint should be as short as possible.

• VALUE-ADDED SERVICES(VAS)

Selling more to the existing subscribers is relatively easier as compared to acquiring new customers. Also the new subscriptions will largely happen at the bottom of the pyramid therefore the new subscriptions will further lower the average revenue per user. So VAS is a potential long term revenue stream as it will be easier to sell more to the existing customers. Airtel should make its VAS more accessible to customers when compared to competitors.

• PRICING STRUCTURE

Pricing is one of the major reasons for customers defecting from the telecom operators. New entrants like Uninor, Tata indicom are offering better tariff packages. So, Airtel should also come up with attractive offers on par with competitors.

• TIE-UP WITH HANDSET MANUFACTURERS

Airtel can have tie-ups with cell phone manufacturers and can provide the handsets at subsidized rates. Once it is purchased, the phone will be locked. Customer cannot use another sim in the same handset. This creates switching costs for the customers and hence they remain loyal to the brand.

LIMITATIONS OF THE STUDY

The study has the following limitations:

Drawing Sample from a Single company was a major limitation of the study. Although service industries have much in common, each industry has its own special characteristics in terms of product/ service complexity, distribution channels, automation levels etc. Drawing sample from a single company limits the generalisability of the study.

Sample size: Many of the studies in this field used sample sizes in the range of thousands. The 500 sample size may be reported as small for few researchers from their point of view and this can be concluded as further limiting factor for the generalization of findings.

FUTURE RESEARCH DIRECTIONS

- What is the effect of psychological characteristics of customers on loyalty in cellular services? Whether these factors function as adjusting variables in the existing interaction?
- What is the impact of inertia and customer indifference on brand loyalty in telecommunication services?
- How to establish relationship among the constructs such as customer satisfaction, loyalty and profitability in cellular mobile services?
- What is the impact of culture on Brand loyalty, as customers from different cultures have different perceptions and expectations?

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STATUS OF BI SOLUTIONS AT SELECTED BRANCHES OF BANKS IN RAJASTHAN

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ABSTRACT

In the wake of global financial crises the efficiency of the banking sector has also come under scrutiny. The mainstay of Indian economy has been the strength of its banking system. With rapid development in the field of information technology, the use of business intelligence practices in banking sector has increased many folds. In an empirical study of 25 selected Indian banks in the state of Rajasthan, the status of Business Intelligence and its applicability at branch level due to implementation of Business Intelligence (BI) solutions have been studied. The major finding is that public sector banks are lagging in implementation of business intelligence solutions compare to private banks. Branch Manager does not make much use of Dashboard and scorecard tools. They are confined to use standard and ad-hoc reporting tools only. At Branch level, fraud prevention and detection analysis and Key Performance Indicators (KPI) analysis are highest application being utilized by the respondent's bank. Execution of regulatory compliances is highest benefit perceived by the respondents. New banks are in better position to implement business intelligence solutions compare to old banks. The research is particularly useful for practitioners in the banking field and suggestions have been given toward the end of paper.

KEYWORDS

Banking, BI Implementation, Business Intelligence, Decision Making, Financial Benefits.

INTRODUCTION

With the globalization and removal of business boundaries, customer, supplier and competitor base has been increased, which has also increased the complexity of decision making process. The emergence of fast communication makes environment less stable and unpredictable and provides less time for examining the available business information, knowledge, and intelligence. Decision makers are taking decision by considering various factors based on strategies and actual performance (Khan and Saxena, 2011).

The decision making depends on quality of available data, tools and technology, trust, flexibility and sound judgments taking capability of decision makers. Business Intelligence (BI) systems should facilitate the decision makers to correct their intuition by taking advantage of analytical tools, which can test and verify intuition before applying it to the decision making process. Decision maker can also use predictive models to improve their decision making. The current state of decision making is forcing us to reap the real benefits of business intelligence.

Storing vast amounts of data does not ensure effective decision making. Business intelligence solution must turn dynamic, detailed data into information, and make it available in real-time to the decision makers at the time of a decision. Actionable information must be accessible on-demand when it's required. It provides trends and patterns that might otherwise go undetected and unseen by decision makers. To be a successful bank, it needs a foundation of accurate, current and complete information rather than managing a bank on intuition, educated guesses or averages. Business Intelligence can derive better return on investment (ROI) from complex integrated banking software and other operational system implemented by unlocking the wealth of information stored in these systems by consolidation of data from many sources, including a diverse customer base, extensive branch networks, and shareholders at data warehouse and utilization of various business intelligence tools.

REVIEW OF LITERATURE

A review of literature of various studies related to applicability of business intelligence and financial benefits achieved due to BI implementation in banks clearly shows that very limited research has been done in Indian context. As per Morris et al., (2002) conducted a study on the financial impact of Business Analytics based on 43 case studies of organizations that successfully implement and utilize analytic applications by interviewing in-person. The project goal was to examine the return on investment (ROI) for analytic applications and financial impact of analytic applications on the core business processes that help contribute to an organization's success. They found that businesses that make an investment in analytics can achieve a significant and rapid return because of increased efficiencies and expanded opportunity.

As Williams and Williams (2003) suggest that the business value of BI lies in its use within management processes that impact operational processes that drive revenue or reduce costs, and/or in its use within those operational processes themselves. The quest for delivering business value via BI can be seen as a matter of determining how an organization can use BI to improve management processes such as planning, controlling, measuring, monitoring, and/or changing so that management can increase revenues, reduce costs, or both. And also to improve operational processes such as fraud detection, sales campaign execution, customer order processing, purchasing, and/or accounts payable processing so that the business can increase revenues, reduce costs or both

According Eckerson (2006), most of the benefits from business intelligence are intangible in nature, which makes organizations to justify in terms of cost based on survey of 510 respondents by the data warehousing institute in 2003. Kalakota and Robinson (2001) suggested that a business intelligence system built on a data warehouse is about empowering best people of organization to gain insight from exploiting the information organization has spent millions to control and years to develop. The data warehouse with business intelligence has the potential to enable users to continuously produce enormous, sustainable, measurable benefits that lead to competitive advantage and fulfill the promise of IT.

As per IBA-Finsight (2007) special report suggests about the operational business intelligence in banking, it delivers information and insights to those manager that are involved in operational and transactional processes. While serving a customer at a counter, the executive can cross sell other product based on the information and analytics available from operational business intelligence system based on customers past transactions. The operational business intelligence reduces the time it takes for a line of business user or application to react to business issue or requirement. The data latency to data warehouse should be as small as possible to get operational analytics. ICICI bank had implemented the SAS solutions to address this problem. Nadeem and Hussain (2004) studied Credit Information Bureau (CIB), State Bank of Pakistan (SBP), which maintain the information related to borrowing. The CIB is acting as central repositories in SBP to provide the credit worthiness report. The bank was in need of providing fast, accurate, and dynamic analysis on both individual and group basis. They have developed and customized the business intelligence solution OLBA-Online Business Analyst using oracle 9i database, MS SQL Server (data staging) and C# programming language. The software provides credit worthiness analytics based data with graphical visualization.

Bach et al. (2007) studied to explore usage of business intelligence tools in Croatian banks. Author had examined the possible business tools and their usage in general, and then explored their possible usage in banks. The survey on usage of business intelligence tools in Croatian banks was conducted. The results of the survey revealed that only 46% of Croatian banks use both main business intelligence tools (data mining and data warehousing). Banks which use business intelligence tools differ from the banks which do not have such a system. They differ in the following characteristics: size of total assets, participation of their own assets in the Croatian banking sector, size of off-balance items, size of income and capital stock and rate of capital adequacy. Banks which use business intelligence tools are larger and more successful. Large and successful banks invest more in information technology, especially business intelligence in the purpose of more efficient business reporting. By using business intelligence tools, these banks will use their organizational knowledge even better, and consequently they will become even more successful. This will make possible to invest even more into advanced information technology.

As per InformationWeek, News Network, published on 11th March, 2010, the Yes bank was awarded the Financial Insights Innovation Award for innovation in Business Intelligence at the Asian Financial Services Congress for its efforts in driving enterprise-wide, actionable business intelligence. The bank has sought a comprehensive focus across retail liabilities, corporate assets, operational risk, and asset-liability management, with the end-game of providing financial, risk, operational, and customer intelligence to the right users, in the right place, at the right time, and in the relevant format, delivered in a secure, automated environment. Bank uses Credit Risk management solution to measure, manage and mitigate credit risk across its retail assets by using its superior data mining and statistical analysis capabilities (IDBI, 2011). Max New York Life (MNYL, 2011), a joint venture of two leading global businesses, (Max India Limited and New York Life International), has adopted SAS technology to transform its efforts to strengthen customer retention and cross-selling to a tightly segmented customer base. With SAS, Max New York Life has access to the right data, the right models, and the right execution. As a result, high-margin revenue from cross-selling has tripled. Earlier, only Seven percent of revenue came from existing customers. In the first quarter after implementing SAS, sales to existing customers reached more than 20 percent.

The success of business intelligence implementation can be measured with overall improvement in business performance and facts based decision making.

METHODOLOGY

A structured questionnaire was developed for collecting the data related to implementation of business intelligence solutions at branch level. The questionnaire seeks to extract responses from IT Manager/Branch Manager or In-charge of BI or Person who understood and utilized business intelligence solutions at branch from selected banks of Rajasthan. They were identified through stratified judgment sampling.

In India, as per the reports available from Reserve Bank of India website, there are about 105 scheduled banks operating in India. The study included 20 banks like SBI, IDBI, SBBJ, Bank of India, Allahabad bank, Bank of Baroda, Corporation Bank, Dena Bank, Uco Bank, OBC, Union Bank of India, Vijaya Bank (public sector) and Yes Bank, Kotak Mahindra, HDFC Bank, Axis Bank, ICICI Bank, ING Vasya, IndusInd Bank, Karnatak Bank, HSBC (private sector) for the regional/zonal/head offices data collection regarding the usage of business analytics using business intelligence solution.

TABLE 1: RESPONSE PATTERN OF BANKS AT BRANCH LEVEL

	No. of Respondents		Responses
	Approached	Respondents	
Public Sector Banks	14	12	86%
Private & Foreign Banks	11	8	73%
Total	25	20	80%

The researcher have collected data about the respondent organization like name of bank, inception year of bank, category of bank and to get knowledge about business intelligence used in banking by framing various questions related to practices followed for implementation of business intelligence solutions in bank. Implementation of business intelligence solutions in banks with the practices followed were categorized in term of organizational factors such as management commitment, effective steering committee, user initiative, availability of IT skills, analyst and training facilities, work culture, qualities of BI staff and implementation consultant, and partnership between IT and business, financial factor like availability of funds, and technological factors such as data quality, quality of ETL tools, complexity of BI solutions, data warehouse update time, responses to queries and implementation of core banking solution, ERP, CRM and SCM. Banks which were established in 1994 and thereafter considered as new banks while banks which were established before 1994 were considered old banks. Public Sector Banks means any Government Sector Bank/Institute that goes public i.e. it issues its shares to general public. It also has a greater share of Government of India or Reserve Bank of India (more than 50%).

Responses were collected from IT Manager/Branch Head of the various banks on the various items. The respondents indicated the extent to which they attach importance on various factors while implementing and utilizing business intelligence in day to day and long term decision making.

ANALYSIS OF BUSINESS INTELLIGENCE STATUS AT BRANCH

The status of business intelligence in respondents' bank at branch level is assessed by collecting data from the part I of section B. In this section, various question related to status of business intelligence have been asked to the respondents including information technology uses, categories of BI tools used, and access of BI at branch level as operational BI.

INFORMATION TECHNOLOGY'S USAGE

Information technologies used by the respondent banks is consolidated in the Table 2. As revealed in Table 2, an Internet usage in the banks is 65% at frequency of low level and 20% at higher frequency. Intranet applications are used by private and foreign banks at 75% (as High) compared to public sector banks 41.7% (as High). Public sector bank used intranet 58.3% (as Moderate). The decision support system is being used 62.5% (as Moderate) compared to 50% by public sector banks.

TABLE 2: INFORMATION TECHNOLOGY'S USAGE AT BRANCHES

Criteria	Public		Private & Foreign		Total	
	N	%	N	%	N	%
Internet						
Low	9	75	4	50	13	65
Moderate	2	16.7	1	12.5	3	15
High	1	8.3	3	37.5	4	20
Intranet						
Low	0	0	0	0	0	0
Moderate	7	58.3	2	25	9	45
High	5	41.7	6	75	11	55
Decision Support System (DSS)						
Low	4	33.3	1	12.5	5	25
Moderate	6	50	5	62.5	11	55
High	2	16.7	2	25	4	20
Business Intelligence (BI)						
Low	6	50	0	0	6	30
Moderate	5	41.7	3	37.5	8	40
High	1	8.3	5	62.5	6	30

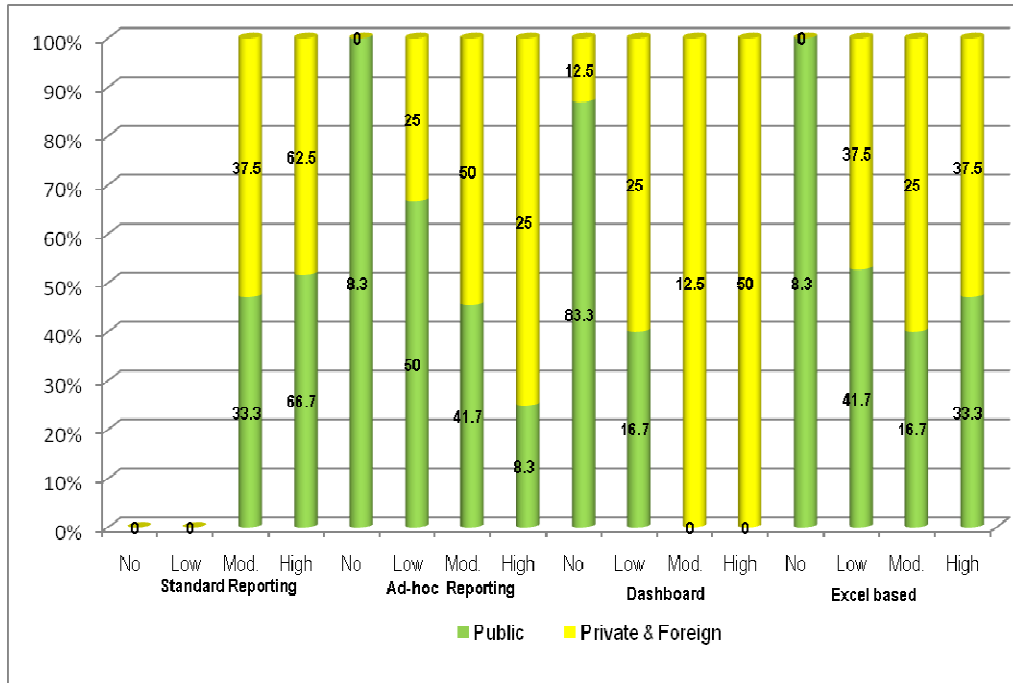
Applications based on DSS are not much popular at branch level. Two thirds of the private and foreign banks (62.5%) are using business intelligence at high frequency where as public sector respondents, are using only 8.3% (as High). But over all, BI is used only 30% as high at branch level which indicates that in branches whether private or public sector banks, it is not used frequently.

CATEGORIES OF BUSINESS INTELLIGENCE TOOLS

Respondents from Branches have given their view about the business intelligence tools like standard reporting, ad-hoc reporting, dashboard, and excel. Two third of banks (65%) including public and private banks are having standard reporting tool and they are using it at High level where as 35% are using it at Moderate level. Ad-hoc reporting tool is used 45% at "Moderate", where as 35% are using at "Low". The pattern of utilization of Ad-hoc reporting is similar in both public and private banks.

Dashboard tool is an essential tool of BI and it gives a graphical view of various key performance indicators with controlling parameter of operation of branch. But it is surprising that 55% banks does not have dashboard. 83.3% respondents have given their opinion "Not at all" on use of dashboard tool in public sector category. Only 20% in overall banks are using Dashboard. Private and foreign banks' branches are ahead in using dashboard for monitoring their performance.

FIGURE 1: VARIOUS CATEGORIES OF BI TOOLS AT BRANCHES



Excel is still a supportive tool to get analytics from exported transaction data. As per responses, 35% of all banks are using excel as High where as 40% of banks are having lower use. It is concluded from the responses given by the respondents that private, foreign and public sector banks are equally utilizing the BI tools except the dashboard which is better utilized by private and foreign banks as shown in Fig. 1.

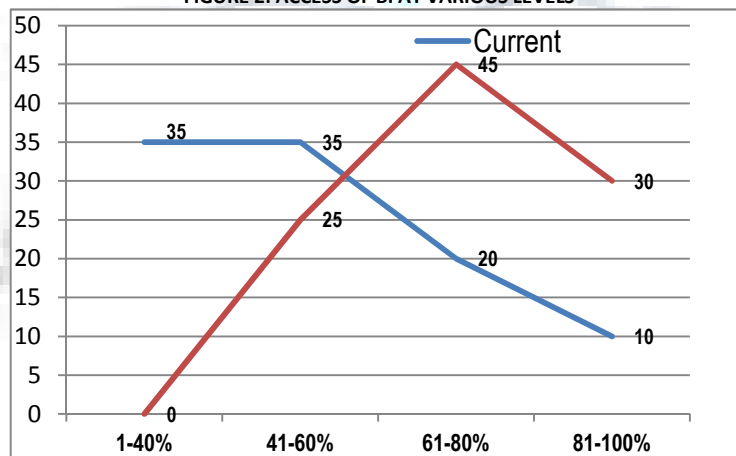
ACCESS OF BUSINESS INTELLIGENCE AT BRANCH LEVELS

The response received to get the response on current available access of business intelligence versus BI should have at various levels, is depicted in the figure 2. There were four blocks given to check the current and should have access to the respondents. It is revealed from the responses that 70% of banks are having access of less than 60% at branch level. Only 30% banks would like to access in 81-100% bracket. 60% of public sector banks using BI (1-40% range) while 75% private and foreign banks are accessing BI in the range of 61-80% and 81-100%.

APPLICABILITY FOR BUSINESS INTELLIGENCE

Responses were collected from branch head or operation head of the various banks on the various items by using 5-point rating scale of importance, where 1 = very poor, 2 = low, 3 = medium, 4 = high and 5 = very high. The respondents indicated the extent to which they attach importance on various applications.

FIGURE 2: ACCESS OF BI AT VARIOUS LEVELS



It is conceived from the Table 3 that the three applications fraud prevention and detection analysis, fair banking practices analysis and Key Performance Indicators (KPI) have highest application being utilized by the respondent's bank with mean 4.2, 3.65 and 3.40 respectively. Fraud prevention and detection analysis is highly applicable in present circumstances as every banks is utilizing information technology based automated system.

TABLE 3: DESCRIPTIVE STATISTICS OF APPLICATIONS USED AT BRANCH

Applications	Mean Score*	Std. Deviation	C.V. (Percent)	Result @5%
Fraud Prevention	4.20	0.70	16.57	NS
Fair Banking	3.65	0.88	23.98	S
KPI	3.40	1.23	36.21	NS
Branch Profitability	3.35	1.14	33.93	NS
Account Profitability	3.30	1.17	35.58	NS
Collection Recoveries	3.30	0.86	26.20	NS
Segmentation	3.25	1.07	32.92	NS
Individual Profitability	3.05	1.10	36.03	NS
Cross Sell	3.05	0.94	30.97	NS
Attrition Analysis	3.00	1.30	43.26	NS
Channel efficiency	2.75	1.33	48.46	NS
Product Profitability	2.50	1.24	49.42	NS
Operational Analytics	2.20	1.58	71.64	NS
Campaign Analysis	1.05	1.43	136.36	S

* Mean score is the average on 5-point interval scale of importance
 S=Mean importance score is significantly greater than that listed immediately below, based on t test
 NS=Mean importance score is not significantly greater than that listed immediately below, based on t test

Campaign analysis application with mean score 1.05 was considered least applicable by respondents. Reason of lower applicability of Campaign analysis is least used at branch level. Fraud prevention (CV=16.57%) applications has lowest variation in response, which means that the responses are consistent and therefore mean score can be considered highly representative where as Campaign analysis has highest variation (CV=136.36%), which means that responses varied greatly and it can be said that mean score is least representative. Further, One-Sample Kolmogorov-Smirnov test for significance shows that the result of the One-Sample Kolmogorov-Smirnov test is significant for fair banking and campaign analysis.

FINANCIAL BENEFITS OF BUSINESS INTELLIGENCE

It is clear from the Table 4 that the execution of regulatory compliances is highest benefit perceived by the respondents with mean 3.45. Financial benefits in term of cost reduction is with mean score 2.55 has considered least applicable by respondents. Reason of lower response might be due to public sector banks which do not give much importance to cost reduction.

TABLE 4: DESCRIPTIVE STATISTICS OF FINANCIAL BENEFITS OF BI AT BRANCH

Financial Benefits	Mean Score*	Std. Deviation	C.V. (Percent)	Result @5%
Execution Compliance	3.45	1.05	30.44	S
Revenue Growth	2.95	1.19	40.37	NS
Competitive Advantage	2.95	1.05	35.60	NS
Budget Control	2.65	1.14	42.89	NS
Cost reduction	2.55	1.19	46.70	NS

* Mean score is the average on 5-point interval scale of importance
 S=Mean importance score is significantly greater than that listed immediately below, based on t test
 NS=Mean importance score is not significantly greater than that listed immediately below, based on t test

Execution of regulatory compliance (CV=30.44%) has lowest variation in response, which means that the responses are consistent and therefore mean score can be considered highly representative where as cost reduction has highest variation (CV=46.70%), which means that responses varied greatly and it can be said that mean score is least representative. All results are of One-Sample Kolmogorov-Smirnov test show that all factors which delivered financial benefits are non significant except execution compliances.

FINDING AND CONCLUSION

BUSINESS INTELLIGENCE STATUS AT BRANCHES OF SELECTED BANKS

- Internet usage by the respondents of public sector banks at “Low” frequency is 75% and private and foreign banks is 50%. But an Internet usage at “High” frequency is 37.5% by private and foreign banks in comparison to 8.3% public sector banks. Overall only 20% respondents are using internet as “High”.
- Three fourth (75%) of private and foreign banks respondent and 41.7% from public and private banks confirm about the intranet usage at “High” frequency. In over all, 55% usage of intranet at “High” and 45% at “Moderate” level.
- Almost two third (62.57%) from private and foreign and 50% from public sector banks respondent is habituating Decision Support System at moderate frequency. 25% of private and foreign bank respondent is utilizing DSS at High frequency in compare to 16.7% of public sector banks.
- Business intelligence is used 30% as “High” and “Low” each and 40% as “Moderate” by respondent managers. In public sector category, only 8.3% is at “High” and 41.7% at “Moderate” where as in private bank category, 62.5% is used at “High” and 37.5% at “Moderate” by the respondents.
- Business intelligence is underutilized. The banks have significant opportunities to increase the use of business intelligence technology to support critical decision-making and operations.
- All banks including public and private banks are having standard reporting tool implemented as reported by respondents. 65% respondents are using as “High” and 35% as “Moderate”.
- 15% Ad-hoc Reporting tool is used by respondents as “High”, 45% as “Moderate”, 35% as “Low”. 5% respondents does not use ad-hoc reporting tool.
- Dashboard tools do not possess by 83.3% public sector banks and 12.5% private and foreign banks. In public sector banks, only 16.7% banks are using dashboard as “Low” frequency compare to 50% as “High” by private and foreign banks. Overall, 55% respondents does not have dashboard tool implemented.
- 35% respondents are employing Excel based analytics at “High” frequency where as 20% at “Moderate”, 40% at “Low” frequency. 5% respondents do not use excel based analytics.
- Only 10% of respondents’ bank is practicing of business intelligence in 81-100% group. 20% in 61-80%, 35% in each 41-60% and 1-40% respondents have access of business intelligence at branch level as operational BI. Respondent suggests, BI access should be 30% in 81-100% group, 25% in 41-60% and 45% in 61-80% at branch.

APPLICABILITY OF BI AT BANK'S BRANCH

- Two applications fraud prevention and detection analysis and Key Performance Indicators (KPI) analysis are highest application being utilized by the respondent's bank.
- Branch, account and individual profitability, collection recoveries, segmentation, and cross sell analysis are other applications which is being used by respondent's bank.
- Fraud prevention, Fair banking and KPI are applications given higher importance.
- Execution of regulatory compliances is highest benefit perceived by the respondents with mean score 3.45.
- Financial benefits in term of cost reduction are considered least applicable by respondents.
- Execution of regulatory compliance and competitive advantage has lowest variation in response, which means that the responses are consistent and therefore mean score can be considered highly representative.
- All factors which delivered financial benefits are non significant except execution compliance.

SUGGESTIONS FOR IMPROVEMENT TO REAP THE BENEFITS OF BI SOLUTIONS

Despite the implementation of sophisticated information technology infrastructure, a level of satisfaction out of delivered information is relatively low. Business Intelligence solution make up a complex solution that allows meeting such needs and fills the information gap by creating intelligent enterprise. To achieve improvement in the implementation of business intelligence solution at branches of banks, it is worthwhile to consider the following suggestions:

SUGGESTIONS TO BRANCHES OF THE BANKS AND RESPONDENT MANAGERS INCLUDES;

- Branches should utilize various BI tools other than core banking system (CBS).
- Branches should also utilize intranet based applications for knowledge sharing.
- Performance management analytics usage in terms of branch and employees should be increased which is under utilized as of now.
- Branches should increase its business intelligence penetration towards operational BI and tactical level, which is currently at strategic level only.
- It is found during data collection that branch heads are not having any schedule of working on analytics. It is suggested that Branch manager/Operation head at branch should make a weekly and monthly schedule of doing analytics based on the customer data available with core banking system for their city.
- It is suggested that branches should perform analytics for customer profitability (at least account type and branch wise), channel efficiency analysis for various channels like branch, ATM, Internet, Mobile etc., customer segmentation for better cross sell and up sell of the products, customer churning analysis to retain good customer and increase their loyalty, and product profitability to increase sale of more profitable products.
- Branches should also perform anti-money laundering analysis to check the suspicious transactions, which is a regulatory requirement too.
- Branches should make Non-performing asset analysis on regular basis along with collection recovery analytics to reduce NPA.
- Branches should also make fair banking analysis which is also a regulatory requirement.
- Branch manager should use dashboard to see the key performance indicators of their branch on continuous basis to monitor and control the branch operation.
- With discussion held with branch manager during data collection, it is found that branch heads are lacking the knowledge and power of analytics. It is suggested that branches should conduct regular orientation and training programs about importance of business analytics for their employees. These programs should be conducted at least once in six months.
- Branches should also conduct some motivational and recreational programs on half yearly basis to break the monotony of job and rejuvenate them to perform better.

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A STUDY ON USAGE OF GEOSPATIAL TECHNOLOGIES IN POWER UTILITY

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ABSTRACT

Electricity Act 2002 was land mark in history of Indian Power sector, which paved the way for unbundling of power sector into Discoms and also led to participation of private players in all three phases i.e.; generation, transmission and distribution of this sector. The power utilities since then has travelled long journey from a just hardcore 'sarkari' govt organisation to now being slowly transformed to service industry. The power utilities since being service provide to consumers/citizens has adopted various innovative technologies which has enabled them to provide better and faster service; one such technology is GeoSpatial Technology. Still not all power utilities has adopted these technologies but still paper investigates the usage pattern, their problems related to usage and know how of Geospatial Technologies in one such power utility through discussions and unstructured interviews of the focussed group executives. The study can be of great help and learning for other utilities to define their strategy in rectification of problems of user departments and make use of this technology in full fledged scale. The study will also help the utilities who are just in nascent stage of implementation of GIS, as they can link the same with users right from the start of the project.

KEYWORDS

power utility, GeoSpatial, users.

INTRODUCTION

Wikipedia defines GIS as geographic information system (GIS) is a system designed to capture, store, manipulate, analyze, manage, and present all types of geographical data. The acronym GIS is sometimes used for geographical information science or geospatial information studies to refer to the academic discipline or career of working with geographic information systems and is a large domain within the broader academic discipline of Geoinformatics. In the simplest terms, GIS is the merging of cartography, statistical analysis, and computer science technology.

This geographically referenced database in recent times has been of great aiding tool in improving of electrical utility performance, better planning and improving efficiency of various departments by adoption of this technology.

Geospatial technologies in last couple of years have seen exemplary application in utilities especially power sector. The importance of these was also felt by government of India and which was seen as the initiative of the Government of India and of the States, as the Accelerated Power Development & Reform Programme (APDRP) was launched in 2001, for the strengthening of Sub Transmission and Distribution network and reduction in AT&C losses.

The main objective of the programme was to bring Aggregate Technical & Commercial (AT&C) losses below 15% in five years in urban and in high-density areas. The scheme comprises of two parts-Part-A & Part-B.

Part-A of the Restructured-APDRP Scheme relating to base line data for Consumer Indexing, Geographical Information System (GIS) Mapping, Metering of Distribution Transformers (DTR's) and Feeders, and Automatic Data Logging for all Distribution Transformers and Feeders. It would also include adoption of IT applications for Meter Reading, Billing and Collection, Energy Accounting/Auditing., management Information System (MIS), redressal of consumer service centers and IT base consumer centers etc. [5]

The study basically tries to investigate in details the usage pattern of GeoSpatial technologies among the user departments in power utility. The study aims at motivation of user in using this new emerging technology and find out how geospatial technologies helps the user in decision making. The paper also tries to find the various problems which limits the usage of GIS to user departments and which can be taken up to maximise the usage and thus help the utility in improving efficiency.

LITERATURE REVIEW

Clarke, K. C., 1986 defines GIS as a information system that integrates, stores, edits, analyzes, shares, and displays geographic information for informing decision making. GIS applications are tools that allow users to create interactive queries (user-created searches), analyze spatial information, edit data in maps, and present the results of all these operations.

Dr.Rajani Mishra, Praveen Shukla,(2011),investigates use of e-resources by research scholars of Institute of Technology, Banaras Hindu University deals with the use of e-resources by the research scholars and to determine the extent to which research scholars of Institute of Technology, Banaras Hindu University (India) are aware and make use of e resources, to highlight the problems faced by them in accessing e-resources, their views on usefulness of e-resources compared to that of print resources and the place from where they prefer to access information.

Pramod Pathak & Govind Swaroop Pathak, 'Behavioural issues in accidents : A study of Coal Mines ' The present research endeavour is designed to get insights into the various causes of accidents in coal mines, as perceived by executives working in a coal mining organization.

Tarak Shah(2006) discusses on use of IT and geo spatial technologies taking Gujarat electricity board as case study, and also discusses various reforms which has led to decrease in losses and increase in revenue for the state government

Nandan Nilekani, 'IT Task Force Report for Power Sector', stressed on usage of by various SEBs to provide unified view of spatial (geographical) and a spatial (asset attributes) information for enhancing operations management.

OBJECTIVES

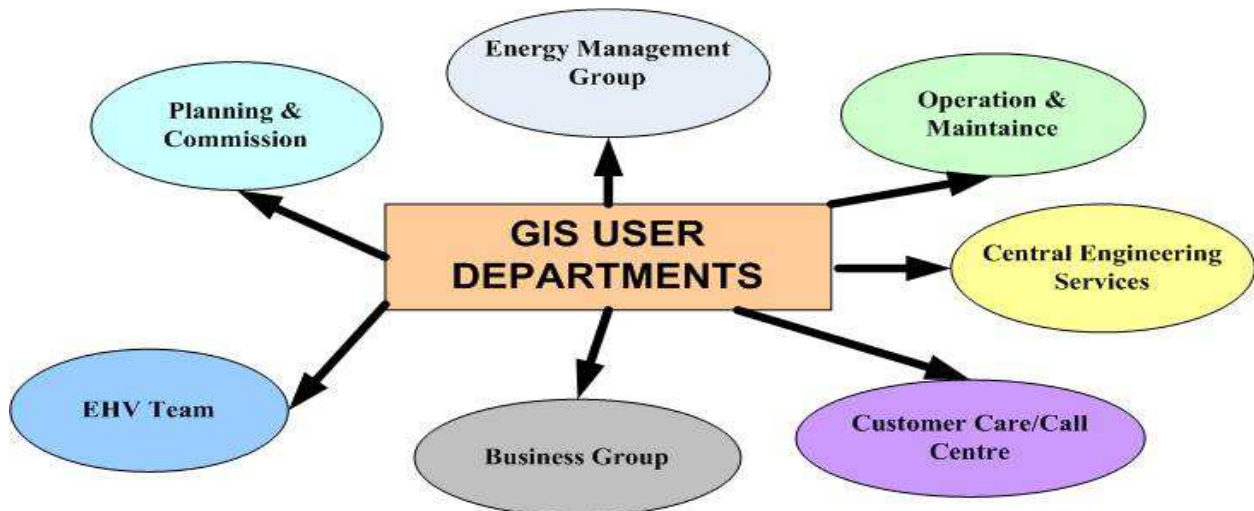
The objective of study is as follows:

- To find frequency of use of GIS by user Depts.
- To Study user requirements from GIS and how they take GIS inputs in their decision making.
- Problems faced by utility users for GIS Usage.

METHODOLOGY

The user departments of GIS in utility are shown in fig below.

FIG. 1.1



SAMPLE

The sample consisted 30 executives working in different departments of the utility.

SAMPLING METHOD AND PLAN

The method of sampling adopted for this study was ‘Purposive Sampling’, owing to the specific nature of research problem under investigation. The subjects constitute executives who were participants in 4 days program of Application of GeoSpatial Technologies for utilities at one of the certified training Centres of Ministry of Power in National Capital Region. Among these, the executives who voluntarily agreed to participate comprise our sample.

PROCEDURE

The data was collected by ‘a dual-moderator focus group interview’ (Malhotra, 2001). A focus group is an interview conducted by a trained moderator(s) in a non structured and natural manner with a small group of respondents. The moderator leads the discussion. During the discussion the participants were asked question and their views and experience on usage of the technology were taken. Some of the taken in the discussion and findings later. The main purpose of focus groups is to gain insights by listening to a group of people from the appropriate target market talk about issues of interest to the researcher. The value of the technique lies in the unexpected findings often obtained from a free flowing group discussion (for details, one may refer to Malhotra, 2001, Morgan, 1997).

Focus groups are the most important qualitative research procedure. They are so popular that many marketing research practitioners consider this technique synonymous with qualitative research (Garee & Schori, 1997). A focus group generally includes 8 to 12 member (Dachler, 1997; Fern, 1982). A focus group should be synonymous in terms of demographic and socioeconomic characteristics. Commonality among group members avoids interactions and conflicts among group members on side issues (Nelson & Fruitcake, 1988).

DATA ANALYSIS & INTERPRETATION

The data was collected during the interview were analyzed and presented in form of tables and figures illustrated below.

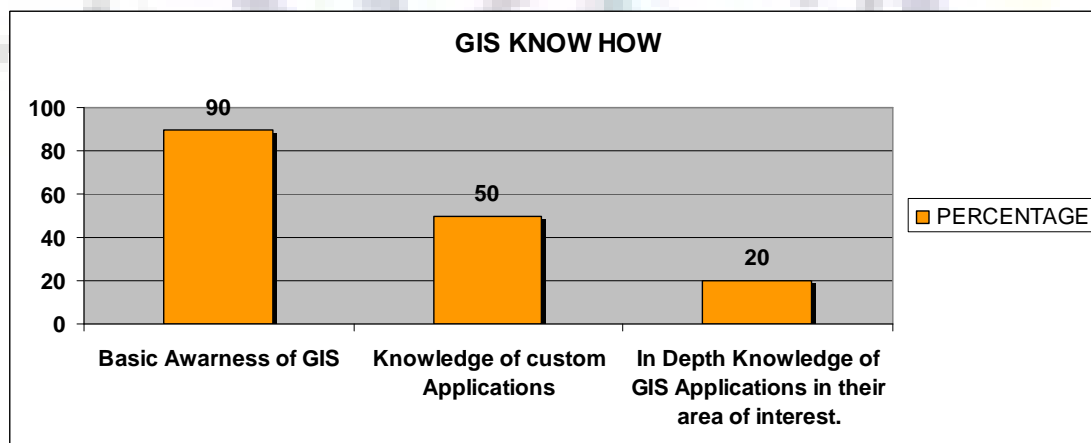
KNOWLEDGE ABOUT GIS

Through focus group interviews user departments were asked about they were aware about what is GIS, its capabilities and activities etc.

TABLE 1: KNOWLEDGE OF GIS

SL	PARTICULARS	PARTICIPANTS(30)	PERCENTAGE
1	Basic Awareness of GIS	27	90
2	Knowledge of custom Applications	15	50
3	In Depth Knowledge of GIS Applications in their area of interest.	6	20

FIGURE 1.1 KNOWLEDGE OF GIS



The graph clearly depicts that most of the user departments (90%) are aware about GIS, also 50 % of the user have knowledge of Custom Applications of GIS and applications. But very less of the users (20%) are not aware powerful capability of GIS technology. So, there is needed to make use the user departments more aware about GIS technologies usefulness for their day to day work and their area of interest.

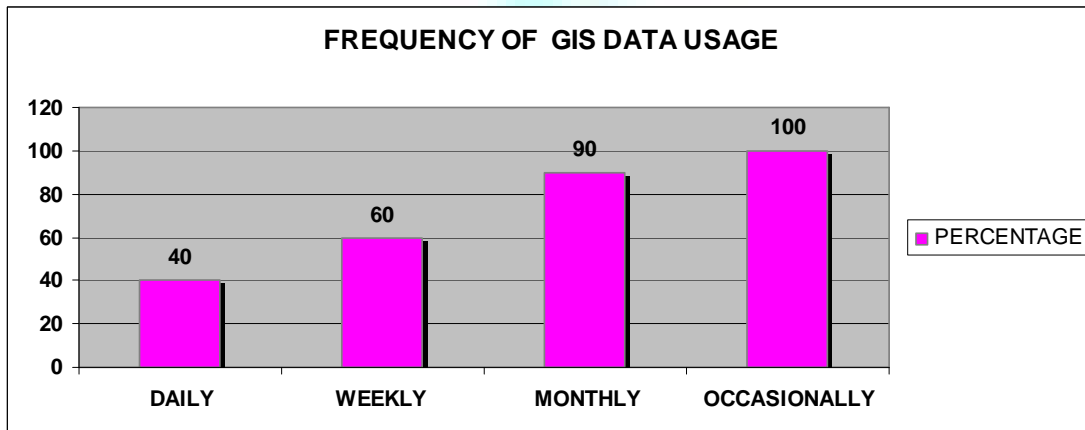
FREQUENCY OF USE OF GIS

This is basically to study how frequently the user uses GIS data in any form, the pattern of usage was studied. Most of the users use GIS data either monthly or occasionally. Daily usage of GIS data by the user is still very limited.

TABLE 2: FREQUENCY OF GIS DATA USAGE

FREQUENCY	PARTICIPANTS(30)	PERCENTAGE
DAILY	12	40
WEEKLY	18	60
MONTHLY	27	90
OCCASIONALLY	30	100

FIG 2: FREQUENCY OF GIS DATA USAGE



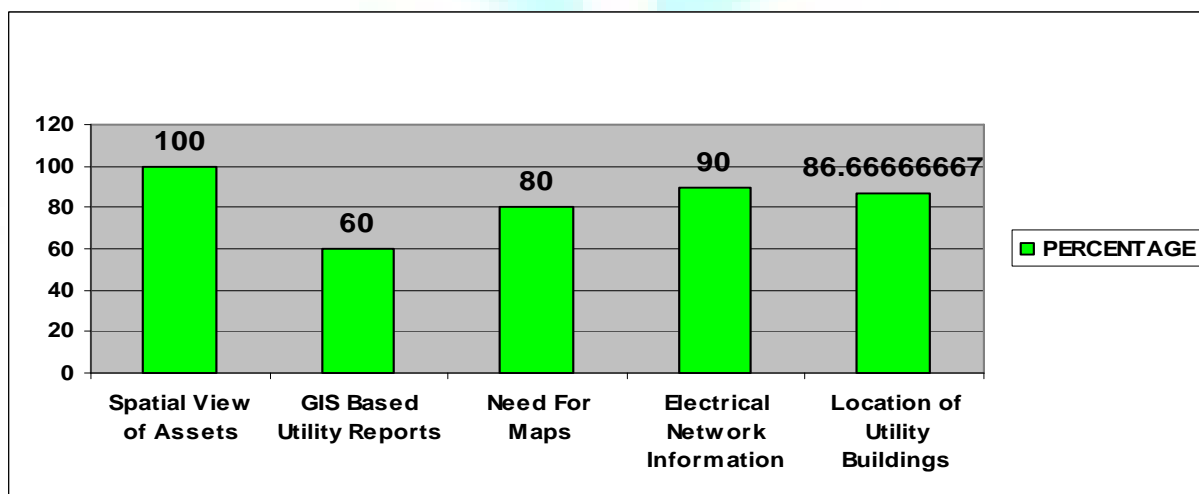
WHAT USER WANT MOST FROM GIS

The study tries to find out for what all different purpose User Departments needs GIS data. The study revealed that electrical network information is one of the biggest information which users demand from GIS. With **Delhi Geo-Spatial Data Infrastructure Act, 2011** coming into place, demand of GIS Maps mostly in pdf format and also increased by users as they need to attach with the schemes they prepare. Use of GIS Reports is less; the main factor accounting to this is that user wants reports with dynamic attributes, some of problems discussed in next section mainly accounts for this.

TABLE-3: USAGE OF GIS DATA FOR DIFFERENT INFORMATION

SL NO	What User want most from GIS	DESCRIPTION	PARTICIPANTS(30)	%
1	Spatial View of Assets	Location of DT/SSTN, Feeder etc	30	100
2	GIS Based Utility Reports	Reports Published by GIS	18	60
3	Need For Maps	Pdf/Print Out	24	80
4	Electrical Network Information	SLDs, DT/Feeder etc Info	27	90
5	Location of Utility Buildings	Nearest Complaint Centre, Cash Office	26	86.7

FIG. 3: USAGE OF GIS DATA FOR DIFFERENT INFORMATION



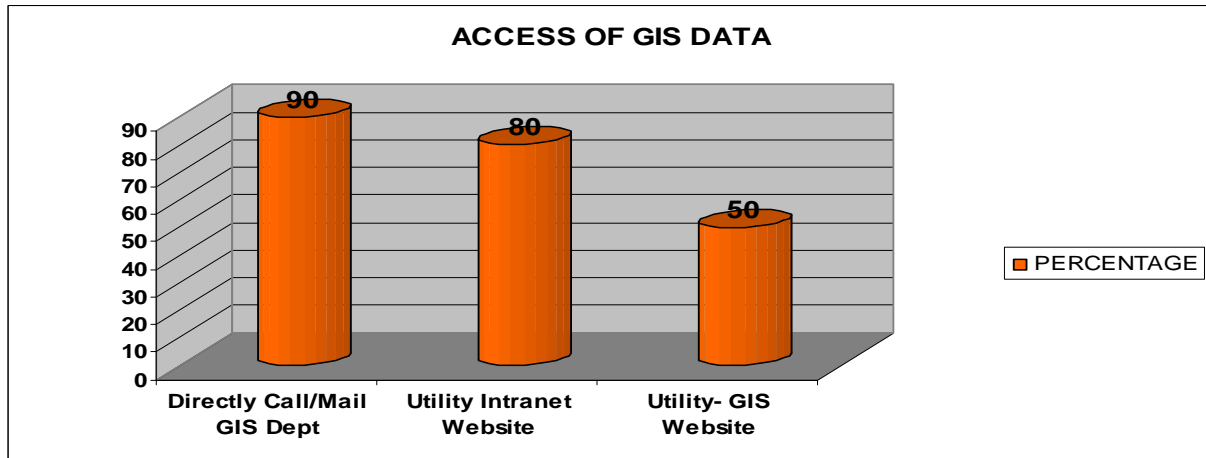
METHODS OF ACCESS OF GIS INFORMATION

In the Last section we discussed about different types of user information which user needs from GIS. Here the study tries to find out different ways through which user access GIS data for their requirements. The study revealed contacting GIS Dept either by mail or call is most prevalent way to get the required information which user needs. Access of Utility Intranet website is other major means of accessing information. The study clearly depicts usage of GIS website is not very popular among users.

TABLE 4: METHODS OF ACCESS OF GIS INFORMATION

ACCESS METHODS	PARTICIPANTS(30)	PERCENTAGE
Directly Call/Mail GIS Dept	27	90
Utility Intranet Website	24	80
Utility- GIS Website	15	50

FIG. 4: METHODS OF ACCESS OF GIS INFORMATION



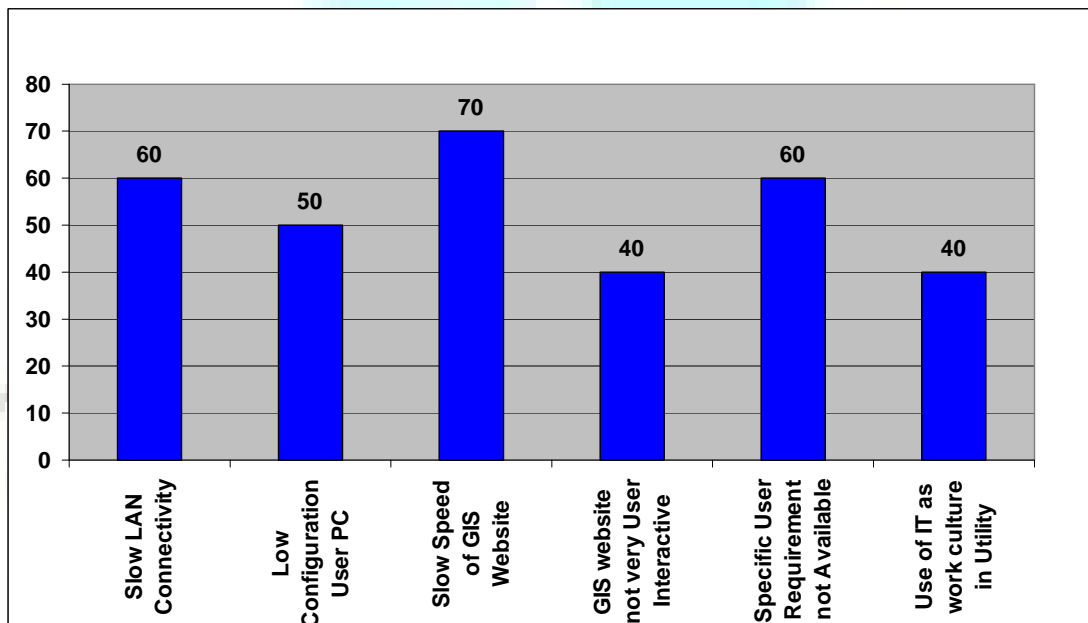
HINDRANCES IN WIDESPREAD USAGE OF GIS

The study analysed various problem encountered by the users which limits the usage of GIS in the organisation. The retrieval speed of GIS web and is not very interactive nature is one of major limitation which limits the usage of GIS. Other important factor is user specific information which user cannot get mainly due to various factors like non integration with other modules like SCADA, SAP, and OMS etc. The study also stressed on improvement of IT Infrastructure like user PC configuration i.e.; hardware and LAN Connectivity.

TABLE 5: HINDRANCES IN WIDESPREAD USAGE OF GIS

Causes	PARTICIPANTS(30)	PERCENTAGE
Slow LAN Connectivity	18	60
Low Configuration User PC	15	50
Slow Speed of GIS Website	21	70
GIS website not very User Interactive	12	40
Specific User Requirement not Available	18	60
Use of IT as work culture in Utility	12	40

FIG 5: HINDRANCES IN WIDESPREAD USAGE OF GIS



RESULTS & FINDINGS

The major findings of the study are as follows:

- Most of the user knows about GIS, but still awareness among about advanced application of this technology and how they can use for their day-day work.
- The utility management should focus on increasing frequency of usage of GIS as still most of the user uses it either occasionally /monthly or weekly. Very less user uses it daily.
- GIS data bank has enough information which user want which can be revealed, as 90% user want network related information from GIS and 80 % needs maps for various purposes. GIS Database has great demand among the users.

- The finding revealed access of GIS information in the organisation is still primitive as 90% user contact GIS dept for their requirements. The need is make the user more used to utility GIS website and does GIS analysis independently.
- Utility needs to address some IT infrastructure related issues in order to increase user level and their dependency on GIS.

CONCLUSION & FUTURE SCOPE

The study revealed that users in various departments in the power utility are keen in using GeoSpatial technologies especially among young peers. The GIS Database has been appreciated and the participants found it very useful in taking key decisions. The management of the utility should focus on addressing the issues which has been found in the study. The study can also help other utilities of different states that are in stage of implementation of GIS and take the key learning from the finding in the research study.

Since the study which was conducted on focussed group though discussion and unstructured natural way of interview, the research in the level can be carried out based on Quantitative Analysis of research, and paves the way for next advanced research ' Road Ahead - Successful Implementation of Geospatial technologies in utility'

GLOSSARY

GIS- Geographical Information System

SCADA- Supervisory Control & Data Acquisition System

OMS – Outage Management System

DT- Distribution Transformer

SLD- Single Line Diagram

SSTN- Sub Station

LAN- Local Area Network

EHV – Extra High Voltage

IT- Information Technology

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AN IMPROVED INVISIBLE WATERMARKING TECHNIQUE FOR IMAGE AUTHENTICATION

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ABSTRACT

Digital Watermarking is a technique which embeds a watermark signal into the host image in order to authenticate it. In their previous work, a binary watermark pattern was constructed from the information content of the image by selecting the minimum value from every block of size 2x2, and was disordered with the help of Arnold Transform but which was not showing a fine robustness against compression and rotation operation. As a solution to this issue, an innovative watermarking scheme is proposed. According to this, the low frequency sub-band of wavelet domain and the rescaled version of original image are utilized in the watermark construction process. A scrambled version of watermark is obtained with the help of Arnold Transform. The operation of embedding and extraction of watermark is done in high frequency domain of Discrete Wavelet Transform since small modifications in this domain are not perceived by human eyes. This watermarking scheme deals with the extraction of the watermark information in the absence of original image, hence the blind scheme was obtained. Peak Signal to Noise Ratio (PSNR) and Similarity Ratio (SR) are computed to measure image quality. In addition, the competency of the proposed method is verified under common image processing operations and a comparative study is made against the previous technique.

KEYWORDS

Robust watermarking, Discrete Wavelet Transform, Arnold Transform, Image Authentication, Content based watermarking.

1. INTRODUCTION

The internet is an excellent distribution system for the digital media because of its inexpensiveness and efficiency. Also the images can be readily shared, easily used, processed and transmitted which causes serious problems such as unauthorized use and manipulation of digital content. As a result, there is the need for authentication techniques to secure digital images. Digital watermarking is a technique which embeds additional information called digital signature or watermark into the digital content in order to secure it. A watermark is a hidden signal added to images that can be detected or extracted later to make some affirmation about the host image.

The major point of digital watermarking is to find the balance among the aspects such as robustness to various attacks, security and invisibility. The invisibility of watermarking technique is based on the intensity of embedding watermark. Better invisibility is achieved for less intensity watermark. So we must select the optimum intensity to embed watermark. In general there is a little tradeoff between the embedding strength (the watermark robustness) and quality (the watermark invisibility). Increased robustness requires a stronger embedding, which in turn increases the visual degradation of the images. For a watermark to be effective, it should satisfy the following features. They are:

Imperceptibility - It should be perceptually invisible so that data quality is not degraded and attackers are prevented from finding and deleting it. A watermark is called imperceptible if the watermarked content is perceptually equivalent to the original, un-watermarked content

- Readily Extractable - The data owner or an independent control authority should easily extract it.
- Unambiguous - The watermark retrieval should unambiguously identify the data owner.
- Robustness - It should tolerate some of the common image processing attacks. A watermark is called robust if it resists a designated class of transformations. Robust watermarks may be used in copyright protection applications to carry copy and access control information.

The digital image watermarking scheme can be divided into two categories. They are visible digital image watermarking and invisible image watermarking techniques. In visible watermarking, the information is visible in the picture or video. Typically, the information is text or a logo which identifies the owner of the original document. In invisible watermarking, information is added as digital data to audio, picture or video, but it cannot be perceived as such. Further, the invisible watermarks are categorized into watermarking techniques as fragile and robust. Generally, a robust mark is generally used for copyright protection and ownership identification because they are designed to withstand attacks such as common image processing operations, which attempt to remove or destroy the mark. These algorithms ensure that the image processing operations do not erase the embedded watermark signal. On the other hand a fragile or semi-fragile watermark are mainly applied to content authentication and integrity verification because they are very sensitive to attacks, i.e., it can detect slight changes to the watermarked image with high probability. This paper deals with a robust watermarking. The commonly used watermarking applications include copyright related applications, medical forensic and military applications and content authentication applications.

Several methods have been proposed in literature [2]. Two categories of Digital watermarking algorithms are spatial-domain techniques and frequency-domain techniques. The Least Significant Bit (LSB) is the simplest technique in the spatial domain techniques [3] which directly modifies the intensities of some selected pixels. The frequency domain technique transforms an image into a set of frequency domain coefficients [4]. The transformation adopted may be discrete cosine transform (DCT), discrete Fourier transforms (DFT) and discrete wavelet transforms (DWT) etc. After applying transformation, watermark is embedded in the transformed coefficients of the image such that watermark is not visible. Finally, the watermarked image is obtained by acquiring inverse transformation of the coefficients.

In feature based watermarking scheme, watermark is generated by applying some operations on the pixel value of host image rather than taking from external source. Recent researches on secure digital watermarking techniques have revealed the fact that the content of the images could be used to improve the invisibility and the robustness of a watermarking scheme [5]. In the proposed watermarking scheme, watermark is created from the content of the host image and discrete wavelet transform (DWT) is used for embedding watermarks, since it is an excellent time-frequency analysis method, which can be well adapted for extracting the information content of the image [6]. A detail survey on wavelet based watermarking techniques can be found in [7].

To improve the security, Wang et al [8] adopt a key dependent wavelet transform. To take the advantage of localization and multiresolution property of the wavelet transform, Wang and Lin [9] proposed wavelet tree based watermarking algorithm. Tao et al [10]. put forward a discrete. Wavelet transform based multiple water marking algorithm. The watermark is embedded into LL and HH subbands to improve the robustness. Luo et al [11]. Introduced an integer wavelets based watermarking technique to protect the copyright of digital data by utilizing encryption technique to enhance the security.

Yuan et al [12]. proposed an integer wavelet based Multiple logo watermarking scheme. The watermark is permuted using Arnold transform and is embedded by modifying the coefficients of the HH and LL subbands. Qiwei et al [13]. put forward a DWT based blind watermarking scheme by scrambling the watermark using chaos sequence. Many of the algorithms proposed meet the imperceptibility requirement quite easily but robustness to different image processing attacks is the key challenge and the algorithms in literature addressed only a subset of attacks.

This paper proposes a novel DWT based blind watermarking scheme, in which watermark is constructed from the spatial domain and is embedded in the high-frequency band. According to this algorithm, a DWT is performed on the host image and values in LL1 subband forms the first matrix. The second matrix is produced by finding average values from every 2x2 blocks. Watermark construction process finds the disparity values between those two matrices and is converted into binary form. The resultant matrix is disordered with the help of Arnold Transform. The extraction process is done without using original image and the newly developed method is robust against many common image attacks and experimental results verify this. The security of the proposed method lies on the multifaceted procedure used to construct watermark.

2. RELATED BACKGROUND

This section briefly describes the techniques and methods that have been adopted by the watermarking schemes, including DWT, Scrambling using Arnold Transform and watermark construction process adopted in our previous watermarking algorithm.

2.1 DISCRETE WAVELET TRANSFORM

The DWT decomposes input image into four components namely LL, HL, LH and HH where the first letter corresponds to applying either a low pass frequency operation or high pass frequency operation to the rows, and the second letter refers to the filter applied to the columns [14], which is shown in Figure 1. The lowest resolution level LL consists of the approximation part of the original image. The remaining three resolution levels consist of the detail parts and give the vertical high (LH), horizontal high (HL) and high (HH) frequencies. In the proposed algorithm, watermark is embedded into the host image by modifying the coefficients of high-frequency bands i.e. HH subband.

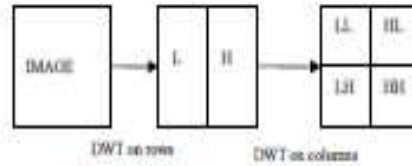


Figure 1. DWT decomposition

For a one level decomposition, the discrete two-dimensional wavelet transform of the image function $f(x, y)$ can be written as

$$LL = \left[\int \int f(x, y) \phi(x) \phi(y) (2n, 2m) \right]_{(n,m) \in Z^2}$$

$$LH = \left[\int \int f(x, y) \phi(x) \psi(y) (2n, 2m) \right]_{(n,m) \in Z^2}$$

$$HL = \left[\int \int f(x, y) \psi(x) \phi(y) (2n, 2m) \right]_{(n,m) \in Z^2}$$

$$HH = \left[\int \int f(x, y) \psi(x) \psi(y) (2n, 2m) \right]_{(n,m) \in Z^2}$$

where $\phi(t)$ is a low pass scaling function and $\psi(t)$ is the associated band pass wavelet function.

2.2 ARNOLD TRANSFORM

A digital image can be considered as a two unit function $f(x,y)$ in the plane Z . It can be represented as $Z = f(x, y)$ where x, y belongs to $\{0,1,2,3,...N-1\}$ and N represents order of digital image. The image matrix can be changed into a new matrix by the Arnold transform which results in a scrambled version to offer security. It is a mapping function which changes a point (x, y) to another point $(x1, y1)$ by the equation (1).

$$x' = (x+y) \text{ mod } N$$

$$y' = (x+2y) \text{ mod } N$$

2.3 OVERVIEW OF PREVIOUS METHOD

This section briefly describes about the watermarking generation algorithm of our previous work [1]. The watermark is generated from the spatial domain information by performing the steps mentioned below.

- The original image X of size $M \times N$ is partitioned into non-overlapping blocks of size 2×2 .
- Compute minimum value from each block and construct a matrix $M_b(p, q)$, where $p \in \{1,2,3,...M/2\}$ and $q \in \{1,2,3,...N/2\}$.
- Find median value M_d for the elements in $M_b(p, q)$.
- Perform Arnold transform for three times on $M_b(p, q)$ to scramble the elements and obtain matrix $M_s(p, q)$.
- Form the watermark pattern to be embedded into original image as

$$W(p,q) = \begin{cases} 0 & \text{if } M_s(p,q) > M_d \\ 1 & \text{otherwise} \end{cases}$$

- For a $M \times N$ image, a watermark pattern of size $M/2 \times N/2$ is generated.

Example: Consider the input matrix of size 8×8

6	14	10	10	4	3	2	2
11	16	17	20	6	3	4	4
11	20	15	10	5	4	4	3
13	16	6	2	2	2	3	9
11	16	7	3	4	2	3	11
6	4	4	2	3	2	2	14
4	2	4	2	1	2	5	16
7	6	0	2	4	1	2	3

The matrix constructed by picking smallest element from every 2×2 block of original matrix is

$$M_b = \begin{pmatrix} 6 & 10 & 3 & 2 \\ 11 & 2 & 2 & 2 \\ 4 & 2 & 2 & 2 \\ 2 & 0 & 1 & 2 \end{pmatrix}$$

After the application of Arnold transform the scrambled version of the matrix is

$$M_s = \begin{pmatrix} 2 & 4 & 1 & 6 \\ 2 & 0 & 2 & 2 \\ 2 & 3 & 11 & 2 \\ 10 & 2 & 2 & 2 \end{pmatrix}$$

The median value obtained for the elements in M_s is 2. According to the constraint (2), the binary watermark pattern constructed is

$$W = \begin{pmatrix} 1 & 0 & 1 & 0 \\ 1 & 1 & 1 & 1 \\ 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 1 \end{pmatrix}$$

In this method, watermark is generated by performing some operations on image pixels rather than taking from external source, hence the name content based watermark. This watermark is embedded in the HH1 subband of original image and the resultant image is called watermarked image. This embedded watermark is extracted in detection phase, and is compared with the calculated watermark to decide authenticity.

3. PROPOSED METHOD

In the proposed scheme, there are three significant phases: Watermark generation, Watermark embedding and Watermark Detection. The watermark is generated from pixel value of original image and so there is no need of external image or logo. Hence it is necessary to devise a method to generate watermark. The resolution of watermark is assumed to be half of that of original image.

For embedding the watermark, a 1-level Discrete Wavelet Transform is performed. Watermark information is embedded in the high frequency bands (HH1) since it is robust against various normal image processing and malicious attacks. The resultant image is called watermarked image. In detection phase, two kinds of watermarks will be obtained. One is generated from watermarked image and the other is extracted from HH1 subband which has been already embedded within the host image. Comparison is made between those watermarks to decide authenticity.

3.1 WATERMARK GENERATION

The watermark pattern is generated from the content information of host image. Watermark generation procedure includes the following steps and is shown in Figure 2.

- Consider the original image P of size M x M.
- Perform 1-level DWT on the original image and acquire the LL1 component to find watermark pattern, which is of size M/2 x M/2. Let this matrix be 'A'.
- A reduced size (M/2 x N/2) image 'B' is obtained from original image by Performing the following steps.
 - (i) Partition the original image into non-overlapping blocks of size 2x2.
 - (ii) One feature value from each block is calculated according to equation (3).

$$B(x,y) = \frac{\sum_{i=-1}^1 \sum_{j=-1}^1 P(x*2+i, y*2+j)}{4}$$

where $0 \leq x \leq M/2$, and $0 \leq y \leq N/2$.

- Find the difference between A and B. Let it be C.
- A binary sequence 'W' can be obtained by applying the following constraint.

$$W(x,y) = \begin{cases} 0 & \text{if } C(x,y) \text{ is even} \\ 1 & \text{otherwise} \end{cases}$$

- Disorder the matrix 'W' with the help of Arnold Transform, the resultant is the required watermark pattern to be embedded in to the host image.

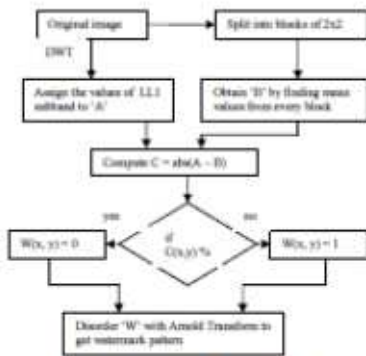


Figure 2. Watermark Generation

Example:

Consider the input matrix of size 8x8

$$\begin{pmatrix} 6 & 14 & 10 & 10 & 4 & 3 & 2 & 2 \\ 11 & 16 & 17 & 20 & 6 & 3 & 4 & 4 \\ 11 & 20 & 15 & 10 & 5 & 4 & 4 & 3 \\ 13 & 16 & 6 & 2 & 2 & 2 & 2 & 9 \\ 11 & 16 & 7 & 3 & 4 & 2 & 3 & 11 \\ 6 & 4 & 4 & 2 & 3 & 2 & 2 & 14 \\ 4 & 2 & 4 & 2 & 1 & 2 & 5 & 16 \\ 7 & 6 & 0 & 2 & 4 & 1 & 2 & 3 \end{pmatrix}$$

Applying 1-level DWT on the original matrix yields the LL1 component in integer form as

$$A = \begin{pmatrix} 24 & 29 & 8 & 6 \\ 30 & 17 & 7 & 9 \\ 19 & 8 & 6 & 15 \\ 10 & 4 & 4 & 13 \end{pmatrix}$$

Now the integer matrix B is obtained by taking average values of every blocks of size 2x2.

$$B = \begin{pmatrix} 12 & 14 & 4 & 3 \\ 15 & 8 & 3 & 5 \\ 9 & 4 & 3 & 8 \\ 5 & 2 & 2 & 7 \end{pmatrix}$$

Matrix 'C' is formed by calculating the difference between matrices A and B.

$$C = A - B = \begin{pmatrix} 12 & 15 & 4 & 3 \\ 15 & 9 & 4 & 4 \\ 10 & 4 & 3 & 7 \\ 5 & 2 & 2 & 6 \end{pmatrix}$$

By applying the constraint

$$W(x,y) = \begin{cases} 0 & \text{if } C(x,y) \text{ mod } 2 = 0 \\ 1 & \text{otherwise} \end{cases}$$

a binary sequence 'W' is obtained as

$$W = \begin{pmatrix} 0 & 1 & 0 & 1 \\ 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \\ 1 & 0 & 0 & 0 \end{pmatrix}$$

3.2 WATERMARK EMBEDDING

The watermark is embedded in the high frequency subband of DWT as follows:

- Apply 1-level DWT to original image.
- The watermark is embedded in the high frequency component HH1 of DWT.
- Perform inverse wavelet transform to obtain the watermarked image.

3.3 WATERMARK DETECTION

Proposed watermarking scheme extracts and generates watermark information from watermarked image and so original image is not essential. So it can be referred as blind watermarking. The authentication process includes the following steps:

- Watermark is derived from the content of watermarked image using the steps described under watermark generation in section 3.1.
- Apply 1-level DWT to the watermarked image and extract the embedded watermark from HH1 subband.
- Compare the two watermarks (derived and extracted). If two values match, authenticity is preserved. Otherwise the authenticity is suspected.
- Quality of watermarked image and the watermark is found out according to equation (4) and (6).

4. EXPERIMENTAL RESULTS

We consider the images with number of rows and columns are of equal size since the embedded watermark is a square matrix. For testing, the size of the original image is taken as 512x512. Figure 3 (a) shows original image. A 256x256 binary watermark signal is constructed from original image and is embedded within itself. The proposed method is tested using MATLAB.

After embedding the watermark, there was no visual difference between the original and watermarked images. Figure 3(b) shows watermarked image. The absolute difference of the pixel intensities of the watermarked image and the original image is shown in Figure 3(c). The difference image shows that the technique ensures high degree of fidelity.

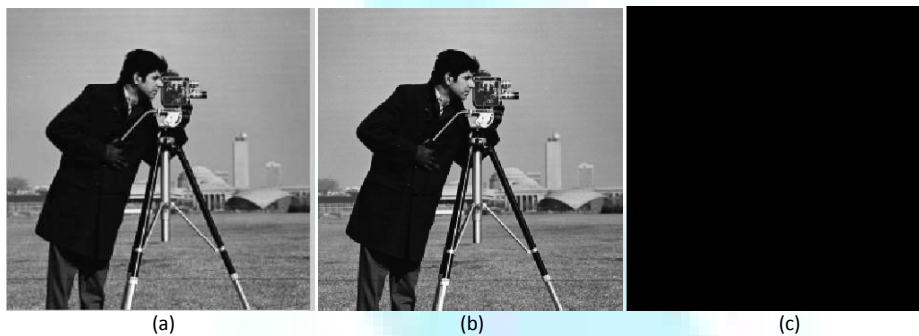


Figure 3. (a) Original Image (b) Watermarked Image (c) Difference Image

The visual quality of watermarked and attacked images is measured using the Peak Signal to Noise Ratio, which is defined in equation (4). The PSNR value of watermarked image is 59.1168, which indicates that there is very little deterioration in the quality of original image.

$$PSNR = 10 \log_{10} \left(\frac{255^2}{MSE} \right)$$

where MSE is Mean Squared Error between original and distorted images, which is defined in equation (5).

$$MSE = \sum_{i=1}^{M-1} \sum_{j=1}^{N-1} \frac{(O(i,j) - DI(i,j))^2}{M \cdot N}$$

where OI is original image and DI is the distorted image.

A comparison between extracted and original watermark can be done by computing Similarity Ratio (SR) between these two patterns as defined in equation (6), which is the metric used for identifying robustness of the watermarking process.

$$SR = \frac{S}{S + D}$$

where 'S' denotes number of matching pixel values and 'D' denotes number of different pixel values. In the proposed scheme, similarity ratio evaluated between extracted and calculated watermark is 0.8496 which indicates that the number of matching pixels are quite high and hence authenticity is preserved. The simulation results of previous method [1] and the proposed one are exposed in Table 1.

Table 1. Quality Evaluation of Watermarking Schemes

Metric used	Method [1]	Proposed
PSNR	54.1047	59.1168
SR	1	0.8496

In the proposed as well as the previous watermarking techniques, the watermarked image is subjected to six types of distortions: compression, noise, filter, image adjustment, scaling and rotation. Watermarked image has been compressed using JPEG compression with different quality factors. Additive Gaussian Noise and Salt & pepper noise has been added to the watermarked image. Also filtering such as median filtering, Linear filtering, histogram equalization and blurring has been applied on the watermarked image. The intensity values of watermarked image are adjusted to new values such that 1% of data are saturated at low and high intensities. Also a clockwise rotation with cropping operation is applied on the image. Results of the metrics Peak Signal to Noise Ratio and Similarity Ratio on the test image camera man against both methods are shown in Table 2 & 3 respectively.

Table 2. Assessment of PSNR under Attacks

Attacks		PSNR (dB)	
		Method [1]	Proposed
Adding Gaussian noise (mean, variance)	0.01, 0	37.8092	38.3272
	0, 0.001	30.0730	30.0997
Adding Salt & Pepper noise	0.002	32.0153	32.1381
Median filtering	3x3	29.5819	29.5727
Linear filtering	3x3	27.7792	27.7761
Image Adjustment		18.7003	18.5312
Blurring		37.8281	37.8322
Histogram Equalization		19.0192	19.0944
JPEG (Quality Factor)	90	43.0143	43.1448
	70	36.4452	37.4799
	50	35.2058	35.4799
	30	33.1859	33.2002
	10	29.1818	29.1867
Scaling (512-256-512)		51.0944	56.1065
Rotation	5°	13.9478	13.9492
	10°	12.0324	12.0325

The imperceptibility of watermark in the proposed method has been evaluated against incidental attacks by using the metric PSNR and are compared against. A comparative study on Table 2 reveals the fact that the quality of watermarked image under various incidental image processing operations is more or less similar in both methods.

Robustness of the proposed method under the common image processing operations has been identified with the help of Similarity Ratio and is compared against our previous method. Table 3 shows the experimental results. The simulation results of both methods in the case of additive Gaussian noises show that the robustness of watermark in this attack is high with constant variance 0. An increase in variance slightly affects the robustness in both cases. The watermarked image is attacked with salt & pepper noise with density 0.002, the results obtained show that both techniques are highly robust in this case. An analytical study demonstrates that the watermark in previous method shows more robustness than the proposed one under noise attacks.

Watermarked image is smoothed with a 3x3 median filter. Experimental results disclose that the proposed technique is more robust than the technique in under filtering operation. Similar is the case with linear filtering. Experimental results against Image adjustment and Histogram equalization attacks reveal that the robustness of watermark is high in both the methods.

A Gaussian lowpass filter of size 3x3 and a standard deviation sigma 0.5 is applied on the image. Similarly the watermarked image is compressed with lossy JPEG compression by applying the quality factor from 0 to 100. Experimental results of the proposed system against the operations such as blurring, histogram equalization, JPEG compression and scaling show a high Similarity Ratio than, which in turn indicates that the robustness of currently devised technique is higher than the previous method. For the rotation with cropping operation, the observed results dictate that the robustness of the proposed method is better than that of the previous one.

Table 3. Assessment of SR under Attacks

Attacks		Similarity Ratio	
		Method [1]	Proposed
Adding Gaussian noise (mean, variance)	0.01, 0	1	0.8371
	0, 0.001	0.5188	0.5042
Adding Salt & Pepper noise	0.002	0.9898	0.8370
Median filtering	3x3	0.5218	0.6629
Linear filtering	3x3	0.5359	0.6696
Image Adjustment		0.8433	0.8435
Blurring		0.6718	0.8083
Histogram Equalization		0.7573	0.7598
JPEG (Quality Factor)	90	0.4659	0.6488
	70	0.4753	0.6956
	50	0.4745	0.7418
	30	0.4759	0.7736
	10	0.4746	0.8158
Scaling (512-256-512)		0.4985	0.8463
Rotation	5°	0.5071	0.7135
	10°	0.4648	0.6957

5. CONCLUSION

This study has discussed a new robust watermarking scheme, which provides a complete algorithm that embeds and extracts the watermark information effectively. In this method, a binary watermark pattern is constructed from host image itself and is disordered with the help of Arnold Transform. The watermark embedding process does not degrade the visual quality of the image. The designed method makes use of the Discrete Wavelet Transform which provides a frequency spread of the watermark within the host image. Moreover the authentication process provides qualities like imperceptibility, robustness and security. The performance of the watermarking scheme is evaluated with common image processing attacks such as additive noises, filtering, intensity adjustment, histogram equalization, JPEG compression, Scaling and rotation. Experimental results demonstrate that watermark is robust against those attacks. Moreover the simulation results of currently devised method are compared with that of our previous work [1], the results obtained show that the proposed technique is highly robust against attacks such as image adjustment, blurring, histogram equalization, compression, scaling and rotation.

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ORGANIZATIONAL STRUCTURE, RESPONSIBILITY, MOTIVATION LEVEL AND JOB SATISFACTION OF SELF-FINANCING ENGINEERING COLLEGES BY USING MATHEMATICAL MODELING

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ABSTRACT

The present study falls in the category of applied research being descriptive one; therefore, it has educational implications for principals, heads of the department, educational administrators and educational planners. In this study an attempt was made to find out the perceptions of teachers with high and low job satisfaction regarding their organizational climate so as to enable the principals and administrators to bring about suitable changes in the organizational climate of the institute. This may be helpful to enhance job satisfaction of teachers and thereby improve student-learning.

KEYWORDS

Standard deviation (SD), Skewness (SK), Kurtosis (KU), THJS, TLJS.

INTRODUCTION

In early days, the higher education system of India was well supported by the Government. The salary and 'non salary' expenditures of the institutions were borne by the Government. But soon, Government realized that it is beyond their capacity to provide higher education to everyone. So, a scheme of 'self financing' institutions was proposed by various State Governments of India. Since then, many new colleges have come up with no financial support from Governments. Particularly, professional higher education colleges such as Engineering, Medical, Management, Computer and Information Technology colleges have come up in large numbers.

In state of Himachal Pradesh there are more than 85 institutions providing technical education (34 polytechnics, 19 Engineering and more than 18 University) are not supported by government. More number of students are able to get admissions to professional courses due to the increase in the number of institutions. It is observed that the teachers migrate from one institution to another frequently. This may be due to various factors and this has resulted in problems in the technical education systems in HP. It ultimately affects on teaching and their involvement in institutions. In order to solve this problem it is necessary to identify the causes for such problems and employ the remedial measures to eliminate or reduce the problem. Since this turnover of teachers may be due to various factors, identifying the factors becomes an important stage in the problem solution. There may be quantitative as well as qualitative factors causing this problem. Qualitative or non measurable factors or variable are more important due to the complexity of these variables and hence it is required to device some modes or methods to identify them. There have been studies in this field of determining the non-measurable variables such as personality factors, job satisfaction, burnout etc.

In order to "survive", Indian organizations are being forced to undergo massive changes. In this context, it would be important to identify the factors in the organizational environment that have the most positive impact on the performance of the organization. Among various factors, attitudes and feelings of the individuals regarding their jobs and job experiences have been found to be significantly affecting their behaviors. (Herzberg, Mausner, Peterson and Capwell, 1957; Iaffaldano and Muchinsky, 1985; Locke, 1970; Schwab and Cummings, 1970; Petty, McGee and Cavender, 1984).

Progress and development of a nation is directly linked with the successful implementation of policies based on a good educational system. It needs careful planning and painstaking efforts. In this struggle, the role of a teacher is regarded as pivotal as he is the man behind the guns who lead to success. No educational system can rise above its teachers. Importance of teachers should be accepted.

As the teacher is the key person to make the educational system a success, therefore it is necessary that he should be provided all facilities so that he may discharge his duties earnestly and as it is universally accepted that a dissatisfied worker cannot do full justice with his job. Keeping in view the role of the teacher, the researcher has tried to make a survey of the prevalent conditions and atmosphere in which the college teachers are performing their duties. The highest official position in the college is that of principal. Thus, the responsibility of running the college is that of the principal (Freiberg and Stein (1999).

According to Dunklee (2000) "the differences in students' behaviour and academic outcomes are influenced inter alia by the principal. The principal leads from his/her values. The activities of the college are determined by what the principal does." Buttrussing the above claim, Ramsey (1999) contends that, "in an

organization like the college, students and staff tend to live up to the image of the principal; because no college is high performing without an effective and efficient principal; he is the gospel that his/her staff and students read, a model of behaviour and work attitude to be copied by all." Wilmore (2002) states that "principals play diverse roles: they are responsible for effecting education policy, keeping track of all activities within the college and ensuring that their colleges run smoothly. The principals' tasks are divided into two major types: instructional and the leadership roles."

HYPOTHESES

On the basis of review of research literature, the following hypotheses were formulated:

There are no significant differences between the perceptions of teachers with high and low job satisfaction regarding all the three dimensions of organizational climate.

There are no significant differences in the organizational climate as perceived by teachers with high job satisfaction belonging to different disciplines.

There are no significant differences in the organizational climate as perceived by teachers with low job satisfaction belonging to different disciplines.

There are no significant differences in the organizational climate as perceived by teachers with high and low job satisfaction belonging to different levels of age and experiences.

OBJECTIVES OF THE STUDY

The objectives of the study are given below

1. To study the differences between the perceptions of teachers with high and low job satisfaction regarding all the three dimensions of organizational climate.
2. To study the differences in the organizational climate as perceived by teachers with high job satisfaction belonging to different disciplines.
3. To study the differences in the organizational climate as perceived by teachers with high job satisfaction belonging to different levels of age.
4. To study the differences in the organizational climate as perceived by teachers with low job satisfaction belonging to different levels of age.

TABLE -1: MEANS, STANDARD DEVIATIONS AND T-RATIOS FOR RESPONSIBILITY AND ORGANIZATION STRUCTURE, THE DIMENSION OF ORGANIZATIONAL CLIMATE

S.No	Dimensions	N THJS*	Mean THJS*	N TLJS*	Mean TLJS*	SD THJS*	SD TLJS*	t-ratio	Significant/Insignificant
1	Responsibility	17	12.94	21	11.76	1.853	2.587	1.579	Insignificant
2	Organization structure.	17	14.65	21	14.5	2.178	2.1797	.843	Insignificant
3	Motivation Level	17	26.35	21	19.90	4.137	2.406	6.007*	Significant at .01Level

TABLE-2: MEANS, STANDARD DEVIATIONS AND T-RATIOS FOR BOTH ENGINEERING AND NON-ENGINEERING TEACHERS WITH HIGH JOB SATISFACTION FOR VARIOUS DIMENSIONS OF ORGANIZATIONAL CLIMATE

S.No.	Dimension	N	Mean Eggs.	N	Mean Non.Engg	SD Eggs.	SD NonEngg.	t-ratio	Significant/Insignificant
1	Responsibility	10	12.60	7	13.43	2.366	.533	.902	Insignificant
2	Organization Structure	10	14.30	7	15.14	2.584	1.464	.776	Insignificant
3	Motivation Level	10	24.60	7	28.86	4.351	2.193	2.370*	Significant at .05 level

TABLE 3: MEANS AND STANDARD DEVIATIONS FOR VARIOUS DIMENSIONS OF ORGANIZATIONAL CLIMATE AS PERCEIVED BY TEACHERS WITH HIGH JOB SATISFACTION BELONGING TO DIFFERENT LEVELS OF AGE

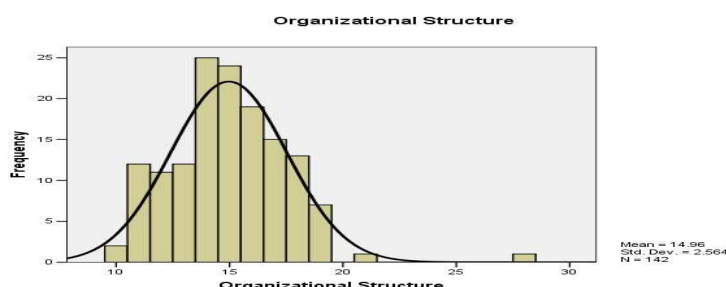
Sr.No	Dimensions	Mean of the Age-Groups			SD			t- values	
		A (20-25) (N = 6)	B (26-30) (N =6)	C (31-35) (N =4)	A (20-25)	B (26-30)	C (31-35)	t-ratio A&B	t-ratio B&C
1.	Responsibility	11.67	13.83	13.50	2.503	1.169	.577	1.921	0.522
2.	Organization Structure	14.17	14.83	14.75	3.125	1.602	1.893	0.465	0.075
3	Motivational level	24.33	26.67	28.25	3.983	5.317	1.500	0.860	0.570

TABLE- 4: MEANS AND STANDARD DEVIATIONS FOR VARIOUS DIMENSIONS OF ORGANISATIONAL CLIMATE AS PERCEIVED BY TEACHERS WITH LOW JOB SATISFACTION BELONGING TO DIFFERENT LEVELS OF AGE

Sr.No	Dimensions	Mean of the Age-Groups			SD			t- values	
		A 20-25 (N =9)	B 26-30 (N =8)	C 31-35 (N =4)	A 20-25	B 26-30	C 31-35	t-ratio A&B	t-ratio B&C
1.	Responsibility	12.00	11.25	12.25	1.803	3.694	1.708	0.542	0.506
2.	Organizational Structure	13.89	14.00	14.50	2.892	1.927	0.577	0.092	0.497
3	Motivational level	20.11	20.25	18.75	2.571	2.605	1.708	0.110	1.033

FREQUENCY POLYGON OF ORGANIZATIONAL STRUCTURE SCORE DISTRIBUTION

FIGURE -1



TOTAL SCORE OF ORGANIZATIONAL STRUCTURE

TABLE 1 (a)

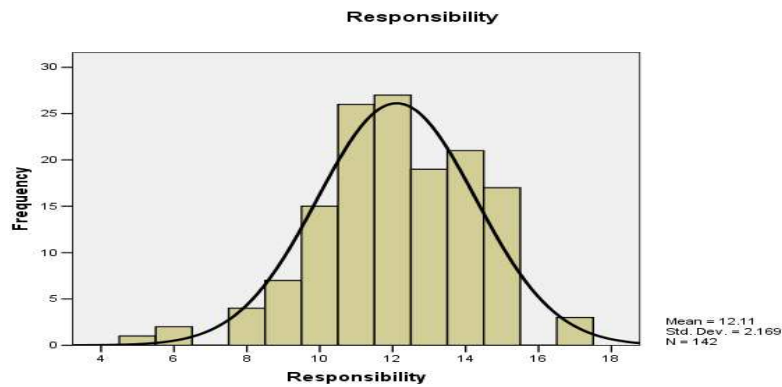
Mean = 14.96	Median = 15.00
SD = 2.564	Skewness = .859
Kurtosis = 3.558	Number = 142

INTERPRETATION OF THE SCORES OF ORGANIZATIONAL STRUCTURE

From the scores of the dimension of organizational structure of organizational climate (fig-1) the skewness of the total sample was 0.859 which showed the normal curve. The value of kurtosis was 3.558 which is greater than the 0.263 for normal distribution hence the curve is leptokurtic. In terms of shape, a leptokurtic distribution has a more acute peak around the mean (that is, a lower probability than a normally distributed variable of values near the mean) and fatter tails. The polygon was very slightly skewed to the right; it indicates that slightly more data had been concentrated towards the left of the curve. Since the values of the total score were near to the normal distribution. This was also got confirmed by the median (15.00) having slightly higher value than mean (14.96). Hence the values of the total score were near to the normal distribution.

FREQUENCY POLYGON OF RESPONSIBILITY SCORE DISTRIBUTION

FIGURE - 2



TOTAL SCORE OF RESPONSIBILITY

TABLE 2 (a)

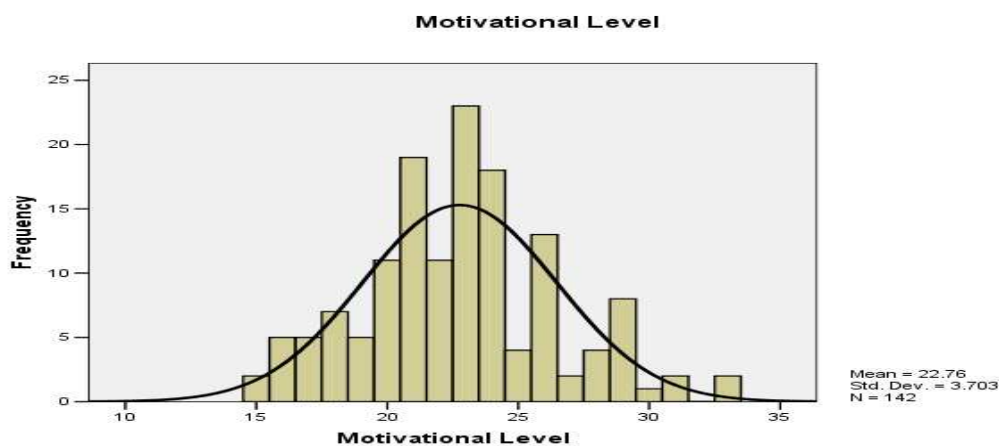
Mean = 12.11	Median = 12.00
SD = 2.169	Skewness = -.391
Kurtosis = .494	Number = 142

INTERPRETATION OF THE CORES OF RESPONSIBILITY

From the scores of the dimension of responsibility of organizational climate (fig-2) the skewness of the total sample was -.391 which showed the normal curve. The value of kurtosis was 0.494 which is greater than the 0.263 for normal distribution hence the curve is leptokurtic. In terms of shape, a leptokurtic distribution has a more acute peak around the mean (that is, a lower probability than a normally distributed variable of values near the mean) and fatter tails. The polygon was skewed to the left; it indicates that slightly more data had been concentrated towards the right of the curve. This was also got confirmed by the median (12.00) having slightly lesser value than mean (12.11). Hence the values of the total score were near to the normal distribution.

FREQUENCY POLYGON OF MOTIVATIONAL LEVEL SCORE DISTRIBUTION

FIGURE - 3



TOTAL SCORE OF MOTIVATION LEVEL

TABLE- 3 (a)

Mean = 22.76	Median = 23.00
SD = 3.703	Skewness = .289
Kurtosis = .080	Number = 142

INTERPRETATION OF THE SCORES OF MOTIVATION LEVEL

From the scores of the dimension of motivation of organizational climate (fig-3) the skewness of the total sample was 0.289 which showed the normal curve. The value of kurtosis was 0.080 which is less than the 0.263 for normal distribution hence the curve is platykurtic. Since the values of the total score were near to the

normal distribution. The polygon was very slightly skewed to the right; it indicates that slightly more data had been concentrated towards the left of the curve. This was also got confirmed by the median (23.00) having slightly higher value than mean (22.76). Since the values of the total score were near to the normal distribution.

RESULTS AND CONCLUSIONS

In case of teachers with high and low job satisfaction t-ratios (Table- 1) were found insignificant on the two dimensions namely responsibility and organizational structure. On the remaining one dimensions namely; motivational level, were found significant. The mean values of motivational level of teachers with high job satisfaction were higher than the teachers with low job satisfaction. Therefore the teachers with high job satisfaction were highly motivated and feel their organizational climate more conducive to perform their duties than those who were least satisfied with their job. These finding supports the finding of the Andre Bishay (1996) conducted study on teacher motivation and job satisfaction and also supported by the research work of Ololube N.P. (2005), revealed significant relationships among facets of job satisfaction and motivation factors.

All t-ratios (Table- 2) were found insignificant in two dimensions of organizational climate as perceived by teachers with high job satisfaction belonging to engineering and non-engineering disciplines. On the remaining one dimensions namely; motivational level, were found significant. The results shows that teachers with high job satisfaction from engineering discipline were highly motivated than the teachers from non-engineering discipline. The value of t-ratio 2.370 was found significant at 0.05 levels of significance.

The mean (28.86) score of motivation level of the teachers with high job satisfaction from non-engineering discipline was significantly higher than the mean (24.60) score of motivation level of engineering discipline on the dimensions of motivational level. This reveals that the teachers with engineering discipline had higher job satisfaction than the teachers who were from the non engineering disciplines.

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WORLDWIDE

DESIGN AND IMPLEMENTATION OF A REAL-TIME VEHICLE TRACKING SYSTEM

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ABSTRACT

Security in general is a major concern in our society today and over time, the security of vehicles has become a priority. Various inventions and technologies have been brought about to put minds at rest, but the complete eradication of theft of cars is much of a tedious task. A solution to knowing the location of vehicles either when they are stolen or for any other reasons. To know this location, it involves the installation of a vehicle tracker in a hidden position in the vehicle so that it is not easily seen while providing essential clues as to the location of the vehicle and also a remote tracking server that receives the location information of the car in longitude and latitude and converts it to a physical address and sends it to the authorized user.

KEYWORDS

Tracker, vehicle, longitude, latitude.

INTRODUCTION

 Security in general is a major concern in our society today. Every day, people purchase vehicles for different purposes, but for which ever reason, a lot of money is spent in the transaction which demands that adequate provision should be provided for its security and safety (Bajaja et al. 2012). Auto theft is a serious crime which is getting rampant day after day. It is then necessary for car users everywhere to have a way to track down their cars in case it is ever stolen. Real Time Vehicle Tracking System is one of the measures of securing vehicles. The word tracking means to find or follow something, therefore, Real time vehicle tracking is a method used to track and monitor any remote vehicle equipped with a hardware unit that receives and transfers signals through global positioning system (GPS) satellite. It makes use of GPS to provide actual geographic real time position of each vehicle.

A vehicle tracker is therefore a major and essential device that should be in every vehicle because it gives the owner the ability to know the exact location of such cars at any point in time anywhere in the world with geography information systems (GIS) (Ambade et al. 2011).

It is very useful for both individuals and companies. It can help a company in the sense that the company workers cannot take the company car(s) to unassigned locations. It can also help an individual who is probably on a business trip to know whether his car is still where he left it or not.

Today, the vehicle tracking system is playing a major role in most sectors as vehicles have become a major means of transportation.

PROBLEM STATEMENT

An increase in car theft in the society which in most cases searching for such cars may not have positive effect is becoming a major concern. Systems like the security lock and alarm system has been implemented in cars to prevent theft, but if a burglar can break open the lock, it therefore becomes easy for the burglar to steal the car. This brought the need for the introduction of this real time tracking system.

OBJECTIVES OF THE STUDY

The main objectives of this system are:

Developing Automatic Vehicle Location system using GPS for positioning information and global systems of telecommunication (GSM) for information transmission.

LITERATURE REVIEW

Over time, the security of vehicles has become a priority. Various inventions and technologies have been brought about to put minds at rest, but the complete eradication of theft of cars is much of a tedious task. Technologies like the car alarm system have been put in place but it is limited to an audible distance and it doesn't give the location of the car if it is successfully stolen. A solution to knowing the location of vehicles when they are stolen is the Real Time Vehicle Tracking System that involves the installation of a vehicle tracker in a hidden position in the vehicle so that it is not easily located while providing essential clues as to the location of the vehicle.

GPS

The **Global Positioning System (GPS)** is the only fully-functional satellite navigation system. More than two dozen GPS satellites orbit the Earth, transmitting radio signals which allow GPS receivers to determine their location, speed and direction. GPS has become indispensable for navigation around the world and an important tool for map-making and synchronization of telecommunications networks. (Khindker, 2009)

It provides location and time information in all weather conditions, anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites.

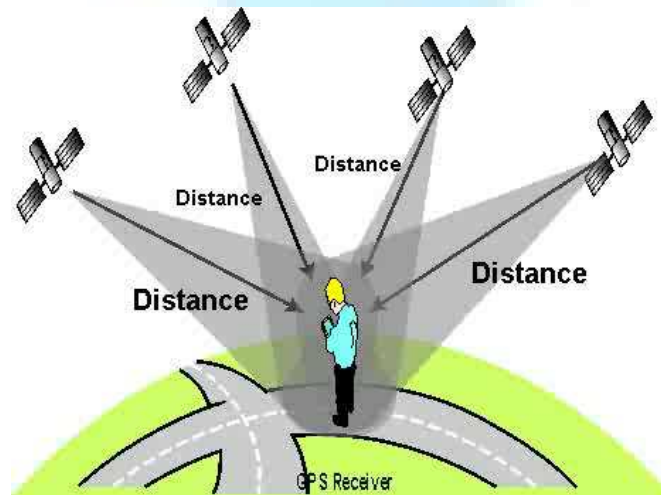
Global Positioning System satellites transmit signals to equipment on the ground. GPS receivers passively receive satellite signals; they do not transmit. GPS receivers require an unobstructed view of the sky, so they are used only in outdoors and they often do not perform well within forested areas or near tall buildings. GPS operations depend on a very accurate time reference, which is provided by atomic clocks at the U.S. Naval Observatory. Each GPS satellite has atomic clocks on board (Introduction to GSM, 2013).

Each GPS satellite transmits data that indicates its location and the current time. All GPS satellites synchronize operations so that these repeating signals are transmitted at the same instant. The signals, moving at the speed of light arrive at a GPS receiver at slightly different times because some satellites are farther away than others. The distance to the GPS satellites can be determined by estimating the amount of time it takes for their signals to reach the receiver.

HOW GPS DETERMINES POSITION

A GPS receiver knows the location of the satellites because that information is included in satellite transmissions. By estimating how far away a satellite is, the receiver also knows that it is located somewhere on the surface of an imaginary sphere centred at the satellite. It then determines the sizes of several spheres, one for each satellite. The receiver is located where these spheres intersect; this can be seen as depicted in fig. 1.

FIGURE 1. - HOW GPS RECEIVER DETERMINES ITS LOCATION



Source: (Introduction to GSM, 2013)

HOW ACCURATE IS THE GPS?

The accuracy of a position determined with GPS depends on the type of receiver. Most hand-held GPS units have about 10-20 meter accuracy. Other types of receivers use a method called Differential GPS (DGPS) to obtain much higher accuracy. DGPS requires an additional receiver fixed at a known location nearby. Observations made by the stationary receiver are used to correct positions recorded by the roaming units, producing an accuracy greater than 1 meter (Khondker, 2009).

TYPES OF VEHICLE TRACKING SYSTEM

Research according to Parade et al. (2011) indicates that Vehicle tracking system can be typically classified into passive tracking and active systems. Each of these utilizes the GPS technology and the satellite to get the vehicle's location but the mode by which the user gets the location information is what differs. For the purpose of this article, the active system will be used.

PASSIVE SYSTEMS

Passive tracking systems store information such as GPS location, vehicle speed, and can trigger events such as start/stop or ignition on/off. It is usually used by people who need to track mileage or monitor location stops. When a vehicle returns to a predetermined location, the tracking device's information is wirelessly sent to a host computer or it is removed from its location and plugged into a computer to view the information.

ACTIVE SYSTEMS

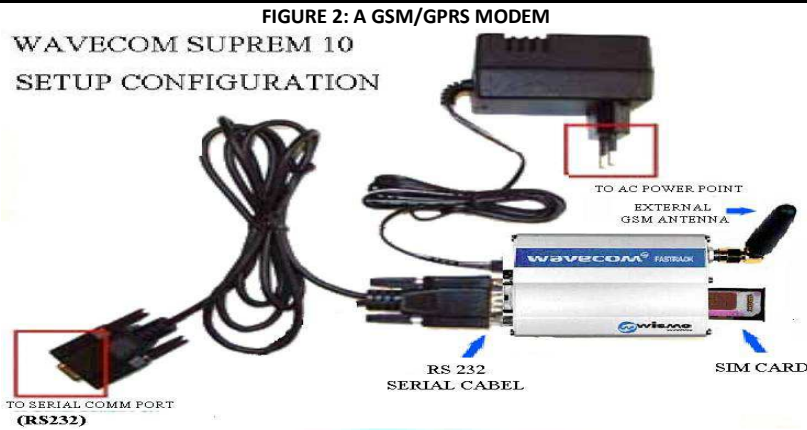
Active tracking systems generally collect the same information, but are more sophisticated than passive systems because they are enabled to work with cellular or satellite networks. Using these wireless networks, they are able to transmit data to a computer or data centre for further evaluation. They can also allow you to locate a vehicle live on a map and to do this you might be required to install a software onto your computer or create an account with a tracking company, when this is done you will be able to monitor a vehicle's direction and speed in real time.

The advantage of using this type of system is that it allows you to redirect vehicles and warn drivers about their speed as they progress along their journey. Additionally, these systems are commonly web-based so tracking data can be accessed from any capable device with an internet connection.

GSM/GPRS MODEM

A GSM modem is a wireless modem that works with a GSM wireless network. A wireless modem behaves like a dial-up modem. The main difference between them is that a dial-up modem sends and receives data through a fixed telephone line while a wireless modem sends and receives data through radio waves (How passive and active works, 2013).

Like a GSM mobile phone, a GSM modem requires a SIM card from a wireless carrier in order to operate as seen in fig 2.



Source: (How active and passive works, 2013)

DESIGN AND IMPLEMENTATION OF VEHICLE TRACKING SYSTEM

This article was aimed at developing an Automatic Vehicle Location system using GPS for positioning information and GSM/GPRS for information transmission with the following features:

- Acquisition of vehicle’s location information (latitude longitude) after specified time interval.
- Transmission of vehicle’s location and other information (including ignition status, door open/close status) to the monitoring station/Tracking server after specified interval of time.
- A Web based software to display all transmitted information to end user along with displaying location of vehicle on a map.

The objective of the paper was to build an additional feature to the present security system that will warn the owner of the vehicle by sending SMS when there has been an intrusion into the vehicle.

The system was designed to have two major units

- In-Vehicle unit
- Tracking Server/Monitoring Station.

The In-Vehicle unit is the major part of the system and it is installed into the vehicle. It is responsible for capturing the current location of vehicle, proximity sensors for parking assistance, vibration Sensors and ultrasonic Sensors for measuring the distance. It is also responsible for transmitting this information to the Tracking Server located anywhere in the world.

COST EFFECTIVE GPS – GPRS BASED OBJECT TRACKING SYSTEM

This article proposes and implements a low cost object tracking system using GPS and GPRS. The objective of this research is to reduce the cost of the tracking system using the latest technologies and also making it available to the common people.

The system allows a user to view the present and the past positions recorded of a target object on Google Map through the internet. The system reads the current position of the object using GPS, the data is sent via GPRS service from the GSM network towards a web server using the POST method of the HTTP protocol. The object’s position data is then stored in the database for live and past tracking (Ambade et al. 2011).

The system has two parts:

- The tracking device and
- The database server.

The device is attached with the moving object and it gets the position from GPS satellite in real-time.

DATA TRANSMISSION METHOD

The tracking device communicates with the server and the data is sent via GPRS service from the GSM network. The reason for this choice is because using GPRS is cheaper than using SMS.

It then sends the position information with the International Mobile Equipment Identity (IMEI) number as its own identity to the server. The data is checked for validity and the valid data is saved into the database. When a user wants to track the device, he logs into the service provider’s website and gets the live position of the device on Google Map. A custom report is also generated which includes a detailed description of the vehicles status. Users can also see the previous positions of the device as seen in the fig. 3.

FIGURE 3: A DIAGRAMMATIC REPRESENTATION OF HOW THE SYSTEM WORKS



Source: (Jennifer, 2013)

REAL TIME VEHICLE LOCKING AND TRACKING SYSTEM USING GSM AND GPS TECHNOLOGY-AN ANTI-THEFT SYSTEM

This project deals with the design & development of a theft control system for an automobile, which is being used to prevent/control the theft of a vehicle. The developed system makes use of an embedded system based on Global System for Mobile communication (GSM) technology. The designed & developed system is installed in the vehicle. An interfacing mobile is also connected to the microcontroller, which is in turn, connected to the brain box of the vehicle (Parade et al. 2011).

An AVR Microcontroller is interfaced to a GSM module, GPS Receiver and also to the vehicle locking system. The Microcontroller will keep listening for new SMS arrival. If a SMS arrives, it will check for authentication and after authentication is verified, it will read the GPS location and will send it to the user's cell phone in the form of SMS, also same information will be sent to a host pc. The PC will have a Visual Basic (VB) based application running on it. This will extract the SMS information from GSM modem or cell phone, and it will plot the latitudes and longitudes on the Google maps. For plotting on the Google maps pc must have an Internet connection. The vehicle can also be locked/ unlocked by sending a message to the system.

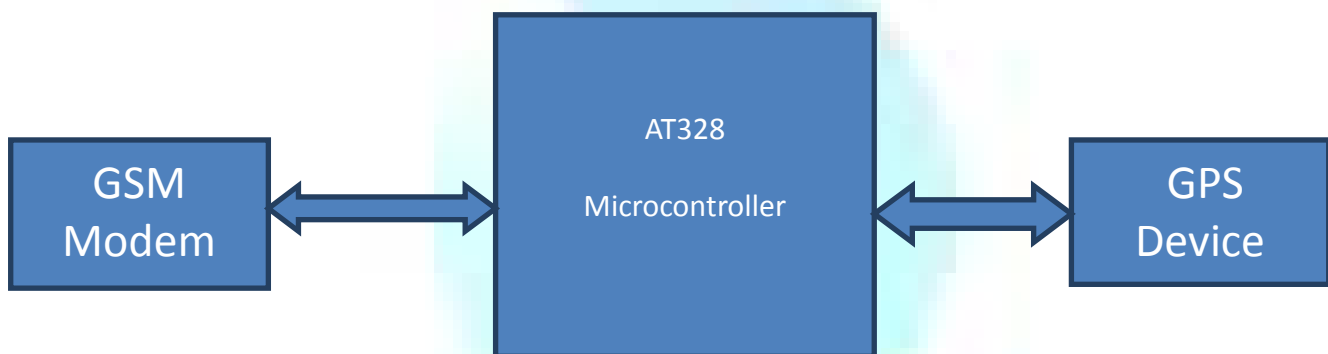
MICROCONTROLLER

The microcontroller is the central controller for the whole unit. In this article, the Arduino AT328 microcontroller is used for interfacing to the various hardware peripherals. The microcontroller will continuously monitor a moving vehicle and report the location status on demand. The AT328 is interfaced serially to a GSM Modem and GPS Receiver [6]. The microcontroller can be seen in fig 4.

Features of ArduinoATmega328 Microcontroller

- High Performance, Low Power AVR 8-bit Microcontroller
- Advanced RISC Architecture
- 131 Powerful Instructions – Most Single Clock Cycle Execution
- 32 X 8 General Purpose Working Registers
- Fully Static Operation
- Up to 20 MIPS Throughput at 20 MHz
- On-chip 2-cycle Multiplier
- High Endurance Non-volatile Memory Segments
- Write/Erase Cycles: 10,000 Flash/100,000 EEPROM
- Data retention: 20 years at 85°C/100 years at 25°C
- Optional Boot Code Section with Independent Lock Bits

FIGURE 4: BLOCK DIAGRAM OF MICROCONTROLLER.



Source: (History of vehicle tracking, 2013)

TABLE 1: SUMMARY OF THE FEATURES OF ARDUINO BOARD

Microcontroller	ATmega328
Operating Voltage	5V
Input Voltage (recommended)	7-12V
Input Voltage (limits)	6-20V
Digital I/O Pins	14 (of which 6 provide PWM output)
Analog Input Pins	6
DC Current per I/O Pin	40 Ma
DC Current for 3.3V Pin	50 Ma
Flash Memory	32 KB (ATmega328) of which 0.5 KB used by bootloader
SRAM	2 KB (ATmega328)
EEPROM	1 KB (ATmega328)
Clock Speed	16 MHz

OPERATIONAL PROCEDURES

The Arduino Uno has a number of facilities for communicating with a computer, another Arduino, or other microcontrollers. The ATmega328 provides UART TTL (5V) serial communication, which is available on digital pins 0 (RX) and 1 (TX). An ATmega16U2 on the board channels this serial communication over universal serial bus (USB) and appears as a virtual com port to software on the computer. The '16U2 firmware uses the standard USB COM drivers, and no external driver is needed. However, on Windows, an inf file is required. The Arduino software includes a serial monitor which allows simple textual data to be sent to and from

the Arduino board. The RX and TX LEDs on the board will flash when data is being transmitted via the USB-to-serial chip and USB connection to the computer (but not for serial communication on pins 0 and 1).

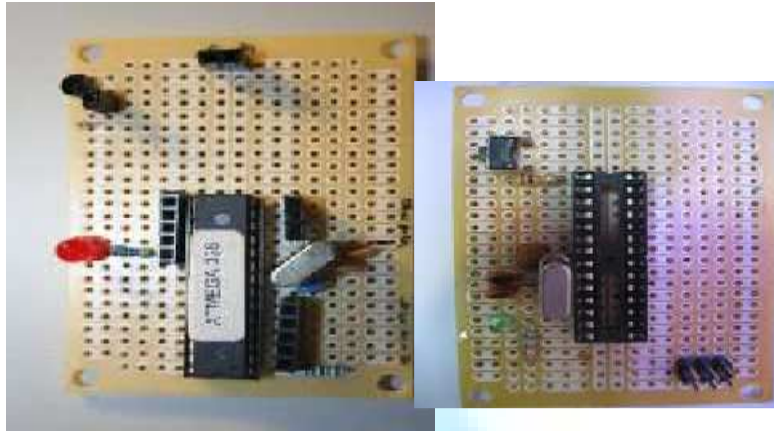
The Software Serial library allows for serial communication on any of the Uno's digital pins.

The ATmega328 also supports I2C (TWI) and SPI communication. The Arduino software includes a Wire library to simplify use of the I2C bus.

16MHZ CRYSTAL RESONATOR

The crystal resonator is connected to Pins 9 and 10 of the Microcontroller. It is responsible for clocking the microcontroller at 16Mhz. The resonator is seen in fig. 5.

FIG 5– 16MHZ CRYSTAL RESONATOR INTERFACED TO A MICROCONTROLLER BOARD



Source: (History of vehicle tracking, 2013)

POWER SUPPLY

The power source of the tracker will be a 9v battery or 12v from the vehicle battery which will be eventually regulated to 5v which is the voltage rate of the circuit.

TRACKING SERVER TOOLS

AT COMMANDS

AT commands are instructions used to control a GSM modem. In this project, AT commands are used to control the GSM modem connected to PC serving as the tracking server and also the GSM/GPRS module in the tracker. Attention (AT) and every command line starts with AT or at that is why modem commands are called AT commands. The starting AT is the prefix that informs the modem about the start of a command /line. It is not part of the AT command name. For example, D is the actual AT command name in ATD, and +CMGS is the actual AT command name in AT+CMGS.

REVERSE GEOCODING

Geocoding refers to translating a human-readable address into a location on a map. The process of doing the converse, translating a location on the map into a human-readable address, is known as reverse geocoding.

For example, the following query contains the latitude/longitude value for a location in Abuja:

<http://maps.googleapis.com/maps/api/geocode/json?latlng=09.045020,007.405295&sensor=true>

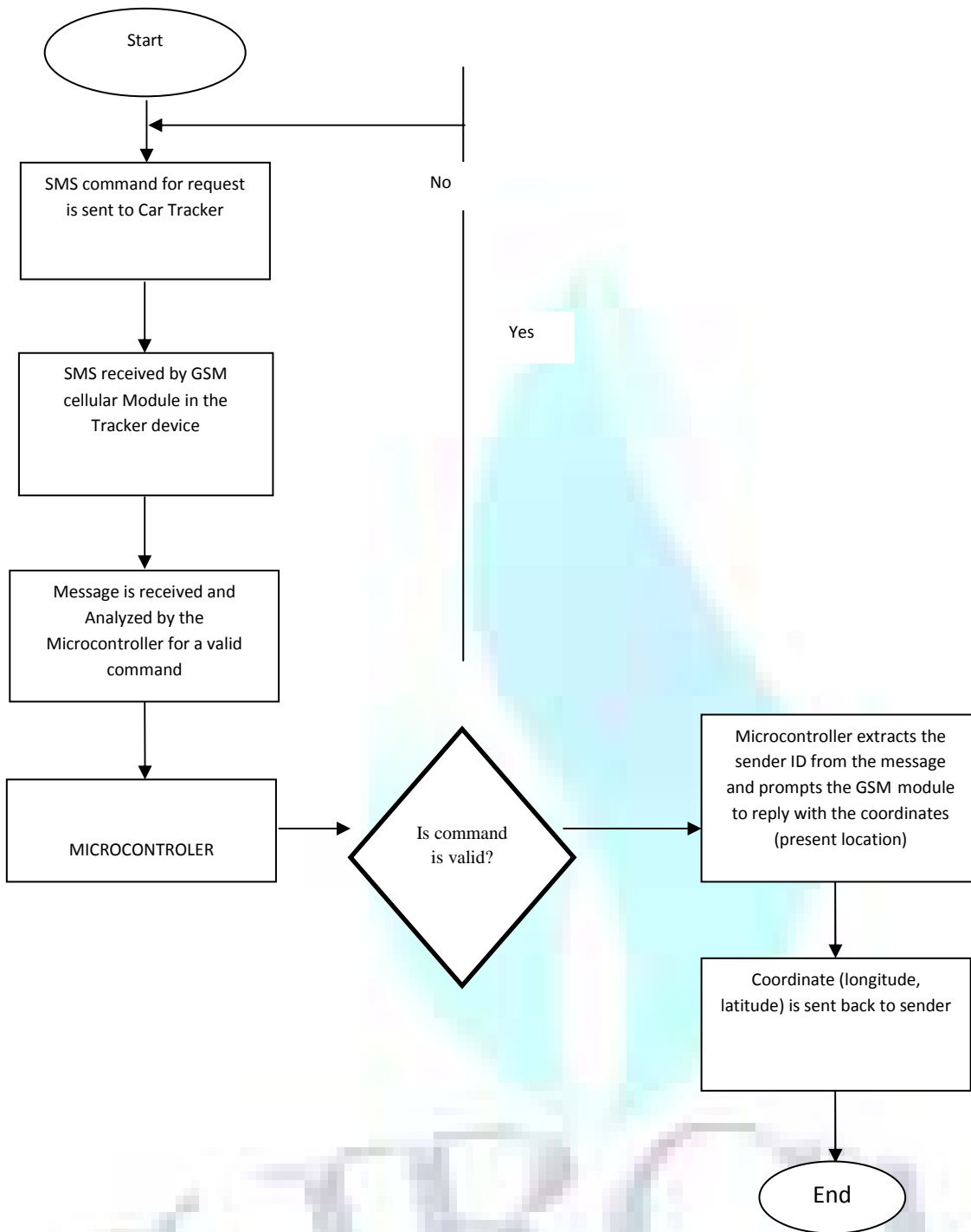
Results of the possible addresses:

- Nnamdi Azikiwe Expy, Abuja, Nigeria
- Citec Estate, Abuja, Nigeria
- Abuja Capital Territory, Nigeria
- Nigeria

The resulting addresses are not just postal addresses, but any way to geographically name a location. For example, when geocoding a point in a city, the geocoded point may be denoted as a street address, as the city, as its state or as a country. The reverse geocoder returns any of these types as valid results. The reverse geocoder matches political entities (countries, provinces, cities and neighbourhoods), street addresses, and postal codes.

Generally, addresses are returned from most specific street address to least specific address. The more exact address is the most prominent result. Reverse geocoding is usually an estimate. The geocoder attempts to find the closest addressable location within a certain tolerance; if no match is found, the geocoder returns zero results.

FLOW CHART OF THE REAL-TIME VEHICLE TRACKING SYSTEM

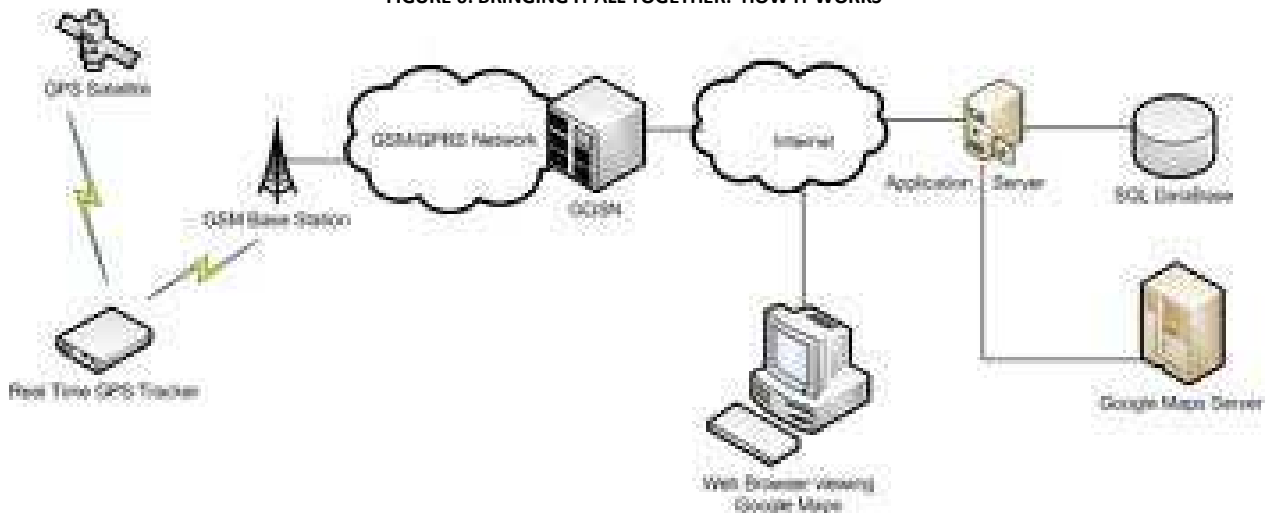


Source: Research article, 2013

OPERATIONAL METHODS

An SMS command is sent to the tracker; the microcontroller receives this message from the serial line via the Tx pin of the Cellular Module. Meanwhile, at all times, the GPS module is continuously picking up locations (longitude and latitude) from the satellites. The microcontroller parses the stream of NMEA data returning from the GPS module and extract out the Longitude and Latitude and send an SMS to the sender's phone number as seen in fig. 6.

FIGURE 6: BRINGING IT ALL TOGETHER: HOW IT WORKS



Source: (Introduction to GSM/GPRS Wireless modem, 2013)

SUMMARY AND CONCLUSION

The main objective of the article is to know the precise location of the vehicle at a particular time with the help of the main parts of the tracking device, which includes the in-vehicle unit, and a PC based application. This objective was achieved by the successful review and analysis of different related works and by meticulously scrutinizing different method of design of a car tracking device together with its properties.

The paper is written in such a way that it allows us to understand the different components used in making a car tracking device and also the principles behind them such as longitude, latitude, GPS, GSM communication amongst others.

In conclusion, we can gather that it is very necessary to give our car adequate protection because it is quite valuable and for this to be guaranteed, we encourage owners/users to invest on real time car tracking system.

RECOMMENDATION

This research has not reach it peak point, better technology could still be applied by writing codes that is capable of either switching off the ignition or activate an alarm system.

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PERFORMANCE EVALUATION OF MANET ROUTING PROTOCOLS WITH SCALABILITY FOR E-MAIL THROUGHPUT TRAFFIC USING OPNET MODELER

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ABSTRACT

Mobile ad hoc network is a collection of wireless nodes that can dynamically be set up anywhere and anytime to exchange information without using any pre-existing network infrastructure. It is a self organized and self configurable network where the mobile nodes move randomly. In MANET mobile nodes can receive and forward packets as a router and each node operates not only as an end system, but also as a router to forward packets. The nodes are free to move i.e. the nodes are mobile. These nodes change position frequently. So there is no fixed infrastructure, which results in addition and exclusion of any number of nodes from the network for relatively small networks routing protocols may be sufficient. However, in larger networks either hierarchical or geographic routing protocols are needed. In this Thesis three routing protocols AODV (Ad- Hoc On-Demand Distance Vector), OLSR (Optimized Link State Routing Protocol) and DSR (Dynamic Source Routing Protocol) are compared. Most of the previous research on MANET routing protocols have focused on simulation study by varying various parameters, such as network size, pause times etc. The performance of these routing protocols is analyzed with Scalability for E-Mail in terms of their Throughput Traffic and their results are shown in graphical forms. The comparison analysis will be carrying out about these protocols and in the last the conclusion will be presented, that which routing protocol is the best one for mobile ad-hoc networks.

KEYWORDS

Mobile Ad-hoc Network, Performance Analysis, Routing Protocols, AODV, DSR, OLSR, OPNET MODELER 14.5.

I. INTRODUCTION

MANET is a dynamic distributed system [1], in which wireless devices with limited energy can move arbitrary. In this network, nodes communicate without any fixed infrastructure. MANET is a self-configurable network and nodes are free to move randomly, so topology may change and this event is unpredictable [6]. According to these characteristics, routing is a critical issue and we should choose an efficient routing protocol to makes the MANET reliable [10].

The most popular routing protocols [1] in MANET are AODV (reactive), DSR (reactive), OLSR (proactive) and GRP (hybrid). Reactive protocols find the routes when they are needed. Proactive protocols are table driven protocols and find routes before they need it. And finally hybrid routing protocols offer an efficient framework that can simultaneously draw on the strengths of proactive and reactive routing protocols.

In this paper, we focus on four MANET routing protocols, AODV, OLSR, DSR and GRP. We consider four parameters to evaluate the performance of these routing protocols: End-to-end delay, network load, throughput and media access delay. The organization of the paper is as follows. We explain routing protocols in section 2, related works are discussed in section 3, section 4 explains the experiment and performance analysis, our simulation result presented in section 4 and finally section 5 concludes the paper.

II. ROUTING PROTOCOLS IN MANETS

Three routing protocols are considered in this paper, namely; DSR, AODV and OLSR. Below is a brief description of each protocol:

A. DSR – Dynamic Source Routing (DSR)

DSR is a reactive routing protocol that discovers and maintains routes between nodes. In the route discovery, DSR floods Route Request Packet to the network. Each node that receives this packet, first add its address to it and then forwards the packet to the next node. When the targeted node or a node that has route to the destination receives the Route Request, it returns a Route Reply to the sender and a route is established. Each time a packet follows an established route, each node has to ensure that the link is reliable between itself and the next node. In the Route maintenance, DSR provides three successive steps: link layer acknowledgment, passive acknowledgment and network layer acknowledgment. When a route is broken and one node detects the failure, it sends a Route Error packet to the original sender [1, 5].

B. Optimized Link State Routing (OLSR)

OLSR is a table driven protocol. It usually stores and updates its routes so when a route is needed, it present the route immediately without any initial delay. In OLSR, some candidate nodes called multipoint relays (MPRs) are selected and responsible to forward broadcast packets during the flooding process. This technique reduces the overhead of packet transmission compared to flooding mechanism [1]. OLSR performs hop-by-hop routing, where each node uses its most recent routing information to route packets. MPR's is made in a way that it covers all nodes that are two hops away (i.e. neighbors of the neighbors). A node senses and selects its MPR's with control messages called HELLO messages. Hello messages are used to ensure a bidirectional link with the neighbor. HELLO messages are sent at a certain interval. Nodes broadcast "TC" or Topology control messages to determine it's MPRs [11].

C. Ad Hoc on-Demand Distance Vector Routing (AODV)

AODV provides on-demand route discovery in MANET. Whenever the nodes need to send data to the destination, if the source node doesn't have routing information in its table, route discovery process begins to find the routes from source to destination. Route discovery begins with broadcasting a route request (RREQ) packet by the source node to its neighbors. RREQ packet comprises broadcast ID, two sequence numbers, the addresses of source and destination and hop count. The intermediary nodes which receive the RREQ packet could do two steps: If it isn't the destination node then it'll rebroadcast the RREQ packet to its neighbors. Otherwise it'll be the destination node and then it will send a unicast replay message, route replay (RREP), directly to the source from which it was received the RREQ packet. A copied RREQ will be ignored. Each node has a sequence number. When a node wants to initiate route discovery process, it includes its sequence number and the most fresh sequence number it has for destination. The intermediate node that receive the RREQ packet, replay to the RREQ packet only when the sequence number of its path is larger than or identical to the sequence number comprised in the RREQ packet. A reverse path from the intermediate node to the source forms with storing the node's address from which initial copy of RREQ. There is an associated lifetime value for every entry in

the routing table. Suppose that some routes are not applied within their lifetime period, so these routes are expired and should be dropped from the table. But if routes are used, the lifetime period is updated so those routes are not expired. When a source node wants to send data to some destination, first it searches the routing table; if it can find it, it will use it. Otherwise, it must start a route discovery to find a route [1]. It is also Route Error (RERR) message that used to notify the other nodes about some failures in other nodes or links [9].

III. RELATED WORKS

1. Behavioural study of MANET Routing Protocols [2]

Amandeep Makkar et al, in their paper, "Behavioural study of MANET Routing Protocols" presented a behavioral study of different MANET routing protocols i.e. Optimized Link State Routing (OLSR), Destination Sequenced Distance vector (DSDV), Dynamic Source Routing (DSR), Ad hoc On-demand Distance Vector (AODV) and Temporally Ordered Routing Protocol (TORA) protocols, have been carried out to identify which protocol is most suitable for efficient routing over Mobile Ad hoc Network (MANET). This paper provides an overview of these routing protocols and then makes their comparative analysis so to analyze their performance, which is important for identifying which protocol is best suitable for MANET and how the performance of that protocol can be further improved.

2. On MANET Routing protocols for Mobility and Scalability[4]

Ashish Shrestha and Firat tekiner, in their paper "On MANET Routing protocols for Mobility and Scalability", presented a performance comparison of the reactive and proactive MANET routing protocols, namely AODV, DSR, TORA and OLSR in a varying network sizes with increasing area and nodes size. The main issue of MANET is the breakage of link at certain moment and re-generation of link at certain state as it consists of routers which are mobile in nature. Therefore performance comparison is done by using the simulator OPNET Modeler 14.5, to investigate the mobility and scalability of the routing protocols. Throughput was considered as the main factor for comparison because it is the actual rate of data received successfully by nodes in comparison to the claimed bandwidth. AODV and OLSR performed pretty well showing average performance throughout the simulation.

3. Performance Evaluation of Routing Protocols in MANET with different traffic loads [8]

Laxmi Shrivastava et al, in their paper "Performance Evaluation of Routing Protocols in MANET with different traffic loads" described, as the network size changes, the control overhead and traffic loads will automatically change. The performance of the routing protocols in MANETs degrades with increasing traffic load. This paper present observations regarding the performance comparison of reactive and proactive protocols for varying traffic load in mobile ad hoc networks (MANETs). The general observation from simulation (NS-2) is that DSR has performed well compared to AODV and DSDV in the situation of heavy traffic load.

4. Scalability of Routing in MANET [10]

Prashant Singh and D.K. Lobiya in their paper "Scalability of Routing in MANET" described that because of the multihop nature of the ad hoc networks, the scalability of MANETs is directly related to the routing protocol. The scalability is subject to the fundamental limitation imposed by the multi-hop nature of MANETs. In this paper, simulations are conducted to investigate scalability of DSR, AODV, and LAR routing protocols using prediction based link availability model. This also proves that whether link prediction model also adds up to the scalability of routing protocol. From simulation results (GloMoSim), it is clear that performance of routing is improved due to link prediction model and the protocols are scalable with the model.

5. Scalability Improved DSR Protocol for MANETs [9]

M. Tamilarasi et al, in their paper, "Scalability Improved DSR Protocol for MANETs" described a technique to improve the performance of the DSR protocol. As reactive Dynamic Source Routing (DSR) Protocol is a commonly applied protocol in Mobile Ad hoc networks, when the network size is increased, it is observed that the overhead is also getting increased due to the source routing nature of DSR and this in turn reduces the efficiency of DSR protocol. In order to improve the scalability of DSR, in this paper, a modification is proposed for DSR. In Modified Dynamic Source Routing (MDSR) protocol, the number of RREPs are limited to only one. This reduces the overhead by restricting the multiple RREPs. Simulation results (GloMoSim) show that the modified DSR (MDSR) has less overhead and delay compared to conventional DSR irrespective of network size.

6. Scalability study of ad-hoc wireless mobile network routing protocol in sparse and dense networks [7]

Hean Kuan Ong et al, in their paper "Scalability study of ad-hoc wireless mobile network routing protocol in sparse and dense networks" presented a detailed study of scalability of the ad hoc routing protocols towards sparse networks, dense networks and combination of sparse and dense networks. Two different categories of ad-hoc wireless networks is used to evaluate how scalable they are for various scenarios. By using Network Simulator (ns-2), simulation of two selected routing protocols DSDV and AODV is conducted to analyze the various factors that cause the routing performance to degrade in large-scale networks. The result shows that data delivery ratio decreases as the network size increases. The scalability reduces in sparse network even though there is less overhead.

7. Analysis of Scalability in MANET's Protocols [11]

Roxana Zoican, in his paper "Analysis of Scalability in MANET's Protocols" presented an architectural framework for a service discovery protocol for MANETs, which is based on the homogenous and dynamic deployment of cooperating directories within the network. In modern applications, group communication is more important. Multicasting provides necessary services for group communication in such type of applications. With the increasing number of nodes, scalability issue in multicasting of Mobile Ad hoc Network is still an open problem. This paper analyzed a scalable service discovery protocol aimed at MANETs, composed of up to a hundred of nodes, and further supporting bridging with other networks, either ad hoc or infrastructure-based. The solution was evaluated through simulation, which shows the efficiency of the analyzed protocol.

8. A Coding-Based Routing for Scalable MANET [5]

Bo Ryu et al, in their paper "A Coding-Based Routing for Scalable MANET" presented a special approach for routing in the MANETs which can increase the scalability of the network in terms of number of nodes and number of hops. The drawbacks of the traditional routing protocols are also described. Then the comparison is made between the traditional protocols and the protocols whose basic principle depend upon the new approach proposed. It is claimed that the new protocols are likely to be inherently scalable, robust and efficient. Preliminary simulation results show considerable performance gain over legacy MANET routing approach.

9. Towards Scalable MANETs [6]

E. Baccelli and J. Schiller, in their paper "Towards Scalable MANETs" described, in the near-future, self-organized networking is becoming an important component in the Internet architecture. A big challenge concerning the integration of this new component is the accomplishment of scalable and efficient mobile ad hoc routing. This paper overviews considerations relative to the design of such MANET protocols inside the framework provided by the IETF, stating the need for new hybrid protocols and architecture which offer a gradual transition from "traditional" MANET routing towards scalable MANET routing integrated in the Internet. This paper also proposes a DHT-OLSR protocol, based on OLSR, enhanced with dynamic clustering and distributed hash table routing. The protocol uses key-based unicast routing to scale to very large MANET topologies.

IV. EXPERIMENT DESIGN AND PERFORMANCE ANALYSIS

In this paper, we have nine different scenarios in OPNET modeler 14.5. In each scenario, we apply a various routing protocol. Comparisons have been made between AODV, DSR and OLSR protocols. Table 1 shows the simulation Parameters of scenarios containing 20 mobile nodes, 40 mobile nodes and 100 mobile nodes operating at Data Rate 11Mbps. Each scenario was run for 2.3 minutes. We considered there parameters for the evaluation; Network delay, network load and Network throughput. In each figure from Fig. 2 to Fig. 6, the horizontal axis shows the simulation time in hour and minute format, and the vertical axis represent one of the five parameters (delay, network load, throughput, media access delay and load).

TABLE 1: SIMULATION PARAMETERS

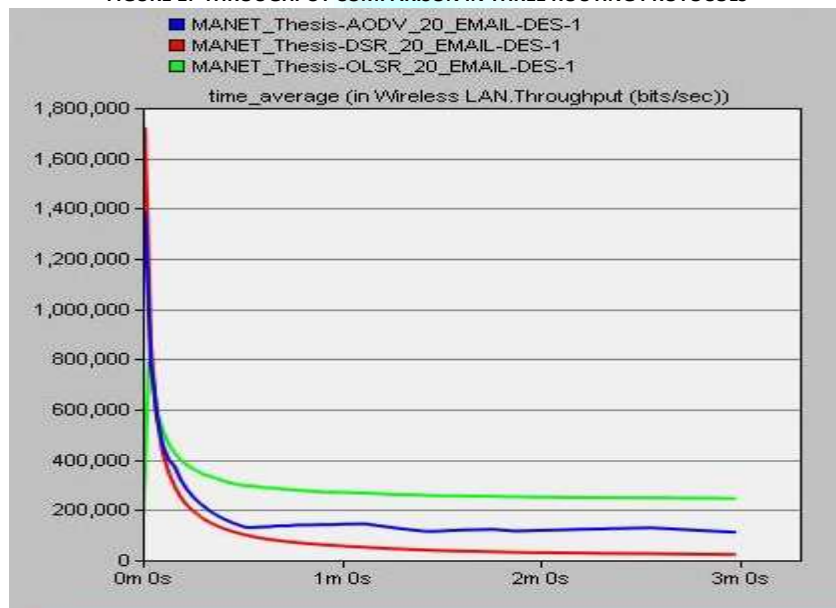
Attribute	Value
Maximum Simulation Time	150 sec
Interface Type	Wireless(ad-hoc)
Mobility Model	Random Way Point
Data Rate(bps)	11Mbps
Transmit Power(W)	0.020
Buffer Size(bits)	1024000
No. of Nodes	20,40,100
Pause Time	200 sec
Protocols	DSR, AODV, OLSR
Traffic Generation Application	E-Mail

V. SIMULATION RESULTS

A. Throughput for 20 nodes:

Fig. 1 show that overall throughput for 20 nodes in OLSR is the highest, in AODV is higher than DSR and in DSR, we have the minimum throughput.

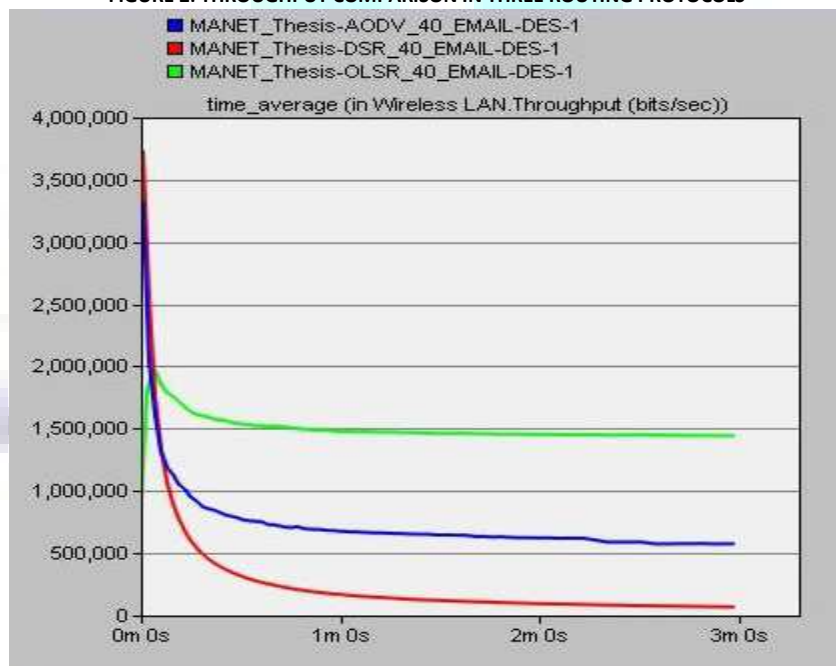
FIGURE 1: THROUGHPUT COMPARISON IN THREE ROUTING PROTOCOLS



B. Throughput for 40 nodes:

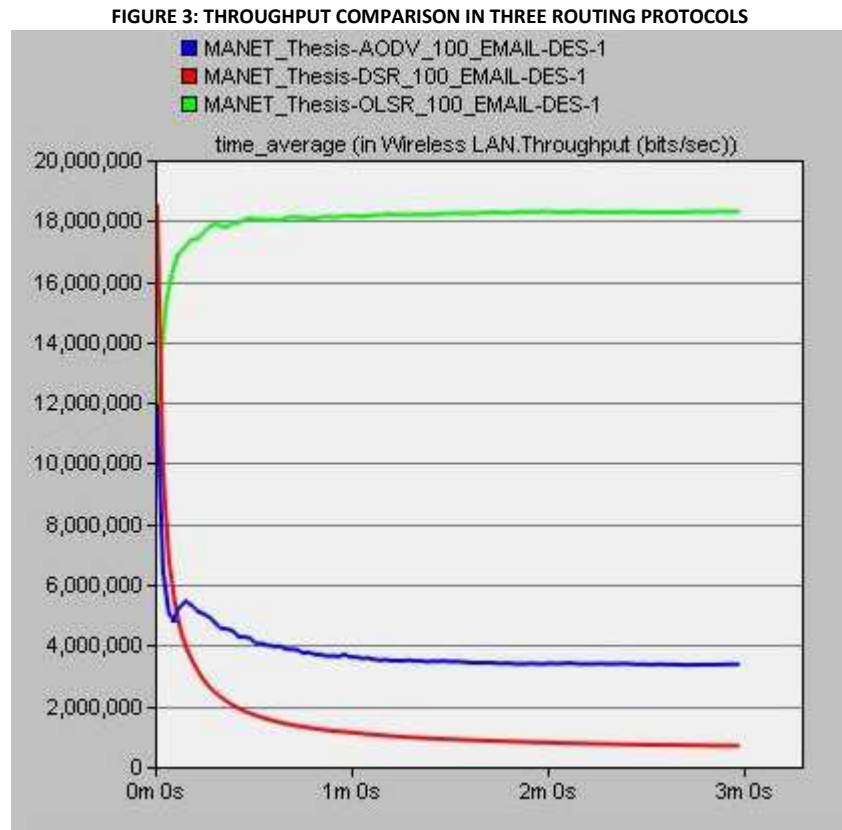
Fig. 2 show that overall throughput for 40 nodes in OLSR is the highest, in AODV is higher than DSR and in DSR, we have the minimum throughput.

FIGURE 2: THROUGHPUT COMPARISON IN THREE ROUTING PROTOCOLS



C. Throughput for 100 nodes:

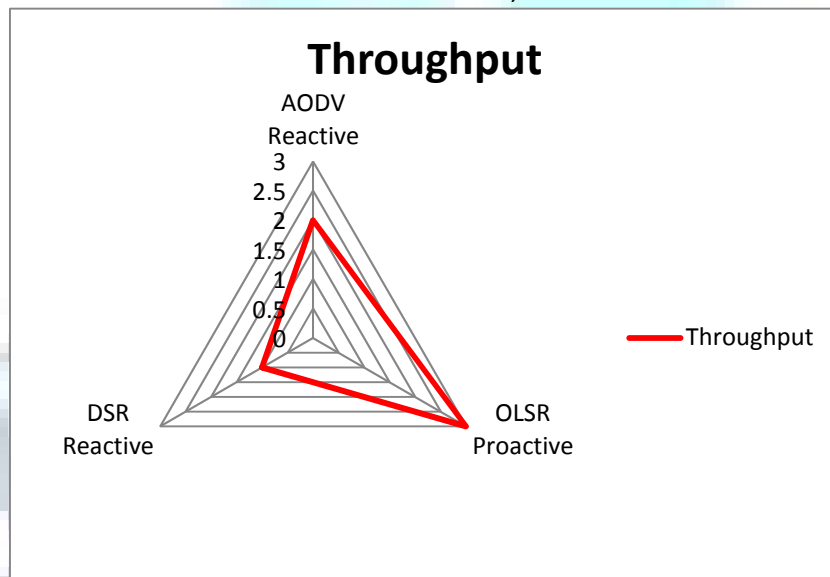
Fig. 3 show that overall throughput for 100 nodes in OLSR is the highest, in AODV is higher than DSR and in DSR, we have the minimum throughput.



D. Overall throughput evaluation:

We can also present performance metrics with KIVIAT diagram. This diagram helps us in quick identification of performance evaluation. We consider the obtained value of three MANET Routing Protocols; AODV, OLSR and DSR. According to Fig. 4, we can conclude that OLSR and AODV perform better than DSR, because of their values in this diagram.

FIGURE 4: KIVIAT DIAGRAM WITH "THROUGHPUT" FOR AODV, OLSR AND DSR ROUTING PROTOCOLS COMPARISON



VI. CONCLUSION

In this paper, Scalable performance of AODV, OLSR, and DSR were evaluated, using OPNET modeler 14.5. We summarized the results in table 2. Numbers used in this table show the best to worst choice in selecting routing protocols. Number "3" represents the best protocol, and number "1" shows the worst one.

TABLE 2: COMPARISON BETWEEN MANET ROUTING PROTOCOLS

Routing Protocol	Reactive/ Proactive	Throughput
AODV	Reactive	2
OLSR	Proactive	3
DSR	Reactive	1

From the above table, we can see that, DSR is the worst choice when we consider Throughput. Best and Average values belong to OLSR and AODV. In summary, we can say that OLSR perform better than others and DSR is the worst routing protocol here.

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DETAILED INVESTIGATION OF RESIDENTIAL SATISFACTION IN APARTMENT'S MANAGEMENT SERVICE

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ABSTRACT

The purpose of this research is to investigate the residential satisfaction of apartment management service. Simple random sampling was carried out. Questionnaires were collected from 105 respondents. Data required was collected from apartment residents of Chennai city. Analysis was done through ANOVA. Taking the age factor into consideration, it is proven that below 30 age group respondents are highly satisfied when compared to above 50 age group respondents.

KEYWORDS

Residential Satisfaction, Apartment Satisfaction.

INTRODUCTION

owning a house is the dream of every individual. Consequently, apartment culture is attaining a greater importance in the present scenario. Management of the apartment plays a significant role in residential satisfaction.

Most new homes already include a wide variety of innovative features, which leaves only quality of service to set a builder apart from others offering similar homes in similar markets. Large builders of new home construction typically have internal sales personnel that play the role of the real estate agent. These real estate agents represent the builder and they are the first point of contact for potential home buyers. Thus, home builders face a critical challenge – the need to thoroughly understand and define home buyers' needs for high-quality service, to better prepare their personnel. Regrettably, many home builders do not recognize this need, and their present business processes do not support it (NAHB, 2003).

Although much research has been done regarding home-buyer satisfaction with their house and builders' service, there is still a gap between builders' and home buyers' perception of quality (Torbica and Stroh, 2001; Bashford *et al.*, 2002). Torbica and Stroh (2001) showed that satisfaction with service is the most important component shaping overall home-buyer satisfaction and that service is the area in which builders demonstrated the poorest performance. Thus, builders need to identify and understand buyer needs in order to constantly improve service.

REVIEW OF LITERATURE

Isabelina Nahmens (2009), observed the customer satisfaction with service quality and home-buyer expectations and their perceptions of service quality. The target groups of his study were buyers of single family houses built during calendar year 2001 in five counties in central Florida and data collected on late June 2003 and lasted until August 2003. Under the single family group they have selected randomly 150 samples. Researcher has identified five dimensions of service quality namely appearance, reliability, timeliness, knowledge and empathy. It is observed that the influence of these variables on customer satisfaction with service quality can positively impact home builders through improved reputation and increased local referrals.

While customer satisfaction studies have not been undertaken in the construction industry, the housing industry has conducted such studies. Most of these studies have been undertaken to characterize the relationship between the customer (owner) and the construction companies. Compared with the notable scarcity of investigations concerning customer satisfaction in the field of construction, a rapidly growing number of studies in the service industries have been published over the past few years. The results of the studies demonstrate strong correlation between customer satisfaction, or service quality, and economic returns (Holm 2000).

According to Parasuraman *et al.* (1988), service quality can be defined as an overall judgment similar to attitude towards the service and generally accepted as an antecedent of overall customer satisfaction (Zeithaml and Bitner, 1996). Parasuraman *et al.* (1988) have defined service quality as the ability of the organization to meet or exceed

RESEARCH METHODOLOGY

The developed questionnaire was circulated among apartment purchasers for their personal usage. The questionnaire consists of 18 questions and is divided into two parts. The first part of the questionnaire includes satisfaction, reliability, timeliness, knowledge and empathy. The second part consists of general information of the respondents, such as age, gender, occupations, number of family members and household income. 200 samples were circulated and 105 were received with full response and the remaining were disqualified due to biased information

ANALYSIS AND DISCUSSIONS**TABLE 1: OVERALL SATISFACTION WITH RESPECT TO AGE****DESCRIPTIVE****OVERALL SATISFACTION**

	N	Mean	Std. Deviation	Std. Error	F	Sig.
below 30	10	3.40	1.265	.400		
31- 40	40	2.88	.911	.144		
41-50	44	3.39	1.298	.196	1.472	0.227
above 50	11	3.18	1.401	.423		
Total	105	3.17	1.180	.115		

Table shows ANOVA for overall satisfaction with respect to age. In order to find the significant difference among the respondents with respect to their age, ANOVA were performed and the result implies that there is no significant difference exists among the respondents with respect to their age towards overall satisfaction ($F=1.472$; $p=0.227$). Taking into consideration the respondents based on their age groups, there is no contrast in opinion towards their overall satisfaction.

TABLE 2: RELIABILITY WITH RESPECT TO AGE: DESCRIPTIVE: RELIABILITY

	N	Mean	Std. Deviation	Std. Error	F	Sig.
below 30	10	3.40	2.066	.653		
31- 40	40	2.63	1.547	.245		
41-50	44	2.34	1.293	.195	4.615	0.005
above 50	11	1.18	.603	.182		
Total	105	2.43	1.505	.147		

Table explains the significant difference among the respondents reliability with respect to their age, ANOVA result implies that there is significant difference exists among the respondents with respect to their age towards service reliability ($F=1.472$; $p=0.005$). That is, the opinion of below 30 age respondents (Mean=3.40, S.D=2.066) is significantly different from above 50 age (Mean=1.18, S.D=0.603), Satisfaction towards service reliability is greater among the below 30 age group respondents when compared to the above 50 age group respondents.

TABLE 3: TIMELINESS WITH RESPECT TO AGE: DESCRIPTIVE: TIMELINESS

	N	Mean	Std. Deviation	Std. Error	F	Sig.
below 30	10	4.00	.000	.000		
31- 40	40	3.53	.506	.080		
41-50	44	3.30	1.212	.183	2.812	0.043
above 50	11	3.91	.302	.091		
Total	105	3.51	.878	.086		

Table proves ANOVA for timeliness with respect to age. In order to find the significant difference among the respondents with respect to their age, ANOVA result implies that there is significant difference exists among the respondents with respect to their age towards service Timeliness ($F=2.812$; $p=0.043$). That is, the opinion of below 30 age respondents (Mean=4.00, S.D=0.000) is significantly different from 41 to 50 age respondents (Mean=3.30, S.D=1.212), Below 30 age group respondents are more satisfied with the service timeliness when compared to the 41 to 50 age group respondents.

TABLE 4: KNOWLEDGE WITH RESPECT TO AGE: DESCRIPTIVE: KNOWLEDGE

	N	Mean	Std. Deviation	Std. Error	F	Sig.
below 30	10	4.00	.000	.000		
31- 40	40	3.08	1.207	.191		
41-50	44	3.50	1.406	.212	2.270	0.085
above 50	11	3.00	.000	.000		
Total	105	3.33	1.206	.118		

Table explains ANOVA for Service knowledge with respect to age. In order to find the significant difference among the respondents with respect to their age, ANOVAs result implies that there is no significant difference exists among the respondents with respect to their age towards service knowledge ($F=2.270$; $p=0.085$). Most of the age group respondents don't have any difference in opinion regarding the fact that there is adequate and good service knowledge.

TABLE 5: EMPATHY WITH RESPECT TO AGE: DESCRIPTIVE: EMPATHY

	N	Mean	Std. Deviation	Std. Error	F	Sig.
below 30	10	3.80	1.932	.611		
31- 40	40	2.53	.987	.156		
41-50	44	2.50	1.321	.199	3.410	0.020
above 50	11	3.09	1.375	.415		
Total	105	2.70	1.324	.129		

Table demonstrates ANOVA for empathy with respect to age. In order to find the significant difference among the respondents with respect to their age, ANOVA result implies that there is significant difference exists among the respondents with respect to their age towards service empathy ($F=3.410$; $p=0.020$). That is, the opinion of below 30 age respondents (Mean=3.80, S.D=1.932) is significantly different from 41 to 50 age respondents (Mean=2.50, S.D=1.321), When considering the variable, service empathy, satisfaction level is high among the below 30 age group respondents when compared to the 41 to 50 age group respondents.

FINDINGS AND CONCLUSION

Respondents do not differ in their opinion towards overall satisfaction, irrespective of their age group. The opinion of below 30 age group respondents is significantly different from above 50 age group respondents, which means that the below 30 age group respondents are satisfied with the service reliability compared to 50 age group respondents. Below 30 age group respondents are satisfied with the service timeliness compared to 41 to 50 age group respondents. They do not differ in their opinion towards service knowledge also. Regarding service empathy satisfaction is considerable among below 30 age group respondents when compared to the 41 to 50 age group respondents. To conclude, real estate sector especially in apartment purchase, the consumers' satisfaction is critical and essential. The real estate corporate has to concentrate on discovering the various factors for customers' satisfaction. Research is done in this paper only about the management service of apartments and its impact on residential satisfaction. Other feature like, how management conflicts have its impact on residential satisfaction among apartment resident and so on are not done in this paper. Still more researches are required to be done on these features.

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A STUDY ON THE PSYCHOLOGICAL IMPACT OF REDUNDANCY ON SURVIVORS**S.SOWJANYA****ASST. PROFESSOR****RAJEEV GANDHI MEMORIAL COLLEGE OF ENGINEERING & TECHNOLOGY****NANDYAL****ABSTRACT**

The challenging economic times facing many countries over the last few years has resulted in many changes as like making redundancies. Whilst this clearly has major impact on those being made redundant, there also impacts for those left behind. The impact on those remaining can also be traumatic and can further hinder a company's ability to survive if not managed effectively. 'Survivor Syndrome' describes the physical and psychological impact of redundancies on the remaining staff that who does not lose their jobs. Redundancies often come with survivor syndrome and form massive downsizing to just one or two employees; redundancies have a negative effect on the workforce. For the 'survivors' there needs to be strategies and measures in place to restore the work place back to its previous state or at least a state of optimum productivity and engagement.

KEYWORDS

Layoff, Productivity, Redundancy, Survivors, Survivor Syndrome.

APPROACH

This article is related to the survivors who feel insecure by the adoption of layoffs in the organization and the impact on productivity. When redundancy becomes necessary quite rightly the initial focus is on those being let go. Yet all too often little consideration is afforded to those who remain. Employees wonder if that's more to come and some will consider leaving before they're forced out. Those who are left have to cope with the range of emotions from guilt to survivor's envy to resentment, emotional contagion and uncertainty that can result from layoffs. The trouble with corporate restructuring or downsizing is not simply that firms are overdoing it, cutting staff to the point of 'corporate anorexia'. Nor is it simply those greedy companies are fattening their profits at the expense of laid-off employees. The fundamental problem with corporate restructuring as it is practised today – as non-going strategy even in profitable times, rather than as an emergency move – is that it is based on a flawed vision of that makes people and organizations work well. It creates an unhealthy culture in the workplace, and sooner or later we are all going to pay.

INTRODUCTION

Organizational change in the form of reorganizations, downsizing and mergers are a part of everyday life for today's business community. The ability of organizations to manage change quickly, positively and productively leads to competitive advantage. In these changing organizations, there are three categories of people, those who will not lose their jobs, those who may lose their jobs and those who will lose their jobs. The first two categories are referred to as "survivors". Excessive downsizing experiences create a new psycho-social problem: "survivor syndrome".

OBJECTIVES OF THE STUDY

- To explore the concept of 'Survivor Syndrome'
- To study the present perception of survivors
- To identify the psychological impact on survivors
- To give suggestions for effective implementation of redundancy strategy

METHODOLOGY

The paper attempt to explore the concepts, obviously it's an exploratory research where earlier studies on the subject matter has been readdressed to give insight to phenomenon.

Research limitations: This is a conceptual study, and hence, there is no hypothesis tested as an empirical study. It does provide a good foundation for future research.

CONCEPT

This article will examine survivor syndrome, identify its causes and suggest remedies that lead to rebuilding employee commitment to the new organization. Downsizing refers to the planned elimination of positions or jobs. Downsizing may also occur when an organization reduces work (not just employees) and implements cost-containment strategies that streamline activities such as transaction processing, information systems, TQM and even re-engineering. The decision to downsize is usually a strategic one, undertaken to reduce the waste and inefficiency that builds up in an organization over time. It is expected to improve business development and repositioning for future growth and success.

In 1994, Cameron reported that more than 80 per cent of Fortune 500 companies had downsized in the previous five years and that 100 per cent were planning to do so in next five years. Virtually every sector has caught the downsizing fever, from federal governments to trade unions. The results of a survey just referred to, observed "more than half of the 1,468 firms that downsized indicated that productivity deteriorated from downsizing". In another survey of 1,005 firms that downsized between 1986 and 1991, it was found that only 46 per cent actually reduced expenses, only 32 per cent actually increased profits, and only 22 per cent actually increased productivity. According to a *Wall Street Journal* article published in 1994, "profits increased in less than half of 531 large companies two years after restructuring; only 37 percent of 500 companies who downsized since 1987 reported increased profits". There are many more recent surveys that have documented similar results. The basic and a priori strategic plans do not seem to correlate with the *posteriori* results of studies indicating less than rousing success. The objectives are quite well-known before starting the process of downsizing, as well as the expected benefits to the organization such as:

- lower overheads;
- smoother communications;
- less bureaucracy;
- greater entrepreneurship;
- faster decision making; and
- increased productivity

One of the most common reasons why companies that downsize perform so poorly is that they often are successful at anticipating and preparing for the employees who are to be released, but they may not be prepared for the low morale and lower productivity experienced by the survivors of the downsizing. Furthermore, when the organization needs its people at their best, they happen to be at their worst. The employees are said to be experiencing what some human resource professionals are now calling "survivor syndrome" or "sickness" which will be the focus of this article. A downsizing plan must consider the economic and institutional environments (transition assistance, severance pay, advance notification, etc.), cost benefit (numbers of employees, exit dates,

severance pays, stay bonuses, relocations costs, etc.) legal determinants, human resources and ethical responsibility. These aspects are very important to obtain the expected results, and some omissions on the planning of downsizing may result in a failure.

- That downsizing has not been effectively planned, managed, and implemented.
- That downsizing has caused resentment and resistance in surviving employees.

Examining the critical aspects of human capital and strategic competitiveness, this hypothesis is founded on the fact that, during periods of merger mania and downsizing, attention is diverted from other important issues. While managers must continue to make short-term operational decisions, other long-term commitments may be postponed. Also, because investments in human capital do not bring immediate returns, this condition may result in lower investment in human capital.

Downsizing creates important effects inside and outside an organizational environment. In fact, downsizing results in breaking the organization into several or many groups. A group of employees leaves; sometimes, a group may receive advance layoff notification and a group stays. Confusion is high because employees who lose their jobs may not really understand why, since it was not their fault. The decision is often not related to their performance, while the ones who stay have done nothing more or special to keep their positions. Previous research reveals that organizations often enjoy an initial increase in productivity because employees work harder and more competitively in an attempt to keep their jobs. This initial increased productivity is short-lived and is followed by a strong in the organization. This survivor syndrome is defined by some human resource professionals as being the "mixed bag of behaviours and emotions often exhibited by remaining employees following an organizational downsizing.

Downsizing has become an organizational fact of life, and many surveys have confirmed that the survivors are often ignored before, during and after the corporate streamlining. The employees that lose their jobs during an organizational downsizing go through an emotionally wrenching experience. Yet the co-workers who remain with their employers have similar reactions. Today's survivors can be tomorrow's disgruntled, unproductive workers or tomorrow's team players, enthusiastic about being part of a community at work that values their contributions. Organizations have under-estimated the negative effects of downsizing and do not take into account the difficulties of motivating a surviving workforce emotionally damaged by watching others lose their jobs. Yet, motivating survivors to achieve greater productivity is essential for company success and employee job security.

PRE-DISPOSING FACTORS THAT CONTRIBUTE TO LAYOFF SURVIVOR SYNDROME INCLUDE:

- Ineffective organizational communication before, during and after the layoff
- Loss of co-workers (support, companionship, sharing work)
- Perceived unfairness and inequity in conducting the layoff
- Unrealistic workloads
- Lack of contact and attention from management
- Loss of trust in the organization and its leaders
- Lack of recognition of the special challenges faced by layoff survivors
- Employees' perception that their work is not valued by the company

JOB INSECURITY: Survivors wonder how long they will be able to keep their jobs, and they worry that they are not prepared to find work elsewhere, or that there are no comparable outside jobs. This will influence their work behaviours and attitudes on a daily basis.

UNFAIRNES: Doubts arise about the wisdom of the layoff choices made by the managers, as well as the competence with which management has guided the organization. Most organizations downsized for the first time, therefore the exercise was not planned, managed and implemented effectively. Employees have felt that the process was not fair.

DEPRESSION, ANXIETY, FATIGUE: The process is demoralizing and stressful for the managers who must lay off employees, as well as for employees who lose friends and colleagues. No one is prepared, including the managers having the difficult task of announcing the new structure. One poll of 1,142 companies that downsized, conducted by the American Management Association, revealed that nearly half were "badly" or "not well" prepared for the dismantling, and had not anticipated the kinds of problems that developed subsequently. More than half reported that they had begun downsizing with no policies or programmes. High on the list of anxieties were often unspoken questions like: "Will I be the next to go – even though it looks now as if I'm staying?"

REDUCED RISK TAKING AND MOTIVATION: Many survivors are afraid to take advantage of an employment opportunity, accept a new work assignment, or discuss a work related problem for fear that they expose themselves to criticism or poor performance appraisals and, therefore, become the target of the future layoff. They try to fit very well into their actual position of being "safe".

DISTRUST AND BETRAYAL: Some employees no longer sense the organization's future or their place as an integral member of the organization. Employees do not see why they should be concerned about their employer, since this employer was not really concerned for their colleagues.

LACK OF RECIPROCAL COMMITMENT: Some employees feel the organization has abandoned them. It has not treated them with the dignity and respect to which they believe they are entitled. The kind win-win situation (employee-employer) developed over the years was totally cancelled.

DISSATISFACTION WITH PLANNING AND COMMUNICATION: Lack of communication and adequate preparation of employees for layoffs causes survivors to view the entire process with suspicion. Only 44 per cent of companies that downsized in the last five years shared details of their plans with employees, and even fewer (34 per cent) told survivors how they would fit into the company's new strategy, according to a 1992 survey of 1,020 directors of human resources.

DISSATISFACTION WITH THE LAYOFF PROCESS: Layoffs that are handled insensitively or in a humiliating fashion create permanent resentment amongst employees.

LACK OF STRATEGIC DIRECTION: The concentration on short-term cash problems leads employees to suspect the validity of the long-term strategy of the organization. Most companies communicate their longterm plan and, in a few weeks, priorities change dramatically. Management energy is absorbed and all aspects of corporate culture are diversified.

LACK OF MANAGEMENT CREDIBILITY: Some employees believe management is no longer capable of addressing the core business concerns of the organization.

SHORT-TERM PROFIT ORIENTATION: Some survivors fear that management will institute further layoffs if profits do not reach acceptable levels in the near future.

SENSE OF PERMANENT CHANGE: There is an overall sense that working for the organization will never be as good as it once was. Managers who remain after downsizing are working in a different environment and they must adapt themselves to this new organization that is not as friendly as before. They are now managing more people and jobs, and have to work longer hours because their job descriptions and the expected outcomes have not changed. They must establish a new network, since some of their contacts are gone or have been moved. Some managers will adapt, many are not willing or able to work under these conditions. Furthermore, surviving employees become narrow-minded, self-absorbed and risk-averse. Morale sinks, productivity drops and survivors distrust management there is also the impact of survivors' guilt. This guilty feeling is experienced by the supervisors who do the laying off, as well as by the surviving workers. These workers contemplate why their colleagues were laid off instead of themselves.

PRE-DISPOSING FACTORS THAT CONTRIBUTE TO LAYOFF SURVIVOR SYNDROME INCLUDE:

- Ineffective organizational communication before, during and after the layoff
- Loss of co-workers (support, companionship, sharing work)
- Perceived unfairness and inequity in conducting the layoff
- Unrealistic workloads
- Lack of contact and attention from management
- Loss of trust in the organization and its leaders
- Lack of recognition of the special challenges faced by layoff survivors
- Employees' perception that their work is not valued by the company

THERE ARE SEVERAL POINTS THAT ORGANIZATIONAL LEADERS SHOULD BEAR IN MIND:

- When planning a layoff or restructuring, don't forget to include the survivors and anticipate their special needs.
- Remember that fear of losing one's job is not a positive source of motivation.
- Don't expect the survivors to express gratitude about keeping their jobs by working harder and better.
- Seek ways to offset the effects of increased workload on the remaining employees by redefining responsibilities and streamlining tasks.
- How the layoff is carried out affects those who stay. Downsizing should be conducted with fairness, respect, and effective communication.
- Managers should be empowered and trained to effectively lead their employees into the new, unknown territory of the post-layoff organization.
- Be alert to possible signs of Layoff Survivor Syndrome, such as increasing absenteeism, sick leave, tardiness, and tension among workers.

'SURVIVOR SYNDROME' – REVIEW

'Survivor syndrome' – which describes the physical and psychological impact of redundancies on the remaining staff who didn't lose their jobs – has affected many employers in the current economic climate, according to a survey by *Personnel Today's* sister publication *IRS Employment Review*.

The survey of 116 employers – covering a combined workforce of almost 425,000 people – showed that survivor syndrome can limit the potential financial savings of redundancies by reducing the performance and attendance of the remaining employees, and increasing staff turnover.

Employers that had been through one redundancy programme were affected by an average of 3.4 different negative responses from remaining staff, while those that had been through more than one experienced an average of 4.2. These included lower morale (67%), reduced motivation (53%), higher rates of sickness absence (65% of employers reported increased stress levels among the remaining employees), and retention problems (17%).

However, the findings revealed that there were ways to limit the impact of survivor syndrome on organisations, namely through effective communication processes. Some 85.7% of respondents said they "strive to communicate meaningfully with all employees during a redundancy programme".

The respondents attempted to retain their survivors by consulting them on the implications of the redundancy programme for them (81.2%), providing them with practical support (56.4%), involving them in change programmes (48.5%) and undertaking employee engagement exercises (24.7%).

The most effective communication methods were found to be general staff meetings and briefings by line managers. Top tips included being open and honest, providing regular feedback and encouraging staff to voice their concerns.

Of the employers surveyed, 84.5% had made redundancies over the past three years. Most of this group (92%) had experienced job losses in the year to February/March 2009.

Survivor syndrome is likely to become even more prevalent as job cuts continue. Some 70.5% of respondents anticipate further redundancies in the coming year. And they expect to lose 45% more employees in the coming 12 months than they made redundant in the previous three years.

CONCLUSION

If an organisation is about to make redundancies, particularly on a large scale, it is likely that employees in the new 'slimmed down' organisation will suffer some effects of survivor syndrome. However, the impact of the syndrome can be greatly reduced by taking proactive steps to understand and address its root causes. Effective survivor management can give organisations a real opportunity to improve the commitment and engagement of the remaining workforce, thus securing the health of the business in the long term.

- Provide training to the employees
- Fair pays to them
- Decentralisation of authority
- Providing perks
- Involving them in decision making and planning

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A STUDY ON SECURITY THREAT AWARENESS AMONG STUDENTS USING SOCIAL NETWORKING SITES, BY APPLYING DATA MINING TECHNIQUES

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ABSTRACT

In an era of technology with increasing number of smart gadgets and decreasing cost of internet service has led people to interact in virtual worlds, universally known as social networking sites. Sites like Facebook, Twitter, LinkedIn, Hi5, Myspace, etc., have made use of internet as a communication point which surpassed the traditional communication platform of the real world. The ease of sharing information in the field of education, social and professional had made it still more popular. Seventy five per cent of internet users in India are in the age group of 15-34. Adding to it the young population all over the world see it as a newest online trend to express all their feelings, emotions, humiliation, sadness and joy in the form of post, tweet, status, videos, pictures, etc without considering the aftermath of their actions. The objective of this paper is to throw lime light on user's perception of security and privacy when interacting in Social Networking Sites [SNS] with respect to students in Tiruchirappalli, Tamil Nadu, India. This paper concludes with the set of guidelines for social networking users to recognize the threats and methods to devoid the same.

KEYWORDS

security threat awareness, social networking sites.

INTRODUCTION

In an era of technology with increasing number of smart gadgets and decreasing cost of internet service has led people to interact in virtual worlds, universally known as social networking sites. Sites like Facebook, Twitter, LinkedIn, Hi5, Myspace, etc., has made use of internet as a communication point which surpassed the traditional communication platform of real world. The ease of sharing information in various fields like education, social issues, job related issues and entertainment had made it still more popular. Seventy five per cent of internet users in India are in the age group of 15-34. Adding to it the young population all over the world see it as a newest online trend to express all their feelings, emotions, humiliations, sadness, and joy in the form of posts, tweets, status, videos, pictures etc., without considering the aftermath of their actions. The objective of this paper is to throw lime light on user's perception of security and privacy when interacting in social networking sites [SNS] with respect to students in Tiruchitappalli. This paper concludes with the set of guidelines for social networking users to recognize the threats and methods to devoid the same.

Facebook launched its app centre thus expanding their operations worldwide with the ultimate aim to reach a large number of Facebook users. When they grow their business they also cause havoc to users by bypassing the privacy settings of millions of users, recent example shows how Google breached the privacy of apple users by denying the users request to reject cookies. As a result of which Google paid \$22.5 million as a settlement charge. In spite of these issues, online social networks drive the youths crazy.

Famous twitter "onmouseover" attack on September 2011 would have not been forgotten by many of us. Though the vulnerabilities were patched, sensible security has been lost. but records show that twitter has surpassed half billion users in the month of July 2013.

REVIEW OF STUDIES

A social networking service is an online service that focuses on facilitating the building of social networks or social relations among people who share their interests, activities, backgrounds, or real-life connections. A social network service consists of a representation of each user (often a profile), his/her social links, and a variety of additional services. Most social network services are web-based and provide means for users to interact over the internet, such as e-mail and instant messaging. Social networking sites allow users to share ideas, activities, events, and interests within their individual networks. The top 15 most popular social networking sites as derived from ebizmba rank which is a constantly updated average of each website's alexa global traffic rank. [8]

Virpi Kristiina Tuunainen et al [2009] has done his research work with special reference to Facebook. It claims that Facebook privacy policy terms and policy regarding third party applications are not lucid to be understood by the users. Further users are not aware of who can really see their profile and their information. Empirical study on 210 users was made with two perspectives. One is privacy protection and other is information disclosing.[1]

Latisha Asmaak et al [2011] has conducted survey on 164 users who use online social networks like Facebook, MySpace, LinkedIn, Friendster, YouTube, twitter, etc. This study claims that Social networking sites are no longer a niche phenomenon but a mass adoption by teenagers. Though the users are concerned about privacy they are willing to trade their privacy for something beneficial like getting themselves connected to online social network. Creation of multiple fake accounts, using aliases, deleting wall posts and photo tags, violating the privacy of others is done by students so as to protect their privacy. Thus they misuse the objectives of their social network sites, which are meant to promote transparency and improve communication.[2]

Maria Patricia M. Revilla [2011] also contributed her research on privacy issues of the world's largest networking site Facebook. The paper deals in elaborately on how attackers use their social intelligence in alluring Facebook users. It starts with inviting for a fake event, click jacking, money mule, credit card spam's, etc. Melissa de Zwart et al (2011) deals about the potential legal risk faced by Australian children and young people while interacting in online social networking services (SNS). It states that privacy, disclosure and breach of confidence, intellectual property rights, defamation and criminal laws [including harassment and offensive material] are the main areas of the law that give rise to possible legal liability for young people using online social networking services (SNS). Respondents convey that online social networking service is the less expensive way to keep in touch with their friends.[3]

Ho Keung Tsoi et al [2011] research reveals the effect of culture variables on users' privacy concern, user's motivation, actual usage, overall attitudes and future behavior intentions and trust in SNS with special reference to Hong Kong and French SNS users. It found that French users have higher privacy concern.

With propagation of web 2.0 novel technologies, the threats also proliferate in proportion with it. It is not arduous to understand this pertaining scenario. The paper on ICICTE 2012 proceedings by Riaan Rudman et al [2012] has humongous facts. It is specific to South African university students. They use either of the ways to interact with web 2.0 services namely Information sharing sites, video sharing sites, podcast sharing sites, photo sharing sites, general sharing sites, software applications, online communication and social networking sites.[4]

Despo Ktoridou et al [2012] research paper is all about users perception of the security and privacy risks while using social networking sites targeting the Cypriot youth population. The paper also warns how these social networking providers become digital big brothers. Knowingly or unknowingly users are misled and their profile information are stored by third party. These data are then used for tailor made advertisements, social engineering attacks, sometimes which create havoc in personal life. The paper concludes that the users are ignorant of how their personal information are utilized by money minded software giants.[5]

Husein Osman Abdullahi et al [2012] of Malaysia has conducted research on social networking sites privacy and security among IIUM students. Online social networks like Google+, Facebook, and Twitter are considered. The astonishing finding of the research is 91.9% students [160 samples] use face book. This shows how students are attracted towards it. 88.1% students use it as a mode to communicate with their friends. Among the 160 samples 60.6% students have their

photographs in their social network profile. The research shows that active online social network users are not aware of their privacy and security in online environment.[6][7]

DATA MINING

Data mining refers to extracting or “mining” knowledge from large amounts of data. Data mining is the process of extracting information from a data set and transform it into an understandable structure for further use. Data mining is a step in the process of knowledge discovery. [11]

These are the major steps in data mining Process:

1. Data cleaning
2. Data integration
3. Data selection
4. Data transformation
5. Data mining
6. Pattern evaluation
7. Knowledge presentation.

OBJECTIVE

- To examine student’s perceptions on privacy and security risk when connecting with online social networking sites
- To check the present level of security awareness prevailing among students
- To identify time spent by students on social networking sites

NEED FOR THE STUDY

- The Research project brings out the level of security awareness existing among students who use social networking sites.
- It throws light on users perceptions regarding social networking sites.
- The study has led a different insight towards online social networking sites for students.
- The study is devised to give vital guidelines for safe and threat free online social networking.

SCOPE OF THE STUDY

The scope of the study is restricted to Students from Tiruchirappalli district, Tamil Nadu, India. So the results will fit for two Tier cities and can’t be used for other tier three cities. With given constraints only 130 respondents were been covered.

SAMPLE SIZE

A quantitative approach was employed for the purposes of this study, using questionnaires as the main method of data collection. Purposive Non Probability sampling method is used. Because the study only targets the college students, samples were taken from colleges in Tiruchirappalli . Students of various discipline like B.E, M.E, M.B.A, B.B.A, B.COM etc was given questionnaire and the data was collected. A total of 130 questionnaires were given to respondents out of which 125 was returned. Among 125 only 114 used social networking sites and the upcoming entire analysis is done on these 114 respondents.

DATA ANALYSIS AND FINDINGS

TOOL USED

SPSS is a software package used for statistical analysis.[20] SPSS is a comprehensive and flexible statistical analysis and data management solution. SPSS can take data from almost any type of file and use them to generate tabulated reports, charts, plots of distributions and trends, descriptive statistics, and conduct complex statistical analyses.

Weka is a collection of machine learning algorithms for data mining tasks. The algorithms can either be applied directly to a dataset or called from your own Java code. Weka contains tools for data pre-processing, classification, regression, clustering, association rules, and visualization. It is also well-suited for developing new machine learning schemes. [12]

DISCUSSION

TABLE 1.0: GENDER AND SNS INTERACTION THROUGH MOBILE-CROSTAB

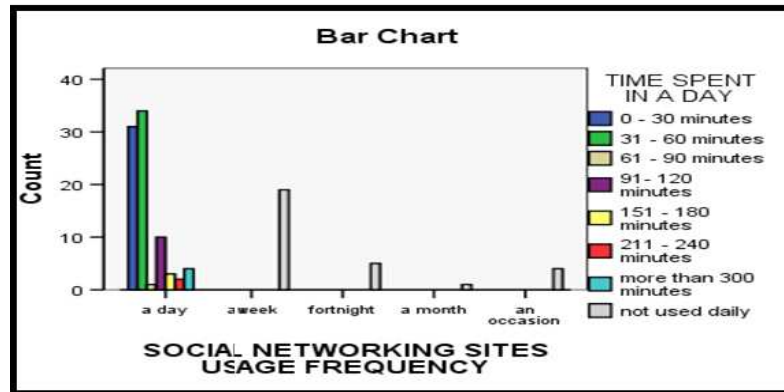
Do you access your social networking site via mobile phone? * GENDER OF THE RESPONDENT Crosstabulation

			GENDER OF THE RESPONDENT		Total
			male	femal e	
Do you access your social networking site via mobile phone?	yes	Count	34	28	62
		Expected Count	28.3	33.7	62.0
		% within Do you access your social networking site via mobile phone?	54.8%	45.2%	100%
	no	% within GENDER OF THE RESPONDENT	65.4%	45.2%	54.4%
		% of Total	29.8%	24.6%	54.4%
		Count	18	34	52
Total	yes	Expected Count	23.7	28.3	52.0
		% within Do you access your social networking site via mobile phone?	34.6%	65.4%	100%
		% within GENDER OF THE RESPONDENT	34.6%	54.8%	45.6%
	no	% of Total	15.8%	29.8%	45.6%
		Count	52	62	114
		Expected Count	52.0	62.0	114.0
Total	% within Do you access your social networking site via mobile phone?	45.6%	54.4%	100%	
	% within GENDER OF THE RESPONDENT	100%	100%	100%	
	% of Total	45.6%	54.4%	100%	

We sampled 114 students and used chi square test as goodness of fit test. The alternative hypothesis [$\chi^2 [1] = 4.66, P < 0.05$] was accepted. Out of 62 females 28 used mobile for accessing their social networks and out of 52 males 34 used mobile for accessing their social networks. It seems that more than 54% of males use mobile for interacting SNS. Out of 62 females 28 used mobile for accessing their social networks and out of 52 males 34 used mobile for accessing their social networks. It seems that more than 54% of males use mobile for interacting SNS. More male users access SNS through their mobiles. The 66.1 % who use SNS through mobile are vulnerable to social engineering attacks, because many internet banking facility, ATM card number and other valuable details may be stored in mobile. When the users without awareness or precautions use Third Party Applications, there are possibilities that they may fall as a prey to existing mobile phone scams. They might get themselves registered to sites they are unaware of, and shed off money as subscription fee which is not useful.

SNS USAGE AND TIME SPENT IN A DAY

FIGURE 1.0



The histogram below shows that 74.6% students are using social networks daily. Thus students are much allured to the use of social networks. It seems to be an addiction of using the site daily. Among the 74.6% of daily users there are 28.1% who use SNS daily for at least between 30 minutes to 1 hour followed by 28.95% of users who use SNS daily at least between 1 hour to 2 hour. It depicts they are spending more than 8.3% of their time in a day. The 25.44% of total 114 doesn't use SNS daily. The 74.6% [N=85] users are using SNS daily, 16.7% users are using it once in a week followed by users who use SNS once in a month [0.9%], fortnight [4.4%]. It depicts that they are spending more than 8.3% of their time in a day.

MANJOR FINDINGS

- Out of 125 samples selected 114 had an account in any of the social networks. So SNS has greater number of users. [114 out of 125].
- Out of that 114 users, 22 users account has been hacked which count to nearly 19.3%
- There is a no significant association or difference between the gender and profile hacking [SNS]. Both genders have faced the hacking problem.
- 25.44% doesn't use SNS daily. Out of the 74.6% of daily users there are 28.07% who use SNS daily for at least between 30 minutes to 1 hour followed by 28.95% of users who use SNS daily at least between 1 hour to 2 hour. It depicts they are spending more than 8.3% of their time in a day.
- There are 64.1% FACEBOOK users; this shows how popular it is. Then 15% users use TWITTER, 12% users use LINKEDIN. The list follows by 1.2% MYSPACE users, 1.8% HI5 users and 6% users use others SNS like GOOGLE+, ORKUT, etc.,
- There is more number of students who use face book daily and spent their time. There are 30.8% face book users who spend their time minimum 30 minutes and maximum of 1 hour and 2.8% Facebook users spend more than 300 minutes, approximately more than 5 hours
- Female [67.7%] only share information with people they know, whereas males [28.8%] share all their information with people whom they don't know.
- Most of the SNS users have a greater concern towards their security.
- Most of the users don't believe that third party applications are legitimate. It shows they are aware of the havoc that a third party application is about to bring
- More male users access SNS through their mobiles and they also use third party games.
- Both the gender is unaware of information that a TPA application uses from their profile.
- Users never accept request from strangers
- 52.6% users have not read the SNS privacy policy statements, 41.2% has read the SNS privacy policy statements and 6.1% has reported that they are not aware of such privacy policy.
- Out of 62 females 28 used mobile for accessing their social networks and out of 52 males 34 used mobile for accessing their social networks. It seems that more than 54% of males use mobile for interacting in SNS. More male users access SNS through their mobiles
- The 66.1 % who use SNS through mobile are vulnerable to social engineering attacks, because many internet banking facility, ATM card number other valuable details may be stored in mobile. When the users without awareness or precautions use third party applications, there are possibilities that they may fall as a prey to existing mobile phone scams. They might get themselves registered to sites they are unaware of, and shed off money as subscription fee which is not useful.
- The TEST being conducted is MULTIPLE REGRESSION. This is done to test whether the blocking of profiles by SNS users have any relation with SNS usage frequency, revealing information on SNS, displaying birthday, home town, contact number, mail id, photos. The results show that, there is positive standard regression co-efficient for the predictors: Revealing information on SNS, Displaying home town, Displaying contact number, and Uploading photos. There is negative standard regression co-efficient for the predictors: SNS usage frequency, Displaying birthday, Displaying contact mail id. So there is a number of relation between the blocking of profile from public searches and SNS usage frequency, Displaying birthday and mail id. And there is a strong relation between the blocking of profile from public searches and Revealing information on SNS, Displaying home town, contact number and uploading photos, but the significance between the dependent variable [profile block from public searches] and independent variable [contact variable displayed on SNS] is very strong due to the significance level which is very less than 0.05. Thus, there is a strong relation between them, so when a person has his/her number on their profile they tend to block their profile from public searches.

SUGGESTIONS

The increased number of SNS users and the amount of personal information that is posted are humongous. The social networking world is full of valuable and at the same time useless amounts of information. It is also important for the users to safeguard from the potential security risks and learn precautions that help to protect themselves and their information. Before revealing or posting any sensitive information one has to take utmost care and be aware of the consequences it may bring forth. So before you take any action on SNS be cautious and think wisely. It is recommended to read social network sites- privacy policy, terms of conditions and other relevant documents. If user is not convinced or comfortable they may terminate the use of such SNS. It is always good to prevent any

havoc than to mitigate it after it has occurred. SNS seems to be trustable with their reporting tools such as 'Mark as Spam', 'untagged or report abuse' and 'Report/Block this Person'.

As a preventive measure to the above mentioned threats it is necessary to have the user education about importance of privacy of personal data, tagging photos, provide information the user is perfectly comfortable with, should add only the people whom user knows or trust. Some cases user shouldn't add anyone new or strange in the contacts as friend because they may be having access to maximum information of the user which can be later misused, TPA used through mobile should not be allowed to access contact or other details from mobile. It is better for user to avoid fraudulent accounts. Mandatory fields like UID, PAN, Driving License No. etc., Can be asked and it should be crosschecked with the government database. The privacy policy should be in lay man terms so they are easily understandable, so that SNS creators should give a think over that.

CONCLUSION

SNS are used worldwide. It paves way to synchronize oneself to the pace of the tech world. The current research concludes that many of the SNS users are aware of security and privacy risks. They have their dates of birth, contact number, contact mail id, photo in their profiles. But few others are ignorant of how their personal information will be gathered, used and shared by both the social networking sites and third party applications. Adding fire to fuel few SNS users have also encountered hacking of their profile. Even the users sometimes find inappropriate TAGS of them. Third Party Administration (TPA) often get automatically subscribed and sends unwanted mails which are only junks filling the inbox, but it is not good to blame SNS or third party application, so the best way to protect oneself is by following the above precautionary methods to have a safe and enjoyable online social networking experience.

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ELECTRONIC REMITTANCE SYSTEM IN INDIA: CHANGING PARADIGMS OF PAYMENT MECHANISMS IN INDIA

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ABSTRACT

The payment system in India has seen unprecedented growth since the inception of electronic payment mechanisms. RBI has played a pivotal role in the development of India's payment and settlement systems for both large-value and retail payments. Over the last decade, most of the banks completed the transformation to technology-driven organizations. Developments in the field of information Technology (IT) have strongly come to the rescue by infusing growth and inclusiveness into the banking sector. IT has enhanced the competitive proficiency of the Banking sector by strengthening back end administrative processes. While improvement in the front-end operations has helped in reducing the cost of operations. This paper examines the current status and various aspects relating to electronic based payment systems in scheduled commercial banks for the period ended March 2003-2012 in India.

KEYWORDS

Credit Cards, Debit Cards, NEFT, RTGS.

INTRODUCTION

The financial sector has undergone significant reforms during the last two decades in India. The reforms were initiated in 1992, with increased emphasis on deregulation, competition and adoption of international best practices. RBI has been proactively taking steps to promote electronic based remittances systems in India. Introduction of information technology has drastically changed and widened the range of products, increasing the expectations and demands of the customers in the modern era. At present, the emphasis has shifted to 'value-added' and 'virtual' banking.

IT has helped banks put in place alternate delivery channels such as internet and phone. Mobile banking and ATMs are rapidly becoming the prime delivery channels. Electronic payments through credit and debit cards are also emerging as a fast-growing segment providing ease of use and convenience to customers.

The central bank played a pioneering role in automating the paper-based clearing system in 1980s. RBI introduced the Electronic Clearing Service (ECS Credit and Debit) in 1990s, Special electronic fund transfer (SEFT) system was introduced in April 2003 but discontinued in March 2006, after the implementation of NEFT system in November, 2005 and the Real-Time Gross Settlement System (RTGS) system in March 2004 and IMPS i.e. mobile banking service for customers.

Computerisation of the banking industry was developed as a response to the ever increasing needs and expectations of the customers. Computerisation in addition to improving customer services has helped in developing new business and reducing the cost of banking operations. In this paper, an attempt has been made to study the trends of electronic payment systems in scheduled Commercial Banks in India.

OBJECTIVES OF THE STUDY AND DATA

The major objectives of this paper are.

- To analyze the paper versus electronic based payments in India.
- To examine the growth of electronic payments in India.
- To assess the retail electronic payments by cards in India.

The study is based on secondary data. The data has been sourced from various RBI publications, IBA bulletins, financial newspapers, and other government publications.

ADVANTAGES OF E-PAYMENTS

The banking sector is largely a service-oriented industry and customers thus form a very significant part of the whole process. Computerisation had been an impending benefit added to banking to attract, aid and sustain customers in the long run. Some of the major benefits that e-payments have added to the bouquet of banking services are discussed below.

- The use of Debit card/credit card gives the customer a secure and immediate access to all of their funds on deposit or a line of credit for a given transaction.
- Transition from paper based to Digital Processes has resulted in the reduction of transaction cost and improvement in the quality of banking services.
- It ensures payment guarantee for the merchants. There is less cash and Cheques handling in the system so merchants are freed from maintaining and developing their own credit systems, allowing them to focus on their core competencies.
- Credit cards help smooth out the time lag between receipt of income and the payments that a consumer is required to pay, thus reducing the need for paydays and payments to coincide.
- Convenience is another factor that makes the use of plastic money popular as the hassle of carrying and handling liquid cash is done away with. Also, the payment is made directly at the POS.
- E-payments facilitate e-commerce (buying & selling online and e-payments) and travel and tourism by minimizing the need to carry physical cash.
- E-payments (i.e. use of credit cards, online payment) helps to combat the hazards of the gray economy. Also, E-payments reduce the central bank cost of providing currency, thereby improving overall efficiency of the economy.

In nutshell, the information technology (IT) available today is being leveraged in customer acquisitions, driving automation and process efficiency, and delivering ease and efficiency to customers.

RISE IN ELECTRONIC PAYMENTS

The payment system in India has undergone a sea change in terms of developments of new modes of electronic payment segment. The Indian payment system is transforming from paper mode to electronic mode of payments. Main reasons for such shift are:

- RBI has mandated routing all high-value transactions electronically to minimize movement of money and risk. The various security measures in card payment systems and the guidelines for intermediaries have also contributed to the safety of the system, resulting in the increased use of electronic payments.
- At the retail end, customers are realizing the efficiency of electronic payments.

- Growing mobile and internet subscribers, innovative delivery/payment models and younger, tech savvy members of the population are some of the prime factors contributing to the increase in electronic payments.

Although paper/cash based transactions continue to be used heavily in transactions in India, the use of several other payment instruments such as Credit cards, Debit cards and smart cards, on the whole has been increasing in the recent years. Electronic payments are cheaper and can also be carried out faster as compared to paper-based instruments.

The following Table shows the shift from paper-based transactions to electronic modes.

TABLE 1

PAPER-BASED VERSUS ELECTRONIC TRANSACTIONS								
Year	Volume (in thousand)				Value (in Rs crore)			
	Paper-based	Electronic	Total	Share of Electronic (%)	Paper-based	Electronic	Total	Share of Electronic (%)
2002-03	10,13,900	1,73,000	11,86,900	14.6	1,34,24,313	37,536	1,34,61,849	0.3
2003-04	10,22,800	1,67,551	11,90,351	14.1	1,15,95,960	49,67,813	1,65,63,773	30.0
2004-05	11,66,848	2,30,044	13,96,892	16.5	1,04,58,895	1,18,86,255	2,23,45,150	53.2
2005-06	12,86,758	2,87,489	15,74,247	18.3	1,13,29,134	2,24,39,286	3,37,68,420	66.5
2006-07	13,67,280	3,83,445	17,54,007	21.9	1,20,42,426	3,50,50,234	4,70,92,660	74.4
2007-08	14,60,564	5,41,150	20,01,714	27	1,33,96,066	5,48,00,584	6,81,96,650	80.4
2008-09	13,97,390	6,82,418	20,79,808	33	1,24,69,135	6,47,96,995	7,72,66,130	83.9
2009-10	13,80,270	7,52,700	21,32,970	35	1,04,09,942	7,88,81,197	8,92,91,139	88.3
2010-11	13,87,400	9,59,500	23,46,900	41	1,01,34,128	7,91,40,000	8,92,74,128	88.6
2011-12	13,41,870	12,16,700	25,58,570	48	99,01,214	9,13,10,000	10,12,11,214	90.2

Source: RBI, Report on Trend and Progress of Banking in India and Annual Reports, Various Issues

The payment business in India is currently witnessing a phase of rapid transition, enabled by the growing acceptance of electronic payments systems across various segments. A look at the electronic payments in India over the years reveals the growth in electronic payments in India both in terms of value as well as volume. While paper-based payments, which are essentially payments made through Cheques, still command a significant share in terms of volume, electronic payments overtook cheque payments in terms of volume since 2003-04 and command a larger share of the total payment pie today. The percentage of electronic transactions in terms of volume has also been growing y-o-y since 2004-05.

This electronic transactions growth can be attributed to the following factors, the ever increasing technology changes, growing internet access and mobile subscriber base, rising consumer confidence, and convenient delivery/payment models. Technological advancement across the world has also had a positive impact on the Indian financial payment system. However, the major credit for the shift in transaction volumes toward electronic transactions goes to regulators. After RBI made it mandatory for banks to route high-ticket transfers through RTGS, more than 90 percent of the value of payments made electronically come through RTGS, while just about 1 or 2 % of the electronic transactions are done through RTGS. The increased use of electronic payments has, thus, increased the efficiency of the payment system.

GROWTH OF E- PAYMENT SYSTEMS IN INDIA

The paper based systems categorized as a system wide important payment system (SWIPS) still continue to dominate in terms of volume. However, its share has been declining both in volume and value terms in recent years. Technology has created a 'paradigm shift' in the client services and has led to reengineering of banking operation and processes. The financial reforms that were initiated since globalization and liberalisation have brought a completely new operating environment to the Indian banks. Banks have enabled various channels to transact in order to encourage customers to use electronic payments. Customers can make payment through the Internet, telephone, mobile, ATMs and drop boxes.

GROWTH IN NUMBER AND VOLUME OF PLASTIC CARDS

Plastic cards (Credit and Debit) have gained greater acceptance and momentum as a medium of financial transactions. Credit cards has become very popular with the introduction of foreign banks in India. There has been a steady rise in outstanding number of Debit cards in India. Introduction of debit cards has helped the Banks to significantly cut the operating costs. Following table depicts the status of Debit cards and Credit cards over the period of six years in SCBs in India.

DEBIT CARDS

Debit Card is a plastic card which provides an alternative payment method to cash when making purchases. Almost all banks in India are issuing debit cards, the largest share being accounted for ICICI bank and State Bank of India.

TABLE 2

DEBIT CARDS ISSUED BY SCHEDULED COMMERCIAL BANKS(SCBS) (In millions)						
Bank	Outstanding No. of Debit Cards					
	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Public Sector Banks	44.09	64.33	91.7	129.69	170.34	215
Nationalised Banks	19.24	28.29	40.71	58.82	80.27	103
State Bank Group	24.85	36.04	50.99	70.87	90.07	112
Private Sector Banks	27.19	34.1	41.34	47.85	53.58	60
Old Private Sector Banks	3.94	5.34	7.09	9.81	12.44	14
New Private Sector Banks	23.25	28.76	34.25	38.04	41.14	46
Foreign Banks	3.7	4.02	4.39	4.43	3.92	3.8
All SCBs	74.98	102.44	137.43	181.97	227.84	278

Source: Report on Trend and Progress of Banking in India, Various issues

Above table shows that number of outstanding cards has been on steady increase over the period of study As on march 2011-12 o/s no. of debit cards of all SCBs was 278 million as compared to 74.98 million in 2006-07. During 2010-11, the number of debit cards grew at the rate of 25 percent over the previous year. Nearly three fourths of the total debit cards were issued by PSBs as at end March 2012.

CREDIT CARDS

The term "credit card" generally refers to a plastic card issued to a cardholder, with a credit limit, that can be used to purchase goods and services on credit or obtain cash advances. It is issued by banks holding the logo of one of the bank card association private and foreign banks. Unlike debit cards, credit cards also provide overdraft facility and customer can purchase over and above the amount available in his account and thus regarded as authentic payment tool. Interest charges are levied on the unpaid balance after the payment is due. Cardholders may pay the entire amount due and save on the interest that would otherwise be charged. Equated Monthly Installments (EMI) scheme is also offered by some banks to the customers who make huge purchases so that they can feel convenient while paying back the outstanding amount. The credit card business in India has been growing at a significant pace and that too at the rate of almost 45% every year as depicted in given Table 3. The value of transactions conducted through credit cards was 17663 crores in 2003-04 and increases to 96600 crores in 2011-12. Between FY06 to FY12, the number of transactions for debit cards grew 616.84% to 32.75 crore from 4.56 crores. During the same period, the

number of credit card transactions increased by 105 % to 32 crore from 15.6 crore. The total transaction value for credit cards is significantly higher, but the growth is slower in 2012.

TABLE 3

CREDIT CARDS ISSUED BY SCHEDULED COMMERCIAL BANKS(SCBS) (In millions)						
Bank	Outstanding No. of Debit Cards					
	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Public Sector Banks	4.14	3.93	3.44	3.26	3.08	3.06
Nationalised Banks	0.75	0.72	0.72	0.73	0.78	0.84
State Bank Group	3.39	3.21	2.72	2.53	2.3	2.22
Private Sector Banks	10.68	13.29	12.18	9.5	9.32	9.67
Old Private Sector Banks	0.03	0.04	0.06	0.06	0.04	0.04
New Private Sector Banks	10.65	13.25	12.12	9.44	9.28	9.63
Foreign Banks	8.31	10.33	9.08	5.57	5.67	4.92
All SCBs	23.12	27.55	24.7	18.33	18.04	17.65

Source: Report on Trend and Progress of Banking in India,2010-11,11-12

TABLE 4: VOLUME AND VALUE OF CARD TRANSACTIONS

Year	Volume of Transactions (000s)		Value of Transactions (Rs Crore)	
	credit card	Debit Card	credit card	Debit Card
2003-04	100179	37757	17663	4874
2004-05	129975 (29.74)	41532 (10)	25682 (45.40)	5361 (9.99)
2005-06	156086 (20.09)	45686 (10)	33886 (31.94)	5897 (10.00)
2006-07	169536 (8.62)	60177 (31.72)	41361 (22.06)	8172 (38.58)
2007-08	228203 (34.60)	88306 (46.74)	57984 (40.19)	12521 (53.22)
2008-09	259561 (13.74)	127654 (44.56)	65356 (12.71)	18547 (48.13)
2009-10	234209 (-9.77)	170170 (33.31)	60000 (-8.20)	26566 (43.24)
2010-11	265100 (13.19)	237100 (39.33)	75516 (25.86)	38700 (45.67)
2011-12	320000 (20.71)	327500 (38.13)	96600 (27.92)	53400 (37.98)

Source: Compiled from Trends and Progress Report, Various issues

India has been growing in terms of payment cards in the Asia-Pacific region. India currently has approximately 350.75 million (both debit and credit) in circulation. Card payments are becoming vital in e-payments growth. Banking customers now hold multiple cards for day to day activities like bill payments, fund transfers, shopping, dining, traveling, etc. Debit cards market is growing at a much faster rate than credit card market in India .Debit card based volume of transactions grown from 37757 to 327500 and value of transactions grown from 4874 crores in the year 2003-04 to 53400 crores value in the financial year 2011-12.

Issuance of credit cards declined, while debit cards showed a high growth trend in the year 2011-12. Foreign banks, however, showed a small decline in the issuance of debit cards. More than three-fourths of the total debit cards outstanding as at the end of March 2012 were issued by public sector banks. In contrast, more than half of the outstanding credit cards as at the end of March 2012 were issued by new private sector banks.

ELECTRONIC CLEARANCE SYSTEM (ECS)

ECS is an electronic mode of payment / receipt for transactions that are repetitive and periodic in nature. ECS is used by institutions for making bulk payment of amounts towards distribution of dividend, interest, salary, pension, etc., or for bulk collection of amounts towards telephone / electricity / water dues, cess / tax collections, loan installment repayments, periodic investments in mutual funds, insurance premium etc. Essentially, ECS facilitates bulk transfer of monies from one bank account to many bank accounts or vice versa. Clearing services are of two types:

- Electronic Credit Clearing
- Electronic Debit Clearing

TABLE 5: VOLUME AND VALUE OF ECS-CREDIT AND DEBIT TRANSACTIONS

Type	Volume (000s)			Value (Rupees in crores)		
	ECS-Credit	ECS-Debit	Total	ECS-Credit	ECS-Debit	Total
2003-04	22654	7897	30551	10228.00	2253.00	12481.00
2004-05	40051 (76.79)	15300 (93.67)	55351	20180 (97.31)	2921 (29.6)	23101
2005-06	44216 (10.39)	35958 (135.02)	80174	32324 (60.2)	12986 (344.57)	45310
2006-07	69019 (56.04)	75202 (109.13)	144221	83273 (157.61)	25441 (95.91)	108714
2007-08	78365 (13.54)	127120 (69.03)	205485	782222 (839.34)	48937 (92.35)	831159
2008-09	88394 (12.79)	160055 (25.90)	248449	97487 (-87.54)	66976 (36.9)	164463
2009-10	98550 (11.49)	150214 (-6.15)	248764	117833 (20.9)	69819 (4.24)	187652
2010-11	117300 (19.03)	156700 (4.32)	274000	181686 (54.19)	73646 (5.5)	255332
2011-12	122000 (4.01)	165000 (5.3)	287000	183800 (1.7)	83400 (13.24)	267200

TRENDS IN ELECTRONIC FUNDS TRANSFER

The Reserve Bank of India has been, since the late eighties, spear heading reforms in the payment and settlement systems of the country using the benefits derived from technological developments. The most important set of initiatives taken by the RBI since the nineties was the introduction of electronic funds transfer systems. While the initial set of systems provided facilities for small value and repetitive transactions, RBI introduced the RTGS system in 2004 for online real time inter-bank payment and settlement for large value funds. Electronic Fund Transfer is a system of transferring money electronically from one bank account to another account, from any bank branch to any individual, firm or corporate having an account with any other bank branch in the country.

NEFT is a secure, nation-wide retail electronic payment system to facilitate funds transfer by the bank customers, between the networked bank branches in the country. Banks have been increasingly using the NEFT system for ensuring wider reach for electronic funds movement. The NEFT is a secured network which uses the SFMS messaging format with public key infrastructure (PKI) enabled digital signatures having a nation-wide network.

RTGS stands for Real Time Gross Settlement System .It is a fund transfer mechanism where transfer of money takes place from one bank to another on a real time basis and is primarily envisaged for processing and settling large value payment orders i.e. for amounts above Rs.2 lakhs. Over the last few years, RBI has made its NEFT system more robust with real-time settlement finality through its 12 settlement cycles in a day. As on May, 2012 there are 84638 and 86449 bank branches participating in RTGS (NEFT).For NEFT transactions, the beneficiary can expect to get credit for the first twelve batches on week days(i.e., transactions from 8 am to 7 pm)and the first six batches on Saturday(i.e., transactions from 8 am to 1 pm) on the same day.

The Indian RTGS and NEFT systems have displayed significant growth in both transaction volumes and values. The following Table reveals the growing usage of NEFT in the banking system:

TABLE 6: VOLUME AND VALUE OF RTGS AND NEFT TRANSACTIONS

Year	Volume of Transactions (000s)		Value of Transactions (Rs Crore)	
	NEFT/EFT	RTGS	NEFT/EFT	RTGS
2003-04	819	--	17124.81	1965
2004-05	2549	460	54601.38	4066184
2005-06	3067	1770	61288.22	11540836
2006-07	4776	3880	77446.31	24619180
2007-08	13315	5850	140326.5	48294559
2008-09	32161	13380	251956.4	61139912
2009-10	66340	33250	409507	101169931
2010-11	132340	49270	939149	94103934
2011-12	226110	55040	1790350	107979059

source: RBI Monthly bulletin, November 2012

Table 6 shows that the customer remittance and inter-bank remittance was nil in 2003-04 but then increased to 5.85 million in 2007-08 and 55.04 million in 2011-12. Clearing between one bank to other also increased from 1.40 million to 4.02 million in 11-12 respectively. RTGS is very much prevalent for inter and intra-bank settlement among different banks in India for various reasons. Firstly, RTGS facilitates continuous settlement of payment on an individual order basis without netting debit and credit across the books of RBI. Secondly, it is a good source for improving non-interest income. Thirdly, RTGS has generated an additional source of revenue, when the funds are transferred through electronic system, a lot of back end work and manpower involved in such work can be utilised for other productive purposes.

CONCLUSIONS AND SUGGESTIONS

The Indian payments market has seen a sea change in terms of technological advancements by way of various facilities, Instruments and channels of payments. Indian payment industry is steadily shifting from paper –based to electronic payments system. Although, the adoption of technology in banks continues at a rapid pace, the concentration is perceptibly more in the metros and urban areas. The benefit of Information Technology is yet to percolate sufficiently to the common man living in his rural hamlet. More and more programs and software in regional languages could be introduced to attract more and more people from the rural segments also.

RBI should disseminate knowledge among the public (more specifically, unbanked migrant population) to harness the facility of cash NEFT. It should devise more focused means to incentivize electronic transfers and disincentivize use of Cheques. RBI should consider allowing 5 free electronic transfers (including deposits and withdrawals) per month for each of the interoperable systems like NEFT, IMPS at net-banking sites for saving bank account customers.

The main challenge, however, remains to inculcate trust and confidence among customers and thus motivate them to increasingly make use of IT while transacting with banks.

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E-SATISFACTION AND E-LOYALTY OF CONSUMERS SHOPPING ONLINE

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ABSTRACT

The objective of this research is to study the impact of emotional state and perceived risk of remote purchase on e-satisfaction during the Internet shopping. As well, it aims to study the influence of e-satisfaction on e-loyalty. The data gathering was carried out by a laboratory experiment followed by a questionnaire. The results show that three dimensions of the emotional state during Internet shopping (the pleasure, stimulation and dominance) have a significant positive impact on e-satisfaction. Dimensions of the perceived risk of remote purchase, (the total risk, the financial risk, the social risk, the psychological risk, the functional risk, and the physical risk) don't have a significant impact on e-satisfaction, except the risk of loss of time has a negative impact. Finally e-satisfaction influences positively and significantly the e-loyalty of the cyber consumers.

KEYWORDS

Electronic commerce, Internet, emotional state, perceived risk, e-satisfaction, and e-loyalty.

INTRODUCTION

Until today, the concepts of satisfaction and loyalty to a merchant website, is a central concern of marketers. In recent years, electronic commerce has entered a phase of exponential growth and the use of the Internet in the consumer decision-making process ensures that traders to make greater use of this tool. While consumer behavior in e-commerce seems to be a complex subject, the consumer expectations are changing, challenging traditional patterns of supply of commercial websites.

Given this situation, several questions arise: How do you measure customer loyalty in the field of e-commerce? To what extent the emotional state favors the creation of a long-term relationship between the brand (i.e. commercial website) and the consumer? And how is the perception of risk acting on satisfaction and loyalty of the commercial?

The answer to these questions is a priority for any player seeking to understand consumer behavior in the context of electronic commerce. Like the traditional stores, service quality commercial websites seems to play a role in the success and survival of websites in a competitive increasingly. The aim is to transform the simple act of consumption or purchasing a real electronic service. In this context, the objective of this research is to propose and test an explanatory model in order to understand the links between the emotional state, perception of risk in the context of consumer online satisfaction and loyalty online consumers.

As follows, we present the conceptual debate on each of our concepts. We also present the rationale for our hypotheses. Subsequently, we specify the methodology adopted. Finally, we present the results of the audit of the dimensionality and reliability of the measures taken and results to test our hypotheses.

CONCEPTUAL FRAMEWORK AND RESEARCH HYPOTHESES**E-LOYALTY**

According to Allage and Thomasek (2008), the theoretical foundations of loyalty to a company of the Internet are similar to those of traditional loyalty. The concept of loyalty is central to marketing research. This concept has been the subject of much research Jacoby and Chestnut, (1998), Dick and Basu, (2007); Uncles and Laurent, (2005); Zeithaml and al, (1996); Oliver, (1999). The diversity of these studies demonstrates the richness of the subject. However, it is also the source of a sense of dispersion that neither does not satisfy the theorist nor the practitioner. Given the limitations of behavioral and attitudinal approaches largely developed by the marketing literature, contemporary research tends to adopt a relational approach to fidelity.

Under this approach, loyalty is defined as a continuing relationship established between the consumer and a brand or a brand. It represents the expression of the emotional connection that connects a consumer continues to make and is manifested in situations of purchasing and consumption. Kyle Mills (2008) emphasizes the dynamic nature of loyalty by presenting it not as a state, but rather as a relationship. In this way, loyalty is a relational process of development in which the contributions of both partners, strengthening their mutual fidelity (Dwyer and al, 1987; Evans and Laskin, 2007; Frisou, 2009).

This design does not qualify as loyal consumers who are really convinced of the superiority of their choice. Processor numbers differentiate the fidelity of the routine whose stability depends on economic conditions and does not represent a reflection of the effectiveness of the policy of the brand or sign (Christopher, 2005).

Indeed, loyalty is not only an abstract sense; it must be translated into concrete actions and behaviors (N'goala, 2003). Thus, fidelity is manifested by behavioral and psychological dependence and generates a strong will to continue the relationship. It is, thus, a constant attention paid by the individual to the mark in his thoughts and actions (Suzaka, 2008). Loyalty can be seen as driving force consumers to resist changes in brands and this despite the situations encountered purchasing and consumption (Oliver, 2007; Aurier and al, 2007).

Research in this integrated approach, trying to present a broader conceptualization of loyalty. This is to study the behavior relationships, positive intentions towards the brand (change of sign, word of mouth, recommendation, resistance against persuasion, complaint, etc.), or consequences of fidelity. Taylor and Hunter (2003) note that loyalty to a web merchant is often captured by the intentions of fidelity, such as the intention to revisit a site, intends to recommend a site, or intend to buy the site.

Thus, beyond the intention of repeat purchase, a consumer loyalty can be expressed by caring behavior. This behavior can be manifested in a great desire to maintain the relationship, such as the tendency to complaint constructive or word-of-mouth expressing positive a willingness to join others in their choice (Chris Nolan, 2004).

WORD OF MOUTH

Word-of-mouth can be defined as the act of communicating formally or informally with other consumers about products and services of the company, including recommendations and defending the company against attacks from other consumers (Henning-Thoreau and al, 2006). It is a communication that is beyond the company and comes from a quite natural in the external environment and specifically for consumers. Word-of-mouth is characterized by a high credibility (Gremier and al, 2007). To advertising, consumers are generally skeptical of the sincerity and credibility of the message and saw that the belief that behind every advertisement there is a commercial interest that takes precedence over any design. Word-of-mouth is an important indicator of loyalty. In this context, a Gould (2005) states that a loyal customer can be defined as one who not only uses the goods or services, but satisfaction is such that it speaks to his entourage. A loyal customer will disclose to others of good assessments and encourage them to attend the same company or buy the same brand. It is therefore to free publicity for the company.

COMPLAINT

The complaint is defined as a phenomenon related to post-purchase response to dissatisfaction during an episode of purchase or consumption of a product or service (Cree and Alladin, 2008). This is a "request for information, correction and / or compensation from the client and from the organization, following dissatisfaction with responsibility of the organization" (Prim- Allaz and Sabadie, 2003). The complaint is a valuable source of free information for identifying malfunctions. Therefore, companies must treat it as a source of enrichment rather than as a constraint.

The importance of the complaint is that of being given a second chance to the company. It allows it to overcome the problems that were causing the discomfort or dissatisfaction of the consumer and thus enable it to prevent and reduce the risks associated with customer relationship breaks Zeithaml and al, (2006); Prim and Pras, (2009). The theoretical foundations of loyalty to a cyber merchant are nearly identical compared to the traditional loyalty. However, the operating environment changes to better take into account the specificities of the interactive context in the field of interactive commerce.

INTENTION OF REPEAT PURCHASE

If loyalty is defined as an uninterrupted sequence many purchases of the same brand, it is estimated according to the marketing literature that a minimum of three or four successive repeat purchase enough to talk about loyalty. The set of behavioral approaches to loyalty only attaches to observe the behavior of repeat purchase, without asking their intentional or not. The lack of distinction in all of these measures between intentional loyalty and loyalty is the main observed through this approach. It seems difficult to reconcile the overly simplistic approach to the behavioral importance of attitude in the decision process.

Behavior on the Internet is much less stable over time. Indeed, the cyber consumer has more alternatives to choose from, the cost of change is relatively small, and information about the sites is available at low cost. All these factors make it generally more difficult to understand loyalty to a website in its classical. In this context, Boultaire and Mathaeus (2009) have demonstrated the centrality could play the commitment to the site in the determination of the precision. They emphasized the relevance of transcribing the relational approach in the conceptualization of loyalty on the internet.

Relational loyalty must be manifested by a cooperative relationship in the long run. The consumer is no longer a mere purchaser of the product or user of the site, but a true partner with whom we can cooperate and be willing to make sacrifices in the short term. The establishment of such a relationship necessarily involves the strengthening of satisfaction and consumer confidence in the brand or site.

EMOTIONAL STATE

"Intense emotional state, characterized by a sudden physical and mental disturbances which are abolished in the presence of certain stimuli or representations vivid, appropriate responses to adapt to the environment. Inadequate modulation of emotional reaction leads to an exaggeration of the reaction in terms of euphoria or depression, or decrease it with insensitivity and indifference. Cognitive functions can be secondarily affected" (Loui Bernube, 2001.)

Emotions are complex reactions that involve both body and mind. These reactions include a subjective mental state, such as anger, anxiety or love, an impulse to act as escape or attack, whether expressed openly or not, and profound change in the body, such that an increased heart rate or blood pressure.

Some of these physical changes prepare for adaptation actions supported. Others such as postures, gestures and facial expressions communicate to others what we feel or what we want others to believe that we feel.

By emotion, we mean a mental state of real time that arises from cognitive appraisals of events or thoughts. It has a phenomenological tone, is accompanied by physiological processes, is often expressed physically, and may result in specific actions to affirm or cope with the emotion, depending on its nature and meaning for the person having it (Richard P. Bagozzi, Mahesh Gopinath and Prashanth U.Nyeer,).

It follows from these definitions that combine emotion:

- Physical sensations (changes in heart rate, muscle tone, alertness, sweating...)
- Mental representations
- The specific motor responses (from the tension of facial muscles to flight or attack, for the case of a threatening situation, the smile is to "jump for joy" in a pleasant situation).

The importance and place of these elements in the development of emotion theories vary. Mehrabian (2000 and 1997) and Mehrabian and Russell (2003, 1974 and 1975) identify the emotional state as a reaction against the individual manifests an environment. According to Whitner (1998), is the set of tangible stimuli that influence the perception and response of the individual.

Emotion is a multidimensional concept. The dimensional perspective that describes emotions in terms of minimum number of base dimension recognizes this feature. The model of Mehrabian and Russell (1994) identifies three dimensions of emotion, namely pleasure versus displeasure, arousal and awakening versus non-dominant versus non-dominance. Regarding the first dimension, pleasure describes the satisfaction or happiness felt vis-à-vis a stimulus. Dube (1999) defined pleasure as "a primary motivation for purchasing hedonic products or services, or as a signal that a transaction has been satisfactory." Bel and Dube (1998) present three sources of pleasure: sensory pleasure, pleasure and fun social psychology. The sensory pleasure is the sense of contact between the individual and the physical world. The description of the sensory dimensions by the interviewees reflected this kind of pleasure. The social pleasure is being with others and especially with friends by performing an activity. Psychological pleasure has two kind of pleasure: the pleasure emotionally grasped through positive emotional responses experienced during a consumption experience, which includes cognitive and the intellectual dimension.

In this research, we will retain the emotional and sensory pleasure. Cardes (1998) states that arousal is a physiological state influenced by exposure to emotional stimuli. Dominance is defined as the extent to which the individual controls or is controlled by stimuli.

To sum up the emotional reaction means an intense experience of short duration and specific to a stimulus. The multidimensionality of this concept reflects its conceptual richness and explains the emotion in terms of three central dimensions.

In this research, we will look to capture the potential impact of these emotional states on the satisfaction of online shoppers. The study of this influence is part of the vision of Zajonivic (1990,1994) which postulates that "the primary reaction of an individual in a situation where the emotional and cognitive conflicts, is emotional". Thus emotional states positively influence the satisfaction of online shoppers. So our assumptions are as follows:

H.1.1: The pleasure has a positive effect on the satisfaction of cyber consumers.

H.1.2: The stimulus has a positive effect on the satisfaction of cyber consumers.

H.1.3: The dominance has a positive effect on the satisfaction of cyber consumers.

PERCEIVED RISK

The notion of risk is a central theme of research in many fields as finance, marketing, sociology and psychology. In marketing, the risk is a source of much debate about the detailed steps of consumer behavior. Indeed, Bayer (1990) was the forerunner of the theory of perceived risk that consumers often perceive a risk at the time of their purchases. For this author, "consumer behavior involves risk in the sense that any action by the consumer will lead to consequences that can not anticipate with certainty approximate and some could be unpleasant."

Several researchers in marketing have proposed a multitude of definitions of perceived risk. Indeed, Cox Rich (1994) have conceptualized entant that "the quantity issues in a purchase situation." For their part, Murray (1991) points out that the perceived risk is the uncertainty perceived by the consumer for losses or gains of a particular transaction. Rudi Voller (1995) also identified the risk as "the possibility of loss due to the purchase or consumption of a product (or service)." This diversity in the conceptualization of the concept confirms About Bischoff (2005) which states "if one were to read ten articles on risk, it should not be surprised to see the risk described in ten different ways".

Although no consensus was reached on the precise nature of perceived risk, most authors agree that it is a built-dimensional, consisting of the likelihood of unpleasant results and the importance of loss, Roselius (2001), Bettman (2003), Lutz and Reilly (2003), Taylor (1974), Peter and Tarpey, (1975) and Peter and Ryan 1(1976). On the other hand, it is considered a multi-faceted building up of physical risk, psychological risk, social risk, financial risk, performance risk and risk of loss of time, Jacoby and Kaplan, (1972); Peter and Tarpey, (1975); Brooker, (1984), Garner, (2006); Mitchell, (1992); Shiffman and Kanuk, (2007).

With the advent of the Internet as a new environment to purchase virtual nature, Forsythe and Shi (2003) have defined the perceived risk associated with Internet purchases as "the expectation of loss subjectively determined by year Internet Particular shopper in contemplating a purchase online". The risk perceived by consumers in using this new marketing method, to order the products they want increases. Indeed, Cox and Rich (1994) argue that certain forms of purchase are perceived as riskier. Thus, Spencer, Engel and Blackwell (2000) and Festervand, and Tsaais Synder (2006) specifically state that the purchase by telephone and mail order purchases are more risky than buying in a store.

Despite the importance of perceived risk in the understanding of satisfaction, there is no consensus regarding the relationship between these concepts. Indeed, some researchers consider the perceived risk as antecedent of satisfaction; others conceptualize because of satisfaction. As part of our research, the perceived risk is considered a precursor of satisfaction. Thus, the perceived risk makes it all the more critical the concept of e-satisfaction.

Indeed, the lack of security and network reliability, lack of confidentiality of personal information stored or transmitted which can be intercepted by anyone other than those involved in the transaction reluctant to leave the consumer this means of distribution. This reluctance is manifested at the level of dissatisfaction of the consumer to the commercial website. Thus, we assume a negative impact on the dimensions of perceived risk on the dimensions of satisfaction with the site. Therefore, our assumptions are as follows:

H.2.1: The global risk associated with purchasing over the Internet has a negative impact on the satisfaction of cyber consumers.

H.2.2: The financial risk associated with Internet shopping has a negative impact on the satisfaction of cyber consumers.

H.2.3: The risk of loss of time associated with Internet shopping has a negative impact on the satisfaction of cyber consumers.

H.2.4: The social risk associated with purchasing over the Internet has a negative impact on the satisfaction of cyber consumers.

H.2.5: The psychological risk associated with purchasing over the Internet has a negative impact on the satisfaction of cyber consumers.

H.2.6: The functional risk associated with Internet shopping has a negative impact on the satisfaction of cyber consumers.

H.2.7: The physical risk associated with Internet shopping has a negative impact on the satisfaction of cyber consumers.

E-SATISFACTION

Satisfaction has generally been presented as an emotional state arising from the non-confirmation of positive or negative initial expectations for the experience of possession or consumption (Greg Oliver, 2000). However, recent research shows that this conception transactional, cognitive, based on a single standard of comparison (initial expectations) is far from sufficient to identify the process of formation of satisfaction.

In addition, this definition of popular satisfaction and is often confused with the conceptualization of perceived quality, found no echo in research in the field of e-commerce and the Web sites in general. This is due to the difficulty of measuring satisfaction in this perspective. In addition, as emotional satisfaction has been studied in research on the browsing experience but less evident in research on electronic commerce (Chiu, 2004).

Current researches mostly opt for a design considering the dual satisfaction as the result of two parallel processes, one is cognitive and the other is affective (Edward, 2001). Beyond this distinction between the cognitive and emotional literature presents another difference in definition of satisfaction. In fact, researchers have defined this concept in a larger way in marketing.

CONCLUSION

If the company can provide good satisfaction to consumers through its products online, The consumer will be always loyal to the particular company's product through his whole life and will spread the word of good mouth to all known to him which will create a huge loyalty base for the company and the consumer will be a loyal fan to the company for many more years to come.

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STUDENTS PERCEPTION TOWARDS e-BANKING: SPECIAL REFERENCE TO KOLLAM DISTRICT IN KERALA

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ABSTRACT

The changing relationship between consumers and banks has escalated the competition in the banking industry. Information and communication technology is considered as one of the key driver for innovative banking services around the world. This study focus on determining the perception of student's towards e-banking services. The questionnaire was developed considering the five dimensions of e-banking services. The study was conducted in Kollam district of Kerala state, in India which has high penetration level of banking services among students. The result shows there is positive perception towards e-banking services among students but there is issues related to security.

KEYWORDS

e-banking, perception, banking services

INTRODUCTION

Information and communication technology (ICT) have changed the way of conducting banking business and is becoming an important factor in the development of financial industry. The promise of ICT in the banking sector has been seen in terms of its potential to increase customer base, reduce transactions cost, improve the quality and timeliness of response, enhance opportunities for advertising and branding, facilitate self-service and customization and improve customer communication and relationship (Garau, 2002). This helped all banks making greater use of ICT facilities to provide better service and to excel in competition. Habib (2012) mentioned the factors to consider when banks adopt technological innovations are assets of a bank, years of operation, urban location, deposits ratio, and expenses ratio.

LITERATURE REVIEW

Electronic Banking (E-Banking) includes various banking activities conducted through internet, mobile phone, telephone, automated teller machines (ATM), credit and debit cards etc towards customers without being present at physical banking location. E-banking saves time and money for banks and consumers as consumers can pay bills, secure loan, know their account balance, transfer money etc and banks can utilize e-banking as an inexpensive way to reach remote consumers or rural consumers as an alternative to branch banking.

Sayar and Wolfe (2007) mentioned that the evolution of e-banking has fundamentally transformed the way banks traditionally conduct their businesses and the ways consumers perform their banking activities. According to Christopher et al (2006), E - banking has become an important channel to sell the products and services and is perceived to be necessary in order to stay profitable in successful.

The major capabilities of E-banking Services include the following:

1. **View Current Account Balance and History at any time:** Consumers can check the status of their account balance, transaction history, history related to withdrawal and deposit etc.
2. **Obtain Credit Card and Debit Card Statement:** Consumers can easily check their transaction history of credit card and debit card.
3. **Pay Bills:** Paying bills through e-banking services has helped consumers save time, no waiting in lines etc.
4. **Transfer money between accounts:** Money can be transferred between consumers account or between inter banks.

Chou and Chou (2000) identified five basic services associated with E-banking: view account balances and transaction histories; paying bills; transferring funds between accounts; requesting credit card advances; and ordering checks for more faster services that can be provide by domestic and foreign bank. E-banking allows customers to perform a wide range of banking transactions electronically via the bank's website anytime and anywhere (Grabner-Kraeuter and Faullant, 2008).

(a) BENEFITS OF E-BANKING TOWARDS CUSTOMERS

1. **Accessibility:** Customers account can easily accessible with an E-banking account.
2. **Anytime Anywhere Banking:** E-banking provides 24 hours service to the customers for anytime, anywhere banking, which means customers can access E-banking services 7days a week, 24 hours a day.
3. **Cash Free Shopping:** A customer can shop without any need of carrying paper money with him.
4. **ATM Withdrawal:** Customer can withdraw at any time through ATMs that are now widely available throughout the country. Besides withdrawing cash customers can also have mini banks statements, balance inquiry at these ATMs.
5. **Bill Payment:** E banking has also greatly helped in payment of utility bill. Now there is no need to stand in long queues outside banks for his/her purpose.

(b) BENEFITS OF E-BANKING TOWARDS BANKING INDUSTRY

1. **More Customers:** Better service levels and strategic marketing initiatives, banks are able to reach out to more customers than possible through traditional banking through physical location branches.
2. **Cost Savings:** Banks save a significant amount of operational capital from not having to open physical location branches in new locations. These savings are passed onto the consumer in the form of reduced or no fees for inter-bank and even intra-bank money transfers, no fees for online payment of utilities' bills, and cash-back options on frequent use of online-applied bank credit cards.
3. **Boundary Less Services:** Banks can provide their services to customers without any geographic barrier.

Adoption of information technology enabled tools helped banks in reducing operational costs, infrastructure cost, staffing etc and helped to reduce customer waiting time in branches resulting in highly satisfied customers.

RESEARCH METHODOLOGY

This study was conducted as a survey that examined Students perception towards e-banking in Kollam district of Kerala state, so the area of survey was confined to Kollam district of Kerala state. The survey instrument was a developed questionnaire comprising open ended and five point categorical rating scale (indicating 1 = very comfortable and 4 = uncomfortable) divided into two (2) sections: personal details and students perception towards e-banking in Kerala state. Data was collected from 200 students and simple random sampling method was used in various colleges at Kerala State during April –July 2013.

SAMPLE PROFILE

DISTRIBUTION OF RESPONDENTS ON THE BASIS OF DEMOGRAPHIC FACTORS

TABLE 1 : GENDER PROFILE OF THE RESPONDENTS

Sl.No.	Gender	Respondents	Percentage
1	Male	142	71%
2	Female	58	29%
	Total	200	100

Source: Field Survey, 2013

The Table 1 presents the gender profile of the respondents. 71% of the respondents fall into male and 29% of the respondents fall into female.

TABLE 2 : AGE PROFILE OF THE RESPONDENTS

Sl.No.	Age Group	Respondents	Percentage
1	Below 20 years	26	13%
2	21 – 25 years	94	47%
3	Above 25 years	80	40%
	Total	200	100

Source: Field Survey, 2013

The Table 2 presents the age group of the respondents. The total population were divided into three groups. Only 13 percent of the respondent belonged to the age group of below 20 years. Respondents in the age group of 21 – 25 years, that comprised 47 percent of the total sample respondent and 40 percent of the total respondent belonged to the age group above 25 years.

TABLE 3 : EDUCATIONAL PROFILE OF THE RESPONDENTS

Sl.No.	Educational Qualification	Respondents	Percentage
1	Graduation	54	27%
2	Professional Graduation	60	30%
3	Post Graduation	32	16%
4	Professional Post Graduation	48	24%
5	Others	6	3%
	Total	200	100

Source: Field Survey, 2013

The educational profile of the respondents is shown in the Table 3. It was observed that a major portion of the respondent i.e., 30 percent was doing their professional graduation, followed by 27 percent were doing their graduation. 24 percent of respondents were doing their professional post graduation and 16 percent were doing their post graduation, followed by 3 percent were doing other courses like diploma, ITI etc.

ANALYSIS OF RESULTS & INTERPREATION

The main objective of the study was to assess the students’ perception towards e-banking. The respondents were asked to how they would get information regarding the e-banking services offered by banks. This also helped to analyse their perception on the e-banking. A significant 40% of the respondents got information from friends and family members. 30% of the respondent got information from advertisement (Online and print media). About 25% of the respondent got information from internet and only very few depend on bank officials to get information about e-banking.

Five dimensions were considered for creating questionnaire and evaluating student’s perception towards e-banking. The five dimensions were:

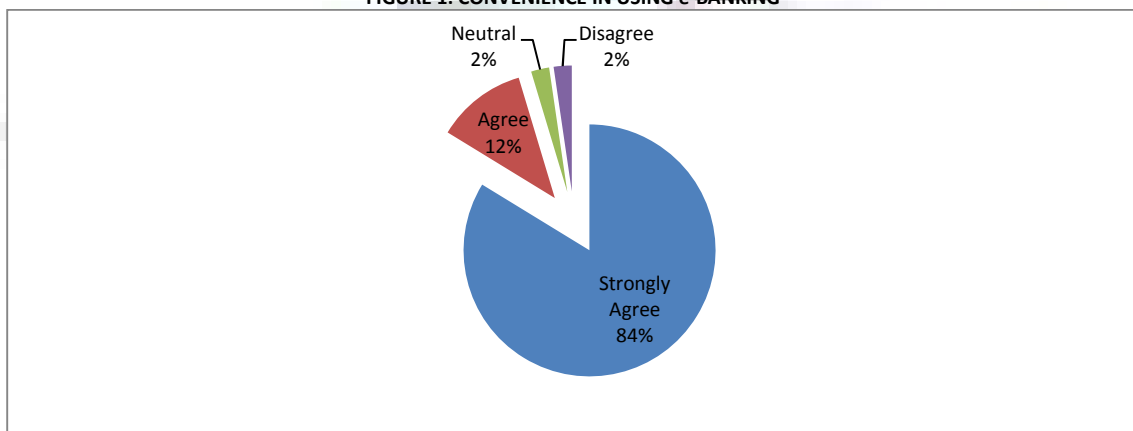
- (1) **Convenience:** Easier than traditional banking; less time taken for completing bank transactions; better service from bank office; any time of usage.
- (2) **Security:** Privacy regarding bank transactions; bank information wouldn’t fall in wrong hands; concern regarding making mistakes.
- (3) **Status:** Creating an impression on other people.
- (4) **Financial motives:** Cheaper in using e-banking services.
- (5) **Valued Added Services:** Include payment of bills, Cash free shopping,

RESULT FINDINGS

The following is the findings for the five dimensions for evaluating student’s perception towards e-banking.

(1) CONVENIENCE

FIGURE 1: CONVENIENCE IN USING e-BANKING

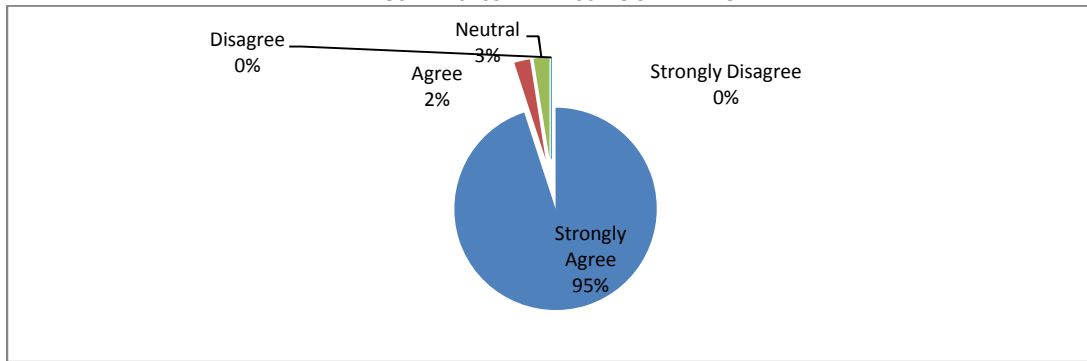


Source: Field Survey, 2013

The first section of the questionnaire focused on the convenience in e-banking. The largest percentage (84%) of the respondent strongly agreed that the usages of e-banking services are convenience when compared to traditional banking, followed by 12% agreed with convenience and followed by 2% of the respondent neither agreed and disagreed for the convenience but no respondent didn’t supported strongly disagree part.

(2) SECURITY

FIGURE 2: SECURITY IN USING e-BANKING

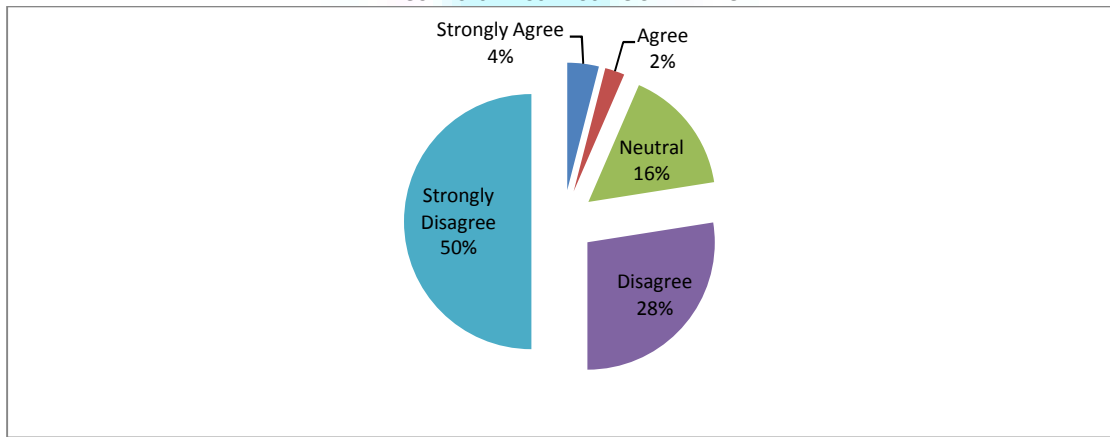


Source: Field Survey, 2013

This section of the questionnaire focused on the security issues of e-banking. The largest percentage (95%) of the respondent strongly agreed that the usages of e-banking services have concern regarding are security, followed by 2% agreed with the same fact and followed by 3% of the respondent neither agreed nor disagreed but no respondent didn't supported strongly disagree part.

(3) STATUS

FIGURE 3: STATUS IN USING e-BANKING

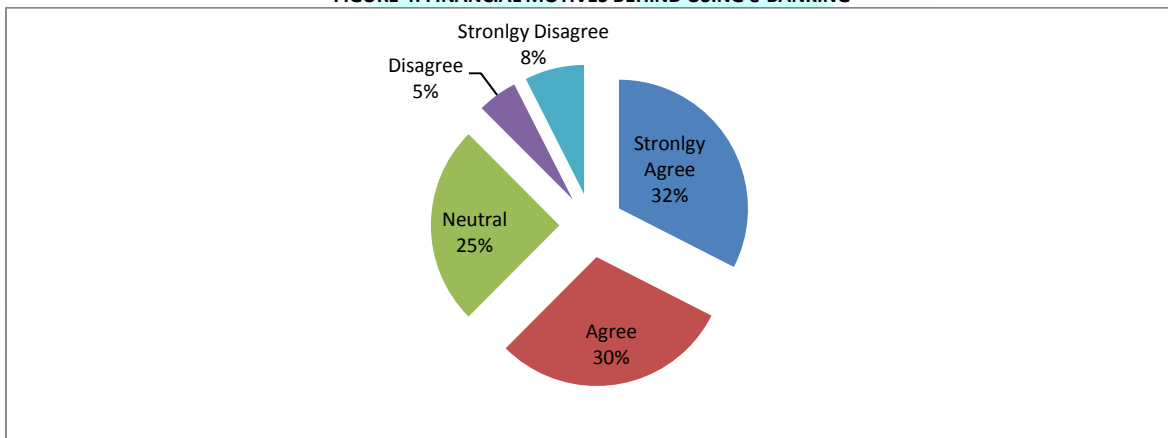


Source: Field Survey, 2013

This section of the questionnaire focused on the social status associated with using e-banking services. 50% of respondent strongly disagreed about using e-banking as status symbol followed by 28% of respondent supporting the above mentioned statement. 16% respondent stayed neutral and 4% of respondent strongly supported e-banking as status symbol, followed by 2% agreeing with the statement.

(4) FINANCIAL MOTIVES

FIGURE 4: FINANCIAL MOTIVES BEHIND USING e-BANKING

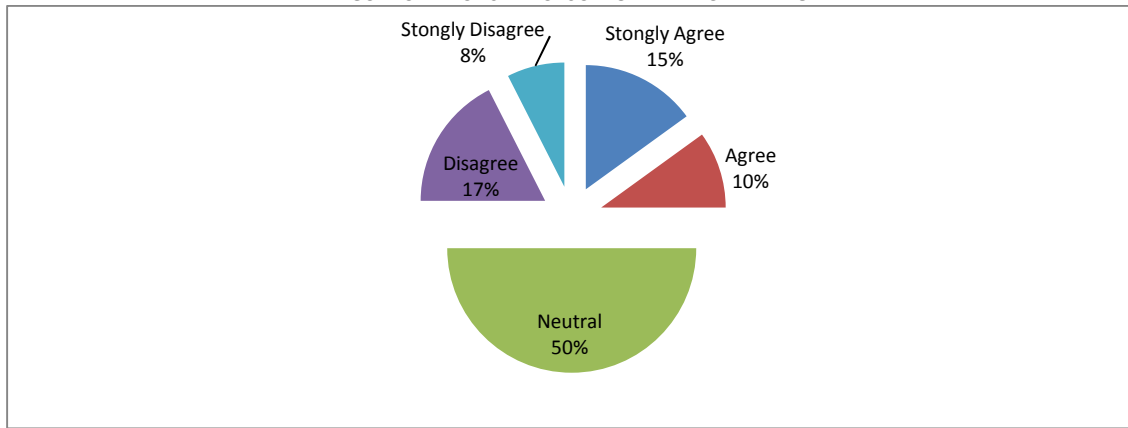


Source: Field Survey, 2013

This section of the questionnaire focused on the financial motives behind using e-banking services. 32% of respondent strongly agreed having financial motives in using e-banking, which is supported strongly by 30% of respondent. 25% kept this section as neutral and 5% respondent disagreed with the fact, financial motives supported by 8% of respondent strongly supporting it.

(5) VALUE ADDED SERVICES

FIGURE 5: VALUE SERVICE SUPPORTED BY e-BANKING



Source: Field Survey, 2013

This section of the questionnaire focused on the value added services provided by e-banking services. 50% of respondent was neutral in this section as population of respondent was students but 15% of respondent strongly agreed, followed by 10% of respondent supporting for value added services. 17% of respondent disagreed with the valued added services provided by e-banking followed by 8% of respondent strongly disagreeing.

CONCLUSION

E-Banking is a great new way of performing everything that you do at the bank; on your computer. E-banking which can has emerged fast as a medium of providing banking services differently from traditional banking services where need for infrastructure is huge.

This study reported interesting facts about the perception of students in the context of e-banking. Students' perception is measured using five dimensions as criteria. It has been found out convenience followed by financial motives are the dimension for students prefer for e-banking. The dimensions, status and other value added services are less important for considering e-banking services. A majority of the students are concern with the security issuing in using e-banking which includes online frauds and manually stealing credit or debit cards.

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TECHNOLOGICAL DRIFT TOWARDS SMART DEVICES: AN OVERVIEW

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ABSTRACT

Technology landscape is the major changing factor in all industry with the outlook of technology evolution in the field of electronics & communication; we are witnessing the turnarounds of firms ranking in this industry. Computers and mobile phones are viewed as two different industries which combined to deliver smart devices like smartphones and tablets have taken over the laptops and desktops business. With this technological change, we see new players like Google, Samsung and Apple replacing the dominance of Microsoft and Nokia. The firm with superior technology and suitable strategy to match the new technology will be at front end. Still the smart devices industry is in evolutionary stage most of the firms bet on upcoming technologies to lead the market.

KEYWORDS

Smart device, Technological changes, Business strategies.

INTRODUCTION

Change is occurring at an accelerating rate; today is not like yesterday, and tomorrow will be different from today. Continuing today’s strategy is risky; so is turning to a new strategy” -Philip Kotler.

Shift in technology and device preference, like shifting trend of customers’ from desktop to laptops (a process that began in early 2000), similarly the technological drift from laptops to smart devices has created an opportunity for companies like Google and Apple.

Technology is one of the constant driving force in the way organizations work. Indeed whole business operation can be traced through technology change. With the combination of electronic & communication and information technology has changed the complexity in consumer preference and adoption of technology, this also enable individual and small firm to afford technology once limited to large organization and to vary their mode and place of work. This give rises to new strategic thinking and handling the business. New technology always provides the edge for innovator or early adopter in terms of handling consumer and competitors.

Similarly the introduction and innovation of new technology has changed the traditional business operation strategy and tactic, along with the technology changes business strategy are also changed with time. Innovation of computer and software has given rise to new business operation strategy that constantly changed and evolved with the change in technology from computers – laptops – Smartphone’s and tablets. The firm which is capable to foresee in technology change and change the business operational strategies can win the race.

Heavily guarded OS (operating system software) market by Microsoft not left a single window for any competitors since from the inception with a strong market share of 98.43% in desktop and PC segment but fail to make its impact in Smartphone and tablet segment with market share of only 1.21% and adding with the and added with increasing trend in sales of Smartphone and tablets, recent sales figure showing steep fall in laptop and desktop sales over Smartphone and tablet sales with Global shipments of Smartphone’s, tablets, and laptops hit 308.7 million in the first quarter of 2013, with 216.3 million Smartphone’s, 50.5 million laptops, and 41.9 million tablets shipped, according to the latest numbers from Canalis. Google’s Android accounted for 75.6 percent of all Smartphone shipments. With these rapid advances going on and the prediction in December, 2012 by Mary Meeker that the installed base of smartphones and tablets will exceed the total PC installed base by the 2nd quarter of this year, market researchers are releasing forecasts more frequently than ever. Smartphone and tablet ready to take over the PC and desktop the shift in technology give the window for competitor to reach and the major advantage is been taken by Google.

TABLE 1: DESKTOP OS MARKET SHARE AS OF MAY 2013

Desktop & Laptop Operating Systems	Percentage Market share
Windows 7 (Microsoft)	44.85%
Windows XP (Microsoft)	37.74%
OS X (Microsoft)	7.06%
Windows Vista (Microsoft)	4.51%
Windows 8 (Microsoft)	4.27%
Linux	1.26%
Other	2.14%

Source: <https://www.netmarketshare.com>

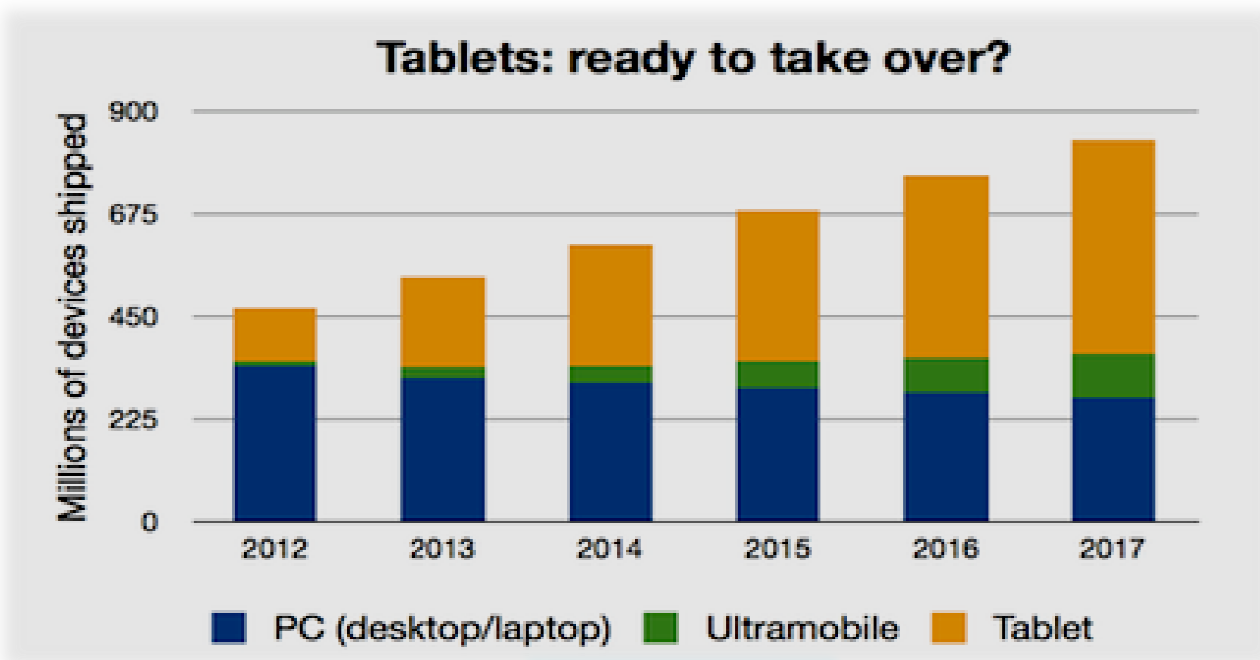
TABLE 2: TOP SIX SMARTPHONE MOBILE OS, SHIPMENT, AND MARKET SHARE, Q3 2012 (PRELIMINARY) (Units in millions)

Operating System	3Q12 Shipment Volumes	3Q12 Market share	3Q11 Shipment Volumes	3Q11 Market share	Year-Over-Year Change
Android	136.0	75.0%	71.0	57.5%	91.5%
iOS	26.9	14.9%	17.1	13.8%	57.3%
BlackBerry	7.7	4.3%	11.8	9.5%	-34.7%
Symbian	4.1	2.3%	18.1	14.6%	-77.3%
Windows phone7/ Windows mobile	3.6	2.0%	1.5	1.2%	140.0%
Linux	2.8	1.5%	4.1	3.3%	-31.7%
Others	0.0	0.0%	0.1	0.1%	-100.0%
Totals	181.1	100.0%	123.7	100.0%	46.4%

Source: IDC Worldwide Mobile Phone Tracker, November 1, 2012

Smartphone and tablets are increasingly dominating the world of smart devices. The advent of mobile data smartphone becomes affordable it is rapidly reaching masses. This has widely been discounted by telecom operators but smartphone and tablets offer more flexibility in term of mobility, access to internet and low cost. This upgraded technology from the integration of computer and mobile phone has posed serious threat to laptop and desktop sales. The trend indicating by 2017 there will be decrease rate of sales in laptops and desktop and increase in sales of smartphone and tablets.

TABLE 3



Source: Gartner (2012)

EARLY STAGE OF MOBILE OS MARKET

Mobile phone operating system was not viewed as major attribute by consumers for purchase decision in the initial stages, since much preference was emphasized on hardware component and additional features like FM radio, MP3 players, camera etc. Later when mobile phone manufacturers started integrating mobile phone with computers this leads to emerging importance of reliable user-friendly software. Inability to down size and incorporate the computer operating system into mobile phone due to hardware constraints leads to design of new operating system with competent, user friendly mobile OS. This opportunity was mainly sensed by Google and started developing mobile OS.

GOOGLE'S ENTRY INTO OPERATING SYSTEM BUSINESS

Google is mainly in search engine business and 99% of their revenue is generated from advertisement. They sell web based advertising, monetizing search traffic (CPC-cost per click, paid listing etc.) with the search engine market share 83% in desktop and PC and 81% in mobiles and tablets. Google anticipated the change in technological environment a trend from PC to smartphone and tablets users, this change should be responded to keep the market share up and search engine available to all devices users which help them to tap maximum number of users. So the company started developing the strategy to make the product available in futuristic devices.

Following with the effort Google started investing from 2001, Google acquired 126 companies from Feb 2001 to May 2013 with its largest acquisition being the purchase of Motorola Mobility, a mobile device manufacturing company, for \$12.5 billion and one of the smart investment was Android a mobile software company for \$5 million making it a wholly owned subsidiary of Google, was founded in Palo Alto, California in October 2003 by Andy Rubin. Key employees of Android Inc., including Rubin, Miner and White, stayed at the company after the acquisition. Reports from the BBC and the Wall Street Journal noted that Google wanted its search and applications on mobile phones and it was working hard to deliver that. Through the effort and acquisitions Android unveiled its first product a mobile device platform built on the Linux kernel version 2.6 first commercially available phone to run Android was the HTC Dream, released on October 22, 2008. From this point Google never looked back, with its huge resources branded the Android quickly worldwide and kept constantly improving and coming up with new version regularly.

TECHNOLOGY SHIFT FROM LAPTOP TO SMART PHONES AND TABLETS

Computer Dell released its first quarter report down 79% in earning as consumers turn from personal computers to smartphones to tablets. Laptops and desktops as went stagnant in terms of evolution or even companies has not concentrated much on developing innovative features in teams of hardware components beyond increasing RAM, storage space, processing speed and reducing weight etc. Unlikely in mobile phone technology improvements are rapidly developed with in short span of time. The key shift in technology in mobile phones came when manufacturers started incorporating the features of computers like increased processing speed, improvised software (operation systems), computer based user applications software's (known as smartphone apps) and internet usability enhanced the mobile phones which at present stage looks fare more superior then laptops and desktops and this was contradicted with the sales figures.

The real shift was seen in the end of the 2010 PC has always sold for more than smartphones. In the first quarter of 2010, 85 million PC were sold worldwide compared to 55 million smartphones. The cross over is expected by 2012, instead by the third quarter of 2010, 94 million PC were sold agents 100 million smartphones. The trend of PC sales is stagnant or at best modest growth around 300 million per year.

The traditional PC manufacturing companies like HP, Dell and Lenovo who were also late to react to the change in trend now started considering as major technological shift started developing new products and most of them has introduces there smartphones and tablets in the market.

COMPETITORS AND OTHER FIRM'S REACTION TO CHANGE

With no clear view that the introduction of new technology of smartphone and tablets was by one individual firm, it was the collective contribution of technological bits from various firms. The major contributors for smartphone and tablet technology are Apple, Samsung and Google where initially all three firms has different core business and business model now converging towards single industries.

Apple was the second largest IT Company by revenue after Samsung electronics and 3rd largest mobile manufacturers after Samsung and Nokia. Product differentiation, product excellence and innovation are the key strategy of apple along with its legendry leader Steve Jobs. The introduction of first iphone on January 2007 a convergence of internet enabled smartphone and ipod along with Apple's Mac OS X (later renamed as ios). Later in January 2010 apple

introduced tablet ipad running with modified ios, this 2 introduction bring the wave of technology changing the world of smartphone and tablets. The customer responses were at record, The Company has set record sales for the iPhone and the iPad.

Now with only one line of products in each category apple fail to address multiple segment of customers, followed by the death of Steve Jobs in October 2011. Post Steve Jobs era was not relay proving good for Apple.

Samsung rise in mobile industry is one of the turning point, they pioneered the industry in touch screen technology now one of the core attribute of the smartphone and bring more innovative features to smartphones. Nokia's dominating presence in the mobile industry was a tough challenge for any competitors in the industry, Samsung has slipped past Nokia selling 90 million handset in the first quarter of 2012 to become the world largest mobile phone company ending Nokia's 14 year regime.

The combination of Android and Samsung's hardware yielded in best mix and been able to win the customers all over the world. TGB (Technology Business Research) indicated Samsung's performance solidifies its competitive position against rival Apple and two company's control 90% of worldwide smartphone market. In this neck to neck war between two major manufacturers Samsung seems to have a major advantage over its rival.

Samsungs combination with Google has benefited both the firms but Google has also launched its mobile phone Nexus one on January 2010 manufactured by HTC, later Google extended length by Nexus S and Galaxy Nexus manufactured by Samsung, latest edition was Nexus 4 manufactured by LG electronics. Now with the acquisition of Motorola Mobility on August 2011 Google can manufacture in its own facilities. Showing once Samsung and Google were in same track to counter Apple in smartphone now slowly moving into opposite direction.

The combination of Nokia and Microsoft seemed much as a partnership of loser's pushing hard to make a strong come back with their Nokia Lumia series (windows phone) but at present status they may not be a major threat for any of the market leaders. Even then Google with Android and Nexus clearly has edge over both Samsung and Apple.

FUTURE TECHNOLOGY AND MARKET TREND IN SMARTPHONE AND TABLET

With no doubt that consumers all over the world have casted their votes on smartphones and tablets future orientation will be focused on constant improvement on technology. Smart device future also impacted by an in-depth understanding of how core component technology, business model and services will evolve.

Samsung investing heavily on the Active Matrix Organic Light Emitter Diode (AMOLED) technology assuming that consumers would pay a premium for high contrast display coupled with lower devices power consumption. Apples engineers focused on developing technology such as multi-touch capability combined with a capacitive touch screen to create an entirely new user interface model.

The entire base of business domination in the industry stands on the technology and innovation. McKinsey & Company, Inc has identified top mobile device, hardware and software trend that will significantly impact these devices over the next five years.

TABLE 4

Changing Technology Trends In Smartphone's and Tablets	New Developments in Technology (New Trends)
Display	AMOLED- A full efficient, flexible and foldable display technology react to "retina resolution" (i.e. a higher display resolution density that boosts text and graphic clarity)
Processors	ARM processors with low power consumption and more compact in size.
Sensors	Biometric, pressure and environmental sensors
Batteries	Lithium- sulfur and carbon nanotubes will increases 80% more capacity, wireless battery charging and fast battery charging.
Operating system	ios5 and new version of Android
User interface	Gesture and retina tracking, infrared keyboard and context aware user interface

Smartphone's and tablets as primary computing, firms focusing to position smart devices main computing devices in workplace. Smartphone and tablets are only as adjunct for workplace for occasional remote usage, the future trend will be to bring it as primary device at workplace. This requires new wave of mobile applications.

As the trend, opportunities indicate the smart devices market has richness for innovation and change, room for existing firms to make strategic moves with technology change and revolutionize the industry. The firms need to make sure their own strategies and business plans to capture values from the shift are equally creative.

CONCLUSION

Technology will continue to advance and amaze us. Once computers and mobile phones were superior technologies at different ends which are combined to form a for more superior devices (Smartphone and tablets) which is leading the marketplace. With this technological change we see shift in players who are responsible for technology. Microsoft and Nokia ruled the early stages to till now were replaced by Google, Samsung and Apple.

This clearly indicates the firm with ability to bring new technology as pre the customer preference and adopt new strategy suitable for new technology will be able to survive and flourish in the market place. As the smart device technology and business strategy is changing rapidly, most enterprises want some way of taking advantage of these changes to make their business profitable and compete more effectively.

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15. https://en.wikipedia.org/wiki/List_of_mergers_and_acquisitions_by_Google
16. <https://www.netmarketshare.com/operating-system-market-share.aspx?qprid=10&qpcustomd=0>

MOTIVATION AS AN EFFECTIVE TOOL FOR ORGANIZATIONAL DEVELOPMENT IN NIGERIA

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ABSTRACT

This paper titled 'Motivation as an Effective Tool for Organizational Development' Motivation which makes managers perform, to inspire, encourage and impel people to take actions that geared toward achieving both individual as well as organizational goal. The need for this paper was informed as a result of worker's dysfunctional attitude when discharging their duties. The major objective of the paper is to identify the importance of motivation and its relevance to the organizational development. Secondary methods of data collection were used. These include text books, journals and net materials. Among others, it was found out that motivation of workers at any level is imperative for organizational success. The researchers based on the study recommends that Management should investigate which incentive is most appealing to groups as well as individuals because some workers are motivated to work hard for salary increases, yet others would work harder for the opportunity to obtain recognition.

KEYWORDS

motivation, organizational development.

INTRODUCTION

Anybody who is interested in understanding, predicting and or influencing individual behavior must start with a basic understanding of human motivation. Why do people behave as the way they do? This question has interested behavioral and social scientist for hundreds of years (scholl, 2000). Putting in place all factors of production, labor is the most expensive and important factor of production that is supplied by employees. The success or failure of any organization is ultimately determined by willingness or otherwise of the individual who supplies the labor force. A human resource unite or department in a given organization plays an important role in coordinating the efforts of individual workers to achieve organizational objectives. Motivation is therefore one of the ways of inducing people to put in their best effort in an effective manner in other to achieve organizational objectives (Oyedeji, n. d) Motivation can be induced by the employer or reside within the employee. Employee's have higher levels of motivation when they perceive that management-labor environment is positive. Control stifles motivation while involvement creates a more productive environment. If workers feel that they are being treated fairly and with respect, this attitude will develop and guide their behavior in positive direction (Kamery, 2004).

The topic assesses motivation as an effective tool for organizational development. The main objective of this paper is to identify the important factors that are relevant in motivating employee at the workplace such as the financial and non-financial benefits as well as the role of motivation in organizational development.

Motivation is an inner state that energizes or activates, or direct or channel behavior towards specific goals (Oginni, 2007). Motivation has been defined in numerous ways. One of the best is that "motivation can be seen as the forces acting either on or within an individual or group(s) to initiate behavior (Routha and Kefure, 2007). Motivation is the psychological process that gives behaviour the purpose and direction (Kreitner, 1992). A predisposition to behave in a purposive manner to achieve specific and unmet needs (Buford, Bedeian, and Lindner, 1995, as cited in (Omar, 2006). An internal drive to satisfy an unsatisfied needs and it is the will to achieve (Bedeian, 1993, as cited in Omar, 2006). Motivation refers to anything (within or outside) that drives individuals or group to accomplish personal and organizational goals. There are three major components of motivation which includes: activation, persistence and intensity. Activation involves the decision to initiate a behavior, such as enrolling in a psychology class. Persistence is the continued effort toward a goal even though obstacles may exist, such as taking more psychology courses in order to earn a degree although it requires a significant investment of time, energy and resources. Intensity can be seen as the concentration and vigor that goes into pursuing a goal. For example, one student might coast by without much effort, while another student will study regularly, participate in discussions and take advantage of research opportunities outside class (Cherry, 2012)

TYPES OF MOTIVATION

Motivation at work can take place in two ways. First, people can motivate themselves by seeking, finding and carrying out work (or being given work) that satisfies their needs or at least leads them to expect that their goals will be achieved. Secondly, people can be motivated by management through such methods as pay, promotion, etc. Herzberg, Mausner and synderman (1957) as cited in Hammed (2002) indicated that motivation can be;

1. Intrinsic motivation: the self-generated factors that influence people to behave in particular way or to move in a particular direction. These factors include responsibility (feeling that the work is important and having control over one's own resources), autonomy (freedom to act), scope to use and develop skills and abilities, interesting and challenging work and opportunities for advancement.
2. Extrinsic motivation: what is done to or for people to influence them? This includes rewards, such as increased pay, promotion, and punishments, such as disciplinary action, withholding pay, or criticism.

Extrinsic motivators can have an immediate and powerful effect, but will not necessarily last long. The intrinsic motivator, which are concerned with the quality of working life are likely to be a deeper and longer-term effect because they are inherent in individuals and imposed from outside (Armstrong, 2005).

STEPS TO BE ADOPTED IN MOTIVATING EMPLOYEES AT THE WORKPLACE

1. Sizing up situations requiring motivation.
2. Preparing a set of motivating tools.
3. Selecting and applying an appropriate motivator.
4. Following up the results of the application.

Sizing up situations that require motivation, this step mainly involves understanding of individual differences. Having assessed their needs, one can determine what can motivate them.

Preparing set of motivational tools, the list of motivators should be prepared based on the revealed needs of the people. Selecting and applying motivators. Out of the list of Motivators, few should be selected and applied wherever and whenever they are needed. Feedback, having applied the motivators, it is important to find how effective had a particular motivator been.

DurBrin (2009) opined that the relationship between motivation, performance and commitment can be expressed by the equation $P = M \times A$, where P refers to performance, M to motivation, and A to ability. Note that skill and technology contribute to ability. The committed employee works joyfully toward achieving organizational objectives. Gaining employee commitment is important in the current era because several studies have found that most American workers are not fully utilizing their capabilities. They do what is expected of them but do not contribute extra mental and physical effort to be outstanding. Many of these workers want to be good organizational citizens, yet many of them feel that they have a poor relationship with the supervisor or believe that the organization does not care about them (Hammed, 2002).

THE USE OF FINANCIAL INCENTIVES IN THE WORKPLACE

No employee(s) work for free. Pursuing money based on negative motives can lead to poorer psychological well-being; this is not the same as pursuing money to provide security and comfort to oneself and the family. Certainly, workers want to earn fair wages and salaries, and employers want their workers to feel the impact of what they are getting. To that end, it is imperative to not those employees and employers alike view the fundamental incentive for satisfactory job performance.

The use of money to or other financial incentives in the classic "work performance paradigm" is based primarily on reinforcement theory. Reinforcement theory focuses on the relation between a target behavior (e.g., work performance) and its consequences (e.g., pay), and it is premised on the principles and techniques of organizational behavior modification. Organizational behavior is a framework within which employee behavior are identified, measured and analyzed in terms of their functional consequences (e.g., existing reinforcement) and where an intervention is developed using principles of reinforcement (Houran and Kefgen, n. d)

A research conducted by Robinson (2004) indicated that 64% out of 100 respondents strongly disagreed that workers will still perform well even if their salary is delayed. In a much published study by Gupta n. d as cited in Houra and Kefgen n. d) analyzed thirty-nine studies over four decades and found out that cash reward their job are exited or mundane, in lab and real world settings alike. But the research team acknowledged that money is not the only thing that concerns employees- noting that beyond a certain point, higher salaries will make employees happier, but it will not "buy" better performance. According to her, small cash can actually be dysfunctional in terms of motivation because employees become irritated that their hard work yields so little. Because of this, she advises employer who must give small raise to be careful about linking them to result and to scrupulous about their being fair.

DuBrin (2009) indicated that a natural way to motivate workers at any level is to offer them financial incentives for good performance. Linking pay to performance improves the motivation value of money. Using financial incentives to motivate people fits behavior modification principles. Financial incentives, however, predate behavior modification. A useful principle for using financial incentives to motivate workers at all levels is to investigate which incentives are most appealing to groups as well as individuals. Many workers are motivated to work hard for salary increases, yet some others would work harder for the opportunity to obtain recognition. Another group of workers might value increased health benefits more than a salary increase. Financial incentives are more effective when they are linked to (or contingent) upon good performance. Linking pay to performance motivates people to work harder. Production workers and sales workers have long received contingent financial incentives.

Although financial incentives are widely used as motivators, they can create problems. A major problem is that workers may not agree with management about the value of their contributions. Financial incentives can also pit individuals and groups against each other. The result may be unhealthy competition rather than cooperation and teamwork (DuBbrin, 2009).

Bellentine, McKenzie, Wysocki, and Kepner as cited in Robinson (2004) argued that monetary incentives encourage compliance rather than risk-taking because most rewards are based only on performance. As a result, associates are discouraged from being creative in the workplace. Monetary incentives may be used to circumvent problems in the workplace. For example, incentives to boost sales can be used to compensate for poor management. Employers also may use monetary incentives as an extrinsic rather than an intrinsic motivator. In other words, associates are driven to do things just for the monetary reward versus doing something because it is the right thing to do. This can disrupt or terminate good relationships between associates because they are transformed from co-workers to competitors, which can quickly disrupt the workplace.

THE USE NON-FINANCIAL INCENTIVES

Cash is king, but in today's economy employees know that there is more to the story than cash alone. Today's job seekers and your employees have become savvier about non-monetary compensation. And there is a good reason they are paying attention to it. Bellentine, McKenzie, Wysocki and Kepner as in Robinson (2004) stressed that Non-monetary Incentives is the reward for excellent job performance through opportunities. Non-monetary incentives include flexible work hours, training, pleasant work environment and sabbaticals. One reason employees place a high value on the non-cash compensation parts of a total compensation package is because they can greatly reduce household expenses. For example, getting an employer's help with health insurance premiums can save a family many thousands of naira a month, not to mention savings from the better medical coverage likely provided by a group plan.

Beyond the employee getting material value from their benefits, there are non-material perks, as well. Organisations who offer benefits, such as a rich retirement plan, send a message that they value their employees and want to promote long-term relationships with their employees. These employers are becoming more and more sought after. Workers are looking for those organizations that invest in their employees and want to provide a fair wage, and a fair benefits package. Savvy workers will want to work for a company that offers a total compensation package rather than work for a one that provides high pay with little in the way of benefits.

Many top performers are looking for an organization that goes even further than just cash compensation and basic benefits. They are looking for flexible work schedule, employee training or education benefits, and well-trained employees to work for. These elements are often even more important than the traditional "what do I get when I work for you" benefits. The value of well-trained workers who has an excellent reputation for helping individuals reach their full potential and increase their likelihood for promotion can be invaluable to employees. Often employees will stay with an organization or take less money to work for the right people at the right place.

If you are looking to stay at the top of your organization by nabbing top talent, it is important to think about non-monetary compensation because it is what you offer to your employees in all areas of their career and quality of life. In this tough economic times, it is hard to give more money or richer benefits to win the war for talent by playing up the strengths that you have as an organization or figuring out what you can offer that will be unique and valued in the labor market.

Dike (1999) indicated that any person who has been following the issues surrounding labor-management relations in Nigeria would agree that the real problem facing Nigerian workers is that they are unmotivated and under-appreciated. Nigeria should motivate its labor force, because it cannot effectively compete in the emerging global economy with angry and hungry workers.

Dike (1999) was also of the view that well-managed retirement benefit for workers could go a long way to boosting the morale and productivity of the workers in Nigeria, because many of them get bogged down and worrying about their fate after retirement (ignoring or forgetting to give proper attention to their job duties). Knowing that they would not get their benefits after retirement, that is why some workers would be tempted to get into corrupt practices in order to save towards retirement. Therefore, the establishments of social security system and unemployment compensation benefits are appropriate motivational packages that could boost workers morale and productivity.

THE ROLE OF WORKER'S MOTIVATION IN ORGANIZATIONAL DEVELOPMENT

Motivation makes every one to feel enthusiastic and accountable to achieve the target set for the team. In any place and anywhere, motivation can do the miracles. In an organization the normal employees become tired with their daily routine, they do not think about the organization. At that time organization motivates, they do their job sincerely.

Motivation in an organization should come from 360 degrees. You will wonder how a subordinate can motivate you. Yes, it is possible and it is one of the keys for development of the "Y" theory of management. Never forget you can be best only when you work with the best. Whether it is your superior or colleague or subordinate, they got to be best for you to be best and it is possible only when motivation is there flowing from all corners. The only possibility for this to exist in any organization is when the organization setup itself in a very much informal and there is scope for flow of ideas from all parts and all are welcomed all over in the organization without strict restriction.

Motivation in an organization is like a prime mover which helps to increase the acceptable productivity which is directly related to profitability. Motivation is like boosting a man mentally it helps him to do his work with much more concentration and doing it properly, making a job properly makes him feel happy if he feels happy whenever he does that job again he will be very smart quick and makes him happy, ultimately which helps in organization development. Motivational factors in an can never be the same, the following tips are important for motivation of workers at each level of the organizational hierarchy;

MOTIVATIONAL FACTORS AT EACH LEVEL OF THE ORGANIZATIONAL HIERARCHY

MOTIVATORS TO TOP MANAGERS

1. Open minded
2. Cooperative
3. Appreciate subordinate
4. Communicate properly
5. Have forgiveness
6. Over smiling
7. Be a model to others
8. Reward giving
9. Beneficiary to subordinate

MOTIVATORS TO COLLEAGUES OR PEERS

1. Cooperative
2. Accretive
3. Knowledge sharing
4. Open minded
5. Problem sharing

SUBORDINATE OR LOWER LEVEL WORKERS

1. Work hard
2. Loyal
3. Knowledge sharing
4. Good looking
5. Pleasing manners
6. Healthy
7. Family living

CONCLUSION

If organization knows why people do what they do and how can we motivate others to do what we need them to do in the workplace, understand how and why motivating, we can encourage them to be their best and do their best at work. The more people are motivated to be successful and achieve the goal set for them, the more their confidence in their own ability will grow as well, which can, in turn make them even more motivated. When people are motivated at work, job satisfaction improves, effort increases, working environment improves, result are focused, derive is created, everyone's full potential can be tapped, everyone is certain of the role they are to play and team members become more skilled as a whole. Despite the importance of motivation, it is pertinent to acknowledged that money is not the only thing that concerns employees, higher salaries will make employees happier, but it will not "buy" better performance, small cash can actually be dysfunctional in terms of motivation because employees become irritated that their hard work yields so little. Because of this, it is advisable that employer who must give small raise to be careful about linking them to result and to scrupulous about their being fair.

RECOMMENDATIONS

For any organization to be productive; there is need to have highly motivated workforce. The following recommendations are essential for effective motivation of employees at the workplace:

1. Management should investigate which incentives are most appealing to groups as well as individuals because some workers are motivated to work hard for salary increases, yet others would work harder for the opportunity to obtain recognition.
2. Management should lay emphasis on what type of motivation are to be provided (extrinsic or intrinsic)
3. They should also identify the appropriate motivational package that will appeal to each level in organizational hierarchy.
4. The package should be able to satisfy both individual as well as organizational needs.

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AN UNDERSTANDING OF DUNNING'S OWNERSHIP-LOCATION-INTERNALISATION (OLI) ECLECTIC THEORY OF MULTINATIONAL COMPANIES

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ABSTRACT

Multinational companies that seek to enter foreign markets usually make the strategic choice whether to enter the foreign market through Foreign Direct Investment (FDI), exportation, or joint ventures. The Eclectic Model was formed to incorporate the three different forms of international growth/expansion: Licensing, Exports and Foreign Direct Investment (FDI). This model supports the manager's decisions in choosing appropriate strategies for expansion. The so-called OLI-factors are three categories of advantages, namely the ownership advantages, locational advantages and internalization. A precondition for international activities of a company is the availability of net ownership advantages. These advantages can both be material and immaterial. The corporation should analyze the six decisions used to decide whether a market is suitable, that is, managers should make the correct product choice for the particular market. Through market research they will choose the best market. This article aims at exposing the understanding of the Dunning's Eclectic theory and its rationale to a multinational corporation. Alongside this the article examines the process of screening foreign markets and also the potential impact of multinational companies on home and host countries.

KEYWORDS

Multinational companies, Foreign Direct Investment (FDI), OLI-factors (ownership, locational and internalization), foreign market, home and host countries.

INTRODUCTION

All organizations have a potential for growth and various strategies to expand and grow internationally are available for them. The only difference that exists is the time and the resources they want to commit in order to reap the benefits of international growth by investing globally. However, what confuses managers is the strategy to choose, even if they are able to identify a potential opportunistic market, they fail to select an appropriate strategy to implement. Multinational companies that seek to enter foreign markets usually make the strategic choice whether to enter the foreign market through Foreign Direct Investment (FDI), exportation, or joint ventures. Most of them usually prefer FDI compared to other modes of investment such as exportation or licensing (Hill, 2005). This is because of several reasons such as; the high transportation cost on exports, for example, when this cost is put together with production cost it becomes so expensive that it leaves MNC's with the choice of FDI in which there exists market imperfection that leads to the internalization theory, due to strategic rivalry and also due to specific advantage. Dunning (1981) suggested that the choice of entry into the new foreign market depend on ownership advantages, location advantages, and internalization. An MNC can enter foreign market through the export, joint venture (FDI), green-field FDI and brown field FDI.

STATEMENT OF THE PROBLEM

In a business environment that is increasingly global in nature, the questions of how, when, and where a firm chooses to engage in foreign direct investment are important topics for international businesses. They will also have to choose which mode of entry they want to use. This article will give an overview of what the Eclectic Paradigm is and how it relates to foreign direct investment. The eclectic paradigm will enable managers to make informed strategic decisions should their firm choose to engage in foreign direct investment.

OBJECTIVES OF THE STUDY

1. To expose the concepts in Dunning's eclectic theory and relate the concepts with a multinational corporation
2. To explicate the potential impact of multinational companies on home and host countries

SIGNIFICANCE OF THE STUDY

The Eclectic Model was formed to incorporate the three different forms of international growth/expansion: Licensing, Exports and Foreign Direct Investment (FDI). This model supports the manager's decisions in choosing appropriate strategies for expansion that is why proper understanding is needed. The OLI framework is also known as the Eclectic paradigm which was proposed by Dunning (1977, 1980, and 1988). His framework was an extension of the internalization theory which originated from the transaction theory stating that "companies should seek lower costs between handling something internally and contracting another party to hold it for them" (Daniels, Radebaugh, Sullivan, 2001).

Before entering foreign markets, certain decisions needs to be made by managers of these firms; these include; screening the market if the barriers for importation and transportation cost are not high, they should opt for exportation but if they are high they should go ahead and screen the product if it is easy to enter a new market with a specific product then they should go for a joint venture. If they cannot use products to enter the market then they should try and use the internal processes that give the firm competitive advantage to enter a green-field market. If it does not work managers should opt to take control in a brown field investment (Daniels, Radebaugh, Sullivan 2009).

LITERATURE REVIEW

Dunning's (1977, 1980, and 1988) proposed model followed Hymer's (1960) application of industrial organization economics in order to study the investment and international trade. The strong position of this model in economic theory gave a basis for integration of various strategic models related to similar theories and for further development. The Eclectic model was developed with the aim of understanding FDI investments throughout the world.

"The ability of an international firm to correctly select markets for its portfolio of products is paramount to its success. During the process of international market selection (IMS) firms must find markets that offer prospects to grow sales, yet also fit strategically with the firm. Finding these markets is not easy and a number of systematic approaches to IMS have been developed over the years. Upon a review of these efforts, one could conclude that the IMS process has three stages: 1) market screening, 2) market identification and 3) market selection". (Kumar, Stam, & Joachimsthaler, 1993; Anderson & Strandkov, 1998).

Root, (1997) argues that the firm is simply attempting to come up with a list market for further study in the screening phase. In this stage the firms use macro variables with secondary data. A more product specific information is used to even narrow down the screening process in the market identification stage. In the market selection stage, detailed analysis of the remaining markets occurs; quite often primary data is used to predict consumer response to the market offer, specific competitors are identified and gauged and, the home firm's strategy is considered.

There are various criticisms about the effects of globalization in which the foreign ventures of international firms are viewed as negatively disturbing or detrimental to the level of exports, creation of jobs, and stability of wages at home and abroad, an comprehensive review of studies on the effects of foreign

direct investment compliments multinationals with being very much beneficial than damaging for both their home and host countries. According to NBER Working Paper No. 9293, "Home and Host Country Effects of FDI", NBER Research Associate Robert Lipsey declares that "there is little evidence that multinationals are guilty of the "many evils that are alleged." (Lipsey, 1994)

Based on the available evidence, "multinational firms transfer managerial practices from their country of origin to their country of operation." (Child et al., 2000). Ferner, (1997), attributes this home country effect to the fact that MNCs are entrenched in the business system of their country of origin.

THE RATIONALE OF THE OWNERSHIP-LOCATION-INTERNALISATION (OLI) ECLECTIC THEORY OF MULTINATIONAL COMPANIES

Ownership Advantages are advantages that firms benefit from controlling. Ownership enables organizations to develop competitive advantages hence encouraging them to use these advantages to expand internationally. These will only apply if the organization has internal unique core competencies or resources that build competitive advantage by enabling it compete with local firms in their own environment. Therefore, successful foreign investment depends not only on the organization's possession of internal core competencies and resources, but on how it is able to co-ordinate them to gain a competitive edge over local firms in the region. These may include a strong brand name, physical assets, research and development facilities, innovation and patents as well as other organizational efficiencies such as superior technology based strategic tools or large scale operational advantages. The multinational company should have a unique competitive advantage which will overcome the disadvantages of competing with the local firms in the home country. Location advantages can be two fold. The organization may benefit from location advantages when it is near the market/customer. This will not only allow continuous and steady supply, but will enable it to save on costs like transportation and warehousing, developing cost advantages. Secondly, Firms can also benefit from location advantages when they are nearer to their suppliers of raw materials. This will enable them to reduce on time taken for transportation and will also help maintain quality. However, there are times when foreign investments reap advantages like cheap labor or make the firm visible to scarce immobile resources only accessible with local firms. This will hence lead to FDI being adopted. Location advantages will build an advantage if performing activities will be more profitable in the foreign location as opposed to the organizations home country. These advantages can be as a result of cheaper labor costs, cheaper land space to set up production sites which are closer to input resources, faster transport channels or proximity to a substantial consumer market, access to cheaper skilled labor, cheaper production inputs such as raw materials or favorable governmental regulations to foreign investments and fewer local competitors. The location advantages are important as they help in identifying which countries will become the host countries for the multinational company.

Internalization Advantages are those that the organization must benefit more from engaging a foreign operational structure rather than remain local in order to build. This means that the cost of operating in the home market is much higher than if operations were international. These may include the lower cost of transactions or better operational control systems. Internalization Advantages explain the advantages that an organization obtains from producing their own products rather than through a collaborative arrangement like a joint venture. The essence is that when organizations develop and carry out their own activities, they are able to benefit from learning and development of their core competencies and resources. With this experience and strategic capabilities, they will hence move into foreign markets.

This advantage is related to the ownership advantage. In the words of Ethier (1986), internalization is mainly important. For example, Coca Cola Company is able to internalize due to its ownership of patents and technology for instance. Ownership has to mainly be explored internally than externally. Companies would choose to internalize due to the greater degree of uncertainty. It would occur when the transfer of knowledge occurs. It would also occur due to price mechanism. In the internal market, prices are charged between related parties within the organization whereas external market prices are charged between the buyer and seller. This leads to flexibility as the company itself decides on the prices of goods and services. It depends on the market entry form. With exports and FDI there are likely to be internalization advantages unlike for licensing as there are regulations to be followed as per license agreement.

Exports is the least expensive strategy and hence the most applied by organizations to expand internationally. It is used when barriers to trade are low and where there exists few competitors in the local market. They can use the following methods to export:*Direct Selling*: This involves selling through sales personal, foreign distributors or retailers who are in touch with the customers on a direct basis. An example is Kenafric Industries Limited. It deals in manufacturing Confectionery, Footwear and Stationery. It uses sales personnel present in foreign countries like Uganda and Tanzania to sell its products in those countries. *Indirect Selling*: The organizations, in this approach, export its goods using agencies and parties that specifically deal with exporting. An example is the use of Export Trade companies. *E-commerce*: This method has emerged as a result of increased technology developments, enabling organizations to sell online using websites. A good example is E-bay that sells consumer products directly to the end-users.

The licensing growth strategy enables a company (Licensor) to grant Intellectual rights to another firm (Licensee) for a fixed period of time in exchange of royalty payments. Licensing normally takes place between a foreign firm (Licensor) and a local firm (Licensee). This method is used especially if there exist high barriers to entry in a particular market and when the product has fewer technicalities. (Daniels et al, 2006)

Foreign Direct Investment (FDI) is the most expensive and riskiest out of all the growth strategies. It also requires abundant resources to be invested for the long-term. FDI can be defined as a strategy where firms engage in investing resources in a foreign country. The company that invests using FDI turns into a Multinational Corporation and commits for the long-term in inflexible strategy. FDI is especially beneficial when it touches on the primary activities of the value chain.

FDI's can be divided into three types: *Brownfield*; which requires purchase of existing operators/firms: *Greenfield*; where the firm engages into new investments: *Joint ventures*; where the company participates with another organization to pursue the same goal. (Amadeo, 2012)

TABLE 1: DUNNING'S ECLECTIC PARADIGM

		Categories of advantages		
		Ownership Advantages	Internalization Advantages	Location Advantages
Form of Market Entry.	Licensing	Yes	No	No
	Export	Yes	Yes	No
	FDI	Yes	Yes	Yes

Source: Dunning (1981)

In order to make a clear decision of which strategy to choose, Dunning (1981) developed the above table to display the advantages a company may experience with a particular growth strategy. The presence or absence of these advantages will determine what kind of strategy the firm should consider as most viable. According to this theory, if the firm has ownership advantages, but has no location advantages or internalization advantages, the most appropriate international growth strategy would be licensing. On the other hand, if a firm has both internalization and ownership advantages, it should employ the exporting strategy. Therefore, only if the firm enjoys all three advantages should the option of foreign direct investment be pursued. However, recent technological and globalization effects on internal resources and competencies will shape the strategy of any global growth objectives.

We can therefore conclude as Rugman and Brewer (2001) say, "that when companies want to exploit a firm-specific asset abroad they will more likely invest in own facilities rather than, for example, licensing if transaction costs are high. The more intangible the firm-specific asset is, the greater the incentive for internalization will be. Organizing transactions may be carried out through two methods, the price system or hierarchy. The problem with the price system may

be that some market participants take advantage of measurement difficulties to overprice and/or underperform. To avoid this 'cheating' behavior companies internalize and integrate transactions". (Rugman and Brewer, 2001)

SCREENING FOREIGN MARKETS

The corporation should analyze the six decisions used to decide whether a market is suitable, that is, managers should make the correct product choice for the particular market. Through market research they will choose the best market. They will also have to choose which mode of entry they want to use. They should also make key consideration if they could transfer their corporate DNA. A corporation must position well to win the loyalty of the intended customers. They must also check the rate at which the market expands in order to choose wisely where to trade. They must analyze the political economic trends and if only they are favorable they should take the venture. Industry attractiveness should be "analyzed by the threat of new entrant, the threat of substitute products, rivalry amongst existing competitors, bargaining power of suppliers and bargaining power of the buyer". (Rugman and Collinson, 2009).

When an organization is pursuing a foreign direct investment strategy, it must start by evaluating and judging if the existing internal resources and competencies will provide competitive advantage in the targeted country as well as enable favorable competition to existing local organizations. For example, if there is a monopolistic advantage or the size of competitors already present. The above approach can hence enable companies to screen for potential foreign markets. The choice of this market will depend on whether the organizations will be able to reap the OLI advantages discussed above. This will be determined by the choice of strategy.

POTENTIAL IMPACT OF MULTINATIONAL COMPANIES ON HOME AND HOST COUNTRIES

Internationalization and foreign investment has many positive and negative effects on both home and host countries. Multinationals have positively affected some countries by investing in them, but at the same time have had adverse effect on their own home country.

The information relating to international management advocates that the home country effect has in recent years become even stronger. As such firms operating in more than one country are forced to integrate and effectively co-ordinate their international business activities. Multinational Corporations, as it is argued, will have to stop or discard multi-domestic strategy, which is a combination of a low need for international integration of the business and a high local responsiveness to the local requirements, and instead they will have to increasingly integrate and co-ordinate their business across borders. (Harzing, 2000). This would be easily done through standardization processes achieved either on the basis of home practices or on some form of global best practice recommendations. "International management structures, financial control mechanisms, expatriates in key positions and written guidelines are among the options for firms seeking to achieve international integration." (Ferner, 2000; Harzing, 1999). Edwards and Ferner, (2000) add that "it can be expected that the home country effect is strongest in firms that originate in a dominant economy, namely the USA today or Japan a decade ago."

Although the home country effect proposes that the management and employment relations of foreign affiliates are displayed on those of their country-of-origin, positing the host country effect assumes that they are also influenced by their country-of-operation (Ferner 1997, Rosenzweig and Nohria, 1994). The extent to which the host country has an effect depends on two factors. Firstly, the institutional distance between country-of-operation and country-of-origin is important. The more institutionally different the two are, the easier it is to identify a host country effect. Secondly, the strength of national institutional regulation is important. MNCs are under more pressure to comply in more tightly regulated business systems than in weaker institutional environments. Nevertheless, research by Muller (1998), Royle (1998) Tempel (2001) and Wever (1995) on American and British MNCs in Germany shows that even in strong institutional environments there is some room for maneuver.

Whether a transfer of practices between the parent company and the foreign subsidiaries occurs does not entirely depend on the host/home country effect, but also on the strategic role of the subsidiary (Gupta and Govindarajan, 1991), the method of affiliate establishment (Taylor *et al.*, 1996) and power relations (Ferner, 2000). Particularly important for the argument pursued here is the type of practice to be diffused. Some, such as those in the area of ER, are more difficult to transfer, as in many countries these are relatively tightly regulated. Nevertheless, ER is also an area where corporate executives might have strong views about certain principles such as management's 'right to manage', which could provide an incentive for standardisation.

CONCLUSION AND RECOMMENDATIONS

FDI is visible at every front. It is, however, discouraged as a result of developed perceptions by the host governments. Due to these perceptions, governments may engage in creating regulations that restrict FDI. Overall, John in his OLI model supports the FDI decision and has provided us with the frameworks and theory as to why FDI should be chosen. As competition goes global and companies search for new opportunities in foreign market, increase in FDI is definite. FDI not only opens up a market for new products but enables the host countries to grow as well. Hence FDI must be encouraged. However, host countries need to maintain a level of control over the FDI so as to prevent any dominance or depletion of resources by the foreigners and to make it a win-win strategy. The so-called OLI-factors are three categories of advantages, namely the *ownership advantages*, *locational advantages* and *internalization*. A precondition for international activities of a company is the availability of *net ownership advantages*. These advantages can both be material and immaterial. The term *net ownership advantages* is used to express the advantages that a company has in foreign and unknown markets. Eclectic theory suggests that by dynamizing the paradigm, and widening it to embrace asset-augmenting foreign direct investment and MNE activity it may still claim to be the dominant paradigm explaining the extent and pattern of the foreign value added activities of firms in a globalizing, knowledge intensive and alliance based market economy. (Bartlett, & Beamish, 2011). As the international business environment became increasingly complex and sophisticated, companies developed a much richer rationale for their worldwide operations. Scale economies, ballooning R&D investments, and shortening product life cycles has transformed many industries into global rather than national structures. They have made worldwide scope of activities not a matter of choice, but an essential prerequisite for companies to survive in those businesses.

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AUTHORING TOOL: KEY FOR E-LEARNING SYSTEM DEVELOPMENT

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ABSTRACT

Recently, a growing number of Institutions and business organization have embraced the concept of E-Learning. They use web based learning systems to fulfill their educational needs .E-learning authoring tools (or AT for short) enable trainers to integrate an array of media to create professional engaging ,interactive training content .The choice of the best authoring tools for the right user is very important for the development of content for E-Learning . This paper describes and reviews on authoring tools that represent the part of the e-learning systems and also to find the best authoring tool.

KEYWORDS

E-Learning, Authoring tools, Classification, Specialized AT, Unspecialized AT.

INTRODUCTION

E-learning is emerging as the new paradigm of modern education. Worldwide, the e-learning market has a growth rate of 35.6%, but failures exist. Little is known about why many users stop their online learning after their initial experience. With its ability to both reduce operating costs and train more people, E-Learning is an attractive option for companies that are trying to balance business and educational goals. But in order to implement an E-Learning program, one have to wade through hundreds of learning management systems, learning content management systems, authoring tools, and collaboration environments to determine what solution will work best for your situation. There are several hundred e-Learning tools out in the marketplace today. Selecting the proper course-authoring tool for developing your company's online training content is no small undertaking. E-learning is becoming an essential part in teaching and teachers are searching for the best method to represent their courses. Since Learning Object becomes the small course unit that can be designed to be reusable, customizable and flexible; teachers prefer to find the authoring tools for creating interactive LO quickly and easily. [1] Many organizations are attempting to reduce their training costs by developing E-learning materials in-house. Whatever the reason, more trainers are finding themselves researching the features, benefits, and cost of authoring tools. Through this paper, will describe the authoring tool, the reason of the using authoring tools and How to find the best tool. In Section 6, the categories of tools will be presented. In Section 7, we will focus on the classification of authoring tools, the most tools. Finally, the paper will be ended by conclusions. [11]

WHAT IS AN AUTHORIZING TOOLS

The "Intelligent tutoring system" research community uses the term authoring system to refer to a computer based system that allows a general group (including non-programmers) to create (or author) content for intelligent tutoring systems. While a few intelligent tutoring systems have been successfully created, they are very costly to construct.

In the development of educational software, an Authoring System is a program that allows a non-programmer to easily create software with programming features. The programming features are built in but hidden behind buttons and other tools, so the author does not need to know how to program. Generally Authoring Systems provide lots of graphics, interaction, and other tools educational software needs.

An authoring system usually includes an authoring language, a programming language built (or extended) with functionality for representing the tutoring system. The functionality offered by the authoring language may be programming functionality for use by programmers or domain representation functionality for use by subject experts. There is overlap between authoring languages with domain representation functionality and domain-specific languages. An authoring tool is a software package which developers use to create and package content deliverable to end users.

Though authoring tools have a range of uses, they are commonly used to create e-learning modules. These modules are generally written to conform to some international standard, such as SCORM (Shareable Content Object Reference Model) or AICC (CBT) (Aviation Industry CBT Committee).

Distribution of content created with authoring tools also varies. Distribution methods include: web, kiosk, interactive CD-ROM, and executable file.

Since the term is somewhat general, many programs can be considered authoring tools, including Flash, and PowerPoint. However, only a small group of programs specifically include support for e-learning content standards including Dictera, Easygenerator, Elicitus, e2train, Composita, Macromedia (Adobe) Authorware, Power X Editor 4 [1], Director, Mohive, Lectora, Composer FX, EasyAuthoring (Metamorphosis), iSpring Suite and MyCAT. [12]

WHAT IS AN AUTHORIZING LANGUAGE

An **authoring language** is a programming language used to create tutorials, computer-based training courseware, websites, CD-ROMs and other interactive computer programs. Authoring systems (packages) generally provide high-level visual tools that enable a complete system to be designed without writing any programming code, although the authoring language is there for more in-depth usage. Examples of authoring languages PILOT ,TUTOR Examples of web authoring languages Bigwig

WHY AUTHORIZING TOOLS?

Most authoring systems also support a scripting language for more sophisticated applications. Thus, these tools provide many facilities helping the author to create a good E-content for courses. In fact, E-content has very important features that make the work easier than paper-content which are storing, modification, reusability and sharing of information .[6]

Authoring tools provide the teacher/expert to design, describe organize and public the learning resources (e.g. learning content, tests).

HOW TO FIND THE BEST TOOL FOR YOU?

Although selecting the best authoring tool requires close attention to detail, the process should be painless. Currently available tools offer a variety of features. For example, some tools are designed to develop extensive assessments, software simulations, or content for hand-held computers. If you have special needs, you'll certainly find a tool that meets them.

However, most tools are designed to create basic E-learning courses for desktop or laptop computers.

The software programs support a variety of media and file types, such as text, graphics, video, and audio. Most include assessment and test creation features. To find the authoring tool that works best for you, conduct a needs assessment. Regardless of how much (or how little) you know about authoring tools, determine the functionality that's most important to your organization and create a shopping checklist.

The following points are intended to give you a basic understanding of authoring tools while provoking some analytic thinking to help you identify the capabilities and options that are most important to you. Automated Programming. By automating programming for online delivery, authoring tools liberate course developers from their dependence on programmers. A few authoring tools have the ability to write such programming languages as HTML, XML, or

DHML. The types of programming code or output formats vary significantly among tools. When evaluating candidates, compare the output formats for each tool.[11]

CATEGORIES OF TOOLS

The majority of authoring tools fall into two broad categories: the pedagogy-oriented systems which “focus on how to sequence and teach relatively canned content” and the performance-oriented systems which “focus on providing rich learning environments in which students can learn skills by practicing them and receiving feedback.” There are seven categories of ITS authoring systems according to the type of ITSs they produce. These are: i) Curriculum Sequencing and Planning, ii) Tutoring Strategies, iii) Device Simulation and Equipment Training, iv) Expert Systems and Cognitive Tutors, v) Multiple Knowledge Types, vi) Special Purpose, and vii) Intelligent/Adaptive Hypermedia. Thus, depending on the requirements and where the content would be implemented the appropriate choice of the content authoring tool can be chosen. The common categories of authoring tools which produce content complying with the E-learning standards use some base software application. The most common ones are those that use PowerPoint presentations, Web based content and Flash based presentations. [8]

AUTHORING TOOLS CLASSIFICATION

The classification of authoring tools can be based on different aspects such as:

(i).Complexity: the tools can be classified in range from simple to advance. The tools become simple when supporting drag drop facilities, wizard ...etc. The advanced tools are those that require programming capabilities to build a course material and needs technical competency. A long time need to be spent in creating a course - especially when there is a need for programming to create tests and quizzes or building the course from scratch.

(ii). Fee: the tools can be classified as free and commercial. Based on the center of learning and performance Technology website (2009), we find through the top 100 course authoring tools 2009 there are 19 free tools and the other need to be purchased.

(iii). Purpose: the purpose of some authoring tools concentrates on creating courses. However, there are a number of multipurpose tools which are not specialized for creating online courses but are used.

UNSPECIALIZED AUTHORING TOOLS

✓ MS PowerPoint

MS PowerPoint is presentation software used to create slideshow. The slides are usually linear and can include hyperlinks to jump to other sections. This allows the user to get to more detail on a subject of interest. In addition, it allow user to add audio and video clips in a presentation. Even though this tool is mainly for creating presentation, it is considered to be one of the most popular course authoring tools. [4, 5]

✓ Flash

Flash has become a popular method for adding animation and interactivity to web pages. Flash is commonly used to create animation, advertisements, and various web page Flash components, to integrate video into web pages, and more recently, to develop rich Internet applications. Therefore, some course authors prefer using flash, because it allows many features and programming using Action Script. [6]

✓ Front Page and Dream weaver

These tools used to create WebPages. They provide an easy way to create links and images without need to know about 5HTML. However, these tools alone cannot provide the interactive course. It needs the help of other tools and graphics designers.

SPECIALIZED AUTHORING TOOLS

The growing of E-learning leads to create special authoring tools that help authors and fulfill the needs for creating course in easy way. The following are the most popular courses authoring tools.

✓ Articulate

In Articulate Studio Package the most three important authoring tools are Presenter, Engage and Quiz Maker. These authoring tools are used inside MS PowerPoint. The Presenter allows adding interactivity and narration compiling to create flash presentation. In addition, it provides features to get attention and inspire learning such as:

1. Animated annotations that highlight important points.
2. Clear, crisp images and video.

Quiz Maker allows creating group and randomizing question pools quickly .It provides the following feature:

1. Branch quizzes takers to different slides depending on how they answer each question.
2. Animate objects and adjust their timing on the click-and-drag timeline.
3. Choose from a wide selection of professionally designed themes or create your own.
4. Give your quiz takers specific results and feedback based on their scores.
5. Get quiz results through e-mail. [3]

✓ Adobe presenter / Captivate

Adobe Presenter helps to easily create professional Flash presentations and self-paced courses complete with narration. In addition, it allows adding animations, quizzes, and software simulations to E-learning courses. Similar to articulate, this tool is also based on MS PowerPoint and can rapidly author professional E-learning content with interactivity, simulations, quizzes, and other experiences no programming skills required. However, Captivate does not need MS PowerPoint because it is independent. [10]

✓ GLO Maker

1. GLO Maker is an authoring tool for creating rich, interactive learning resources. It builds on the extensive Publish to HTML package.
2. Publish to CD-ROM.
3. Publish to SCORM 1.2 and SCORM 2004 package for import to any 6LMS supporting this standard.

Experience of the 7CETL in Reusable Learning Objects. It is open source and free for educational use. GLO Maker authoring tool is based on the new concept.GLO approach inverts traditional approach for reusability. The traditional approach to the reuse of learning objects has been to separate content from context in order to make the content reusable. However, in GLO, It extracts successful pedagogical designs and makes these the basis for reuse. [10]

✓ E-learning Authoring Tool

The E-learning authoring tool is a simple, easy to use tool for creating online course content. Its design allows you to create rich media courses containing text plus images, Flash animations, audio and video created with your favorite media editors. Every course you create will fully conform to the SCORM standard. With the AT, you can quickly create courses for employees, customers, partners, or even the general public. Your learners will enjoy an easy to navigate course with a clean, professional design. You will not need any programming skills to create courses with the AT. You author your course with easy to use forms and a built-in HTML editor. [10] When you deliver your course or test with a SCORM-based LMS, the questions are automatically graded and the results sent back to the LMS. The AT reports the overall score (raw, minimum and maximum), the course status (incomplete, completed, passed or failed) and the results of individual questions. [2]

✓ ObjectJ Authoring Tool

ObjectJ Authoring tool is an E-learning Content Authoring Tool which is easy to use for instructors and Provides highly synchronized interactive content. ObjectJ Authoring tool supports the whole authoring process from high-level outline to fine-tuned timing using an instructor-centered user interface. This tool provides features to get attention and inspire learning such as: * Easy to use for instructors and covering the authoring process from providing lesson outline to detailed timing and synchronizations in a single, easy to use storyboard view. * Providing highly synchronized interactive content and Support for different types of media clips, including audio, video, and flash components. * Supports thin-client model for authoring Whole functionality is accessible through the web browser. No client management is necessary.

8AICC-standard compliant The produced content is fully AICC-compliant and can communicate with any standard LMS. * Supports Java applets and ActiveX components Both Java applets and ActiveX components can be embedded in the content to increase interactivity. This feature enables having complex simulations, virtual labs, or tests in the content. [13]

✓ **Advanced E-learning Builder**

The Advanced E-learning Builder authoring tool is designed for creating e-learning materials such as e-tests, tutorials, quizzes, etc. The system enables the creation of E-tests, just with several mouse clicks (visual design), which contain several types of exercises. The Advanced E-learning Builder authoring tool creates Standalone EXE files. By planning exercises in visual mode, exercises can be designed, corrected, examined, complemented, and updated in a simple and survivable way. Various elements such as gap-fill tasks, multiple choices, and alternative questions are used to set tests questions. Additionally, many other elements such as various types of texts, graphics, multimedia, Object Linking and Embedding - buttons ensure that your test has an attractive look and professional feel. And, all these elements can be easily moved and resized using a mouse. Elements offer various customization possibilities including changing colors, fonts, and contents; thus, creating and modifying all kinds of e-tests is quick and easy. Visual design mode allows the building of E-learning materials in a simple and comprehensive way. Therefore, you can always see exactly how the final test to be deployed to students will look. Additionally, built-in dynamic resolution assures you that a test will automatically adjust to all possible screen resolutions that end-users may have so the look won't be deformed in any way. [14] Advanced E-learning Builder also contains many pre-defined test templates that allow you to make professional looking tests in no time at all. This way, creating e-tests is as easy as editing text in a word processor, which allows beginners to start using the application immediately. An additional feature of advanced E-learning Builder is test flow control, which allows you to write teaching sequences that can adjust to the students' knowledge and supply students with additional information when needed. This way, individualization is granted. All tests created with advanced E-learning Builder are finally graded and supplied with a customizable commentary. The package also contains a real world example that can be used in the class with, or without, customization.

CONCLUSIONS

Nowadays, there is a large movement from education institutions and universities for using E-learning and increasing population to choose the best AT to create a proper course for E-learning. In addition, all produced learning contents are conforming to the SCORM standard, which makes better the contents interoperability and reusability. Therefore, Improving authoring tools is important and one of the main points is, to enhance them for the easily usage and having professional output.

This paper proposed several authoring tools with the goal of designing and creating the contents which should provide the learner with all the necessary tools. Therefore many organizations are attempting to reduce their training costs by developing E-learning contents in-house. Whatever the reason is, more trainers are finding themselves researching the features, benefits, and cost of authoring tools. Choosing an appropriate authoring tool in E-learning can help to solve many problems including the needs of growing communities to educate people, Lack of access to educational, shortage of training costs and economic opportunities. There are many advantages in this type of training that will cover the problems.

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ANTECEDENTS AND CONSEQUENCES OF WORK-EXHAUSTION (IT SECTOR)

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ABSTRACT

This research is an attempt to develop an antecedent and consequential framework of Work Exhaustion. This research helps to measure the work exhaustion which depends on Perceived workload, Work family conflicts, Job autonomy and Fairness of rewards. Moreover the subsequent effect which leads towards Turnover Intentions. Study also explores the main factors which can create cause towards turnover intentions. The sample of this research study has chosen from IT sector of Pakistan. Results shows significant correlation of Perceived workload, Work family conflicts and Work Exhaustion on Turnover intentions among employees. Research suggest that Turnover intentions is a significant factor among employees in a working environment in order to overcome this perceived workload and work exhaustion level must be lower as they are major catalyst of turnover intentions. Also work family conflicts can also enhance turnover intentions, so organizational policies also are made in accordance with balancing work-family matters,

KEYWORDS

Turnover intentions, Work exhaustion, Perceived workload, Work family Conflicts, Job autonomy, Fairness of rewards.

INTRODUCTION

Work stress is the major health problems occur these days (Daalen, Willemsen, Sanders, & Veldhoven, 2009). Stress is a human life aspect that can be traced back to almost the evolution of mankind as a reasoning and thinking (Sondhi, Chawla, Jain, & Kashyap, 2008). Turnover at work place has received awareness by many researchers (Noor & Maad, 2008). Turnover of workers is a well-recognized subject of critical importance to the organizations; it's a widely researched phenomenon, a giant quantity of hypothetical and observed literature identified various factors or reasons responsible for turnover (Shah, Fakh, Ahmad, & Zaman, 2010). Employee turnover is global observable fact; many organizations are dealing with turnover issue. In today's business scenario it is difficult to achieve goals until it clearly tackle with turnover problems.(Rana, Salaria, Herai, & Amin, 2009). In addition, employees who feel stress and anxiety at their job are likely to be having higher turnover (Stoner & Kim, 2008). Pressure can enhance turnover it is fundamentally a form of unpleasant feeling and it has got the possibility to increase employee turnover, issues in management of office work and family matters arise big problems, so many organizations keep lenient family friendly policies for employees as they concentrate on their work efficiently (Noor & Maad, 2008). Morgeson, Delaney-Klinger, and Hemingway(2005) finds that job autonomy increased improved the ownership of work but also those employees feel the confidence which is important factor for their work, more power of autonomy in job enhance the motivation power of employees. Work-family conflicts can increase the stress level among professionals; it may also consider an obstacle in job performance.(Ahuja, Chudoba, Kacmar, McKnight, & George, 2006).Strategies implied by employers focusing on work-life matters reflects that it is a significant element.(Noor & Maad, 2008). Sondhi et al (2008) suggest major implication as the organization would need to acknowledge work exhaustion as a principal outcome of the aggravated development and work opportunities that dominate the country today, In order to effectively sustain growth, the detrimental effects of work exhaustion will have to be recognized and curtailed by more effective working conditions and policies.

Many studies focused on the progress of the various predictors and their background of turnover intentions and fully tested theories regarding turnover among employee Western region working environment excluding many developing countries including Pakistan (Jhatial, Mangi, & Ghumro, 2012).

In our research we will find the answers of the following questions. What is impact of job autonomy, work-family conflicts, perceived work overload, fairness in reward on work exhaustion? And how the work exhaustion factor affects turnover intentions among employees?

LITERATURE REVIEW

Work exhaustion is key factor which can lead towards the turnover intension in workers. Turnover intentions are the challenging factors for organizations. Also too many pressure, conflicts between work and family, job autonomy and fairness of reward are the key factors which influence the work exhaustion which further lead to the turnover intension. In the methodological way the work exhaustion is playing intervening role between the turnover intension and other factors. This work exhaustion factor is address through consequently framework validating the through research area.

Work exhaustion

In observation of work exhaustion (or job burnout) study is the combination of two energies emotional and mental which are necessary for job demands (Moore, 2000b). Initially it was addressed as "tedium." Tedium referred as an emotional condition, mental, and physical exhaustion influenced by pro-long participation in demanding conditions, the outcome is that tedium is the effect of consisting much unhelpful and few helpful elements in related environment that is, so much conflicts, stress, and demands in combination with rewards, successes, and acknowledgments, However one might can consider on a demanding place on that point one may feel appreciated and valued, nearly many people feel tedium or exhaustion when their life experience stress rather than healthy support. (Moore, 2000a). Moore discovered in 2000b that people influenced by work exhaustion will not reflect the whole job attitude and reflexes establish to relate with exhaustion factor. Moreover, people are more likely to experience a combination of these, dependent on the perceptions which are related with the cause of exhaustion. Job burnout has been explained as repeated or constant emotional pressure related with a well-built integration with people for a long time period (Moore, 2000a).Stoner & Kim(2008)state that burnout has three major elements: emotional exhaustion, de-personalization exhaustion element and decreased personal accomplishment. Some attitudinal reactions are the direct outcomes of work exhaustion, whereas other attitudinal reactions relay on individual's informal contribution for the work exhaustion (Moore, 2000b).When an employee is not in exhaustion in work environment, greater involvement in job may increase the outcomes of positive factors of the working environment. However, for employees who are in work exhaustion conditions, greater involvement in job can results the negative factors of the working environment and increase their negative effects on the quality level of work life (Moore, 2000a).

Work family conflict

Family and work are two fundamental domains in most adults' lives(NOOR, 2004).Work and family interference is a kind of inter role conflicts that take place as an outcome of unsuited role stress from the work- family issues, work can create interference with the family matters or family can also interfere with the working matters(Yildirim & Aycan, 2008).In consideration of modern organization conflict of work or family is closely relates to exhaustion, lesser organizational

commitment level, job dissatisfaction, work-family conflicts occurs when the time, energy level and behavioral factors of a role in one scenario (choosing work or family) create difficulties to overcome the demanding situation of the other scenario (choosing between family or work)(Bragger, Srednicki, Kutcher, Indovino, & Rosner, 2005). However as Yildirim & Aycan (2008) state, Work-Family Conflicts are closely attached to negative organizational and psychological results, for example high level of depression signs, and increased usage of alcohols, dissatisfaction with life, satisfaction level with job and level of marital satisfaction, and increased turnover intentions. Family-work conflicts occur if work and home matters are unable to establish side by side and it became difficult to manage both at one time. Not only family and home demands have been found as a precaution of daily stress consequences of family to work conflicts it also been found unhealthy for employee's physical and mental conditions(Daalen, Willemsen, Sanders, & Veldhoven, 2009). The view of work-family conflicts arise from examining the level where demands resources effects the performance of work and family domains. Demands are psychological or structural sources connected with role needs, norms and expectations where individuals must react or make adaptation by physical or mental effort (Voydanoff, 2004). More recent conducted study has accepted its nature with more than one dimension, where the demands of family and work are in directly and in equal competition. Specifically, work-family conflicts states that work demands may create interference with individual's ability to bring out family tasks. Family-work conflicts states when family matters interfere with individual's tasks of work Bragger, et al.(2005).

Job Autonomy

Job autonomy clearly stated as the degree of control of an individual has over his or her own preparation, task and arrangements (Stoner & Kim, 2008). Job autonomy is refers to the important decisions in their work over degree of discretion employees, such as the timing and methods of their tasks (Parker, Axtell, & Turner, 2001). Authors conceived that freedom in decisions making on the job or tasks was linked with relatively fewer symptoms of exhaustion, and depression, even when job load were heavy (Kirmeyer & Shirom, 1986). Autonomy can also play a contributing role towards self-esteem through the appraisals of co-workers, because in office culture it can be a symbol of status for an employee (Schwalbe, 1985). Parker, Axtell, & Turner (2001) defined that Job autonomy can be recognized as one of the significant elements of work design tasks for employee outcome like motivation and job satisfaction.

Freedom of movement, can execute plans and create task accomplishment levels, and independence from direct observation are important for providing people an intelligence of control over their work. Clearly this control of intelligence was beneficial psychologically in its own way. Moreover scope of autonomy was significant psychologically for other matters as well, in the environment of workplace they were use as indicators of reliability, symbol, confidence and competence. Large number of people appreciated autonomy because of its meanings in these aspects and concomitantly about the individuals who had meant it (Schwalbe, 1985).

Fairness of Rewards

Rewards is the conspicuous of a slightly balance between the intrinsic rewards (for example autonomy, variety, and challenge) and the extrinsic rewards (for example fringe benefits, pay, promotion, and physical working conditions) that have a powerful effect on the employees' attitude towards their job and the company (Sondhi et al, 2008). The reward issuance structural method in economy is constructed by the planner. In "post-Reform" proper planned economies rewards are presented as bonus, the size and amount of which is related to such success indications like profit rate and value of output (Tam, 1981). Cate, Lloyd, Henton, and Larson (1982) state that employee don't focus on the subject of distributive fairness when there levels of rewards in a relationship are high. Fairness in rewards can be stated as the ability to which making decisions in work environments are considered as reflect equitable and fair (Maslach & Leiter, 2008). (huja, Chudoba, Kacmar, McKnight, and George(2006) gave suggestions that employees are willing to form social exchange bonds with others ones as they consider they are fairly and inversely receiving perks of value to them as an outcome of the social exchange element. On other hand, social exchange commitments affect the level of organizational commitment.

Perceived Work Load

Managerial level work in which work load was reported to be the main element of seeming stress in work, strongly followed by ambiguity role and the role of conflict (Moore, 2000a). The correlation between an individual and group human operator and task demands, it is the amount of work hand over to or expected from an employee in a specified time(Sondhi et al, 2008). In 2000 Moore describe Perceived work overload reflected more variance in the exhaustion level of information technology professionals than the other more commonly cited workplace individuals, and it was also shown in the strong majority of problems explained by the exhausted technology executives, it is suggested that employee in organizations are constantly asked to take on unachievable workloads and deadlines, In fact, work overload condition and less time to complete the work have been reported as most common demands in the working environments of employees.

Turnover Intention

Turnover described as one's propensity to depart the job that the individual is currently pursuing(Sondhi et al, 2008). Harris, James and Boonthanom (2005) state that strain is a psychological response created by a Stressor that may contain frustration, nervousness, depressed feelings, and other symptoms of physical disturbance as well. Generally authors of stress address Stressors in sense the strains and predictors as the result of these Stressors. However in some scenarios organizational politics are seems as threatening. When the individuals experience strain and the resulting emotional feelings of willing to stop or go away from organization that is turnover intentions.(Rehman, 2012) State that turnover purely refer to the leaving phenomenon of workers of an organization, This is a harmful situation, might lead towards the disappointment of worker sustainability in the organizations, skipping a job appears to show significant work place troubles, in spite of opportunities to go for better jobs, employee's turnover disrupt steams, increases costs, lower productivity, and leads in lost knowledge. So, it is necessary for the policy makers to realize the significance of employee's job satisfaction level.

Perceived Work overload and Work Exhaustion

The degree of work exhaustion changes with perceived work overload in a same pattern as increase in perceived workload results relative increase in work exhaustion. In fact perceived work over-load is the perception that one has too much ability to do (Ahuja et al, 2006). Moore (2000a) observed that work overload is the strongest contributing factor towards exhaustion. Therefore perceived workload has positive influence on work exhaustion.

H1: Perceived work over-load will influence the work exhaustion (WE) positively.

Work Family Conflicts and Work Exhaustion

More work family conflicts among the workers results in high level of work exhaustion. The work family conflicts might be a factor of stress condition in working environment (Ahuja et al, 2006). High level of Work family conflicts can affect the behavior of worker badly which may results towards work exhaustion. Hence work exhaustion and work family conflicts are positively related.

H2: Work family conflict will effect work exhaustion positively.

Job Autonomy & Work Exhaustion

Autonomy on job has negative effect on work exhaustion. As job autonomy increase in the work exhaustion factor decreases and vice versa. Job autonomy give a power to worker to control its tasks by own. Job autonomy associated with work exhaustion as well as autonomy on job also has been found to be related with turnover intentions among employees (Stoner & Kim, 2008).

H3: Job autonomy will negatively influence work exhaustion.

Fairness of Rewards and Work Exhaustion

(Ahuja, Chudoba, Kacmar, McKnight and George(2006) suggest employees are willing to construct social exchange relations with one another as they perceive that they are receiving benefits fairly and reciprocally as a result of the social exchange. In this manner, social exchange relationship affects work exhaustion.

H4: Fairness of reward among workers will negatively influence work exhaustion.

Work Exhaustion and Turnover Intentions

Work exhaustion factor positively influences the turnover intentions in a positive way. More work exhaustion level affect high turnover intentions. Turnover intentions can also be address as burnout which means the outcome of stable or frequent pressure on emotions linked with tense attachment with people over long time (Moore, 2000a). So turnover intentions are positively related with work exhaustions.

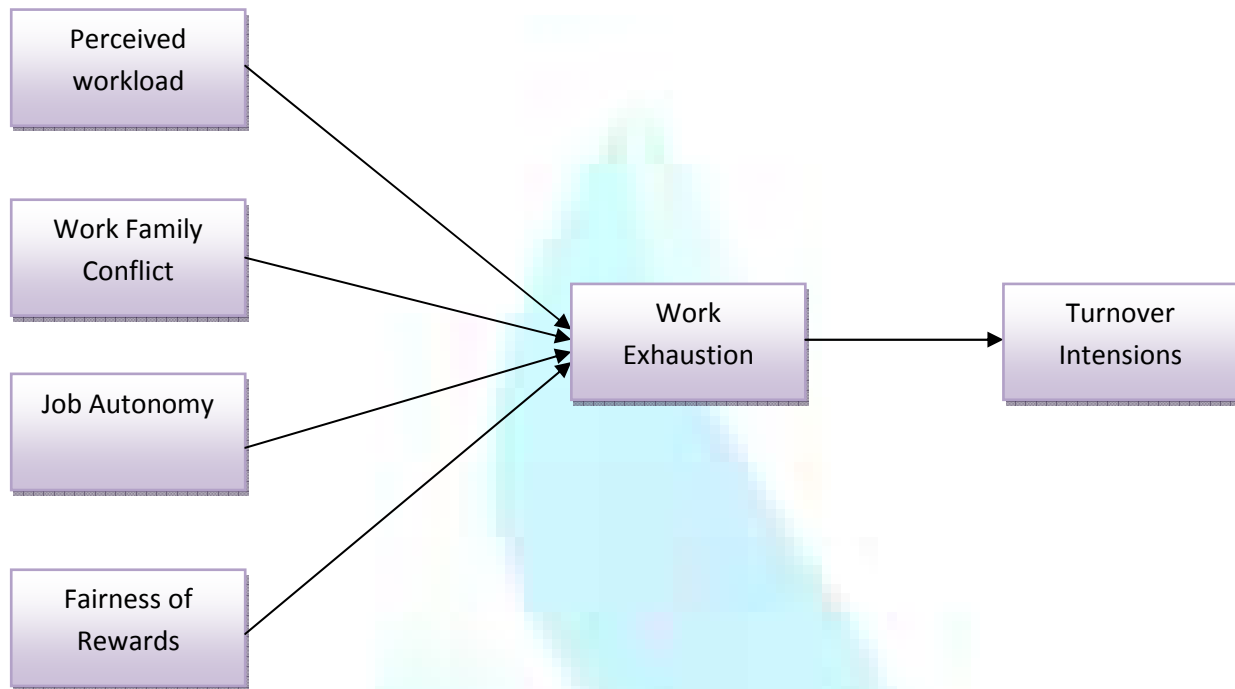
H5: Work exhaustion (WE) will influence turn over intentions among workers positively.

THEORETICAL FRAMEWORK

The purpose of understudy research is to use the framework of research on work exhaustion faction and turnover intension by analyzing elements which inhibits work-life integrations. In concerning research model six variables are present. One is dependent which turnover intension is. Work exhaustion is the intervening variable between dependent and independent variables. Four independent variables are present in research models are; perceived workload, work-family conflicts, autonomy at job and fairness of reward.

In research model perceived workload and work-family conflicts have positive influence on work exhaustion factor while the job autonomy and fairness of reward have negative influence on work exhaustion. More over work exhaustion has positively influence on turnover intension.

FIGURE 1



PARTICIPANTS AND DATA COLLECTION

This study is conducted in the IT sector, various kinds of institutions were involved for the purpose of data collection. All the responders were conveniently involved by whole – hearted. All our targeted population was free and frank to us in the process to the collection of data. The IT institutions were basic target and we found a lot of experiences and dynamic results from this sector.

We used the Paper – and – Pencil Technique to collect the data for the study and their analysis. We distributed 300 questionnaires in various IT institutions in our target audience, but the 237 questionnaires were returned back and 19 questionnaires were unsatisfactory for the analysis due to response biasness. We got the effective response rate as 72.67%. This study is based on the 218 questionnaires. We have used 6 different demographics and 37 questions as measuring scale to understand the behavior of our respondents. The brief summaries of demographic variables are as under:

In our study there are 129 were males (59.17%) and 89 were females (40.83%). Estimated age of respondents' ranges from 20-25 years were 76 (34.86%), 26 – 30 years were 62 (28.44%), 31 -35 years were 49 (22.48%) and 36 – 40 years were 31 (14.22%). In marital status variable there are 139 respondents were married (63.76%) and remaining 79 were single (36.24%). Other demographic variables organization name, income, experiences were asked from respondents.

VARIABLE AND MEASURES

TURNOVER INTENSIONS

The dependent variable Turnover described as one's propensity to depart the job that the individual is currently pursuing (Sondhi et al, 2008). Five items is to measure this variable, a sample item being "I will probably look for a job in a different organization in coming year." The measure of Cronbach's alpha for five items for this sample was 0.952. However the Cronbach's alpha value of this research is 0.886. All five items are present and all items are selected while no item is dropped.

WORK EXHAUSTION

It is the intervening variable. In observation of work-exhaustion study is the combination of emotional energy level and mental energy level required to fulfill job demands (Moore, 2000b). It is generally regarded as the core component of job burnout. Seven items is to measure this variable like "I feel burned out from my work." The value of Cronbach alpha for seven items was 0.791. But the Cronbach's alpha value for this research is 0.810. All seven items are present and all items are selected while no item is dropped.

WORK FAMILY CONFLICT

Work-family conflict is the independent variable. (WFC) happen when involvement in the work and the family role is unsuited in some aspect. As a result, contribution in one either role is made more complex by virtue of involvement the other role (Sondhi et al, 2008). Eight items are to measure this variable such as "The demands of my work interfere with my home and my family life." Cronbach's alpha value of this variable was 0.779. However the Cronbach's alpha value for this research is 0.849. Eight items are presented while all items are selected and no items is dropped.

JOB AUTONOMY

Job autonomy is independent variable. Job autonomy can be stated as the job gives freedom of substantial, independent and judgment in kept organizing the work and choosing the systematic procedures to be used further (Sondhi et al, 2008). Four items are asked like "I have the authority it initiate projects at my job." Cronbach alpha value of this variable was 0.690. However the Cronbach's alpha value for this research is 0.334. Four items are presented while all items are selected and no item is dropped.

PERCEIVED WORKLOAD

Perceived Work Load is the independent variable. It is the association between a group and individual human operator and task demands, In addition, it is the amount of work assigned or expected from an employee in a specified time. (Sondhi et al, 2008). Seven items are asked like "I usually bring work home with me". The value of Cronbach's alpha for seven items was 0.740. But the Cronbach's alpha value for research is 0.789. All seven items are present and all items are selected while no item is dropped.

FAIRNESS OF REWARDS

Fairness of Rewards is independent variable. Rewards is the conspicuous of a slightly balance between the intrinsic rewards (for example autonomy, variety, and challenge) and the extrinsic rewards (for example fringe benefits, pay, promotion, and physical working conditions) that have a powerful effect on the employees' attitude towards their job and the company (Sondhi et al, 2008). Six items is to measure this variable, a sample item being "My organization has processes that assure that all team members will be treated fair and equal." The measure of Cronbach's alpha for six items for this sample was 0.870. However the Cronbach's alpha value of research is 0.723. All six items are present and all items are selected while no item is dropped.

ANALYSIS AND RESULTS

RELIABILITY ANALYSIS

We Computed Cronbach's Alpha's to analyze the reliability of the scales. The Alpha coefficient values fulfilled the suggested cutoff level of 0.70 (Nunnally, 1978). The Alpha coefficient of Job Autonomy is 0.734, Work-family conflict is 0.849, work exhaustion is 0.810, perceived work overload is 0.789, fairness of rewards is 0.723 and of turnover intention is 0.886.

TABLE 1

Sr. #	Variable	Total no. of items	Alpha
1	Job autonomy	04	.734
2	Work-family conflict	08	.849
3	Work exhaustion	07	.810
4	Perceived work overload	07	.789
5	Fairness of reward	06	.723
6	Turnover intention	05	.886

CORRELATION ANALYSIS

TABLE 2: CORRELATION RESULTS

			Estimate
H ₁	Perceived Work Overload <--- -->	Work Exhaustion	0.505**
H ₂	Work family Conflict <-- --->	Work Exhaustion	0.429**
H ₃	Job Autonomy <-- --->	Work Exhaustion	-0.357**
H ₄	Fairness of Rewards <-- --->	Work Exhaustion	-0.614**
H ₅	Work Exhaustion <-- --->	Turnover Intention	0.422**

** Correlation is significant at the 0.01 level (2-tailed).

Correlation Analysis shows the relationship of independent variable with dependent variable.

There is significant positive relationship between perceived work overload and work exhaustion having value (r = 0.505, p< 0.01) and confirms our hypothesis 1.

Results shows the significant positive relationship between work family conflict and work exhaustion (r = 0.429, p< 0.01] and supports our hypothesis 2.

Work exhaustion has significant negative relationship with job autonomy (r = -0.357, p< 0.01) and supports our hypothesis 3.

Fairness of rewards has significant negative relationship with work exhaustion (r = -0.614, p< 0.01) and supports our hypothesis 4.

Work exhaustion has significant positive relationship with turnover intention (r = 0.422, p< 0.01) and supports our hypothesis 5.

REGRESSION ANALYSIS

TABLE 4: REGRESSION RESULTS

	Work Exhaustion		Turnover Intention		Estimate
	β	R ²	β	R ²	
Perceived Work Overload	.505	.344	----	----	.000**
Work family Conflict	.429	.257	----	----	.000**
Job Autonomy	.357	.325	----	----	.000**
Fairness of Rewards	.614	.380	----	----	.000**
Work Exhaustion	----	----	.422	.332	.000**

DISCUSSION

Perceived Work overload

Our hypothesis predicts that Perceived work overload will positively predict Work Exhaustion. Regression result prove our hypothesis and shows the positive impact of Perceived Work overload on Work Exhaustion (β= 0.505, p < .01). Results explain that Work Exhaustion can be determined by perceived work overload.

Work Family Conflict

Our hypothesis predicts that work family conflict will positively predict work exhaustion. Regression result prove our hypothesis and shows the positive impact of work family conflict on Work Exhaustion (β= 0.429, p<.01). Results explain that Work Exhaustion can be determined by work family conflict.

Job Autonomy

The hypothesis predicts that Work Exhaustion will be negatively related to the job autonomy. To test this hypothesis, we regressed job autonomy on Work Exhaustion. We found that job autonomy has significant negative impact on work exhaustion (β=-0.357, p<.01).

Fairness of Rewards

Hypothesis predicts that fairness of rewards will negatively influence work exhaustion. To prove the hypothesis we regressed fairness of rewards on work exhaustion and found that fairness of rewards negatively influence work exhaustion (β=-0.614, p < .01).

Work Exhaustion

Our Hypothesis predicts that turnover intention will be positively influenced by Work Exhaustion and Relationship Quality. And results confirm our hypothesis (β=0.422, p < .01).

CONCLUSION AND FUTURE RESEARCH

Turnover intentions among employees in working environment is a significant issue, according to this research study elements such as work exhaustion, perceived work-overload and work family conflicts are major causes and effect of employees turnover intentions. In accordance of this research organizations must form and implement strategies through which turnover intentions level can controlled.

Future research can be conducted in other sectors like banking sector, educational sector etc. Moreover, a comparative study can also be conducted between two or more countries or between males and females.

LIMITATIONS

This research study has various limitations. Such as this research is conducted on the working environment of IT sector with one country. No other sectors or other countries are part of this research. Further in presence of six variables it is quite difficult for subject to response questionnaire in efficient manner. Gender difference can also add significant change in results specifically in work-family life balance factor. As work exhaustion, perceived workload, work family conflicts are major cause of turnover intentions so individually a comprehensive research on these elements can be conducted.

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