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     RESULTS & DISCUSSION

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     RECOMMENDATIONS/SUGGESTIONS

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CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

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- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS

- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–22 June.

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WSN BASED ROBUST GROUND TARGET TRACKING FOR PRECISION GUIDED MISSILES

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ABSTRACT

Ground based target tracking using low cost sensor based network, for Precision Guided Missiles (PGM) is very much effective for targets locating and precision guidance than traditional ways. Today PGMs depend heavily on GPS for location and navigation, also adding some advanced sensors for terminal target identification and guidance. Advances in inertial navigation systems (INS) also have added to the precision of weapons now deployed. But to enhance the precision of precision strike weapons in a cost effective way we are proposing distributed wireless sensor network (WSN) based target locating and precision guidance for PGM. Compared to the traditional ways, it has high precision, reliability, and also it can cope with the group targets with no duplication. For real time performance we have considered energy consumptions, computational overheads, new node deployments as well as security related challenges of the sensor networks. Further, our scheme is secure against different types of sensor network related attacks. The simulation results of our scheme ensure that our scheme can track, detect and classify targets in a timely and energy efficient manner.

KEYWORDS
PGM, GPS, INS, Distributed wireless sensor networks, target locating, authentication, security.

1. INTRODUCTION

Precision has always been recognized as an important attribute of weapon development. Accuracy of aim is one of the five recognizable attributes of weaponry, together with range of action, striking power, volume of fire, and   portability. Now a new definition has emerged in warfare to describe munitions that can strike a target with extraordinary if not precise accuracy. Precision means that a projectile is self locating and maneuvers to its target. Precision weapons may be too costly to field in sufficient numbers to facilitate routine training, their effectiveness is limited to specific target types and engagement criteria and they lack the essential capability of delivering sustained physical and psychological shock that is intrinsic to dominant maneuver warfare.

Presently PGM type weapons utilize GPS/INS and seeker technologies for guidance to ground targets. GPS/INS systems work by acquiring position and velocity information and maneuvering to given target coordinates entered before release. By using seeker technology, target-tracking techniques are employed to guide to the final target. Potentially, missile seekers is used to view the area and send the images back to the planners, who could then take necessary action in regard to potential threats in that area. The missile would then continue on its flight path and strike its intended target. This would provide planners with a set of precision engagement tools in a rapidly changing threat environment. There is no doubt that Seekers bring relatively high accuracy than other traditional guidance system, for moving/ moveable targets but also it require much higher cost and greater mission planning, power, and cooling requirements. The ability to attack this class of targets without the expense and issues associated with seekers with greater accuracy is desirable. In this paper we presents a concept for precision guidance against moveable ground targets by using wireless sensor networks for implementation in air-launched munitions. Here, we try to address those problems and want to present a practical solution of WSN based target tracking in PGM.

A WSN is a system of spatially distributed sensor nodes with a goal to produce globally meaningful information from locally collected data. The nodes communicate wirelessly, operate autonomously and perform cooperative actions. In order to make good use of the locally collected data, nodes have to collaborate with each other and should form a network to perform any common application.

Now, Wireless Sensor Network is an absolutely necessary part of the C4ISRT (command, control, communication, computing, intelligence, surveillance, reconnaissance and targeting) system. WSN has the characteristics such as rapidly deployment, self-organized, good concealment and high fault tolerance that made it suitable for military usage.

Each sensor node in the WSN is battery powered and equipped with a low-power microcontroller, a radio transceiver, and sensor arrays. The onboard processor has limited memory and processing speed and a short sensing range. To overcome these challenges, we need the network to intelligently distribute the task of target tracking among the nodes and select the best sensor node for target tracking.

A sensor node is capable of performing some processing, gathering sensory information and communicating with other connected nodes in the network. Typically, the transmissions between the sensors take place by short range radio communications. The base station is computationally resource-rich whereas the

sensor nodes are resource-starved [2]. Each of the deployed sensor nodes has the capabilities to collect data and route data back to the base station. Usually, data are routed back to the base station by a multi-hop infrastructure less architecture through sensor nodes.

In this paper we aim to design and analyze target tracking and precision guidance based on wireless sensor network. Here for target co-ordinate determination triangulation method is used and we also consider the problems associated with multiple target determination , overlapping nodes, trajectory generation, detection areas before and after movement of targets, optimization technique to determine the optimal launch position of the daughter missiles and also various kind of security threats involved in wireless sensor networks. We analyze the performances of our scheme, using both theoretical and simulation environments and get a satisfactory result.

The rest of the paper is organized as follows. The next section gives a short description of the conventional target tracking procedures in PGM. Section three describes our proposed scheme of target tracking for PGM sing wireless sensor network (WSN), its security challenges and proposed solution and the experimental results. Conclusions from the current work and its scopes are elaborated in the last section.

1.1 MOTIVATION

Recently Y. Hu [1] has published his research on the targets locating and precision guidance of a kind of missile based on WSN. Though that paper is one of the pioneers of the research on WSN based target tracking for missile technology but it also suffers from some unrealistic ideas. In that paper author has not considered any base station that means sensor node directly transmit data to mother missile which will be in 3000m to 4000m height. Also he has not considered any security solutions for the networks which are very much required.

1.1.1 Problems associated with the traditional system in target tracking

There exist a few traditional technologies which have been implemented for target locating in a PGM type weapons. These include GPS/INS systems, seeker technology and auto-homing semi auto-homing systems. All of them suffer from some serious drawbacks as listed below:

- Using GPS/INS systems, the position and velocity information of the target needs to be entered before the missile release. This kind of systems lack in precision and accuracy for a frequent moving target.
- Seeker technology provides relatively high accuracy in target tracking but it demands much higher cost and greater mission planning, power, cooling requirements etc.
- In an auto-homing system, sender and receiver are installed in a sub-missile. Hence, the missile controlling process gets complicated and more energy is consumed. In semi auto-homing system, the sender is placed somewhere to cooperate with the missiles. is much lighter, but it is more depend on the sender. If the sender is destroyed, the missile will be lost.
- The auto-homing and semi auto-homing system cannot detect group targets and suffer from duplication of resource or even failure of the task.

1.1.2 Advantage of Using WSN based target locating for PGM application

A WSN based system for target locating and precision guidance is more promising in compared to the traditional techniques. Here, a large number of small computing nodes, called sensors or motes, are scattered in the sensor field or battlefield for the purpose of sensing information of the targets. The nodes can transmit those sensing information to either the nearby base station or directly to the mother missile for further processing.

A WSN based system has many advantages.

First, the nodes are dynamically deployable. We can easily deploy new nodes in the target field which can safely communicate with the existing nodes. This is quite necessary because in a hostile environment, older nodes can be compromised in many ways. Some robust access control protocol need to be implemented for dynamic addition of nodes.

Second, the nodes of WSN are self-organized. There no need to maintain a centralized control over the network.

Third, Battle field is a movable and multi-target environment. A WSN based system can help missiles attack group targets with no duplication and miss. Also this kind of system can provide higher precision over the traditional systems. Fourth, as the WSN based system have high Fault Tolerance, it is more suitable for military usage [22].

Fifth, the WSN based systems have low cost, low power, small volume and high redundancy. These make a WSN based system more reliable and more effective to apply to targets tracking in PGM than traditional systems [23].

1.1.3 Security requirements: Need of security in the system

In military application, wireless sensor networks operate in public, hostile and uncontrolled area. Before the sensed data reaches to the base station or to the mother missile, it is prone to different types of malicious attacks. Hence security is a major challenge in WSN based target tracking applications.

First, wireless communication is always under different threat realized over a broadcast medium. In a broadcast medium, adversaries can easily eavesdrop on, intercept, inject, and alter the transmitted data

Second, sensor networks work in an insecure environment. Adversaries can easily execute lot of harmful operations in the system such as stealing nodes, recovering their cryptographic material, pretend as authorized agent etc.

Third, Sensor nodes have limited computation, memory and energy resources. Adversaries can repeatedly send packets to drain a node battery and waste network bandwidth. In this resource-sensitive environment, secure transmission of sensitive digital information over the sensor network is quite essential.

Generally Wireless Sensor Networks are vulnerable to various types of attacks. In WSN based target locating for PGM application, we found some of them are very crucial. On the other side, few attacks are quite trivial and can't do much harm in our proposed system. A good understanding and recognition of possible attacks and threats will help us to build the required security protocol for this system. A WSN based target locating system is susceptible to the following type of attacks:

- Replay attack: Here an attacker spies or may intercept the conversation between the sender and receiver and takes the authenticated information.
- Forgery attack: A legal user of the system can launch a forgery attack against the WSN by eavesdropping and masquerading.
- Node compromised attack: Here attacker can steal all the data stored in any compromised node's memory and with that attacker try to get the cryptographic information in the network
- Sybil attack: In Sybil attack a malicious node illegally forges an unbounded number of identities. To overcome the problem of Sybil attack, unique identity of each node is required.
- Insider attack: In this attack any genuine user attacks the system for a different application for which he has no access permission.
- Worm hole attack: In this attack a malicious node tunnels to packets received in one part of the network and replays them in a different part of it.
- Many logged-in users with the same login-id attack: Systems which maintain a password-verifier table to verify user login are usually vulnerable to many logged-in users with the same login-id attack.
- Denial-of-service attack: Here an attacker tries to block the messages from reaching the base station as well as to other nodes in the sensor network.
- Withstand false reports injection attacks: An attacker may try to inject false reports into the sensor networks. An access control protocol must prevent external parties from injecting reports into the existing sensor networks.
- Withstand man-in-the-middle attacks: An access control protocol must protect the man-in-the middle attack from an adversary.

Resilience against node capture attacks: The resilience against node capture attack of an access control scheme is measured by estimating the fraction of total secure communications that are compromised by a capture of some sensor nodes not including the communication in which the compromised nodes are directly involved. An access control scheme must be highly resilient against node capture attacks.

1.1.4 Type of security is required for the system

To design a dependable and secure WSN based target locating system of PGM, we must implement two fundamental security issues.

First, in our system, either the ground base station or the mother missile acts as the user. A battlefield may contain many adversary missiles projected by the enemies. These missiles can pretend to be a real user and try to access the sensor node information. Here proper User authentication is essential for allowance

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of sensed data only to privileged users. But as the user is fixed and limited that is the base station or the mother missile so in this case we are not considering any traditional user authentication protocols used for WSN.

Second, Access control among sensor nodes is mandatory. This allows new sensor nodes to join dynamically in a secured way with the old valid nodes in the battlefield. An access control needs to accomplish the following two tasks:

- Node authentication: Through authentication a deployed node needs to prove its identity to its neighbor nodes and also to prove that it has the right to access the sensor network.
- Key establishment: Shared keys must be established between a deployed node and its neighbor legitimate nodes to protect communications, after successful authentication between them.

1.1.5 Functionality Requirements

Scalability: A sensor network consists of a large number of nodes spread randomly throughout deployed area. Managing all these sensor nodes becomes a very difficult task. The number of nodes depends on the application. Sometime increasing the number of sensors in an area leads to better tracking results, but it is also true that beyond a critical threshold increasing the number of sensors does not improve the location precision in tracking. Hence, the placement of the sensors in the deployed area should be so as to maintain a balance between number of sensors and coverage required. But in our case deployment of sensor in territory is a difficult task. Random deployment is the only solution so some of the sensor may lose or damage at the time of deployment also. Taking care of this entire conditions secure WSN based target tracking system should be developed. Even at the time of authentication and key establishment between sensor nodes new node deployment phase need to be considered. Scalability is a essential functional requirement for our proposed scheme.

Stability:

As sensors are likely to be deployed in hostile environments so their failure is an issue forever. The network should operate well without supervision. Sensor networks instead are deployed in a very ad hoc manner (e.g. thrown down at random from an aircraft). Nodes are damaged and fail due to limited power available with them. The networks have to be able to overcome node failures and be able to reconfigure themselves. Considering such sensor nodes should establish an ad hoc network amongst themselves. Thereafter, different application instances running on each node can communicate with each other and the network should be stable and up for all the time.

1.1 THREAT MODEL

As in this paper we have proposed WSN based target tracking so security and attacks inside the WSN need to be addressed. For that purpose in our proposed protocol, we make use of the standard Dolev-Yao threat model [24] in which two sensor nodes communicate over an insecure channel. In a similar fashion we assume that the sensor nodes or end-points cannot be trustworthy in general and the communication channel is insecure. Finally, we assume that an attacker can eavesdrop on all traffic, inject packets and reply old messages previously delivered.

In our proposed scheme, two assumptions are quite fundamental. First, the ground base station which receives the sensing information from the nodes is trustworthy and not to be compromised in any situation. Second, the sink node of the mother missile should never be compromised as it receives the processed information from the ground base station or it accumulates the information directly from the sensor nodes. Thus, if an attacker compromises any sensor, he/she can extract all cryptographic information including the key materials, data and code stored on that node though. This is a big threat to the system as it is very easy for the enemies to steal sensor node from a captured battlefield.

1.2 OUR CONTRIBUTIONS

In this paper, we propose a new scheme for target tracking for precision guided missiles using wireless sensor networks.
Our scheme has the following important properties:

- This work addresses a real-world application for precision guided missiles using ground based wireless sensor networks.
- We investigate the functional challenges for implementing conventional target tracking methods used for PGM for moving targets.
- In this paper we also proposed security mechanisms for wireless sensor networks used specially for target tracking for PGM.
- We have also identified the challenges with respect to real time requirements and validate our design and analysis through simulation with few numbers of nodes.

1.3 ORGANIZATION OF THE PAPER

The rest of this paper is organized as follows. In Section 2, we review the conventional target tracking system. In Section 3, we briefly discuss the mathematical preliminaries needed to understand our proposed security protocols. Here, we also discuss the advantage of an ECC based system. Section 4 describes the related work done in the field of WSN based target tracking system. In Section 5 we describe our proposed scheme. Section 6 presents our proposed solution for WSN based PGM and models the experimental results. Finally, we conclude the paper in Section 7.

2 CONVENTIONAL TARGET TRACKING IN PGM

The two widely used conventional techniques for engaging air-to-surface missiles on to ground target are active radar homing and semi-active radar homing [3]. In active homing the missile can illuminate the target with radar signals and track it autonomously by the help of a radar transceiver present onboard the missile, shown in fig 1. In semi-active homing missiles the targets are illuminated by a higher power transmitter usually located on the ground, and the reflected signals from the target is used to home the missile on to the target as shown in fig. 2.

In addition to this, both types can employ a passive radiation homing, if the target does attempt to jam them using some kind of ECM,
they can in effect turn into an anti-radiation missile and home in on the target's radiation passively. Some advantages and disadvantages offered by the above two techniques are as listed below.

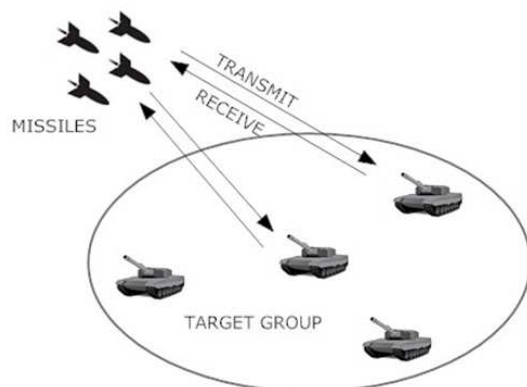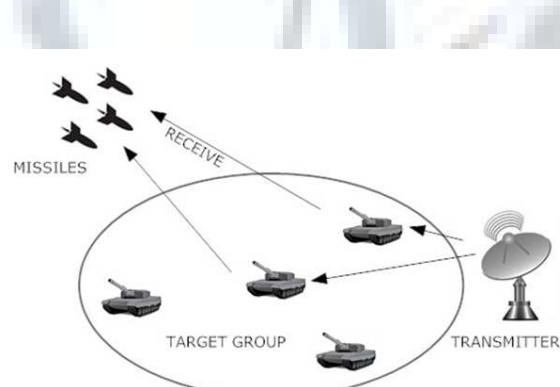FIG. 1: ACTIVE RADAR HOMING   FIG. 2: SEMI-ACTIVE RADAR HOMING

- Active radar homing missiles has higher kill probabilities since the missile is approaching the target and the accuracy of tracking is increasing. But since the radar transceiver has to be small enough to fit inside a missile and has to be powered from batteries, therefore having a relatively low Effective Radiated

Power (ERP), its range is limited. Often it is used with other navigational systems like command guidance or Inertial Navigation System (INS) but it greatly increases the complexity and cost of the missile.

- The semi-active homing has reduced complexity in the sense that only a passive radar receiver is required onboard but it is dependent on the transmitter. If the transmitter is destroyed then the missile cannot be guided on to the target.
- In a scenario where a group of missiles is engaged for a group of targets, since there is no inter communication among the missiles to intimate their individual target engagement, there is a high probability that multiple missile may lock on to the same target while some target within the kill range of the missiles are not hit.

3   MATHEMATICAL PRELIMINARIES USED FOR CRYPTOGRAPHY AND SECURITY FOR WSN

In earlier days, either RSA cryptography system [17] or Diffie-Hellman [12] key agreement were mostly used for providing security of traditional networks. But in a resource constrained domain of sensor networks, these traditional ideas are not suitable implement. The sensor nodes are comprised of limited energy resources, limited computation and communication ability and limited bandwidth [1, 8]. Along with these, sensor networks are dynamic in nature and post-deployment network configuration is not possible to decide a priori. Therefore new cryptographic ideas are needed.

In a WSN based target locating for PGM application, new sensor nodes needs to be dispersed in the battlefield quite frequently. In this scenario, conventional key pre-distribution schemes [10, 11,13,14] are very difficult to use. Whenever a new node joins the existing sensor network, they demand an updating of all the old secret keys and broadcasting messages. This is quite an impractical idea.

A sensor network must establish a suitable access control protocol to prevent the malicious nodes from joining it. The protocol should also include a dynamic key establishment mechanism to help new valid nodes to establish shared keys with its neighbors for a secure communication. In 2007, Zhou et al. [16] proposed an access control protocol based on elliptic curve cryptography (ECC) for sensor network which is more efficient than those algorithms based on RSA. Compared to RSA, ECC can achieve the same level of security with smaller size key. For examples, 160-bit ECC provides comparable security to 1024-bit RSA and 224-bit ECC provides comparable security of 2048-bit RSA [17]. It was pointed out in [18] that in wireless sensor networks, the transmission energy consumption rate is almost three times greater than the energy consumption rates for computing. Therefore, the packet size and the number of packets in transmission play a crucial role in the performance while designing an access control protocol in sensor networks. It is noted that if a node is preloaded with the certificate by the base station, then verifying RSA signature in the certificate takes less time than that for ECC signature verification in the certificate, since the signature will be generated in offline by the base station prior to deployment of sensor nodes in the target field. However, compared with a 1024-bit RSA signature [15], if we use ECC based signature [19, 20] in certificate, then we require only 320-bit signature when 160-bit ECC is used in the proposed scheme. These motivate us to use ECC instead of RSA in our proposed access control scheme so that we base station certainly achieve much more energy and bandwidth savings. Our scheme uses the symmetric key cryptographic techniques along with ECC to achieve better communication and computational efficiency.

A cryptographic system using elliptic curve [21] can be designed as follows:Consider the equation Q = kP, where Q, P ϵ Ep(a, b) and k < p. It is easy to calculate Q given k and p, but it is relatively hard to determine k given Q and P. The problem is known as Elliptic Curve Discrete Logarithm Problem (ECDLP). In ECC a base point or generator point G = (x1, y1) of order n in the elliptic group of points Ep(a, b)is identified. then user choose the smallest integer value n for which they have nG = O where O is the zero point. The case is that for Given G and kG, it is computationally hard to find out k so an attacker needs to compute k to break this scheme. This practically is an infeasible task.

4   THE PROPOSED SCHEME

Target tracking for PGM using WSN: In the proposed WSN system, a number of tiny sensors are dispersed near the adversary's battle field. These sensors work as nodes in the system. The nodes accumulate information of the targets, and send the raw signals to the ground based base station. The base station processes the signals of the individual nodes to determine the number of targets and their locations. The sink is on the mother missile. The information of the targets is sent to the sink from the ground base station. After computation by the control system, each sub-missile is assigned a particular target, which maybe the nearest target or the target considering all other sub-missiles so as to best finish the whole task. The structure is shown in Fig. 3.

With broad scale of nodes, the information content is very large. The position of the group targets can be detected all together by the WSN system, and the attacking plan can be settled before the sub-missiles are released, so that each sub missile has its unique destination, with no duplication and waste of power. Therefore, the fatal problem of the traditional ways is resolved.

FIG. 3: STRUCTURE OF WSN FOR TARGET LOCATING AND PRECISION GUIDANCE
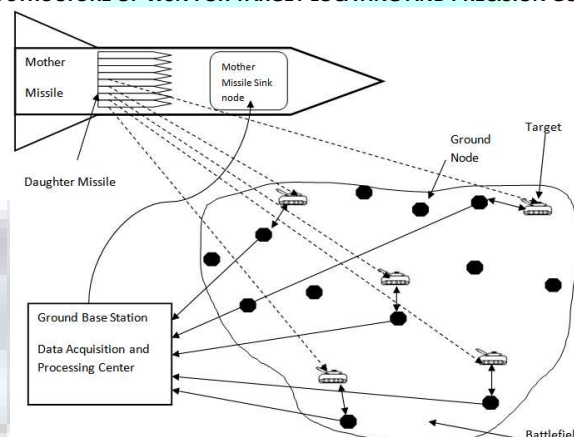
As the nodes are very small and ulterior, it can be put very close to the enemy's battle field, so more accurate data can be got compared to the traditional method. The number of nodes can be very large. Therefore the reliability is increased at the same time because if one node fails, others are still working.

We visualize a heterogeneous, hierarchical sensor network that is composed of a static backbone of sparsely placed high capability sensors called CHs and moderately to densely populated low-end sensors whose function is to provide sensing information to CHs upon requests [4]. Because of the limited mobility nature of sensors, the calibration process of sensor locations is executed only once when the network is deployed. A CH volunteers to become active when it detects that the strength of a received radio frequency (RF) signal exceeds a pre-determined threshold and the signal matches one of the signal patterns which the system intends to track. The sensors can be deployed in any facility or area which has to be sensed in three main types [5]. It can either be 1) triangular sensor deployment, 2) square sensor deployment or 3) irregular sensor deployment Fig. 4.

FIG. 4:a) TRIANGULAR b) SQUARE c) IRREGULAR NETWORKS

(a)

(b)

(c)
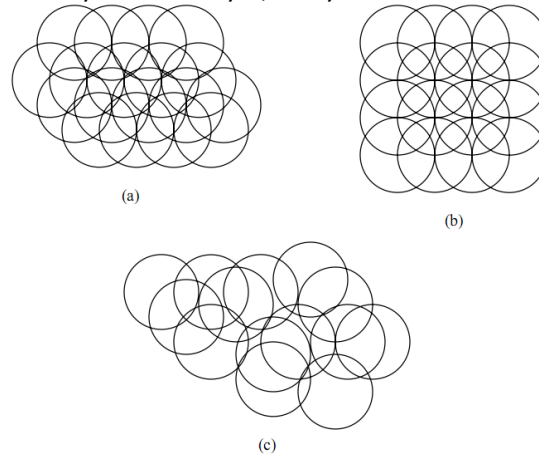
For our case, we have to choose irregular sensor deployment as the sensor nodes will be distributed irregularly in the battlefield. A sensor node should consist of four sub-systems [5] as shown in Fig. 5.

- A computing subsystem: In a sensor node, the microprocessor (microcontroller unit, MCU) is responsible for functions such as control of sensors and execution of communication protocols. Since these functions consume a lot of energy, an MCU operates under various modes of energy consumption.
- A communication subsystem: This comprises of short range radios used to communicate with neighboring nodes and the outside world, these devices operate under the Transmit, Receive, Idle and Sleep modes having various levels of energy consumption. The maximum energy consumption is in the first two modes and if the sensor is not performing any function, it should be shut down rather than putting in idle mode.
- A sensing subsystem: Low power components can help to significantly reduce power consumption here since this subsystem (sensors and actuators) is responsible for the sharing of information between the sensor network and the outside world.
- A power supply subsystem: Since a battery supplies power to the sensor node, the amount of power being drawn form it is constantly being monitored. The lifetime of a battery can be increased by tuning it on and off depending on the functionality of the node in question. This process should ideally be automated.

FIG. 5: SYSTEM ARCHITECTURE OF A WIRELESS SENSOR NODE
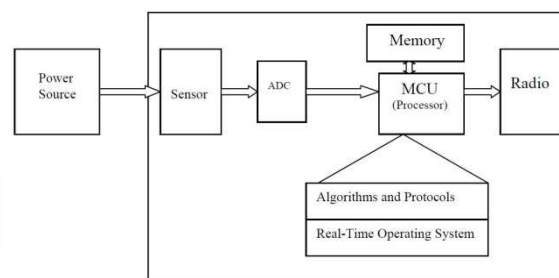
The sensor nodes may not need identities (e.g. an address). Applications should focus on the data generated by the sensors. Individual sensor nodes in a network can perform the functions of information gathering, collecting and storing and forwarding of information/data on request from neighboring nodes. This is in contrast to a centralized structure in the case of routers that facilitate node-to-node packet switching in traditional networks. Individual sensors report their data to a central node, which then performs the computation required for the application. This centralized structure is a bad choice for several reasons: it provides a single point of failure, it can be energy inefficient, and it doesn't scale to large networks. Thus, localized algorithms are better suited to sensor networks in which each sensor node communicates with neighboring nodes and computation is performed locally, yet the entire structure achieves a desired global objective. Since the sensors are physically distributed, it is not unnatural to design sensor networks using distributed algorithms. Furthermore, localized algorithms have two attractive properties. First, because each node communicates only with other nodes in some neighborhood, the communication overhead scales well with increase in network size. Second, for a similar reason these algorithms are robust to network partitions and node failures.

As an alternate to the trilateration technique some other techniques [6] have also been proposed. They are: infrared, ultrasound and Radio. In our case, radio wave is considered for locating the target within the region of interest of a node because it provide a better approximation for location detection because of the ability of these waves to penetrate various materials. Instead of using differences in arrival times as in Ultrasound, these systems utilize signal strength to measure the location.

To reduce budget, some system only set GPS receiver to a small part of nodes, the neighbor nodes localize themselves based on pair wise distance or angle [9]. In fact, here all the nodes do not have to carry GPS receiver, because for the missile to finish the attacking task, the information needed is actually the relative location of targets to each missile. The nodes only have to measure the distance and angle between itself with missile and with target, and the distance and angle between the missile and the target is calculated with a simple triangular law. So the budget can be greatly reduced, and the saved budget can be used to reinforce the detect precision and communication ability.

5   THE PROPOSED SOLUTION
5.1 OUR SECURITY PROTOCOL

As for our proposed scheme wireless sensor networks will operate in uncontrolled area or battlefield, hence the security is a major challenge in sensor applications. Because sensed data of sensor nodes is prone to different types of malicious before reaching base station. Security is one of the most difficult problems facing these networks. First, wireless communication is difficult to protect since it is realized over a broadcast medium. In a broadcast medium, adversaries can easily eavesdrop on, intercept, inject, and alter transmitted data. Second, since sensor networks may be deployed in a variety of physically insecure environments, adversaries can steal nodes, recover their cryptographic material, and pose as authorized nodes in the network. Third, Sensor networks are vulnerable to resource consumption attacks. Adversaries can repeatedly send packets to drain a node battery and waste network bandwidth. In these and other vital or security- sensitive deployments, secure transmission of sensitive digital information over the sensor network is essential. The use of encryption or authentication primitives between two sensor devices requires an initial link key establishment process, which must satisfy the low power and low complexity requirements.

Generally, without involving the gateway node users preferred to access directly the sensed data so real-time transmission of sensed data is required. User authentication and authorization and access control are mandatory for allowance of sensed data only to privileged users through base station.

As here base station is only involved in communication with user that means the mother missile so in this case for each user hash value of its password with a time-stamp along with its identity should be stored in the base station. So at the time of flight that mother missile can be genuinely recognized by the base station as well as hash of the base station id with the mother missile times-tamp along with identity should besend to the mother missile for mutual authentication. So if some other user tries to intercepts the message they will not be successful.

For access control we want to use simple dynamic access control protocol proposed by Huang et al. [7]. Here we want to use an energy efficient and low computational overhead dynamic access control protocol in WSN using hash functions [8] and XOR ($\oplus$) operations. In this protocol the base station generates different secret keys for all the neighborhood nodes and preloads each secret key k_i , one way hash function, node identity N_i and boot strapping time of the node T_i to each node i. After that base station generates pair wise secret keys S_{ij} by computing the XOR ($\oplus$) of the hash values of one node's identity with other node's secret key, for each pair of nodes i, j in the sensor network. Here

$S_{ij} = H(k_i , N_j) \oplus H(k_j , N_i)$.

Later this pair wise secret keys S_{ij} for each pair of node i, j are broadcasted.

In authentication and key establishment phase any node i first computes the hash value of its own node identity with other node secret key $H(k_j , N)$ by using XOR ($\oplus$) operations. It also generates a random number t_i and computes hash value z_i of that random number with the previous computed hash value.

$z_i = H(t_i, H(k_j , N_i))$.

Then send this with the generated random number and along with its node identity.

After receiving the message other node of the pair j computes the hash value H_j of its own secret key k_j and identity of node i.

$H_j = H(k_j , N_i)$.

Then it calculates the hash of H_j and the received t_i. If this computed value matches with the received z_i then node j authenticate node i as a legitimate node and similarly computes z_j and a shared session key

$k_{ij} = H((H(k_j , N_i) \oplus t_i) \oplus ((H(k_i , N_j) \oplus t_j))$.

Then similar to node i node j also send z_j, t_j, N_j to node i. After receiving the message from node j, node i verify z_j in a similar manner and after successful verification computes shared session key k_{ij} and another hash value

$y_{ij} = H(k_{ij} , t_i \oplus t_j)$

and deliver y_{ij} to node j for establishing mutual authentication.

Node j checks the authenticity of y_{ij} and if it holds then connection will be established between these two nodes. For new node addition this protocol follows the same authentication and key establishment phase so other information in existing node need not to be updated. By using this protocol we can achieve our desire security of WSN for PGM target tracking.

5.2 EXPERIMENTAL RESULTS

In order to verify that the WSN system can cope with the target locating and precision guidance mission with advantages of high precision and no duplication, simulation of a theoretic model of the task is done. Multiple sensors and targets are considered within the region of the battlefield. Every node has its own region of interest (ROI). If target falls within its ROI, the node will collect information about the target and send to the ground based base station. In the base station, the location of the target is determined.

Nine different targets and twenty nodes are considered. The arrangement of the nodes and targets are shown in Fig. 6.

FIG. 6: NODES, THEIR ROIS AND TARGET LOCATIONS IN THE BATTLEFIELD
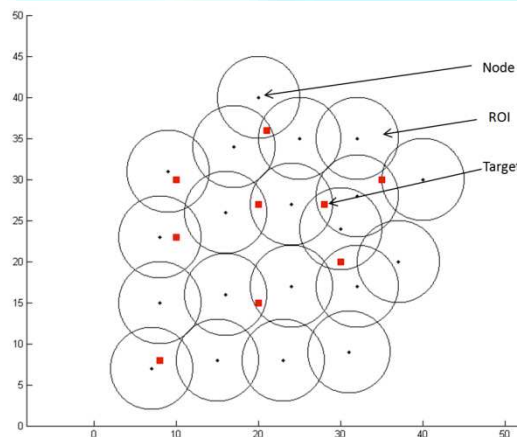
The circular region of interest (ROI) of a single ground node is taken to be 5 meter. For each ground node, if a target is in its ROI, it determines the distance of the target from the node and its angle with reference to a specific coordinate system. There can be scenario here multiple target may fall within single ROI or single target may fall in multiple ROI as the nodes are randomly distributed in the battlefield. To decrease the processing power of the individual node, each node computes only distance and angle of the target within its ROI and the raw data is sent to the base station. If multiple targets fall within single ROI of a node, the node sends information regarding each target. If single target falls in multiple ROI, each of the nodes corresponding to intersecting ROIs will detect the target separately. In that case, there is a chance of multiple instance of same target. To remove repetition of targets, target duplication removal algorithm is implemented in the base station. After the base station computes the coordinates of the nine targets, the target location information is sent to mother missile sink node to engage single sub-missile to single target. The mother missile is assumed to be 3500 meters above the battlefield. The total process is simulated and each of the nine sub-missiles are assigned individual distinct target and the targets are intercepted successfully as shown in the Fig. 7. These groups of nine targets are correctly detected by the set of ground nodes.

FIG. 7: TRAJECTORY OF SUB-MISSILES FROM MOTHER MISSILES TO THE TARGET
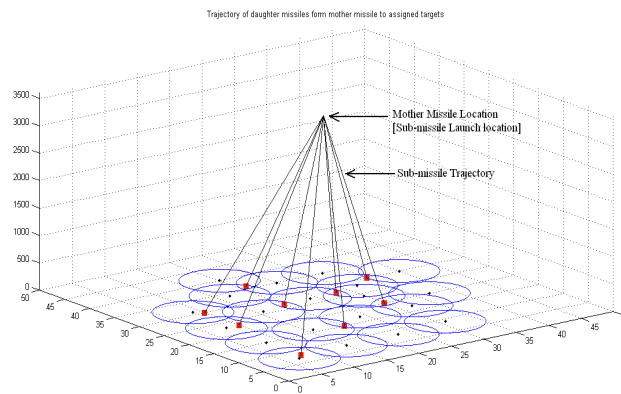
6   CONCLUSION

In this paper, we demonstrate the feasibility to design a complex real-time wireless sensor network for target tracking by PGM. We also analytically identify the challenges among system properties while meeting the real time requirements. We validate our design and analysis through simulation with twenty nodes. We contribute a set of tradeoffs that are useful for the future development of real-time sensor systems for target tracking by PGM. Given real-time constraints, a system designer can make guided engineering judgments on the system parameters such as the network density, the appropriate detection algorithm and the security and protocol settings for the sensor nodes in the network.

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IMPACT OF LIQUIDITY ON PROFITABILITY OF PUBLIC SECTOR BANKS IN INDIA: A STUDY OF SBI & BOB

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ABSTRACT

The recent crisis has underlined the importance of sound bank liquidity management. In response, regulators are devising new liquidity standards with the aim of making the financial system more stable and resilient. In this paper, the analysis is being made on the impact of liquid asset holdings on bank profitability for a sample of State Bank of India (SBI) and Bank of Baroda (BOB). Results suggest that profitability is improved for banks that hold some liquid assets, however, there is a point at which holding further liquid assets diminishes a banks' profitability, all else equal. Moreover, empirical evidence suggests that this relationship varies depending on a banks business models and the state of the economy. These results are particularly relevant as policymakers devise new standards establishing an appropriate level of liquidity for banks. While it is generally agreed upon that banks undervalued liquidity prior to the recent financial crisis, one must also consider the tradeoff between resilience to liquidity shocks and the cost of holding lower-yielding liquid assets as the latter may impact banks' ability to generate revenues, increase capital and extend credit.

KEYWORDS

Liquidity Management, Profitability, Financial Development, SBI, BOB, Economic Growth, Financial System Regulation and Policies.

INTRODUCTION

Liquidity was an instrumental factor during the recent financial crisis. As uncertainty led funding sources to disappear, many banks quickly found themselves short on cash to cover their obligations as they came due. In extreme cases, banks failed or were forced into mergers. As a result, in the interest of broader financial stability, substantial amounts of liquidity were provided by authorities in public sector banks including State Bank of India (SBI) and Bank of Baroda (BOB).

In the aftermath of the crisis, there is a general sense that banks had not fully appreciated the importance of liquidity risk management and the implications of such risk for the bank itself, as well as the wider financial system. As such, policymakers have suggested that banks should hold more liquid assets than in the past, to help self-insure against potential liquidity or funding difficulties. This has led to a desire for common measures and standards for liquidity risk, culminating in ongoing work by the Basel Committee on Banking Supervision.

Since liquid assets such as cash and government securities generally have a relatively low return, holding them imposes an opportunity cost on a bank. In the absence of regulation, it is reasonable to expect banks will hold liquid assets to the extent they help to maximize the banks profitability. Beyond this, policymakers have the option to require larger holdings of liquid assets, for instance, if it is seen as a benefit to the stability of the overall financial system. That said, the aim of this paper is not to establish the ideal level of liquid asset holdings, but rather to help distinguish empirically, whether SBI and BOB holding of liquid assets have a significant impact on their profitability.

In short, while controlling for other factors, this paper finds evidence, based on public sector banks like SBI and BOB from financial year 2002-03 to 2010-11, that profitability is improved for banks that hold some liquid assets, however, there is a point at which holding further liquid assets diminishes a banks' profitability, all else equal. These findings are conceptually in line with relevant literature and are consistent with the idea that the opportunity cost of holding low-return assets eventually outweighs the benefit of any increase in the bank's liquidity resiliency as perceived by funding markets.

In the context of this relationship, estimated results suggest some evidence of further positive benefit to hold additional liquid assets for institutions that follow a less traditional, more market-based banking model. Likewise, there is a similar estimated benefit to hold more liquid assets when economic conditions deteriorate.

The result of this paper sets forth this evidence, beginning with some facts and regulatory context. This is followed by a brief description of the relevant literature and the empirical framework as applied in this paper. Finally, the empirical results are presented and policy implications are drawn.

FACTS AND REGULATORY CONTEXT

As shown in Figure 1, public sector banks in India like SBI and BOB had been holding a declining share of their balance sheet in liquid assets, such as cash and government securities, prior to the onset of the recent financial crisis. Indeed, in reaction to the funding and liquidity pressures experienced during the crisis, banks, in aggregate, began to hold considerably more liquid assets. While there was an opportunity cost of holding liquid assets given their relatively low return, banks and supervisors recognized the operational benefits of additional liquidity, along with the benefits in terms of market perception. A relatively strong liquid asset pool could represent a more robust bank to investors and funding markets.

FIGURE-1: LIQUID ASSETS AS A PERCENTAGE OF TOTAL ASSETS
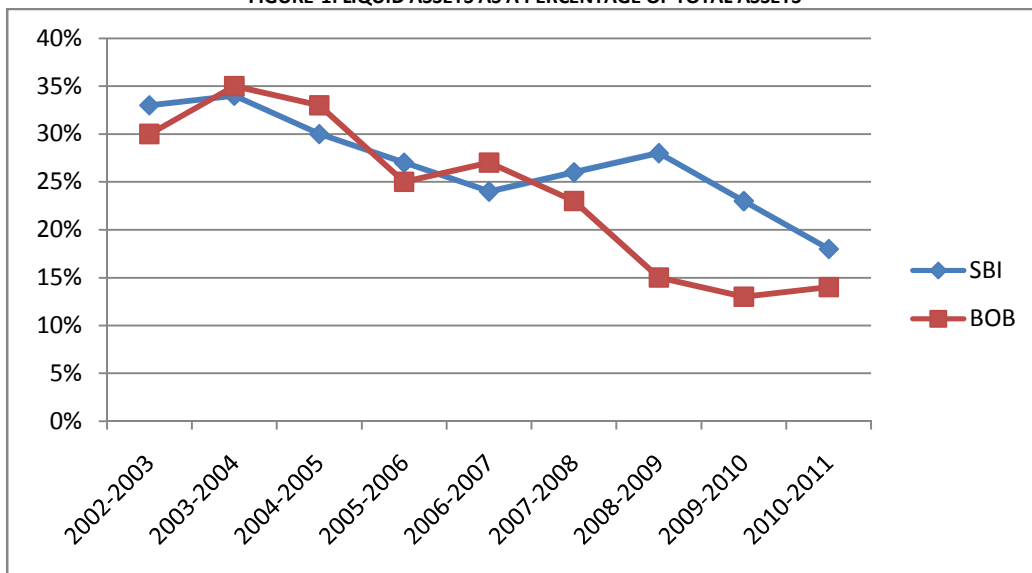
Source: Self Analysis

In fact, it was during the crisis that authorities in SBI and BOB saw the need for a consistent standard to monitor and improve bank liquidity. As such, the G20 recommended that the Basel Committee on Banking Supervision (BCBS) establish "a global framework for promoting stronger liquidity buffers at financial institutions". This framework, published in March 2011 and subject to an observation period over coming years, would include, among other things, a requirement that internationally-active banks hold enough liquid assets to cover their net cash outflows over a 30-day stress scenario. In broad terms, this regulatory standard is meant to ensure banks are self-insured to withstand a specified idiosyncratic and market-wide liquidity shock. Not surprisingly, however, the calibration of such a standard is a key to its impact on banks and the financial system as a whole. For reasons such as this, it is crucial to understand the impact that a change in bank's liquid asset holdings has on its stability and profitability.

Figure 2 presents historical data on a weighted average of return on equity (ROE) for SBI and BOB since 2010-11. Of note, SBI experienced considerable losses throughout the financial crisis, while those in BOB generally did not. Combining the information in both Figure 1 and Figure 2, it is unclear through visual observation what the impact, of additional liquid assets has been on the profitability of SBI and BOB. As such, this paper takes an empirical approach to investigate this question while controlling for other relevant factors.

FIGURE-2: RETURN ON EQUITY
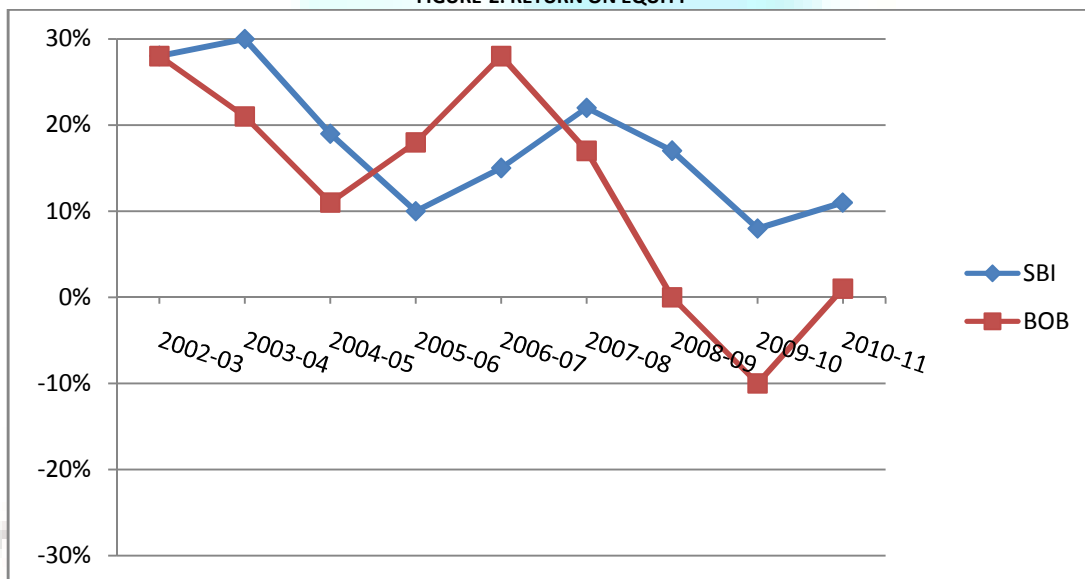
Source: Self Analysis

LITERATURE AND EMPIRICAL FRAMEWORK

A broad literature exists surrounding the analysis of liquidity holdings for firms. While a very limited number of studies appear to include liquidity as an explanatory variable for bank profitability, this relationship is not the focus of those papers and the empirical results are mixed. To our knowledge, there is no existing empirical work directly focusing on the specific question considered in the current paper: whether banks' holdings of liquid assets have a significant impact on their profitability. However, we are able to draw on relevant concepts in some related literature dealing with the impact of capital on bank profitability and of the impact of liquid assets on bank credit risk.

Berger (1995) analyses the statistical relationships between bank earnings and capital for Indian banks over the period of 1983-1989 and finds that, contrary to what one might expect in situations of perfect capital markets with symmetric information, there is a positive relationship between capital and return on equity. This result, according to the author, is consistent with the "expected bankruptcy cost hypothesis." More specifically, Berger's results suggest that banks with higher levels of capital see their funding costs decrease to such an extent that it more than offsets the cost of issuing additional capital. While Berger (1995) applies the concept of the "expected bankruptcy cost hypothesis" in the realm of capital, it is also conceptually applicable to the impact of liquid assets on profitability, whereby banks holding more liquid assets benefit from a superior perception in funding markets, reducing their financing costs and increasing profitability.

At the same time, a recent paper by Morris and Shin (2010) develops a model where the total credit risk of a bank is decomposed into "insolvency risk" and "illiquidity risk". The model provides a formula for "illiquidity risk" and the authors show that an increase in the liquidity ratio of a bank decreases the probability of an "illiquid" default.

These two concepts can be drawn together in the context of the current paper. If an increase in the relative liquid assets holdings of a bank decreases its probability of default, and if the "expected bankruptcy cost hypothesis" is indeed correct, then holdings of liquid assets should exhibit a positive relationship with bank profits. At the same time, holding liquid assets imposes an opportunity cost on the bank given their low return relative to other assets, thereby having a negative effect on profitability. Thus, overall, we expect liquid assets to exhibit a non-linear relationship to bank profitability in which increasing liquid assets would improve a bank's profitability through the "expected bankruptcy cost hypothesis", as long as the marginal benefit of holding additional liquid assets outweighs the opportunity cost of their low relative return.

Concurrently, the impact of liquid assets on profitability can be affected by other factors such as the bank's business model, or exogenous economic conditions. This idea is, in fact, analogous to existing literature on international reserve holdings. This literature has argued that emerging market economies accumulate reserves to self-insure against capital flow volatilities and sudden stops (Aizenman and Marion 2003; Stiglitz 2006). Furthermore, recent work by Jeanne and Rancière (2009) suggests that the optimal level of a small country's international reserves increases with the amount of short-term debt the country has, and with the probability of a sudden stop. Clear parallels can be drawn between this literature and the need for banks to self-insure against liquidity and funding shocks, as illustrated by the recent financial crisis.

Therefore, in our framework, we suppose that the impact on profitability of a bank's holdings of liquid assets depends on the amount of funding that comes due in the short-term and on the general state of the economic cycle. The latter can be interpreted as a proxy for the likelihood of a "sudden stop" or freeze in funding markets. All else equal, if a bank is more reliant on short-term funding, it may need to hold more liquid assets in order to maximize profits. Likewise, if the economic cycle is in a downturn and investors interpret this as an increase in the likelihood of a freeze in funding markets, banks would likely need to increase their holdings of liquid assets in order to maximize profits.

DATA AND EMPERICAL ESTIMATION

The econometric framework is presented in Equation (1). In short, the dependent variable, profitability, is regressed against a non-linear expression of relative liquid asset holdings, as well as a set of control variables, X.

$$\pi_{i,t} = \alpha_0 + \alpha_1 la_{i,t-1} + \alpha_2 la^2_{i,t-1} + \alpha_3 la_{i,t-1} \cdot stfunding_{i,t} + \alpha_4 la_{i,t-1} \cdot gdp_{i,t} + X\beta + u_{i,t} \quad \ldots\ldots(1)$$

More specifically, to test for the key relationship of interest between liquid assets and profitability (π), Equation (1) expresses the liquid asset ratio (la) as a nonlinear polynomial of order two, as well as the product of real GDP growth (gdp), and a proxy for short-term funding reliance (stfunding), respectively. Moreover, since creditors must first observe the relative liquidity of a bank before adjusting their views on its credit risk, all liquid asset terms are lagged by one period.

To more clearly illustrate the form of the estimated relationship between liquid assets and profitability, Equation (2) presents the marginal impact on profits of the liquid assets ratio. As noted above, this relationship is a function of the liquid assets ratio, a measure of short-term funding reliance and general macroeconomic conditions. Indeed, setting Equation (2) equal to zero allows one to solve for the reduced-form profit-optimizing level of the liquid assets ratio, given by Equation (3).

$$\frac{\partial \pi_{i,t}}{\partial la_{i,t-1}} = \alpha_1 + 2 * \alpha_2 la_{i,t-1} + \alpha_3 stfunding_{i,t} + \alpha_4 gdp_{i,t} = 0 \ldots\ldots\ldots\ldots (2)$$

$$la^*_{i,t-1} = \frac{-(\alpha_1 + \alpha_3 stfunding_{i,t} + \alpha_4 gdp_{i,t})}{2 * \alpha_2} \qquad \ldots\ldots\ldots\ldots (3)$$

DATA

TABLE- A.1: VARIABLE DEFINITIONS AND DESCRIPTIVE STATISTICS

Symbol	Definitions	Sample Mean	Standard Deviation
ROE	Pre-tax annualized return on total shareholders' equity	0.1799	0.1276
ROA	Pre-tax annualized return on total assets	0.0154	0.008578
gdp	Quarter-over-quarter growth rate of real GDP	0.01194	0.007913
cpi	Quarter-over-quarter growth rate of core CPI (core inflation rate)	0.005988	0.006014
Unemployment	Unemployment rate	5.3539	1.1353
Leverage	Ratio of total assets to total shareholders' equity	12.6958	4.6222
Tier-1	Tier 1 capital ratio (Tier 1 capital as a share of risk-weighted assets - Basel I definition for SBI; For BOB Basel I definition until 2007Q1 and Basel II definition from 2007Q2 on)	0.09673	0.02262
la	Liquid assets as a share of total assets	0.1926	0.09320
Mkt_income	Trading and investment banking related revenues as a share of gross income (interest income and non-interest income)	0.03394	0.05570
Repos	Reverse repurchase agreements as a share of total liabilities	0.07928	0.06322

The above table i.e. **Table- A.1** provides a summary of the variables used for empirical estimation, along with their definitions and some descriptive statistics. Of note, the dependent variable, profitability (π), is measured as return on equity or return on assets as noted, and relative liquid assets (la), are measured as the ratio of cash, government-issued and government-guaranteed securities and interbank deposits relative to a bank's total assets. Note that, because of accounting differences in the netting of derivatives on the balance sheet between SBI and BOB, we imperfectly adjust BOB total assets, as used in the liquid assets ratio, using the impact of master netting agreements.

Control variables include quarterly growth in real GDP, unemployment and core inflation, as well as a measure of balance sheet leverage, measured as the ratio of assets to shareholders' equity.

With respect to the short-term funding variable, ideally, one wants to measure a bank's reliance on relatively flighty short-term funding. Unfortunately, available data are not as granular as desired, since they cover all types and sources of funding coming due within one year. There may be very significant differences in the stability of various sources of short-term funding. For instance, insured retail demand deposits are likely to be much more stable than short-term market funding. To address this data issue, we assume that a bank's business model and the structure of its short-term versus long-term funding are related and use the former as a proxy. Indeed, sample correlations between the market-related proportion of a bank's income and measures of the term of funding are positive and statistically significant at the 1% level.

BASELINE RESULTS

TABLE-A.2: ESTIMATION RESULT WITH BANK AND TIME FIXED-EFFECTS – RETURN ON EQUITY

Variables	ROE
unemployment	-0.0397***
gdp	3.132***
$cp1_{t-1}$	-0.0286
la_{t-1}	0.695***
la^2_{t-1}	-1.006***
$la_{i,t-1}mkt\_income_{i,t}$	1.783**
$la_{i,t-1}gdp_{i,t}$	-16.98***
$leverage_{t-1}$	0.00747***
Observations	2875
R-squared	0.580
R-bar	0.562
p-value of Hansen's J- Statistic	0.373
p-value of under identification LM statistic	0.000

Table- A.2 presents the baseline estimation results in which return on equity is regressed on the liquid asset ratio (in level form and as a product of GDP growth and a product of market income share), along with the control variables for GDP growth, inflation and balance sheet leverage. Note that the estimation gives an adjusted R-squared (around 0.58) that is in line with the current literature, and also shows desirable characteristics with respect to the instrumental variables used.

Turning to the key results, the estimated relationship between liquid assets and bank profitability is as expected. Coefficients for the liquid assets ratio, its square, its product with GDP growth, and its product with a proxy for reliance on short-term funding are all statistically significant at the 1% level. As expected, we find evidence of a non-linear relationship between profitability and liquid asset holdings. More specifically, as illustrated in Figure 3, the negative coefficient on α2 indicates that profitability is maximized, according to this reduced-form model, at $la^*_{i,t-1}$. In other words, the relationship takes the form of a downward-concave parabola and to the extent the relationship is relatively flat around the maximum ($la^*_{i,t-1}$), the cost associated with holding more or less liquid assets will be limited in range around the maximum. Estimation also suggests a negative coefficient, as anticipated, for the interaction term with GDP growth and a positive coefficient for the product with the proxy for reliance on short-term funding.

FIGURE-3
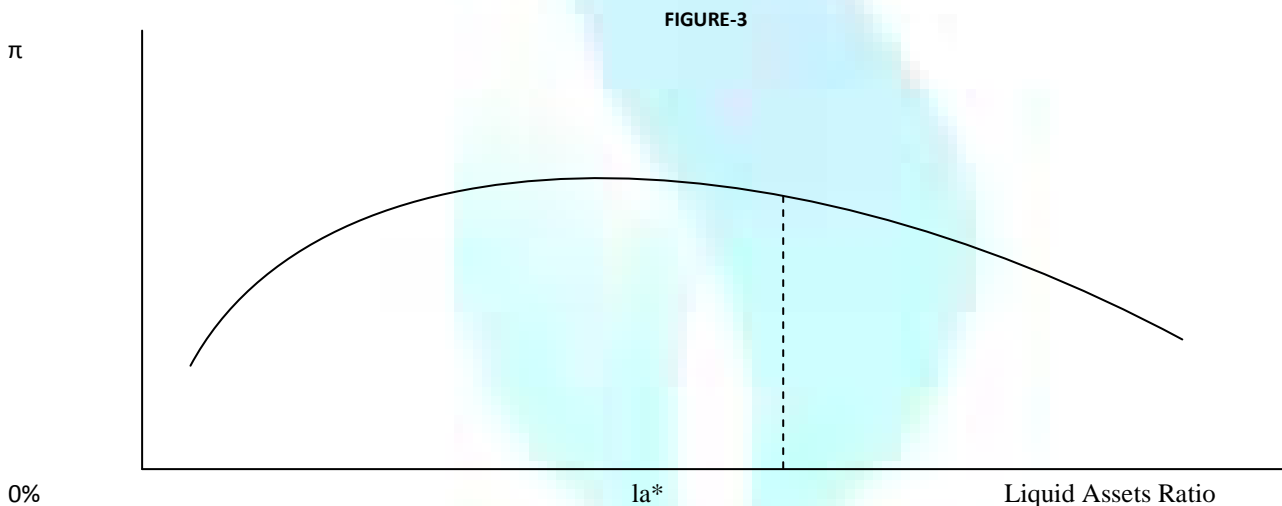
Taken together, these results suggest that, all else equal, profitability is improved for banks that hold some liquid assets, however, there is a point at which holding further liquid assets diminishes a banks' profitability, all else equal. This finding is consistent with the idea that funding markets reward banks for holding some liquid assets, but at some point this benefit is outweighed by the opportunity cost of holding such low-yielding assets. At the same time, as macroeconomic conditions deteriorate, increasing the likelihood of market illiquidity, the reduced-form profit optimal level of liquid assets $la^*_{i,t-1}$ increases (recall Equation (3) above), confirming the intuition. Likewise, as a bank increases its reliance on capital market- related revenues, the estimated reduced form profit-optimal level of liquid assets also increases. In short, profit incentives should encourage banks to hold more liquidity in times of weak economic growth or when they maintain a less-traditional business model.

Estimated coefficients on the macroeconomic control variables are generally in line with the existing literature. GDP growth is estimated to have a positive and statistically significant impact on bank profitability, while the level of unemployment, through a higher probability of default on loans, has a negative impact. Meanwhile, the lagged rate of inflation exhibits a negative and statistically significant relationship with profitability.

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DIFFERENCE IN THE IMPACT OF LIQUIDITY FOR SBI AND BOB

TABLE-A.3: ESTIMATION RESULTS WITH DUMMY VARIABLE- RETURN IN EQUITY AND RETURN ON ASSETS

Variables	ROE	ROA
unemployment	-0.0388***	-0.00331***
gdp	3.171***	0.350***
$cp1_{t-1}$	0.00381	0.0221
la_{t-1}	0.748***	0.0678***
CAD * la_{t-1}	-0.413*	-0.0293*
la^2_{t-1}	-1.090***	-0.0862***
$la_{i,t-1}mkt\_income_{i,t}$	1.837**	0.100**
$la_{i,t-1}gdp_{i,t}$	-16.60***	-1.782***
$leverage_{t-1}$	0.00783***	-0.000298**
Observations	2875	2875
R-squared	0.580	0.788
R-bar	0.562	0.779
p-value of Hansen's J- Statistic	0.542	0.237
p-value of under identification LM statistic	0.00602	0.00602

To test whether BOB's profitability exhibits a different relationship toward holdings of liquid assets relative to SBI, we introduce a dummy variable for BOB interacted with the liquid assets ratio. Equations (1), (2) and (3) above become Equations (4), (5) and (6), with CAD representing a dummy variable taking the value of one for BOB and zero for SBI. Estimation results are presented in Table A.3 with column one corresponding to the baseline specification.

$$\pi_{i,t} = \alpha_0 + \alpha_1 la_{i,t-1} + \alpha_2 la^2_{i,t-1} + \alpha_3 la_{i,t-1}.stfunding_{i,t} + \alpha_4 la_{i,t-1}.gdp_{i,t} + \alpha_5 la_{i,t-1}.CAD + X\beta + u_{i,t} \quad \text{............(4)}$$

$$\frac{\partial \pi_{i,t}}{\partial la_{i,t-1}} = \alpha_1 + 2*\alpha_2 la_{i,t-1} + \alpha_3 stfunding_{i,t} + \alpha_4 gdp_{i,t} + \alpha_5 CAD = 0 \quad ..... (5)$$

$$la^*_{i,t-1} = \frac{-(\alpha_1 + \alpha_3 stfunding_{i,t} + \alpha_4 gdp_{i,t} + \alpha_5 CAD)}{2*\alpha_2} \quad \text{.................. (6)}$$

Coefficients for the interactive dummy variable are estimated to be negative and statistically significant in the baseline specification. This result is robust with respect to the use of return on assets as the dependent variable, as shown in column 2 of Table A.3. In general, these findings suggest that, ceteris paribus, the level of liquid assets required to maximize profits is lower for BOB than in SBI. However, this result may primarily reflect data issues. As mentioned previously, accounting differences tend to inflate total assets for BOB, relative to their SBI. Although an attempt has been made to reduce this divergence, the adjustment is imperfect and such structural dissimilarities could still exaggerate differences in the estimated impact of liquid assets on profitability in BOB relative to SBI. Moreover, the sample period used for estimation is significantly influenced by the recent financial crisis. Over this period, BOB generally performed better than SBI, producing comparatively more profits for a given level of liquid assets. Nonetheless, setting aside data concerns, this result could reflect differences in market perception across BOB and SBI. More specifically, investors and fund providers could demand that SBI holds additional liquid assets in comparison to BOB due to unobserved structural factors.

CONCLUSION

This paper presents empirical evidence regarding the relationship between liquid asset holdings and profitability for SBI and BOB over the period of 2002-03 to 2010-11. In short, results suggest that a nonlinear relationship exists, whereby profitability is improved for banks that hold some liquid assets, however, there is a point beyond which holding further liquid assets diminishes a banks' profitability, all else equal. Conceptually, this result is consistent with the idea that funding markets reward a bank, to some extent, for holding liquid assets, thereby reducing its liquidity risk. However, this benefit is can eventually be outweighed by the opportunity cost of holding such comparatively low-yielding liquid assets on the balance sheet.

At the same time, estimation results provide some evidence that the relationship between liquid assets and profitability depends on the bank's business model and the risk of funding market difficulties. Adopting a more traditional business model allows a bank to optimize profits with a lower level of liquid assets. Likewise, when the likelihood of funding market difficulties is low, banks need to hold less liquid assets to optimize profits.

Although, to our knowledge, there is no existing literature addressing these specific issues, the empirical results presented in this paper are in line with similar concepts in the broader literature related to capital, credit risk and international reserves.

From a policy perspective, the results of this paper are highly relevant, particularly given ongoing regulatory reform following the recent financial crisis. As policymakers devise new standards establishing an appropriate level of liquidity for banks, helping to ensure adequate stability for the overall financial system, the empirical results of this paper suggest they should bear in mind the trade-off between resilience to liquidity shocks and the cost of holding lower-yielding liquid assets. While holding liquid assets will make banks more resilient to liquidity shocks, thus reducing the negative externalities they might impose on other economic agents, holding too many may impose a significant cost in terms of reduced profitability. Indeed, as retained earnings are the primary means of organic capital generation, low profits may prevent banks from expanding and extending additional credit to the real economy. These benefits and costs are equally applicable both for individual institutions and the financial system as a whole.

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QR WITH MOODLE FOR EFFECTIVE HIGHER EDUCATION

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ABSTRACT
E-Learning and M-Learning are the technologies which dominate and changed the face of the traditional teaching and learning. The limitations of the mobile and electronic devices used for E-learning and M-learning are almost overcome during these days. The students always prefer few components of traditional teaching methodology along with the new technologies. They are very much interested in face to face class room teaching and hard copies of the teaching materials. At the same time, they would like to see the video lectures rather than reading a book either in printed format or in digital format. Hence we have tried to put together the traditional teaching and learning methodology and the modern flawless mobile technology in a better way. By introducing the QR code in the hard copy of the learning material, it would be very easy for the students to get the access of a particular link JIT. The time taken to access a website is ten times less than the usual way of browsing a web page using the mobile devices. In this paper, we have made an effort to reduce the hard copies of the learning materials and to make it more interesting by giving links to the video lectures. This paper explains only the methodology of using QR code in the E-learning. The scope of this paper is not to discuss the impact of the QR code but how it can improve the students' academic progress and knowledge.

KEYWORDS
E-Learning, ICT, JIT, M-Learning, QR Code.

INTRODUCTION
In a society, learning is a fundamental cognitive process of mental and social change over an entire lifetime [3]. Today, the organization of learning is changing, especially in secondary schools and universities due to digitization in the teaching and learning equipment's, delivery and also social changes. However, in this context, new technologies offer the opportunity to pupils and students to communicate and interact with multi-media learning resources and simulated environments for in-hand experience in their field [4]. Consequently, technology can enhance motivation, which is a vital aspect of teaching and learning, deliver information when needed, and encourage solving problems and satisfying curiosity. Most of all, new technologies also offer the possibility to scaffold learners through an extended process of capturing and organizing situated activities [6].

Nowadays, the use of computers in education has mostly been focused on enhancing teaching and learning in formal settings, typically in the traditional classroom or computer lab. This form of teaching and learning are called e-learning and it has a restriction for JIT learning experience due to heavy hardware devices. However, learning does not only take place within such formal learning settings! The use of mobile devices could expand learning possibilities and solve the problem of being tied to a particular location. This contemporary method is called "M-Learning" [8].

Generally, the combination of e-learning and mobile computing is called Mobile Learning (M-Learning) and promises the access to applications that support learning anywhere, anytime and JIT [1]. However, most of the proposed examples in the past uses handheld computers or laptops and are mainly supporting adults in the workplace—people who know what they want. Subsequently, M-Learning has become an attractive target application area for corporate mobile devices. However, meanwhile hardware is considered as a solved problem; innovative, affordable and usable software remains still the greatest challenge. Since the teaching field and methodology changes according to the devices which is recommended for learning. But this increases the complications of implementing M-Learning. Hence we should see the ways for implementing this technology without much complication [13] along with the traditional methods in which students are more comfortable.

WHY M-LEARNING?
A recent survey proves that mobile phones are no more going to be used only as a communication device. This era started from pervasive computing. It can be used as a still digital camera, video recorder, storage device and file compiler. Apart from all these, it can be used along with computers. Computers and mobile phones can be used in tandem to share information between them.

FIGURE 1: AVERAGE WORLD ICT STATISTICS TAKEN FROM THE 2010 ITU REPORT (Acharya&Teltscher, 2010).
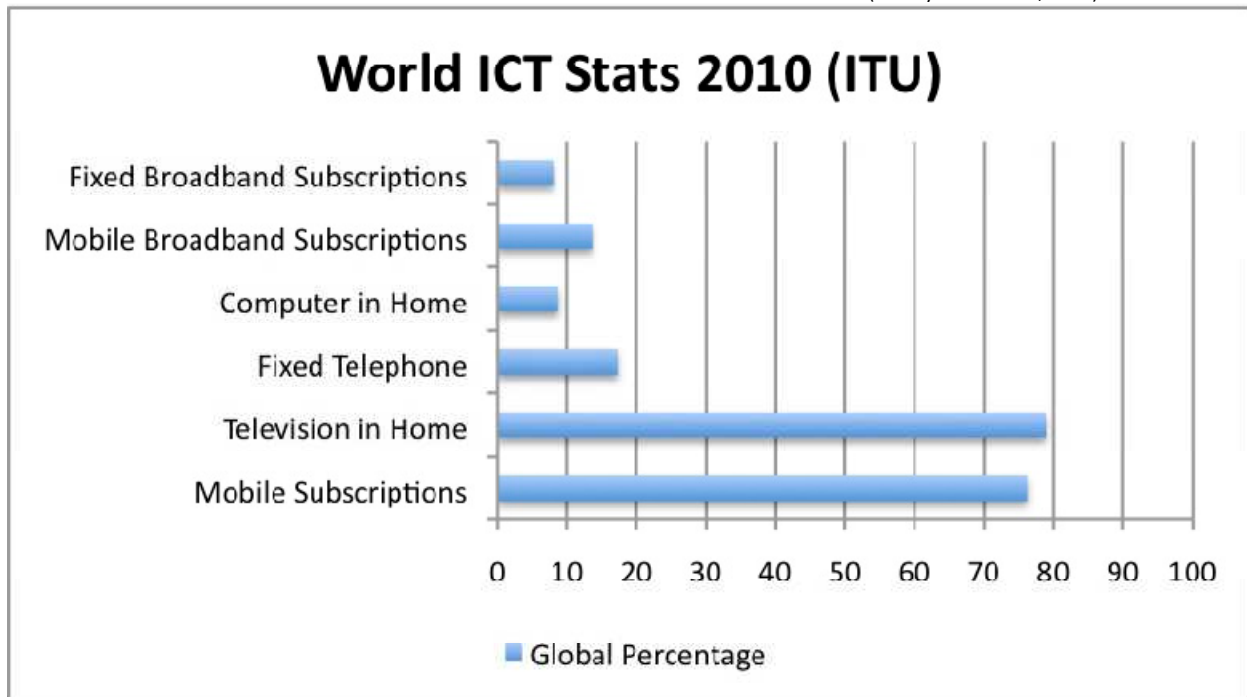
However, other than technologies, now days, education is not only for the regular students (full time students) but also for anyone interested in improving and developing himself. Awareness and necessity of education has become unavoidable for all age groups irrespective of their background. People have to learn throughout their lifetime (this is called lifelong learning) to keep themselves abreast and updated with the recent developments in their area of interest.

This is a great challenge as well as an opportunity to the academic community to provide services to the students as per their convenience. Since anytime and anywhere learning concept is the latest trend and so it becomes ever so important for everyone to be involved in the selection of technology as a means for lifelong learning. As of now e-learning is the hot cake for the students who prefer to educate themselves through distance education. But e-learning has its limitations as it helps students to study only from a particular place and not anytime. Hence the only alternative for this is m-learning. It helps students to learn anytime and anywhere[7] alongwith some advance features such as convenience, collaborative effort, portability, content and compatibility. M-learning is the answer and is sure to become a prime technology for any kind of education in the near future.

"Successful technologies are those that are in harmony with end-users needs"

- Ben Shneiderman (2002)[7]

WHY MOODLE?

Open Source Software's (OSS) are becoming more popular these days and dominating all the fields including education. One of such educational Learning Management Systems (LAM's) OSS is Moodle. Moodle is supported by the academicians and researchers in the educational field and also interested in promoting OSS. These people have included many dynamic and useful modules with Moodle to make it popular and useful for both teaching and student community. The main advantage of Moodle is the advantage of OSS like cost free and code availability of the software. Moreover the OSS can be freely downloaded with code and it gives rights to people to copy, modify and share with others without paying any fees. The expansion of Moodle is Modular Object-Oriented Dynamic Learning Environment and it is a famous Learning Management System throughout the world due to its versatility. The history of Moodle starts with a doctoral research by an Australian by name Martin Dougiamas. But as on today it has long list of people who have contributed for the improvement of the same. In the Moodle site www.moodle.org we can have more information related to the developers, users and links for downloading the software.

In the year 2010, in a survey the growth of Moodle was tremendous and it get 34.1% of the market of Education. This happened at the cost of blackboard, Inc., and "developed in house". In the business market also the growth is excellent. Moodle got good market share against the homegrown learning management System. Table 1 shows that Moodle is in the second place of the educational market.

TABLE 1: THE TOP 10 LMSS IN USE BY 668 EDUCATION ORGANIZATIONS, AS REPORTED BY ELEARNING GUILD MEMBERS IN THE LAST YEAR

	1 - 50 workers	51 - 500 workers	501 - 2000 workers	2,001 - 10,000 workers	More than 10,000 worke..	**Grand Total**
Blackboard, Inc.	37.9%	50.0%	68.2%	61.1%	51.1%	**56.7%**
Moodle	58.6%	50.0%	37.9%	42.6%	31.9%	**45.3%**
ANGEL Learning	6.9%	20.8%	8.3%	5.6%	14.9%	**10.9%**
Desire2Learn Inc.	6.9%	6.6%	5.3%	8.3%	8.5%	**7.2%**
Developed In-House	10.3%	1.9%	3.8%	5.6%	10.6%	**5.6%**
eCollege	5.2%	3.8%	6.8%	5.6%	8.5%	**4.2%**
Oracle	3.4%	3.8%	1.5%	0.9%	2.1%	**2.3%**
Resource Development Company	3.4%	0.9%	2.3%	0.9%	4.3%	**2.1%**
Articulate	5.2%			1.9%	4.3%	**1.6%**
Skillsoft, Thomson NETg	1.7%	0.9%	0.8%	2.8%	2.1%	**1.6%**

Source: Guild Research

Table 2 shows Moodle gained the first place in the business organizations survey even against the saba and Sum total systems. [26]

TABLE 2: THE TOP 10 LMSS IN USE BY 1,932 BUSINESS ORGANIZATIONS, AS REPORTED BY ELEARNING GUILD MEMBERS IN THE LAST YEAR

	1 - 50 workers	51 - 500 workers	501 - 2000 workers	2,001 - 10,000 workers	More than 10,000 worke..	Grand Total
Moodle	48.2%	24.6%	15.3%	12.7%	6.3%	22.1%
SumTotal Systems Inc.	7.3%	9.8%	12.3%	17.6%	24.8%	15.4%
Saba	11.3%	8.2%	10.4%	12.0%	21.4%	13.7%
Developed In-House	17.6%	13.1%	8.6%	8.1%	13.7%	13.1%
Blackboard, Inc.	16.6%	13.7%	9.8%	7.7%	7.4%	11.0%
Plateau Systems, LTD	5.3%	7.7%	9.2%	9.9%	13.7%	9.4%
Skillsoft, Thomson NETg	8.0%	7.1%	5.5%	10.2%	11.7%	9.2%
Oracle	6.0%	3.8%	6.7%	12.0%	8.8%	8.0%
Learn.com	4.7%	7.7%	11.7%	7.7%	3.1%	6.3%
GeoLearning	5.6%	7.1%	6.1%	4.2%	3.1%	5.1%

Source: Guild Research

The Moodle was used by Higher College of Technology (HCT) for a long time but it became very active and started using all the components of Moodle from the year 2008. Now it is altered in such a way that students can use Moodle for their studies as well as for their assessments. It is very convenient for the students to access their Moodle account either in the intranet of HCT or through internet outside the campus.

ADVANTAGES AND DISADVANTAGES OF MOODLE

ADVANTAGES

All the open source software's are available at free of cost along with the source code. Hence it can be customized to our requirements. It has a great flexibility in its implementation and usage. Even if we have any problem in customizing the software we may get the technical support from a large group of people. It has well tested updates and plug-ins. The great advantage is variety of tools and capabilities it has. It can be peer reviewed with high level of security. The popularity of this software is not due to its economic nature but due to the contemporary tools available with it. The customer satisfaction is greater compared to the company developed software's. Due to the open nature, top academicians and experts reviewed it and ensured the quality, reliability, accuracy, accountability, collaboration and greater communication. Because this software is developed by a community with real interest in academics and who are all the experts in this field, it helps the whole educational world with high standard. The development speed is also rapid and knowledge sharing is very high among this community people. The experts from different geographical places developed this software in different languages. Hence the reach ability is higher compared to other software's.

DISADVANTAGES

Even though Moodle has lots of advantages it has few drawbacks also. When we try to customize this software too much it creates lot of problem and people comment that it is not enterprise-ready. We may get technical support from various experts, but fixing problem will be our responsibility. This software takes care of most of the academic components, but when it comes to the administrative part of an institute, it is not suitable software. If we try to integrate with other software components of the organization, it has very less integration ability. It cannot be integrated with Human resource system, other students' management system, business process models, etc., even though we can customize this software it has less capability of assessment and grading system. Hence HCT is always relay on other software's for grading and result processing, also HCT still follow traditional assessment patterns to assess the students.

Many companies in almost all countries help educational institutions to implement web based Moodle. These companies take responsibility of hosting, software support, customization, training the employees and integrate with other applications.

QR CODE

Quick Response Code is the expansion of QR code and this is the trade mark for a type of matrix bar code. This is actually the extended technology of bar code used in Japan for the automotive industry. It is a label which can be read by the optical machines contains information related to an item or a URL, etc., it helps to read the information very fast and stores more data compared to the previous technology. It is a patent technology, but the patent holders are not exercising those rights. It has black modules or square dots as specified in the figure 3 with a white background. The data can be encoded using supported extensions, virtually any type of data or four standardized types of data like numeric, alphanumeric, etc., [30]

FIGURE 3: QR CODE FOR THE MOODLE LINK OF ORACLE COURSE IN HCT

QR CODE SCAN

QR code can be generated with various software packages. One of such web site is www.qrgo.me. This is the web site we used to generate the QR codes and used in the delivery plan of the course. After the generation and printed in the delivery plan it can be scanned by any mobile devices of the students. If a student having a windows phone like Nokia Lumina series phones then Bing search app can scan QR code. Similarly, the iPhone/iPod/iPad and Google devices can use 3rd Party applications because they are not having any native code reader with it. In general there are so many apps are available for Google Android Operating system to scan QR code reading. The another big giant in mobile phone industry is black berry, its App World applications can scan QR codes and load any URL on the device web browser. [29]

QR codes are used to store the URLs of the course materials and video lectures in the delivery plan. It is also used in HCT for many other purposes. In HCT to advertise any event they give the URL of the link in which the details of that event stored will be advertised in the college bus, signs, LED TV's, notice boards etc., Even the Lecturers has a QR code in their Id card and use as a business card. The students or visitors who have a camera phone with proper QR code reader software can scan and the image of QR code will display text about the business card details of the lecturer or contact information about the person. If the phone has a internet connection then it may load the URL of the link which is is in the QR code. This act is called hardlinking or object hyperlinking. Finally it is also used to identify the location of a lecturer in HCT by retrieving the geo information by using the GPS associated with a location. [28]

IMPLEMENTED QR CODE FOR MOODLE IN HCT

Every semester after the student's registration, the course coordinator has to prepare CSV file of his subject and forward to the Educational Technology Committee (ETC). ETC gives access to the concern subject for all these students. Meanwhile the course coordinator has to upload all the course materials,

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sample assignments, Exams, Reference materials and additional video lectures in the Moodle. During the teaching week, course coordinators record their lectures and upload in the Moodle. All the relevant lectures for the particular subject will be made available in the HCT website's E-learning portal (Moodle). In the beginning of the semester Course Coordinator prepare a 6 page document called Delivery Plan in which they includes course aims, objectives, learning outcomes with each week schedule of teaching topics, assignment schedules, marking and attendance details. Now, in the new format of delivery plan each course coordinator has a QR code for the corresponding link next to the chapter title and other related topics. When the student scans the particular code it will open the video lecture of the staff to the student in his mobile device. The mobile devices are having access to the intranet of HCT, so it will not cost the student.This is much helpful when the student have not attended the particular class or in need of more reference materials. Thus it is possible to sync the student with teacher lectures. 10 percent of the sessions are made mandatory to the student to learn using Moodle through M-Learning at HCT.

FUNCTIONS OF THE APPLICATION

1. Student Scan the QR Video Code.
2. Mobile App identifies the Corresponding Course Video.
3. The video will be shown to the Student.
4. Monitoring will be done to evaluate the completion of the session.

CONCLUSION

This paper has attempted to develop a rational and systematic framework for assessing the effectiveness, efficiency and economics of Moodle software for higher education students in HCT. But this paper has not analyzed the independent variables of M-learning process using Moodle. Not all the dependent variables are considered for this research. But in this primary stage it gives positive signals for implementing Moodle and QR code delivery plan for the HCT students.

This paper has also presented the conceptual Moodle architecture with QR code Delivery plan that can be implemented in the HCT. This gives Anywhere Anytime Learning advantages to the learning community and helps to improve the efficiency of the teaching community at lesser cost. Apart from that the accessing speed and the organisation of the materials in the Moodle are very effective and impressive than the previous usage of the Moodle in HCT. However this can be used for the traditional teaching and learning environment as a supporting tool to make the cost of the resources required for higher education institutions. Further to this research it is very much required to involve all students and teachers for the effective M-Learning in the college level education for all the faculties using Moodle. It will allow the University/ College to adopt the common teaching and learning strategy throughout all the faculties which is more convenient for the student. However, measuring such differences was not the primary objective of these discussions and plans. Even without a measurable effect of using different teaching and learning tools, adopting tools to fit student preferences can improve student satisfaction. Further, this application can be extended to the secured Moodle M-Leaning environment for the distance learning students and part time students.

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INVESTIGATING THE HRD CLIMATE AND PERCEPTIONAL DIFFERENCE OF EMPLOYEES IN BANKING SECTOR

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ABSTRACT

HRD climate is an intrinsic part of organization climate. It is the perception of the employees can have developmental environment in the organization. It plays important role in the success of organizations because it directly or indirectly links with the performance of the employees. If the HRD climate is strong in the organization, the employees will contribute their maximum effort for the achievement of the organizational goals. Human resources are the biggest asset of the organization and help them to get competitive advantage. The strong HRD climate means high performance of the employees and result leads to get maximum profit. The study of HRD climate is very important in every sector, but this study conduct on banking score. The researcher tries to find out, how much HRD climate prevails in banking sector. The present study also tells about the perceptional difference regarding HRD climate on the basis of age, gender, designation and experience. The researcher personally connected with respondent and collected the data from the employees of three major banks Allied Bank Limited, United Bank Limited and MCB using HRD climate questionnaire and finally 75 Questionnaires take into consideration. Data was analyzed with different statistical tools mean, standard deviation, variance and T test, the researcher come to conclusion there is an average HRD climate prevails in these organizations. The present study also shows there is no significant difference on the basis of age, gender, designation and experience. Average HRD climate can be improved by eliminate favoritism system, conduct training programmed, eliminate communication gap, and introducing the HRD policies and practices.

KEYWORDS
HRD climate, Banking sector, Employees performance.

INTRODUCTION
HRD CLIMATE
According to American society for training and Development (ASTD), Human Resource Development (HRD) is the integrated use of training and development, organizational development and career development to improve individual, group and organizational effectiveness. HRD is concerned with the provision of learning and development opportunities that support the achievement of business strategies and make improvement of organizational, team and individual performance (Armstrong and Barron, 2002).

If we want to find a way to develop employees in order to become effective contributors to the organization goal, we need to understand of what an effective contribution would look like. The use of personal resources can be very helpful in describing the way in which an effective employee should behave, but there can be no general prescription of an effective employee. Effectiveness will differ with organizational environment and on whose perspective what we are perceive. The matter of what, finally, an effective employee includes a combination of personality, natural capabilities, developed skills, experience and learning. The process of developing an employee's present and future effectiveness is called development.

MEANING OF H R D CLIMATE
HR means employees in organization, who works for the development and profit of organization.
Development, it is combination of capabilities that are needed to do the present job, or the future expected job.
After analyzing Human Resource and Development we can simply say, HRD is the process of helping people to develop his competencies.
Climate is the overall feelings that the organization physically conveyed, how the members of the organization are interacting with each other and the way, members of the organization are interact with outsiders. It is the physical layout of the organization which conveyed through its members.
HRD climate is an intrinsic part of organization climate. It is the perception of the employees can have developmental environment in the organization.
HRD climate have some general characteristics which are find Rao and Abraham in 1986. According to them the tendencies such as treating employees as the most important resources of the organization, perceiving that developing employees is the job of every manager from top level to lower level, believing in the capabilities of employees, communicate openly, encouraging risk taking and experimentation, making efforts to help employees recognize their real strengths and weaknesses, creating a general climate which support of trust, collaboration and autonomy, supportive personnel policies, and supportive HRD practices. According to Athreya 1988, the top management visualizes the employees values is a starting point. When a critical mass evaluated these values, there emerges a supported climate for HRD. This positive HRD climate makes the existing systems more effective and makes the organizations more receptive to the introduction of relevant additional system. A healthy HRD climate is overall internal environment of the organization, fosters employee commitment, involvement and satisfaction with the job.

REVIEW OF LITERATURE
Many researchers have done his research on HRD climate. The result shown HRD climate affects the performance of employees.
The first research of HRD climate in Indian organizations was carried out by Rao and Abraham (1986). They found, HRD climate in the organizations appears to be an average level. The most important factor contributing is general indifference on the part of the employees on their own development.
Abraham (1989) in another study observed that HRD climate is a power full intervening variable that converts HRD practices into profit.
Krishna and Rao (1997) carried out a detailed empirical study in. BHEL, Hyderabad and found that HRD climate encouraged senior and middle level managers in the organization.
Venkateswaran (1997) also done research on HRD climate and found favorable HRD climate was prevalent in a public sector of India.

Sharma and Purang (2000) done his study to find out the relationship between value institutionalization and HRD climate in engineering and manufacturing sector and found that there is positive relationship between two variables.

Alphonsa (2000) conducted its research on private hospitals. The researcher found satisfactory HRD Climate towards the perception of the supervisors and good climate was prevailing in the hospital.

Srimannarayana (2001) contribute his work on Software and identified below average level of HRD climate in a software organization in India.

Agarwala (2002) done his research on automobile and IT industry and found that the HRD climate was more developmental in IT industry when compared to the automobile industry.

Mishra & Bhardwaj (2002) done his research on private sector of India and concluded that there was good HRD climate in a private sector in India.

Rodrigues's (2004) contribute his study in the engineering institutes in India found the highly satisfactory climate in India.

Sampath & Kalpana, (2005) conducted a study on HRD Climate on organization and found that to a large extent organizations where knowledge workers work enjoy a good HRD Climate.

Chalam and Srinivas (2005) done his study on Gender wise perceptions and Attitudes on HRD Climate in Indian Banking sector, and find there is basic disagreement in selected branches of SBI with respect to HRD Climate.

Vijaya Banu (2007) done his study, HRD climate on public sector cement Corporation in India and concluded that to excel and survive in the new economy, HRD Climate is one of crucial importance to this Sector.

Mufeed SA (2006) has done its work on hospitals. The result shows the existence of poor HRD climate in the hospitals.

Mufeed & Gurkoo (2006) has done his study to HRD climate in universities and other equivalent higher level academic institutions.

Srimannarayana M (2007) conducted a study in local bank of Dubai and found that there was a good HRD climate prevailed in this organization. On the basis of some demographics variable he found out the differences in the perception of employees regarding the HRD climate.

Pillai's (2008) also did his work on banks. The study identified that HRD climate existing in banks as average level. This study further found that a supportive HRD climate in banks that stimulate the learning capabilities of employees.

Kuresh Saxena & punkaj tewari (2009) done his research on HRD climate exist on banking sector of Ahmadabad and found average climate prevail in these banks.

Famina (2009) has done her research on South Asian public sector organization, Kerala state Financing Enterprise, find the satisfactory level of HRD Climate in this sector.

Ajay Solkhe & Nirmala Chaudhary (2011) has found HRD Climate has a significant impact on job satisfaction which in turn leads to the increased organizational performance.

Richa chudary & Santosh Rangenkar (2012) has done their study on the perception of employees regarding HRD climate and they find private sector organization are significantly better than the public sector organization.

Akinyemi Benjamin (2012) has found the significant relationship between Human Resource Development climate and organization citizenship behavior.

STUDY OBJECTIVES

1.   How much HRD climates prevails in three selected banks.
2.   How much the difference of perception of employees on the basis of gender.
3.   How much the difference of perception of employees on the basis of age.
4.   How much the differences of perception of employees on the basis of Designation.
5.   How much the differences of perception of employees on the basis of Qualification.

RESEARCH METHODOLOGY

RESEARCH DESIGN

The sample used in this study comprise employees of different department in three different banks which representing the banking Sector. The researcher selected three banks on the basis of judgmental sampling and use non probability random sampling for respondents.

DATA COLLECTION

The researcher personally contacted 75 employees in three different banks. The respondent shows much interest for this study and praised about the purpose of study. The researcher was able to collect 80 filled questionnaires with the response rate of 80%. 5 questionnaires were rejected due to errors and incomplete information and finally 75 take into consideration.

QUESTIONNNAIRE

The researcher used HRD climate survey questionnaire which was developed by Rao and Abarham (1989) at center for HRD Xavier Labor Relation Institute (XLRI) India. This Questionnaire contain 38 items of scale variables which have five alternatives such as not at all true, rarely true, sometime true, mostly true, almost mostly true.

Each item contain the 1 to 5 scores which indicate, 1 contain there is no HRD climate in three banks or really poor climate in these Banks. And score 2 indicate poor climate but somehow improve and 3 indicate there is an average HRD climate prevail in these organization, and 4 indicate there is positive HRD climate in the organization and 5 show there is an extraordinarily climate prevail in these banks.

STATISTICAL MEASURES

To analyze the results, different statistical measures such as Mean, Standard Deviation, and T-test were performed through SPSS 18.

DATA ANALYSIS AND FINDINGS

RELIABILITY STATISTICS

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.938	.938	38

To check the reliability of data Researcher conduct reliability statistic. In the social sciences research the Cronbach's alpha > 0.70 is considered acceptable. In our case the value of Cronbach's alpha is 0.933, which shows a good reliability and also preferable.

SAMPLE PROFILE

TABLE 1.A FOR GENDER WISE DISTRIBUTION (SEE IN THE LAST)

TABLE 1.B FOR AGE WISE DISTRIBUTION(SEE IN THE LAST)

TABLE 1.C FOR DESIGNATION WISE DISTRIBUTION(SEE IN THE LAST)

TABLE 1.D FOR QUALIFICATION WISE DISTRIBUTION(SEE IN THE LAST)

ANALYSIS

TABLE 2.A SHOWS THE MEAN SCORE OF ALL THREE BANKS(SEE IN THE LAST)

TABLE 2.A1 SHOWS MEAN AND STANDARD DEVIATION RESULTS OF 38 ITEM - HRD CLIMATE SURVEYRESPOND BY 75 EMPLOYEES OF ALL THREE BANKS(SEE IN THE LAST)

The item wise mean scores of the total sample of 75 employees are presented in table 2.A1. Since the questionnaire used 5 point scale, average score of 3 indicate a moderate tendency on that dimension. Score 4 indicate a fairly good degree of existence but here the score is 2.94 in table 2.A, that indicate there is an average HRD climate exists in all these organizations. In one aspect it shows there is a tremendous scope of improvement of HRD climate in banks but it also

shows it make much improvement than the past. Table 2.A1 present items with individual mean scores, if see the items with highest score of 3.33 is employees trust with each other. Item with score 3.23 is employees are freely to express their feelings. Which means employees in this organization helpful to each other and do not hesitate to discuss their problems with each other. The item with lowest score is 2.19 which indicate employees are not satisfied with the polices of top management, but overall an average climate prevail in this sector.

TESTING OF HYPOTHESIS

HO: There is no significant difference between the male and female perception.

Ha: There is a significant difference between the male and female perceptions.

TABLE 2.B SHOWS DIFFERENCE BETWEEN MALE AND FEMALE PERCEPTION(SEE IN THE LAST)

The level of significance is .086 which is greater than 0.05 so we accept the null hypothesis that shows there is no significant difference in the perception of male and female employees. Both have same perception regarding HRD climate.

HYPOTHESIS 2

HO: There is no significant difference between the Younger and Elder perception.

Ha: There is a significant difference between the Younger and Elder perceptions.

TABLE 2.C SHOWS DIFFERENCE BETWEEN YOUNGER AND ELDER PERCEPTION(SEE IN THE LAST)

The level of significance is .471 which is greater than 0.05 so we accept the null hypothesis that shows there is no significant difference in the perception of younger and elder employees. Both have same perception regarding HRD climate.

HYPOTHESIS 3

HO: There is no significant difference between the Executive and Non-Executive perception.

Ha: There is a significant difference between the Executive and Non-Executive perception.

TABLE 2.D SHOWS DIFFERENCE BETWEEN EXECUTIVE AND NON-EXECUTIVE(SEE IN THE LAST)

The level of significance is .716 which is greater than 0.05 so we accept the null hypothesis that shows there is no significant difference in the perception of executive and non executive. Both have same perception regarding HRD climate.

HYPOTHESIS 4

HO: There is no significant difference between the Graduate and post Graduate perception.

Ha: There is a significant difference between the Graduate and post Graduate perception.

TABLE 2.E SHOWS DIFFERENCE BETWEEN GRADUATE AND POST GRADUATE PERCEPTION(SEE IN THE LAST)

The level of significance is .584 which is greater than 0.05 so we accept the null hypothesis that shows there is no significant difference in the perception of Graduate and Post Graduate. Both have same perception regarding HRD climate.

RECOMMENDATIONS

Fowling steps are required for the improvement of HRD climate in banks.

1. The top management must sure a strong system in which employees are well familiar with rules and regulation and all polices of the whole organization.
2. The top management must introduce trainings programmed on each level of the hierarchy.
3. The top management should introduce "employee of the month" system; it will encourage employees to do more work.
4. Training programmed must be conduct according to the need of employee's problems.
5. Management should treat all the employees on equitable basis. Favoritism system must be discouraged.
6. Appraisal and promotion must be done on the basis of merit.
7. The top management should clear the communication gap between employees and management and employees should be encouraged to express their ideas and feelings.
8. The top management must encourage the team spirit of employees.
9. The top management must involve branch manager in decision making, because branch manager can express better feelings of employees and this thing also make easy to implement the decisions.
10. Proper authority should be given to right person; it will be encouraging all employees to do better work.

LIMITATIONS OF STUDY

1. This study was conducted in selected three banks which may not give the exact picture regarding HRD climate.
2. Small sample size is also one of the limitations of the study.

CONCLUSION

After analysis the whole study the researcher concludes employee performance based on HRD climate. If there is strong HRD climate in the organization the employees will maximum contribute for the achievements of the organization. The result of current study shows there is an average HRD climate prevails in these organizations and there is a lot of need of improvement. The top management must take some steps which the researcher shows in recommendation for the improvement of HRD climate. The present study also shows there is no significant difference on the basis of age, gender, designation and experience. All variables have same perception about HRD climate. But there is need to improve HRD climate by eliminate favoritism system, conduct training programmed, eliminate communication gap, and introducing the HRD policies and practices.

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TABLES

TABLE 1.A: FOR GENDER WISE DISTRIBUTION

GROUP STATISTICS					
	what is Gender	N	Mean	Std. Deviation	Std. Error Mean
HRD CLIMATE	Male	47	3.0011	.59002	.08606
	Female	28	2.8628	.60657	.11463

TABLE 1.B: FOR AGE WISE DISTRIBUTION

GROUP STATISTICS					
	What is Age	N	Mean	Std. Deviation	Std. Error Mean
HRD CLIMATE	Less than 30	42	2.9236	.62876	.09702
	More than 30	33	2.9825	.55931	.09736

TABLE 1.C: FOR DESIGNATION WISE DISTRIBUTION

GROUP STATISTICS					
	What is Designation	N	Mean	Std. Deviation	Std. Error Mean
HRD CLIMATE	Exeuctive	37	2.9075	.56266	.09250
	Non Exuective	38	2.9903	.63156	.10245

TABLE 1.D: FOR QUALIFICATION WISE DISTRIBUTION

GROUP STATISTICS					
	what is your qualification	N	Mean	Std. Deviation	Std. Error Mean
HRD CLIMATE	Graduate	35	2.8233	.60840	.10284
	post Graduate	40	3.0599	.56961	.09006

TABLE 2.A: SHOWS THE STATISTICAL SCORE OF ALL THREE BANKS

SUMMARY ITEM STATISTICS							
	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.949	2.187	3.333	1.147	1.524	.065	38

TABLE 2.A1: SHOWS MEAN AND STANDARD DEVIATION RESULTS OF 38 ITEM - HRD CLIMATE SURVEY RESPOND BY 75 EMPLOYEES OF ALL THREE BANKS

DESCRIPTIVE STATISTICS	N	Mean	Std. Deviation
The top management of this organization goes out of its way to make sure that the employees enjoy their work	75	2.19	.996
The top management believes that human resources are extremely important resource and that they have to be treated more humanly	75	3.11	1.169
Development of the subordinates is seen as an important part of the job by the managers/officers here	75	2.87	1.166
The personnel policies of this organization facilitate employee development	75	2.93	.949
The top management is willing to invest a considerable part of their time and other resources to ensure the development of employees	75	2.88	1.039
Senior officers/executives in this organization take active interest in their juniors and help them learn their job	75	2.89	1.214
People lacking competence in doing their jobs are helped to acquire competence rather than being left unattended	75	2.57	.947
The managers in this organization believe that employee behavior can be changed and people can be developed at any stage of their life	75	2.88	1.115
People in this organization are helpful to each other	75	3.23	1.247
Employees in this organization are very informal and do not hesitate to discuss their personal problems with their supervisors	75	3.05	1.102
The psychological climate in this organization is very conductive to any employee interested in developing himself by acquiring new knowledge and skills	75	2.99	.923
Seniors guide their juniors and prepare them for future responsibilities/roles they are likely to take up	75	3.21	1.106
The top management of this organization makes efforts to identify and utilize the potential of the employees	75	2.87	1.095
Promotion decisions are based on the suitability of the promote rather than on favoritism	75	2.49	1.267
There are mechanisms in this organization to reward any good work done or any contribution made by employees	75	2.72	1.300
Performance appraisal reports in our organization are based on objective assessment and adequate information and not on favoritism	75	2.40	.986
When an employee does good work his/her supervising officers take special care to appreciate it	75	3.11	.994
People in this organization do not have any fixed mental impressions about each other	75	2.88	.929
Employees are encouraged to experiment with new methods and try out creative ideas	75	2.84	1.040
When any employee makes a mistake, his/her supervisors treat it with understanding and help him to learn from such mistakes rather than punishing him/her or discouraging him/her	75	2.89	1.085
Weakness of employees are communicated to them in non-threatening way.	75	3.15	.911
When behavior feedback is given to employees they take it seriously and use it for development.	75	3.08	1.124
Employees in this organization take pains to find out their strengths and weaknesses from their supervising officers or colleagues	75	2.67	1.004
When employees are sponsored for training, they take it seriously and try to learn from the programmed they attend	75	3.04	1.156
Employees returning from training programmed are given opportunities to try out what they have learned	75	2.92	1.302
Employees are sponsored for training programmers on the basis of genuine training needs	75	2.88	1.078
People trust each other in this organization	75	3.33	1.031
Employees are not afraid to express or discuss their feelings with their superiors	75	3.17	1.045
Employees are not afraid to express or discuss their feelings with their subordinates	75	3.23	1.008
Employees are encouraged to take initiative and do things on their own without having to wait for instructions from supervisors	75	3.12	.915
Delegation of authority to encourage juniors to develop handling higher responsibilities is quite common in this organization	75	3.07	.991
When seniors delegate authority to juniors, the juniors use it as an opportunity for development	75	3.16	1.066
Team spirit is of high order in this organization	75	3.17	1.212
When problems arise people discuss these problems openly and try to solve them rather than keep accusing each other behind the back	75	3.23	1.158
Career opportunities are pointed out to the juniors by the senior officers in the organization	75	3.23	1.073
The organization's future plans are made known to the managerial staff to help them develop their juniors and prepare them for the future	75	3.17	.978
This organization ensures employee welfare to such an extent that the employees can swage a lot of their mental energy for work purposes	75	2.75	.960
Job rotation in this organization facilitates employee development	75	2.72	1.192

TABLE 2.B: SHOWS DIFFERENCE BETWEEN MALE AND FEMALE PERCEPTION INDEPENDENT SAMPLES TEST

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
HRD CLIMATE	Equal variances assumed	.086	.771	.972	73	.334	.13834	.14233	-.14532	.42200
	Equal variances not assumed			.965	55.641	.339	.13834	.14334	-.14885	.42553

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TABLE 2.C: SHOWS DIFFERENCE BETWEEN YOUNGER AND ELDER PERCEPTION

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
HRD CLIMATE	Equal variances assumed	.526	.471	-.422	73	.674	-.05890	.13941	-.33674	.21895
	Equal variances not assumed			-.428	71.827	.670	-.05890	.13745	-.33291	.21512

TABLE 2.D: SHOWS DIFFERENCE BETWEEN EXECUTIVE AND NON-EXECUTIVE

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
HRD CLIMATE	Equal variances assumed	.134	.716	-.599	73	.551	-.08277	.13825	-.35829	.19276
	Equal variances not assumed			-.600	72.437	.551	-.08277	.13803	-.35790	.19237

TABLE 2.E: SHOWS DIFFERENCE BETWEEN GRADUATE AND POST GRADUATE PERCEPTION

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
HRD CLIMATE	Equal variances assumed	.302	.584	-1.738	73	.086	-.23656	.13609	-.50780	.03468
	Equal variances not assumed			-1.730	70.169	.088	-.23656	.13670	-.50919	.03607

CONSUMER PREFERENCE ON BRANDED PRODUCTS – PERSONAL COMPUTER

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ABSTRACT
The consumers can better imagine the intangible goods with the help of brand name. Strong brand organizations have a high market share. The brand should be given good support so that it can sustain itself in long run. A consumer who prefers a particular brand basically agrees to select that brand over others based primarily on the brand's reputation. Strong brands reduce consumers perceived monetary, social and safety risks in buying goods/services. Intrinsic brand preferences are generally inferred from tangible performance measures such as sales after accounting for the effects of other factors that may have influenced these tangible measures. Given the rapid introduction and withdrawal of models, one need to, while measuring the dynamics in brand preferences, partial out the effect of the changing portfolio of models on a brand's performance.

KEYWORDS
consumer preferences, branded products.

INTRODUCTION

As the world is turning into a Global Village and new products from abroad are finding their way into the country, the trend of consumption by our native people is slowly changing. Just as human beings have personality showing a summation of characteristics, a brand also has a personality with a set of characteristics, which are human in nature. These characteristics are demographic, e.g., sex, gender, age and socio-economic class. It takes image characteristics of a brand and renders them in human nature as seen by the consumer. Brand image is broader than brand personality because by the time one enters into real personality, we are dealing with feelings and emotions that the consumers takes away from communications. A well-established brand has a clear brand personality. It may remain unstated. But it can play a strategic role in brand wars. Closely positioned brands may also acquire distinct personalities as a result of exposure to the product, packaging, service, word – of – mouth and advertisement. Brand is thought -of - being friendly, boring, funny, rude, caring, and stylish and so on. Consumers need to think of brands in human terms. Memo ability of a brand personality comes through consistency and other pros. It provides an added insight into the brand. By knowing what the people think about the brand, we can guess what their attitudes towards the brand are. Brand personality is either a part of core identity or extended identity. In both the cases, it is a basis to differentiate a brand. This is more so when brands have more or less the same attributes.

OBJECTIVES OF THE STUDY
- ✓ To know the various brands of personal computer available in the market in general.
- ✓ To examine the promotional schemes of the vendors of personal computer.
- ✓ To examine the consumer preference towards the purchase of branded Personal computer.
- ✓ To evaluate the influence of Demographic/Organisational variables on brand preference towards Personal computers in Tirunelveli District.
- ✓ To offer the suggestions for better preference to purchase the personal computer.

HYPOTHESIS
- ✓ H_o: there is no significant relationship between *Age Group/Gender/Marital Status* of the respondents and their preference towards branded personal computer

H_1: there is significant relationship between *Age Group/Gender/Marital Status* of the respondents and their preference towards branded personal computer
- ✓ H_o: there is no significant relationship between *Educational Qualification/ Occupational Status* of the respondents and their preference towards branded personal computer

H_1: there is significant relationship between *Educational Qualification/ Occupational Status* of the respondents and their preference towards branded personal computer

METHODOLOGY
SOURCES OF THE DATA
As focuses on the aspects of consumer preference on branded computers especially at Tirunelveli district. Hence both primary and secondary data have been obtained for the study. The primary data is collected from the users of branded personal computer. A comprehensive questionnaire has been prepared to collect the primary data. The secondary data is collected from reports, journals, newspapers, magazines and websites. To obtain different preference of consumer of branded products of personal computer. Since the population is unknown, a simple random sampling procedure is adopted to obtain better statistical results to reflect the characteristic features of the population.

BRAND
A Brand is a name, term, symbol or design or a combination of them, which is intended to identify the goods and services of a seller or a group of sellers and to differentiate them from those of competitors.

FEATURES OF A GOOD BRAND
- • Brand should suggest something about the product – purpose, quality, benefit, use, action etc.

- It should be simple, short and easy to pronounce and remember.
- It should be easy to advertise and identify.
- It should be of a permanent nature.

BRAND PREFERENCE

Based on the previous experience with the product consumer will choose it rather than competitors of its availability. Companies' with products at the brand preference stage are in favourable position in competition their industry since the brand preference results in brand loyalty companies more market share.

H_0: there is no significant difference between gender with Product Detail, Source of information, Price, Brand, Quality, After sales service, Buying behavior and Convenience.

H_1: there is significant difference between gender with Product Detail, Source of information, Price, Brand, Quality, After sales service, Buying behavior and Convenience.

TABLE 1: MULTIPLE COMPARISONS

Particulars		Mean Difference	Sig.	Result
Gender	Product Detail	35.3333	.052	Significant
	Source of information	27.0000	.333	Significant
	Price	23.3333	.593	Significant
	Brand	36.6667(*)	.038	Not Significant
	Quality	34.2500	.099	Significant
	After sales service	41.6667(*)	.012	Not Significant
	Buying behavior	38.0000(*)	.035	Not Significant
	Convenience	48.6756(*)	.001	Not Significant
* The mean difference is significant at the .05 level.				

Source: Primary Data

It is observed from the above table/analysis that there has been a low degree of correlation between the gender compared with product detail, source of information, price, brand, quality, after sales service, buying behavior and convenience. On which/ however the respondents brand, after sales service, buying behavior and convenience are not significant with gender and other variables are significant with gender.

H_0: there is no significant difference between age with Product Detail, Source of information, Price, Brand, Quality, After sales service, Buying behavior and Convenience.

H_1: there is significant difference between age with Product Detail, Source of information, Price, Brand, Quality, After sales service, Buying behavior and Convenience.

TABLE 2: MULTIPLE COMPARISONS

Particulars		Mean Difference	Sig.	Result
Age	Product Detail	5.9143	.998	Significant
	Source of information	.2000	1.000	Significant
	Price	-3.8000	1.000	Significant
	Brand	3.4857	1.000	Significant
	Quality	-2.4000	1.000	Significant
	After sales service	7.3429	.992	Significant
	Buying behavior	9.9950	.958	Significant
	Convenience	18.8756	.302	Significant

Source: Primary Data

It is observed from the above table/analysis that there has been a low degree of correlation between the age compared with product detail, source of information, price, brand, quality, after sales service, buying behavior and convenience. On which all the variables are significant with age.

FINDINGS

51 percentage of the respondents belongs to the male gender. 33 percentage of the]respondents fall in the age group of 26 to 35. Majority of the respondents are married persons. Maximum of the respondents comes under graduation. 25 percentage of the respondents are private servants. The above table shows that all the respondents are having thepersonal computer. 73 percentage of the respondents used the computer earlier. Majority of the respondents feels that the personal computer reduces the cost of operation. Majority of the respondents use the lcd monitor in the personal computer. Majority of the respondents use the 17 – 20 inch size of monitor in the personal computer. 27 percentage of the respondents are neutral with the price range of the personal computer. Majority of the respondents purchase their personal computer by down payment. Majority of the respondents compared their brand with other brands.

CONCLUSION

On overall assessment it can be concluded that people give preference to the quality and also to the brand. What lies in the future is virtually impossible but we do know that whatever it brings, computer technology will be right in the center of it. As computer technology continuous to advance and development for both home and industry there will be an ever growing needs for computer professional to fill the resulting job opening career opportunity in the computer field remain strong and knowledge of computer technology will continue to become more and more important to workers in very field.

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MOBILE ANALYTICS ON CUSTOMER CHURN

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ABSTRACT

The telecom market in India especially mobile telephony continues to grow at a frenetic pace, driven particularly by the rapid penetration of mobile services with an exploding increase in churn rate and disloyalty especially on the youth market. To face this operational challenge it is highly essential to exploit customer behavioural data to identify unique and actionable factors influencing the purchasing decision and customer loyalty. As the customer behaviour of the youngsters and their loyalty is very important, this research mainly targets the youth segment.

KEYWORDS

elecom analytics, Customer value, customer lifecycle analysis, Churn management, Market Basket analysis, Customer profiling, Data mining, customer focus groups, Mind mapping, up selling, cross selling, switching cost.

INTRODUCTION

BACK GROUND

The Indian telecommunications Industry is one of the fastest proliferating sector in the World and India is projected to bench the second largest telecom market globally by 2011. Indicators are clearly revealing increased competition inducing the customers to hop for low cost options[1]. This in turn entangled with disloyalty and as the industry saturates, it become imperative for the mobile operators to shift their focus from rapid acquisition strategies to strategies which helps to maintain and enhance margins from existing customer base.

IMPACT OF THE PROBLEM

Though many service industries are affected by the churn phenomenon, the problem is extremely acute in the telecom industry, with customers joining and quitting in short periods. According to research firm Gartner, India's churn rate is anywhere between 3.5 percent to 6 percent per month, one of the highest in the Asia-Pacific region. Considering that the cost of acquiring a new customer is as high as Rs 3,000, the losses are immense.

CUSTOMER ANALYTICS AND ITS SIGNIFICANCE

Current research is a process with focus on Indian cellular market by which data from customer behavior is aggregated and analysed to gain customer mind map, enabling each business to help make better and quicker business decisions. This information is used by the cellular businesses for direct marketing and customer relationship management. Customer analytics plays a very important role in predicting customer behavior and shaping future customer interactions.

Customer analytics can provide customer segmentation groupings; profitability analysis (which group of customers lead to the most profit over time); personalization (the ability to market to individual customers based on the data collected about them); event monitoring , what-if scenarios (how likely is a customer or customer category that bought one product to buy a similar one); and predictive modeling (for example, comparing various product development plans in terms of likely future success given the customer knowledge base). Data collection and analysis are viewed as a continuing and iterative process and ideally over time business decisions are refined based on feedback from earlier analysis and to make consequent decisions[2].

The efforts of product development, marketing, client services and other departments are fuelled by customer actions, or at least assumptions about the customer. Recent statistics depicts very high churn in this Industry, is mainly rooted by the Youth segment Hence this study of customer analytics is mainly focusing on Youth segment to lead not only to better and more productive customer relations in terms of sales and service but also to improvement in supply chain management (lower inventory and speedier delivery) and thus lower costs and more competitive pricing.

It facilitates to assess the Customer profitability index and Customer lifecycle, Customer analytics enables an operator to gain a better understanding of the variables that influence customer churn. It enables the Telco to understand which customer is likely to leave and why, which in turn can help the company take the necessary measures to counter it.

Extract of customer analytics provides the telecom company with a sliced and diced view of the customer base, thereby empowering it to treat each customer differently as per needs. The customer attributes typically considered in a churn analysis can be broadly categorised into customer demographics, contractual data, technical quality data, billing and usage data and events-type data. But the most commonly used historic variables include the time a customer spends on air, the number of calls he makes and the revenue generated from that customer.

The predictive information becomes crucial as it gives the service provider a window to proactively fix the glitches in service and contain churn, thereby improving bottom lines. The solution also helps identify cross-sell and up-sell opportunities, which can have a further positive impact on the operator's bottom line.

SUBJECT AREA

Data analytics was performed on customer profile, level of satisfaction, customer loyalty and their buying behavior with regard to Indian mobile telecom providers.

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[1]http://www.destinationcrm.com/Articles/Web-Exclusives/Viewpoints/The-Secret-to-Successful-Customer-Analytics-43814.aspx
[2]http://www.corda.com/customer-analytics.php

OBJECTIVES

Recent trend line shows the growth and prospects of youth marketing[3] and especially in the field of Telecommunications, they are marking tremendous development. At the same time indicators are highlighting very high churn rate in this segment. Hence this Research focuses on Youth segment and Research objectives are listed below.

1.   To identify the factors influencing the customer loyalty with respect to Indian mobile telecommunications.
2.   To determine the level of customer satisfaction with regard to their perceived product quality, services and values.

METHODOLOGY

RESEARCH PROBLEM

Even though Indian mobile telecommunications marked tremendous growth, it is facing very high churn and disloyalty[4] in the market. It is highly critical to analyze the factors influencing customer loyalty and their level of satisfaction on the cellular providers.

PURPOSE

The purpose of this research is to perform customer analytics by identifying the operational factors that are influencing customer buying behavior, level of satisfaction and loyalty with regard to Indian Mobile telecommunications.

RESEARCH DESIGN

"Exploratory" type of research design is adopted for this study.

DATA COLLECTION

The research work is in need of first hand information. Primary and Secondary data are collected for this survey.

PRIMARY DATA

Survey method was adopted for collecting the primary data.As mentioned above in the research objective, youth segment[5] falling under the age group of 12 to 34 are selected as the respondents for the research. Questionnaire was structured using the objective set for this study.

SECONDARY DATA

The secondary data had been collected from the previous Research findings, scholarly reports, telecommunication reports, respective marketing departments and through the different sources of literature such as journals, , articles etc.

SAMPLING PLAN

Simple Random sampling method was adopted.

SAMPLE SIZE

The sample consists of 200 persons in the age group of 12 to 34.

RELIABILITY & VALIDITY

RELIABILITY

Reliability is the consistency of a measurement. Questionnaire had been tested with 30 respondents to check the reliability. With SPSS package, reliability was tested. Cronbach alpha value was 0.782 with no exclusions implying the acceptability of the questionnaire for the research work.

VALIDITY

Internal and external validity were checked with the respective sources and every hypothesis is represented by a question in the questionnaire so that they can be tested and measured.

PILOT STUDY

Pilot study was conducted with 30 respondents.

PROCESS OF DATA ANALYSIS

In order to analyze the data collected, SPSS 18.0 and Excel were used

DEFINITION AND MEASUREMENT OF HYPOTHESES SET FOR THIS STUDY

In accordance with the extensive analysis of review of literature, the following null hypotheses were formulated.
The operational definitions and variables are summarized and represented below for the validation of research hypotheses.

TABLE-1:OPERATIONAL DEFINITION AND MEASUREMENT OF VARIABLES

Variable	Operational definition(Hypotheses)	Measurement items
Customer Satisfaction	Perceived product quality(H1)	Call quality
		Coverage of area
		SMS quality
		Network quality
	Perceived service quality(H2)	The convenience and reliability of Inquiring phone fee system
		Service quality of service center and hotline
	Perceived customer value(H3)	Rating price of given quality Advertisements about corporate image social responsibility
Demographics	Demographic profile(H4)	Gender Income Mobile Experience

Operational variables are conceived as per the earlier research findings[6], where researchers defined perceived product quality (H1) measured through Call quality, Coverage of area, SMS quality and Network quality. Perceived service quality (H2) measured with the convenience and reliability of Inquiring phone fee system and Service quality of service center and hotline. Perceived customer value measured through Rating price of given quality, the Advertisements about corporate image and their involvement on social responsibility.

NULL HYPOTHESES

Ho: 1. There is no relationship between customer loyalty and perceived product quality.

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[3] http://en.wikipedia.org/wiki/Youth_marketing
[4] http://www.mobileyouth.org/post/mobileyouth-tv-4/
[5] http://www.mobileyouth.org/
[6] Andres K. 2007, Affecting customer loyalty: do different factors have various influences in different loyalty levels?, University of Tartu - Faculty of Economics & Business Administration Working Paper Series. 58. 3-30.

Ho: 2. There is no relationship between customer loyalty and perceived service quality.
Ho: 3. There is no relationship between customer loyalty and perceived customer value.
Ho: 4 There is no relationship between customer loyalty and demographic factors of the respondents.

RESULTS OF ANALYSIS

The above hypotheses were tested using chi square method and results were listed below.

TABLE 2 RESULTS OF HYPOTHESES TESTED

Null Hypotheses		Chi square value	Result
N1	Call quality	255.800*	All null hypotheses rejected
	Coverage of area	160.550*	
	SMS quality	196.300*	
	Network quality	114.000*	
N2	The convenience and reliability of Inquiring phone fee system	106.700*	
	Service quality of service center and hotline	104.350*	Ho Rejected
N3	Rating price of given quality	167.950*	
	Advertisements about corporate image	117.500*	Ho Rejected
	social responsibility	132.200*	
N4	Gender	32.000*	
	Income	39.050*	Ho Rejected
	Mobile Experience	667.550*	

*at 0.05 significance level*at 0.05 significance level

From the above table it is very clear that all the null hypotheses are rejected and so alternative hypotheses are accepted. It has been proved that customer perception on quality, services and values of the mobile service are influencing their buying behavior and creating impact on customer loyalty.

Moreover gender, income, customization of the respondents also found significant in sustaining the loyalty. So Marketers need to closely monitor youth attitudes towards media, products, shopping, health, career, relationships and technology. So the option is participative marketing campaign to understand their perception on product attributes. Marketing campaigns should have functional, educational and emotional components built-in to successfully target youth.

At this stage Marketers should know their level of satisfaction over the product for tapping their apparent mind map and the following table will portray the level of satisfaction of the respondents.

TABLE 3: LEVEL OF SATISFACTION OF THE RESPONDENTS WITH RESPECT TO MOBILE TELECOMMUNICATIONS

Factors	Highly satisfied	Satisfied	somewhat satisfied	Dissatisfied	Highly Dissatisfied
Customer services	13.0%	37.0%	36.5%	10.5%	3.0%
In General	16.5%	55%	25.5%	1.5%	1.5%
Billing-Recharge vouchers	21%	56.5%	18.5%	2.5%	1.5%
AD & Promotional activities	15%	43%	29.5%	8.5%	4%
social Responsibility	13.5%	40.5%	31%	12.5%	2.5%
Tariff plans	9%	36%	42.5%	9%	3.5%
call connectivity	18.5%	45%	30.5%	6%	0%
Network coverage	18.5%	48%	24.5%	7%	2%
Subscription Easiness	9.5%	44.5%	36.5%	6.5%	3%
Value added services	17.5%	56%	19%	5.5%	2%
offers and discounts	15%	43%	29.5%	10.5%	2%
Ringtones and caller tones	4%	10.5%	26.5%	41%	18%
Internet services	14%	38%	38%	9.5%	0.5%

From the above table it is inferred that 55% of respondents are satisfied with the overall performance of the product, 56% and 48% of them are satisfied with the value added services and network coverage. About 57% of the respondents are satisfied with the attributes of Recharge vouchers or billing system. This indicates marketers have fairly identified and targeted their level of expectations. But 41% of the respondents expressed their dissatisfaction on one particular factor - Caller and ring tones. As this survey is focused on Youth segment, Mobile service providers have to concentrate this particular area. Mobile marketing campaigns can be devised for youth audiences to identify their exact expectation in this particular field. Telecom marketers have to improvise their performance in the areas of Internet services, and in designing Tariff plans. They can mind map their customers and based on that, they can come out with differentiated marketing strategies in designing their tariff plans. They have to strengthen their portfolio on customer services.

Recent market survey indicates 97.3% of customer churn happens due to poor customer services. Before designing the marketing strategies, it is highly important to identify the intensity and strength of the selected variables contributing the effectiveness of the research and the following table representing factor analysis to explain the same.

TABLE 4: KMO AND BARTLETT'S TEST

TABLE 4: KMO AND BARTLETT'S TEST		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.754
Bartlett's Test of Sphericity	Approx. Chi-Square	1425.314
	Df	406
	Sig.	.000

The above table shows the KMO value 0.754. It is an overall index implying that the data are likely to factor well based on correlation and partial correlation. Based on this index, it is confirmed that the data support the use of factor analysis and suggest that the data may be grouped into a smaller set of underlying factored. The following table indicates the amount of variation explained by each factors with Eigen values.

TABLE 5: TOTAL VARIANCE

Component		Initial Eigen values		
		Total	% of Variance	Cumulative %
Dimension0	1	**2.804**	**21.573**	**21.573**
	2	**1.345**	**10.344**	**31.916**
	3	**1.275**	**9.809**	**41.725**
	4	**1.181**	**9.083**	**50.809**
	5	.988	7.603	58.412
	6	.895	6.882	65.293
	7	.874	6.724	72.018
	8	.776	5.970	77.988
	9	.766	5.890	83.877
	10	.665	5.115	88.992
	11	.529	4.065	93.057
	12	.433	3.334	100.000

The above table indicates the total variance for each factor along with their Eigen values. This is mainly to know the percent of total variance accounted for by each factor. Hence from the cumulative percentage of variance it is clear that the first four factors together account for 50.809% of the total variance.

TABLE 6: COMPONENT MATRIX

	1	2	3	4
Gender	-.147	.327	-.089	**.721**
Family income	.027	**.635**	-.101	-.070
Mobile usage in years	.026	.226	.224	**-.621**
Service details	.052	-.254	.177	.624
Service quality-quality of phone calls	**.764**	.043	.109	.178
Service quality-quality ofcoverage	**.818**	-.019	.086	-.104
Service quality-quality of sms	.491	.337	.153	-.229
Service quality-quality of network	.467	.444	-.059	-.139
Service quality-quality ofconvenice & reliability	.084	**.576**	.302	-.016
Service quality-quality of service center and hotline	.130	**.558**	.394	-.091
Service quality-rate of pricing for given quality	.134	.316	**.493**	.116
Service quality-ad	.046	.071	**.677**	-.021

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 5 iterations.

From the above table is inferred that Quality of coverage and quality of phone calls branched under component1, Family income, quality of convenience and service under component 2, Advertisement and pricing under component 3, Gender and service details of component 4 are identified as they are having high correlation score or factor loading with positive correlation. From this marketers can scheme the factors for designing the marketing strategies. By concentrating on the above mentioned factors, telecom marketers can map the areas where they can lead.

SUGGESTIONS

Customer analytics thus indicating the path way for the Indian Mobile for increasing the customer loyalty and to turn around the churn rate, For that Indian mobile should:

(1) Keep its good performance on quality of phone call, coverage, quality of SMS and pay attention on these three areas because they are in the first level, which means they have great importance on customer loyalty

(2) Improve its performance on customer service, advertisements about corporate image, inquiring phone fee system and corporate social responsibility and pay more attention on customer service, because it is in the first level.

(3) Improve its performance on rating price of given quality significantly and pay great attention on this factor.

CONCLUSION

The telecom industry, especially the mobile industry of India is undergoing a transformation and the number portability is bringing about imperatives worthy enough to carry out high-end research. This study is one such attempt to enhance the exposure on customer analytics and it is also expected to facilitate the marketers to design the essential operational parameters for scheming the retention strategies and to enhance Customer Experience management.

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GREEN IT: ENERGY SAVING USING PELTIER

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ABSTRACT

Green Computing can adopt in our daily life to improve the deteriorating environmental conditions. Green computing or green IT, refers to environmentally sustainable computing or IT whose goals are to reduce the use of hazardous materials, maximize energy efficiency during the product's lifetime, and promote the recyclability or biodegradability of defunct products and factory waste. Green Computing concentrates on energy efficiency, reducing resource consumption and disposing of electronic waste in a responsible manner. Such practices include the implementation of energy-efficient central processing units (CPUs), servers and peripherals as well as reduced resource consumption and proper disposal of electronic waste (e-waste). As the number of computers is increasing day by day, so is the amount of electricity consumed by them which in turn is increasing the carbon content in atmosphere. This problem has been realized by people and measures are being taken which help in minimizing the power usage of computers. Superficially, this can be called as Green Computing. So to save Energy consumption this paper introduced concept of using Peltier.

KEYWORDS
green IT, energy saving.

1. INTRODUCTION

When we heard the term green computing the first thought that came into our mind was "going green with computers" but the questions that strike our thoughts the very same moment were HOW and WHY to "go green", and in the quest for finding the answers to our questions we landed up with the conclusion "GREEN COMPUTING –GREAT COMPUTING" . This research work of ours has given us a new perspective to think in the direction that technology does not only mean to accomplish our tasks but also make sure that our technology is not harming the environment around us.

FIG. 1: GREEN COMPUTING

This environmentally sustainable computing can be defined as "the study and practice of designing, manufacturing, using, and disposing of computers and associated subsystems such as monitors, printers, storage devices, networking, and communication systems efficiently and effectively with no impact on the environment.

1.1 WHAT IS MEAN BY GREEN COMPUTING?

Green computing, green IT or ICT Sustainability, refers to environmentally sustainable computing or IT. In the article *Harnessing Green IT: Principles and Practices*, San Murugesan defines the field of green computing as "the study and practice of designing, manufacturing, using, and disposing of computers, servers, and associated subsystems—such as monitors, printers, storage devices, and networking and communications systems — efficiently and effectively with minimal or no impact on the environment."The goals of green computing are similar to green chemistry; reduce the use of hazardous materials, maximize energy efficiency during the product's lifetime, and promote the recyclability or biodegradability of defunct products and factory waste. Many corporate IT departments have Green Computing initiatives to reduce the environmental impacts of their IT operations. Research continues into key areas such as making the use of computers as energy-efficient as possible, and designing algorithms and systems for efficiency-related computer technologies.

1.2 WHY GREEN COMPUTING

Our so called technically successful world almost sounds fake .We have great machines and equipments to accomplish our tasks, great gadgets with royal looks and features make our lives more impressive and smooth. Today almost all streams weather its IT, medicine, transportation, agriculture uses machines which indirectly requires large amount of power and money for its effective functioning. It's OK we are happy with ourselves, we are completing all our work on time everything is working smoothly and Effectively, we are earning large amount of money and living a luxurious life but have we ever given a thought that what sort of a achievement it is? We have achieved what we desired but have we ever realize that in this journey of ours what have we return to natural surroundings, The air which we breathe, the water that we drink, the food that we eat and the soil on which we live is contaminated with hell lot of pollutants which are acting back upon us and harming us. Newton's Third Law of Motion states that "For every action, there is an equal and opposite reaction.", therefore consumption of energy sources has a negative reaction on the environment. Datacenters use a large amount of power and consequently cooling energy is needed to counteract the power usage. It can be an endless circle of energy waste Hence the three main reasons that made us realize the need for growing green are

1. Release of harmful gases from electronics.
2. More utilization of power and money.

3. Increase of E-waste and improper disposal.

2. TOWARDS "GREEN" DATA CENTERS

A data center hosts computational power, storage and applications required to support an enterprise business. A data center is central to modern IT infrastructure, as all enterprise content is sourced from or passes through it. Datacenters can be broadly classier, on the basis of power and cooling layout, into one of the 4tiers:

Tier 1: Single path for power and cooling; no redundant components;

Tier 2: Redundancy added to Tier 1, thereby improving availability;

Tier 3: Multiple power and cooling distribution paths, of which one is active;

Tier 4: Two active power and cooling paths, and redundant components on each path. This classification however, is not precise and commercial data centers typically fall between Tiers 3 and 4. A higher tier implies an improvement in resource availability and reliability, but it comes at the expense of an increase in power consumption. Data centers host services that require high availability, close to 99.99%. Fault tolerance, therefore, becomes imperative. The loss of one or more components must not cause the data center to terminate its services to clients. Consequently, data centers feature hardware redundancy.

The migration to cloud and virtualized network and converged storage infrastructures is driving the centralization of both IT operations and network equipment. As with any technology, the industry has developed specific terminology to describe energy efficiency and utilization for data centers. When engineering a data center, two key metrics include Power Usage Effectiveness (PUE) and Data Center Infrastructure Efficiency (DCIE).

Overall data center efficiency includes networking, servers, the ability to use 'free cooling', and other determinants of Total Cost of Ownership (TCO). Enterprises are increasingly called to task to demonstrate their Corporate Social Responsibility (CSR), one aspect of which is reducing their carbon footprint. Each country has its own standards. The efficiency of the networking equipment deployed therefore directly impacts a data center's 'green' credentials.

3. MEASURING POWER CONSUMPTION

There are a variety of computer power consumption benchmarking techniques in practice today. Even though many techniques are available, there is no universal one size fits all technique that is appropriate for every benchmarking situation. Different methods of benchmarking must be completed for different usage patterns. Additionally, measuring computer power consumption is different than general computer benchmarking because a tool is usually required to measure how much electricity is being consumed by a running machine. General computer benchmarks such as CPU or video benchmarks do not require any special tools. Since power consumption benchmarks require electricity measuring devices, it makes it harder for people to participate in the power consumption benchmarking area. The requirement and cost of a tool adds a burden to those who wish to run their own computer power consumption benchmarks. Here two electricity consumption meters are described, the affordable KILL A WATT meter and the more expensive Watts up? meter. There are two fundamental ways of measuring power consumption: measuring power consumption at one moment in time and measuring power consumption over time. Each method has its pros and cons. Measuring power consumption over one moment in time is useful when measuring a device that is using a constant amount of power.

4. ENERGY SAVING USING PELTIER

4.1 PELTIER HISTORY

Early 19th century scientists, Thomas Seebeck and Jean Peltier, first discovered the phenomena that are the basis for today's thermoelectric industry. Seebeck found that if you placed a temperature gradient across the junctions of two dissimilar conductors, electrical current would flow. Peltier, on the other hand, learned that passing current through two dissimilar electrical conductors,caused heat to be either emitted or absorbed at the junction of the materials. It was only after mid-20th Century advancements insemiconductor technology, however, that practical applications for thermoelectric devices became feasible. With modern techniques, we can now produce thermoelectric "modules" that deliver efficient solid state heat-pumping for both cooling and heating; many of these units can also be used to generate DC power at reduced efficiency. New and often elegant uses for thermoelectrics continue to be developed each day.

4.2 PELTIER

The Peltier effect occurs whenever electrical current flows through two dissimilar conductors; depending on the direction of current flow, the junction of the two conductors will either absorb or release heat. Explaining the Peltier effect and its operation in thermoelectric devices, is a very challenging proposition because it ultimately keys on some very complex physics at the sub-atomic level. Here we will attempt to approach it from a conceptual perspective with the goal of giving readers an intuitive grasp of thistechnology. In the world of thermoelectric technology, semiconductors are the material of choice for producing the Peltier effect—in part because they can be more easily optimized for pumping heat, but also because designers can control the type of charge carrier employed within the conductor (the importance of this will be explained later). Using this type of material, a Peltier device (can be constructed—in its simplest form—around a single semiconductor "pellet" which is soldered to electrically-conductive material on each end (usually plated copper). In this "stripped-down" configuration (see right), the second dissimilar material required for the Peltier effect, is actually the copper connection paths to the power supply.

A Peltier element consists of two types of semiconductors of p-type and n-type in series-connection, and when a DC current is applied, Peltier effect (a thermoelectric effect where heat transfers due to voltage application) takes place causing heat transfer from the heat-absorbing side to the heat-dissipation side. When the heat from the heat-dissipation side is removed, the temperature on the heat-absorbing side decreases. Whereas, in general heat conduction, heat flows from high-temperature side to low-temperature side, Peltier element functions as a heat-pumping apparatus to transfer heat from low-temperature side to high-temperature side.

Thus, a Peltier element is used as a heat-dissipating device with its heat-absorbing side attached on a heat-generating element, it becomes possible to lower the heat-generating element's temperature than ambient temperature. Since Peltier elements have no moving parts, it is advantageous that system construction can be made simple and compact.

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FIG. 2: INTERNAL STRUCTURE OF PELTIER
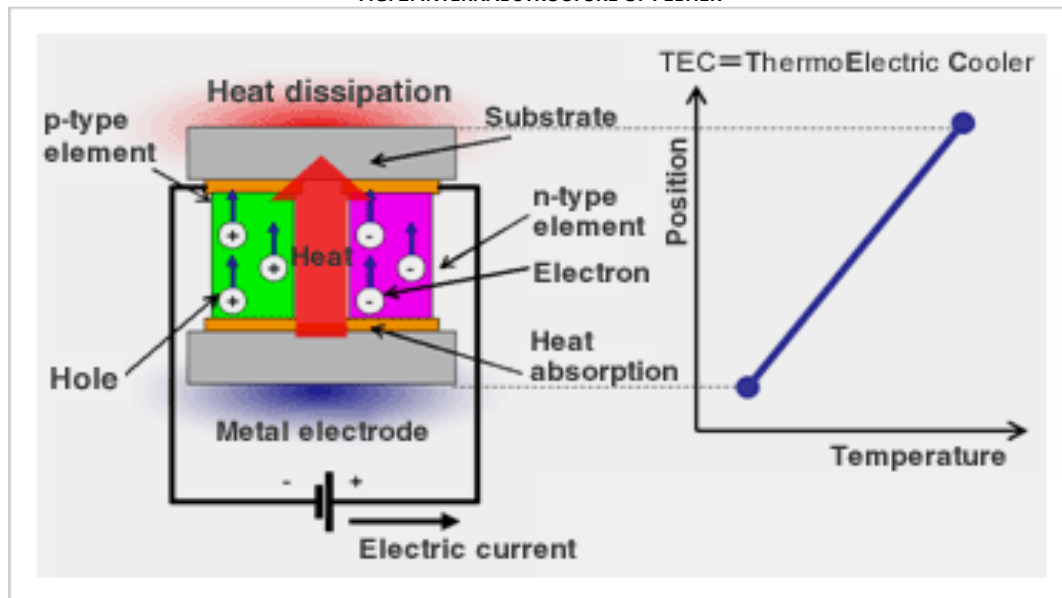
Thus, a Peltier element is used as a heat-dissipating device with its heat-absorbing side attached on a heat-generating element, it becomes possible to lower the heat-generating element's temperature than ambient temperature. Since Peltier elements have no moving parts, it is advantageous that system construction can be made simple and compact.

Moreover, the heat-absorbing and heat-dissipating sides can be switched by simply reversing the direction of electric currents, application to temperature-controlled equipment is feasible. In addition to conventional Peltier elements mounted on a ceramic substrate, Furukawa Electric has added to its product lineup substrate-less Peltier elements (sometimes called skeleton type because of the visibility of the electrode), in which the elements are arrayed on a multi-hole epoxy substrate, and an electrode is attached on their either side. The skeleton-type Peltier element has advantages in that it allows ease of large-sized structure, flexible configuration, and high reliability.

5. CONCLUSION

By using PELTIER in GREEN COMPUTING : it takes only 5 watt for cooling. Compare to other device for cooling the computer machine it is low cost device. It is not only bounded for the computers but it can also be used in other devices which generate heat and need cooling. It can also be used in those devices also. It can easily portable with the processor fan and SMPS.

6. FUTURE WORK

We can use Peltier for generating more electricity -For the small devices like mobile charging. And in Industries also-Making Air condition using Peltier for the big factories where air condition run 24*7.

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SIGNIFICANCE OF QUALITY OF WORK LIFE OF EMPLOYEES IN ELECTRONIC BASED MANUFACTURING SECTOR

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ABSTRACT

Quality of work life refers to the satisfaction levels of one's career. This is an attempt to look into the quality of work life of the employees in electronic based manufacturing sector. It emphasize that the significance levels of quality of work life among the employees in manufacturing sector. The sample consists of 80 employees in an electronic based manufacturing company. The designed quality of work life questionnaire was used for the investigation of the study. The means, SDs and mean differences were employed for the investigation of the study. The results shows that the quality of work life of employees in electronic based manufacturing company might be relayed on the employee's experience, age and satisfaction levels etc.

KEYWORDS
Quality of work life, satisfaction, gender difference and work environment.

INTRODUCTION

Work is an integral part of our everyday life, be it our livelihood or career or business. On an average we spend around twelve hours daily in the work place, that is one third of our entire life; it does influence the overall quality of regular life. It should also yield life satisfaction, pleasantness, a fulfilment of having done a task, as it is expected, completed without any flaw and having spent the time fruitfully, constructively and purposefully. Even if it is a small step towards our lifetime goal, at the end of the day it gives satisfaction and eagerness to look forward for the next day. A happy and a healthy employee will give better turnover, make good decisions and positively contribute to the organizational goal. An assured good quality of work life will not only attract young and new talent but also retain the existing experienced talent. This being the virtual fact, the current study on Quality of Work Life among workers with special reference to manufacturing industry and is expected to prove which extremely more useful for the organizations inorder to improve the quality of work life .

Quality of Work Life in an organization is essential for the smooth functioning and success of its employees. In their contribution the work-life balance should be maintained effectively to ensure that all employees are running at their peak potential and free from stress and strain. The Quality of Work Life can affect such things as employees' timings, his or her work output, his or her available leaves, etc. It helps the employees to feel secure and like they are well being thought of and cared for by the organization in which they work. An organization's HR department assumes that it will be the accountable for the effective functioning of the Quality of Work Life for their employees.

Quality of Work Life is a philosophy, a set of principles, which holds that people are the most important resource in the organization as they are trustworthy, responsible and capable of making valuable contribution and they should be treated with dignity and respect in the organisational setting.

The elements that are relevant to an individual's quality of work life include the task, the physical work environment, social environment within the organization, administrative system and relationship between life on and off the job. Quality of work life consists of variety of opportunities for active involvement in group working arrangements or problem solving that are of mutual benefit to employees or employers, based on labor- management guidelines. People also conceive of quality of work life as a set of methods, such as autonomous work groups, job enrichment, high-involvement that aimed at boosting the satisfaction and productivity of people. It requires employee commitment to the organization and an environment in which this commitment can flourish. Thus, quality of work life is a comprehensive construct that includes an individual's job related well-being and the extent to which work experiences are rewarding, fulfilling and devoid of stress and other negative personal consequences.

Glasier (1976) concludes that quality of work life implies job security, good working conditions, adequate and fair compensation, more even than equal employment opportunity all together. Katzell et. al (1975) viewed that quality of work life more broadly as an individual's evaluation of the outcome of the work relationship. They observed that an employee might be say to enjoy a high quality of working life when an employee has positive feelings towards his job and its future prospects, is motivated to stay on the job and performs well and feels his working life fits well with his private life to afford him a balance between the two in terms of his personal values. Walton (1973) suggested the eight major conceptual areas for understanding quality of work life. These were adequate and fair compensation, safe and healthy working conditions, development of human competencies, growth and security, social integration, constitutionalization and total life space and social reliance. Various other studies conducted on quality of work life include employment conditions, employment security, income adequacy, profit sharing, equity and other rewards, employee autonomy, employee commitment, social interaction, self- esteem, self- expression, democracy, employee satisfaction, employee involvement, advancement, relations with supervisors and peers and job enrichment (Chander and Singh, 1983).

Mirvis and Lawler (1984) suggested that quality of working life was associated with satisfaction with wages, hours and working conditions, describing the "basic elements of a good quality of work life" as 1.safe work environment, 2.equitable wages, 3.equal employment opportunities and 4.opportunities for advancement.

Bertrand and Scott (1992) concluded that improvements in the quality of work life are achieved not only through external or structural modifications, but more importantly through improved relations between supervisors and subordinates. Heskett, Sasser and Schlesinger (1997) stated that quality of work life as the feelings that employees have towards their jobs , colleagues and organizations that ignite a chain leading to the organizations' growth and profitabi lity. A good feeling towards thei r job means the employees feel happy doing work which will lead to a productive work environment. This definition provides an insight that the satisfying work environmen t is considered to provide better quality of work life.

Quality of Working Life is not a unitary concept, but has been seen as incorporating a hierarchy of perspectives that not only include work-based factors such as job satisfaction, satisfaction with pay and relationships with work colleagues, but also factors that broadly reflect life satisfaction and general feelings of well-being (Danna & Griffin, 1999). More recently, work-related stress and the relationship between work and non-work life dimensions (Loscocco & Roschelle, 1991) have also been identified as factors that should conceptually be included in Quality of Working Life.

The recent definition by Serey (2006) concludes that quality of work life is quite conclusive and best meet the contemporary work environment. It is related to meaningful and satisfying work. It includes (i) an opportunity to exerci se one's talents and capacities, to face challenges and situations that require independent initiative and self-directio n; (ii) an activity thought to be worthwhile by the individuals involved; (iii) an activity in which one understands the role the individual plays in the achievement of some overall goals; and (iv) a sense of taking pride in what one is doing and in doing it well. This issue of meaningful and satisfying work is often merged w ith discussions of job satisfaction, and believed to be more favourable to quality of work life.

Normala and Daud (2010) in their study , Investigating the Relationship between Quality of Work Life and Organizational Commitment Amongst Employees in Malaysian Firms concluded that the quality of work life of employees is an important consideration for employers interested in improving employees' job satisfaction and commitment.

In the light of above mentioned views, the following **hypotheses** were formulated for the investigation of the study.

1.   There is gender difference between the working employees with regard to quality of work life in the electronic based manufacturing sector.
2.   The employees those who have above 30 years age have more quality of work life than the employees those who have below 30 years age in the electronic based manufacturing sector.
3.   There is no significance difference between the employees those who have more than 5 years job tenure and the employees those who have below 5 years job tenure with regard to quality of work life in the electronic based manufacturing sector.

SUBJECTS

The sample consists of 80 employees of a manufacturing industry for the investigation of the study. The simple randomized sample technique was adopted for choosing the sample.The distribution sample with mean age level is shown in the table: 1.

TABLE: 1 PRESENTS THE SCORES OF NUMBER, AGE MEAN AND SDS OF EMPLOYEES THOSE WHO ARE WORKING IN AN ELECTRONIC BASED MANUFACTURING SECTOR

SAMPLE	
N	80
Mean	28.14
SD	5.62

INSTRUMENTS USED

The designed quality of work life questionnaire consists of 22 items to be responded on a 4-point scale from highly satisfaction to highly dissatisfaction. A response on highly satisfaction was given a numerical value 4, moderately satisfaction 3, dissatisfaction 2, and highly dissatisfaction 1. the maximum and minimum possible scores on this scale are 88-22 respectively.

RESULTS

The scores of means, SDs and t-test value of quality of work life of male and female employees are presented in table: 2.

TABLE: 2 PRESENTS THAT THE SCORES OF NUMBER, MEANS, SDS AND MEAN DIFFERENCES OF MALE AND FEMALE EMPLOYEES IN AN ELECTRONIC BASED MANUFACTURING INDUSTRY WITH REGARD TO QUALITY OF WORK LIFE

	EMPLOYEES	
	Male	Female
N	39	41
Mean	60.64	62.00
SD	8.40	6.24
t 0.82@		

@ not significant

In the analysis part, the t-test was employed to find out the significant difference with regard to quality of work life between male and female employees in an electronic based manufacturing industry.The mean difference is 0.82, not significant . It can be said that there is no significant difference between male and female employees with regard to quality of work life in an electronic based manufacturing industry.

Based on the results obtained, the 1st hypotheses that can be assumed as "There is gender difference between the working employees with regard to quality of work life" is not accepted as unwarranted by the results.

DISCUSSION

It is timely fact that the human resources are one of the assets of the organisation irrespective of any department because organisations expect more competitive advantage and effective contribution of employees.

Management should concentrates to provide quality of work life for their employees to promote qualitative perspectives because of the management might be promoting their organisational brand image in the markets by means of their quality and knowledge which produce a thought of need fulfillment in the minds of business management and employees.

We assumes that need fulfillment might be associated with quality of work life which is associated with satisfaction with wages, hours and working conditions and the "basic elements of a good quality of work life" are 1.safe work environment, 2.equitable wages, 3.equal employment opportunities and 4.opportunities for advancement.

In functional departments., the employees are paid to their worth and work abilities but not to their physical abilities. Generally we may find the differences between male and female in work attitude especially in physical strengths, but not having the differences in work pottentials between the employees who are male and female. It can be said that the 1st hypotheses predicted that "There is gender difference between the employees with regard to quality of work life" is not accepted as unwarrented by the results.

RESULTS

The scores of means, SDs and t-test value of quality of work life of the respondents those who are having below 30 years age and those who are having above 30 years age, are presented in table: 3.

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TABLE: 3 SHOWS THE SCORES OF MEANS, SDS AND MEAN DIFFERENCES OF THE EMPLOYEES THOSE WHO ARE HAVING BELOW 30 YEARS AGE AND THE EMPLOYEES THOSE WHO ARE HAVING ABOVE 30 YEARS AGE REGARDING TO QUALITY OF WORK LIFE

	EMPLOYEES	
	Below 30 years age	Above 30 years age
N	63	17
Mean	60.22	64.88
SD	6.80	8.29
T2.39*		

*significant at 0.05 level.

In the analysis, t-test was employed to find out the significance difference with regard to the quality of work life among the employees those who are having above 30 years age and the employees having below 30 years age of an electronic based manufacturing sector.

The t-test value is 2.39, which is significant at 0.05 level. It can be said that there is significant difference with regard to quality of work life among the employees those who are having below 30 years age and above 30 years age in a manufacturing sector.

Based on the results, the 2nd hypotheses which predicted that "The employees those who have above 30 years age have more quality of work life than the employees those who have below 30 years age for the electronic based manufacturing company" is accepted as warranted by the results.

DISCUSSION

In order to pursue the good quality in work life., need satisfaction is very important component. Needs are different from individual to individual. Similarly quality of work life is also varied from person to person.

The expectations of employees are different from the expectations of the people those who are already proved themselves. For the best performance that was given by an employee or by a person who is in the organisation expects a recognition atleast interms of appreciation by his immediate superior. But the others (above 30 years) expects monetary benefits so that they can fulfill their personal requirements. Moreover management perspective is always different from an employee's perspective. Management feels that ,'knowledge to accomplish a given task is enough to an employee'. If the employee is lagging in that knowledge management is ready to educate an employee through training or developmental activities. But the management may not be ready to provide more knowledge beyond the requirements through the inductive programes.

The employees are not satisfied with the monetary benefits, because they expects an environment which leads them to get good experience. But the other people those who are having above 30 years age are satisfied with the monetary benefits that they are getting from the management for their extrordinary performance. So., these people will have more quality in their work life, when compared to employees those who have below 30 years age.

It can be said that the 2nd hypotheses predicted that "The employees those who have above 30 years age have more quality of work life than the employees those who have below 30 years age in the electronic based manufacturing company" is accepted as warrented by the results.

RESULTS

The scores of means, SDs and t-test of quality of work life between the employees those who have below 5 years of job tenure and the employees those who have above 5 years of job tenure in a manufacturing industry, are presented in table: 4.

TABLE 4: REVEALS THAT THE MEANS, SDS & T-TEST VALUE OF QUALITY OF WORK LIFE BETWEEN THE EMPLOYEES THOSE WHO HAVE BELOW 5 YEARS OF JOB TENURE AND TO THE EMPLOYEES THOSE WHO HAVE ABOVE 5 YEARS OF JOB TENURE IN AN ELECTRONIC BASED MANUFACTURING INDUSTRY

	EMPLOYEES	
	Below 5 years job tenure	Above 5 years job tenure
N	52	28
Mean	60.12	63.25
SD	6.99	7.66
t	1.84@	

@ not significant

In the analysis part, the t-test was employed to find out the significance difference with regard to quality of work life among the employees those who are having below 5 years of job tenure and employees those who are having above 5 years of job tenure in an electronic based manufacturing sector.

The t-test value is 1.84, which is not significant at 0.05 level. It can be said that there is no significant difference with regard to quality of work life among the employees those who are having below 5 years of job tenure and above 5 years of job tenure in an electronic based manufacturing sector.

Based on the results obtained, the 3rd hypotheses ''There is no significance difference between the employees those who have more than 5 years job tenure and the employees those who have below 5 years job tenure with regard to quality of work life in the electronic based manufacturing sector" is not accepted as unwarranted by the results.

DISCUSSION

Expectation doesn't have any criteria or limit. Every one might be have their own expectations. A manager can expect promotion for his/her best performance , another employee can expect salary hike, a marketing employee can expect more incentives and even the management can also expect a pleasant environment among the employees which should be varied in work related life.

If we meet our expectations we may feel that there is a quality in our work life. If the expectations of the employees are practically possible to meet by the management, then definately employee will meet their expectations, similarly they will get quality in their work life.

Experienced candidates expectations are different from the expectations of the candidates those who are not having experience. To get experience, employees expects conducive work environment, good relations with their managers and encouragement from their managament. The people those who have experience might be expected promotions, salary hikes and other benefits. Even the expectations of the employees are different, the management will not concentrate on their expectations, it only provides what they deserves.

So., There is no difference between the employee's quality of work life those who have more than 5 years job tenure and the employees those who have below 5 years job tenure in the electronic based manufacturing company. It means that the several individual factors will be influenced by incremental change of the organisation, automatically they should expect some proof of quality of work life gradually found on above mentioned views.

Therefore., the the 3rd hypotheses which is predicted that ''There is no significance difference between the employees those who have more than 5 years job tenure and the employees those who have below 5 years job tenure with regard to quality of work life in the electronic based manufacturing sector" is not accepted as unwarranted by the results.

CONCLUSIONS

1. There is no gender difference between the working employees with regard to quality of work life in the electronic based manufacturing sector.
2. The employees those who have above 30 years age have more quality of work life than the employees those who have below 30 years age in the electronic based manufacturing sector.
3. There is a significance difference between the employees those who have more than 5 years job tenure and the employees those who have below 5 years job tenure with regard to quality of work life in the electronic based manufacturing sector.

IMPLICATIONS

1. The conducive quality environment should be provided by the organization, if managers should expect quality of work life of employees.
2. Motivation and reinforcement strategies play a vital role to provide quality of work life while expecting quality in products and rich services.
3. Organisation should promote the sense of partnership and sense of ownership in the employees .

ACKNOWLEDGEMENT

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A STUDY ON HOW RISK AND RETURN CREATE AN IMPACT ON PORTFOLIO SELECTION

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ABSTRACT
Investing in securities involves high risk, but they yield high returns as well. In order to diversify the risk we need to build a strong portfolio. This article gives us an overview of how risk and return play a vital role in selecting a portfolio which yields better returns at comparatively lower returns. This also helps to understand the movement stocks in line with the Index and at the same time gives a picture of how stocks react while the market is in a bearish trend.

KEYWORDS
portfolio selection, finance, investment.

INTRODUCTION
The Stock Market lays a platform for the investors who are willing to invest in direct market equities and is the most important component of our Indian Financial system. It facilitates flow of funds from those who have surplus to those who are in need of funds. Individual investors and Institutional investors are the major players of the Stock Market. It is a barometer which indicates the economic growth of a nation. This Market is highly sensitive and volatile. Any changes that occur in other markets create an impact on our Market. This volatility restricts us form predicting the appropriate stock returns and the future outcomes. These variations or fluctuations constitute to another important element called 'Risk'. Most of the investors are Risk averse in nature and they expect better returns for their investments. The term Risk means Uncertainty, and it can be classified under two broad categories: The Systematic Risk and Unsystematic Risk.

SYSTEMATICRISK: The risk inherent to the entire market also known as "un- diversifiable risk" or "market risk." Interest rates, recession and wars all represent sources of systematic risk because they affect the entire market and cannot be avoided through diversification.

UNSYSTEMATICRISK: This risk is due to the influence of internal factors prevailing within an organization. Such factors are normally controllable from an organization's point of view.

Despite, many investors invest in direct equities knowing that the returns are uncertain. But understanding the relationship between Risk and Return is vital for any investor to maximize their returns at a minimal risk.

Markowitz (1952) argues that by combining different set of securities investors can eliminate their unsystematic risk. He also suggests considering the correlation among the securities while selecting a portfolio. On the other hand calculation of beta co-efficient will lay a path to eliminate systematic risk. The Beta coefficient will provide us the reaction of a Stock on the Index volatility. The possible increase or decrease in the price of a stock can be predicted in relation to possible increase or decrease the Index. This study aims to investigate the Impact of return and risk on the index, IT and banking stocks. This study evaluates the investment strategies like buy and hold, and also measures the role of correlation in investment decisions.

REVIEW OF LITERATURE
Scott and Horvath (1980) that positive preference for skewness and negative preference for kurtosis has been postulated in explaining financial behavior of the investors. Skewness preference is one potential explanation for investors holding imperfectly diversified portfolios.

Dittmar (2002) showed that higher expected returns compensate investors bearing systematic variance and kurtosis risks, while investors forego return to benefit from increasing systematic skewness.

Harvey, Liechty, Liechty and Muller (2004) found that international asset holdings can be quite different under third-moment preferences compared to the standard mean-variance case.

Taleb (2004) found that investors commonly engage in negatively skewed stocks. A negatively skewed stock was characterized as a trade that has a large chance of making gains but a very small chance of losing big money.

Levy (2006), suggested that investors would consider the standard deviation while selecting the portfolio for the maximization of returns.

OBJECTIVES OF THIS STUDY
➢ To compare the performance of IT sector and Banking sector stocks with the performance of the Index or the Market
➢ To measure the Performance and relation of the stocks among the same industry as well with the index
➢ To identify the combination of stocks which will provide us a better returns at comparitively

RESEARCH METHODOLOGY
MS Office Excel 2003 was used to calculate the Holding period Return (HRR), Daily return, Standard deviation, correlation coefficient and the Beta Coefficient among the stocks.
Dividend paid during the study period, transaction cost, brokerage, taxes, and other charges were ignored.
PERIOD OF THE STUDY
Period of the study ranges between 20-12-2010 to 11-12-2012. During this period there were 495 trading days in National Stock Exchange India.
SAMPLE
➢ For this study, the top 9 IT sector and the top 10 Banking sector stocks were taken.
➢ The S&P CNX NIFTY Index was considered as The Market
➢ The closing price of the stocks and the closing value of the index on a daily basis was considered for the above mentioned period. These data's were obtained from NSE India website.

TABLE 1: LIST OF IT SECTOR AND BANKING SECTOR STOCKS CONSIDERED FOR DISCUSSION

S.No	IT Stocks	Banking Stocks
1	TCS	HDFC Bank
2	Infosys	ICICI Bank
2	Wipro	AXIS Bank
4	HCL	IDBI
5	Satyam	Canara Bank
6	Tech Mahindra	Indusind Bank
7	Mphasis	Bank of India
8	Hexaware	Punjab National Bank
9	Honeywell	State Bank of India
10		Union Bank of India

TOOLS OF ANALYSIS

HOLDING PERIOD RETURN

The returns obtained from an asset or a stock when it been held with the investor for a specific period of time is known as holding period returns. The holding period returns has been calculated for a period of 3 months,6 months,9 months,12 months,15 months, 18 months,21 months and 24 months.

This return was calculated using the formula $(T_1 - T_o)/T_o * 100$

Where

Ti is the Last day price till which the stock was held and

To is the Beginning Price or the Price at which the stock was bought

DAILY RETURNS

Daily returns on the stocks was calculated using the formula $((P_1 - P_o)/P_o) * 100$

Where P_1 is Today's Price and Po is Yesterday's Price

The average of the Daily returns for the above mentioned period constitutes the Average Daily Returns

COMPOUNDED ANNUAL GROWTH RATE (CAGR)

The **compound annual growth rate (CAGR)** is a useful measure of growth over multiple time periods. It can be thought of as the growth rate that gets you from the initial investment value to the ending investment value if you assume that the investment has been compounding over the time period.

The formula for CAGR is:

CAGR $= (EV / BV)^{1/n} - 1$

where:

EV = Investment's ending value

BV = Investment's beginning value

n = Number of periods (months, years, etc.)

STANDARD DEVIATION

It is a widely used measure of variability or diversity used in statistics and probability theory. It shows how much variation or "dispersion" there is from the average (mean, or expected value). It is used to calculate the stock price volatility. It measures how much values are dispersed from the average

$SD = \sqrt{(\Sigma X - \mu)2/N-1}$

CORRELATION

It is a measure that determines the degree to which two variable's movements are associated. The correlation coefficient is calculated as:

$Correlxy = Cov(x,y)/ \sigma x * \sigma Y$

Correlation is computed into what is known as the correlation coefficient, which ranges between -1 and +1. Perfect positive correlation (a correlation co-efficientof +1) implies that as one security moves, either up or down, the other security will move in lockstep, in the same direction. Alternatively, perfect negative correlation means that if one security moves in either direction the security that is perfectly negatively correlated will move in the opposite direction. If the correlation is 0, the movements of the securities are said to have no correlation; they are completely random. Correlations are used in advanced portfolio management

BETA

Beta is a measure of a stock's volatility in relation to the overall market. The market has a beta of 1.0, and individual stocks are ranked according to how much they deviate from the market. A stock that swings more than the market over time has a beta above 1.0.If a stock moves less than the market, the stock's beta coefficient is less than 1.0. High-beta stocks are supposed to be riskier but provide a potential for higher returns; low-beta stocks pose less risk but also lower returns. In other words, volatility refers to the amount of uncertainty or risk about the degree of changes in a stock's value. A higher volatility means that a stock's value can potentially be spread out over a larger range of values. This means that the price of the security can change dramatically over a short time period in either direction. A lower volatility means that a security's value does not fluctuate dramatically, but changes at a steady pace

RESULTS AND DISCUSSIONS

TABLE 2: DAILY AVERAGE DAILY RETURNS, STANDARD DEVIATION AND COMPOUNDED ANNUAL GROWTH RATE FOR IT SECTOR STOCKS

S&P CNX NIFTY		0.00362	1.16	-0.01
S.No	IT Stocks	Average Daily Returns (%)	Standard Deviation (%)	CAGR (%)
1	TCS	0.03	1.80	0.03
2	Infosys	-0.06	1.77	-0.17
3	Wipro	-0.03	1.65	-0.11
4	HCL	0.08	1.92	0.17
5	Satyam	0.13	2.47	0.28
6	Tech Mahindra	0.09	2.14	0.17
7	Mphasis	-0.07	2.52	-0.24
8	Hexaware	0.05	3.66	-0.09
9	Honeywell	0.03	2.42	0.00

TABLE 3: DAILY AVERAGE DAILY RETURNS, STANDARD DEVIATION AND COMPOUNDED ANNUAL GROWTH RATE FOR IT SECTOR STOCKS

S&P CNX NIFTY		0.00362	1.16	-0.01
S.No	Banking Stock	Average Daily Returns (%)	Standard Deviation (%)	CAGR (%)
1	HDFC Bank	-0.06	3.90	-0.44
2	ICICI Bank	0.03	2.10	0.01
2	AXIS Bank	0.03	2.29	0.02
4	IDBI	-0.05	2.14	-0.17
5	Canara Bank	-0.03	2.30	-0.14
6	Indusind Bank	0.13	2.08	0.30
7	Bank of India	-0.05	2.32	-0.17
8	Punjab National Bank	-0.06	1.96	-0.17
9	State Bank of India	-0.01	2.09	-0.08
10	Union Bank of India	-0.01	2.46	-0.10

From table 2 & 3 it is inferred that, The Daily Average returns of IT stocks and the Banking stocks were compared with market index, 6 IT stocks and 3 Banking stocks have outperformed the market. The other 3 stocks of IT sector and 7 stocks of banking sector have reported negative returns than the market. The stocks that show a positive indication on daily average returns also show a positive compounded Annual Growth rate. But the CAGR of Honeywell, ICICI Bank and the Axis bank are lower when compared to their daily average returns. Whereas, the other stocks CAGR is high.

TABLE 4: CORRELATION AMONG THE BANKING SECTOR STOCKS WITH THE INDEX AND THE IT SECTOR STOCKS WITH THE INDEX

S.No	Banking Stock	Correlation Coefficient (%)	IT Stocks	Correlation Coefficient (%)
1	HDFC Bank	0.07	TCS	0.08
2	ICICI Bank	0.15	Infosys	0.06
2	AXIS Bank	0.20	Wipro	0.04
4	IDBI	0.13	HCL	0.09
5	Canara Bank	0.12	Satyam	0.07
6	Indusind Bank	0.19	Tech Mahindra	0.15
7	Bank of India	0.13	Mphasis	0.04
8	Punjab National Bank	0.13	Hexaware	0.19
9	State Bank of India	0.12	Honeywell	0.06
10	Union Bank of India	0.14		

The table 4, indicates the correlation coefficient that is, how a security responds to the movement of the Index All the securities have a perfect positive correlation.

TABLE 5: STOCK VOLATILITY WITH REFERENCE TO THE INDEX VOLATILITY

S.No	Banking Stock	Beta Coefficient (%)	IT Stocks	Beta Coefficient (%)
1	HDFC Bank	0.24	TCS	0.12
2	ICICI Bank	0.27	Infosys	0.09
2	AXIS Bank	0.39	Wipro	0.06
4	IDBI	0.23	HCL	0.15
5	Canara Bank	0.24	Satyam	0.14
6	Indusind Bank	0.34	Tech Mahindra	0.28
7	Bank of India	0.26	Mphasis	0.09
8	Punjab ational Bank	0.23	Hexaware	0.59
9	State Bank of India	0.23	Honeywell	0.12
10	Union Bank of India	0.29		

Beta is a measure of a stock's volatility in relation to the overall market. The Beta coefficient of IT sector stocks is lower when compared to the Beta coefficient of banking stocks. The Banking stocks are more volatile than the IT sector stocks. The Beta coefficient of the index will be 1 which implies 1 % change in the index will have either positive or negative change in the stocks according to their respective beta coefficients.

TABLE 6: THE HOLDING PERIOD RETURN OBTAINED BY BANKING STOCKS AT DIFFERENT PERIODS OF TIME

S&P CNX NIFTY		-9.64	-11.59	-13.68	-20.40	-12.08	-13.47	-4.59	-1.50
S.No	Banking Stock	3 months	6 months	9 months	12 months	15 months	18 months	21 months	24 months
1	HDFC Bank	-1.07	8.14	-77.69	-81.31	-77.04	-75.31	-72.13	-68.20
2	ICICI Bank	-8.86	-6.17	-21.87	-40.26	-17.47	-24.84	-4.64	2.05
2	AXIS Bank	-0.13	-3.80	-13.08	-33.19	-5.66	-21.19	-15.54	4.29
4	IDBI	-17.81	-20.12	-33.88	-45.69	-35.36	-45.22	-39.26	-31.53
5	Canara Bank	-6.42	-21.46	-34.12	-40.18	-29.11	-37.76	-39.43	-25.83
6	Indusind Bank	-0.49	4.03	9.72	0.63	23.01	28.84	36.04	68.56
7	Bank of India	-0.51	-6.59	-28.73	-32.66	-19.12	-23.60	-32.28	-30.30
8	Punjab National Bank	-9.66	-12.91	-18.94	-33.71	-23.06	-37.83	-33.40	-31.18
9	State Bank of India	-4.08	-18.05	-29.01	-39.71	-20.10	-22.21	-21.37	-15.02
10	Union Bank of India	3.71	-3.96	-26.85	-45.14	-31.60	-37.01	-39.16	-19.69

TABLE 7: THE HOLDING PERIOD RETURN OBTAINED BY IT STOCKS AT DIFFERENT PERIODS OF TIME

S&P CNX NIFTY		-9.64	-11.59	-13.68	-20.40	-12.08	-13.47	-4.59	-1.50
S.No	IT Stocks	3 months	6 months	9 months	12 months	15 months	18 months	21 months	24 months
1	TCS	-7.20	-4.93	-12.74	-1.98	-3.83	9.19	13.31	5.07
2	Infosys	-12.20	-17.32	-29.47	-20.11	-15.30	-26.06	-22.36	-31.52
2	Wipro	-7.89	-14.39	-28.60	-15.41	-10.39	-16.34	-21.89	-21.52
4	HCL	0.26	6.86	-12.65	-8.39	11.09	5.08	27.72	36.78
5	Satyam	6.16	31.44	7.42	-0.16	11.93	21.48	64.14	63.90
6	Tech Mahindra	6.33	4.01	-4.17	-14.01	-6.69	3.39	35.62	37.89
7	Mphasis	-41.26	-31.71	-48.16	-48.61	-35.64	-47.88	-42.35	-41.61
8	Hexaware	-49.98	-36.88	-34.41	-24.24	5.02	8.40	17.71	-16.34
9	Honeywell	-7.68	9.36	13.41	-26.63	21.27	8.81	9.12	0.15

From table 6 & 7 it is inferred that, Most of the Banking and IT sector stocks show negative returns during 3 months, 6 months, 9 months and 12 months period. But later they show a positive sign. The index also shows very high negative returns during the above mentioned period and later it has started to move in the forward direction. Though it shows a negative return the percentage of negative returns is in positive direction.

PORTFOLIO SELECTION AND RISK DIVERSIFICATION

By investing in different securities investors can reduce the portfolio risk. The fundamental premise behind diversification is that portfolio risk and volatility can be lowered by investing in a number of different asset classes which have varying levels of risk. In order to achieve effective diversification portfolio holding should not be highly correlated. It is evident from table: 4 that, all the stocks are positively correlated with the market index. It can be said that all the IT and banking stocks are moving in tandem with the market. By combining high correlation with low correlation stocks, we can minimize the portfolio risk.

From the above results, based on the holding period, standard deviation, correlation and Beta analysis these sets of stocks were selected for the portfolio. Table: 8 shows the stocks selected for the portfolio. Satyam, HCL, Tech Mahindra and Indusind Bank show very high and positive returns over the long run. Though TCS shows a negative return in the short run it also shows a positive returns in the long run. ICICI Bank and AXIs bank also show a positive return in the long run.

TABLE 8: STOCKS SELECTED FOR THE PORTFOLIO

S. NO	Sector	Stock Name	3 months	6 months	9 months	12 months	15 months	18 months	21 months	24 months
1	IT	Satyam	6.16	31.44	7.42	-0.16	11.93	21.48	64.14	63.90
2	IT	HCL	0.26	6.86	-12.65	-8.39	11.09	5.08	27.72	36.78
3	IT	TCS	-7.20	-4.93	-12.74	-1.98	-3.83	9.19	13.31	5.07
4	IT	Tech Mahindra	6.33	4.01	-4.17	-14.01	-6.69	3.39	35.62	37.89
5	Banking	ICICI Bank	-8.86	-6.17	-21.87	-40.26	-17.47	-24.84	-4.64	2.05
6	Banking	AXIS Bank	-0.13	-3.80	-13.08	-33.19	-5.66	-21.19	-15.54	4.29
7	Banking	Indusind Bank	-0.49	4.03	9.72	0.63	23.01	28.84	36.04	68.56

TABLE9:CAGR, STANDARD DEVIATION, CORRELATION AND BETA COEFFICIENT FOR THE STOCKS SELECTED FOR THE PORTFOLIO

S. NO	Sector	Stock Name	CAGR (%)	Standard Deviation (%)	Correlation Coefficient (%)	Beta Coefficient (%)
1	IT	Satyam	0.28	2.47	0.07	0.14
2	IT	HCL	0.17	1.92	0.09	0.15
3	IT	TCS	0.03	1.80	0.08	0.12
4	IT	Tech Mahindra	0.17	2.14	0.15	0.28
5	Banking	ICICI Bank	0.01	2.10	0.15	0.27
6	Banking	AXIS Bank	0.02	2.29	0.20	0.39
7	Banking	Indusind Bank	0.30	2.08	0.19	0.34

CONCLUSION & RECOMMENDATIONS

It is assumed that investment in common stocks provide more returns than any other financial assets. Current study provides evidence to this argument. There is a positive relationship between the stocks holding period and the measures of dispersion with the market return. Longer the holding period gives better returns. It suggests that investors should sell the stock when it meets their expected return. Another important finding of the study is that some of the stocks were outperformed the market index. Significant positive correlation was found among the stocks with the market index. This suggests that all stocks are moving in Tandem with the market. Based on this, investors advised to design portfolio in which equilibrium is maintained high and weak correlation stocks.

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SAP IMPLEMENTATION FOR PREVENTIVE MAINTENANCE USING BREAKDOWN HISTORY

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ABSTRACT

Maintenance Management is a key function used by industrial systems that deteriorate and wear with usage and age. The primary objective of maintenance management is to increase equipment availability and overall effectiveness. Since the cost of maintenance is very high, modern industry requires not only the theoretical basis to express the experience of operators, but also the identification of proper techniques to optimize the maintenance action. Maintenance Scheduling grows importance as the maintenance cost accounts for a significant portion of the total production cost in capital intensive industries. Scheduling is a crucial component of maintenance management. Effective use of scheduling is a major factor of workforce productivity. The computer aided maintenance system helps both management and maintenance section in working at maximum effectiveness by providing adequate information with minimum effort. The present work was carried out with an objective of computerizing the plant maintenance system and doing analysis for the critical machines which often break down and which in turn affects the factories overall turn over in terms of both production and monetary benefits. The firm was following breakdown maintenance with regular lubrication and simple inspection. Manually the data were recorded, which are characterized by high maintenance costs, unpredictable breakdown, down time and production loss. The computerized preventive maintenance system and analysis was implemented using SAP technology which minimizes breakdown and production loss in terms of breakdown hours.

KEYWORDS

Availability, Mean Time between Failure (MTBF), Mean Time to Repair (MTTR), Preventive Maintenance Program, Reliability.

INTRODUCTION

Maintenance is a combination of all technical, administrative, and managerial actions during the life cycle of an item intended to keep it in or restore it to a state in which it can perform the required function [6]. Until World War II, industry was not highly mechanized. Failure consequences were not vital and had a neglected effect. Therefore, industrial equipment was operated until it failed, i.e., Reactive Maintenance was followed. After World War II, the shortage of industrial manpower and the increase in demand of various products, among other things, led to increased mechanization and maintenance became a task of the maintenance department and was considered as a technical matter, thus the second maintenance approach could be described as a preventive approach. During the 1970's, manufacturing plants became even more automated and complex. Reliability, Availability and Maintainability (RAM), safety, quality, environment, and multi-skilling were considered very important therefore, more integration efforts have been done and maintenance no longer remained an isolated function. Thus, these approaches can be described as a predictive approach. By the beginning of 1980's, many systematic concepts to maintenance have been proposed such as terotechnology, RCM, TPM. Thus, these practices can be described as process oriented "holistic" approach [7].

The maintenance organization is confronted with a wide range of challenges that include quality improvement, reduced lead times, set up time and cost reductions, capacity expansion, managing complex technology and innovation, improving the reliability of systems, and related environmental issues. However, trends suggest that many maintenance organizations are adopting Total Productive Maintenance (TPM), which is aimed at the total participation of plant personnel in maintenance decisions and cost savings. The challenges of intense international competition and market globalization have placed enormous pressure on maintenance system to improve efficiency and reduce operational costs. These challenges have forced maintenance managers to adopt tools, methods, and concepts that could stimulate performance growth and minimize errors, and to utilize resources effectively toward making the organization a "world-class manufacturing" or a "high-performance manufacturing" plant.

Industrial maintenance has two essential objectives which are a high availability of production equipment and low maintenance costs. However, a strong factor militating against the achievement of these objectives is the nature and intensity of equipment failures in plants. Since system failure can lead to costly stoppages of an organization's operation, which may result in low human, material, and equipment utilization, the occurrence of failure must therefore be reduced or eliminated. An organization can have its customers build confidence in it by having uninterrupted flow in operations. Thus, maintenance ensures system sustenance by avoiding factors that can bother effective productivity, such as machine breakdown and its several attendant consequences [1-3 & 8]. The maintenance procedures involve:

- Preventive maintenance—the prevention of equipment breakdowns before they happen. This includes inspections, adjustments, regular service and planned shutdowns.
- Repair work—repairing equipment and troubleshooting malfunctions in an effort to return the equipment to its previous condition. These repairs may be reactive or preventive.
- Improvement work—searching for better materials and improved design changes to facilitate equipment reliability. Repair work is often a part of improvement work.

IMPORTANCE OF THE STUDY

Preventive Maintenance Program consists of actions that improve the condition of system elements for performance optimization and aversion of unintended system failure or collapse. It involves inspection, servicing, repairing or replacing physical components of machineries, plant and equipment by following the prescribed schedule. It is commonly agreed nowadays that preventive maintenance program can be very successful in improving equipment reliability while minimizing maintenance related costs. [5]

Preventive maintenance (PM) refers to any activity, which is performing:

1. To predict the onset of component failure;
2. To detect a failure before it has an impact on the asset function; and
3. To repair or replace the asset before failure occurs.

Availability is the ability of an asset to perform its function as predicted. Availability is usually measured as the mean of time between the failures (MTBF) for each of the system. The maintenance of the centralize availability is a process which could be used to determine any physical asset continuous functioning according to the tasks designed or assigned. The availability engineering is concerned about the prediction and avoidance any failures effectively and at the same time including the cost factors if failure is allowed to happen. Each maintenance personnel must know and understand the machine operations and always tries to improve the availability of the machine. In facing technical problems, competence maintenance personnel could come out with the solution and counter measure so that the problems would not recur. Besides that, they are also responsible to perform the existing maintenance activities and take corrective actions to solve any existing problem. Keeping up with the scheduling has also become an important indicator to control and monitor the maintenance activities. [4]

PROBLEM IDENTIFICATION

The present work was carried out in BHEL, EDN, Bangalore which is an electrical and electronic industry with an objective of computerizing the plant maintenance system and doing analysis for the critical machines which often break down and which in turn affects the factories overall turn over in terms of both production and monetary benefits.

It has been observed that the factory maintenance includes or rather relies on breakdown maintenance for most of the equipments. For some critical equipment manual preventive maintenance was in practice which mainly includes lubrication, greasing, top up of oil levels and servicing, if required and the same was recorded with proper scheduling and planning. Tracking the breakdown history of the machines has been unsuccessful because of inherent problems with data management. Due to this scheduling of preventive maintenance is not carried out properly and completely. This in turn causes breakdowns resulting in large amount of production loss.

Hence it was found desirable to have a proper computer aided preventive maintenance and analysis using breakdown history (using SAP) which is capable of handling very large data. Sap can generate maintenance schedule automatically and also keeps records of all the necessary details of maintenance activities, equipment break down history (number of occurrences, date, time, make etc) and also calculate mean time between repair (MTBR), mean time to repair (MTTR).

The main objective of the present work is to develop formats, reports, etc and also to implement the tedious and difficult manual pm and analysis method to easy, user friendly sap technology. This also includes design and development of user friendly software methods for the application of pms. In brief, this includes creating and maintaining pm databases, scheduling of maintenance and also obtaining reports whenever required with results of reduced down time like mean time between repair (MTBR), mean time to repair (MTTR).

In computerizing the maintenance activities, data and procedures, at all levels of an organization. Hence the departments are to be interlinked and integrated to accomplish the maintenance task through sap technology. If in any department, data is changed then it should be reflected in all the departments irrespective of the levels. And authorizations of changing authentic information would be retained with the appropriate responsible personnel. For the maintenance module, most important and critical equipments, or machines are to be listed or identified for analysis and studied depending upon the breakdown history.

IMPLEMENTATION OF COMPUTER AIDED PREVENTIVE MAINTENANCE & ANALYSIS

The computer aided maintenance system helps both management and maintenance section in working at maximum effectiveness by providing adequate information with minimum effort. Record keeping is also made easier because input data can be edited and equipment records can be standardized. The software used in this organization is SAP (an acronym for systems applications and products for data processing) developed in Germany, by the company SAP.

System Application and Products (SAP) technology which is an integrated functional organizational program will be a multi user accessible system to all levels of organization like finance .HRD, production, maintenance etc. Any information at any point of time at any level of organization can be viewed but cannot be altered or manipulated unless authentic authorization is given. But it will be with senior managers of that particular department. This product (package) provides easy access and has user friendly system codes to transact.

When a system failure occurs, the maintenance organization is tasked with accomplishing the necessary repair actions in order to get the system back into operation as soon as possible. The Equipment Maintenance Data to be recorded are:

1. Administrative Data:
- Event report number, report date & individual preparing report.
- Work order number.
- Work area & time of work (month, day, year).
- Activity (organization) identification.

2. System Factors:
- Equipment part number &manufacturer
- Equipment serial number
- System operating time when event occurred
- Segment of mission when event occurred
- Description of event (describe symptoms of failure for unscheduled actions)

3. Maintenance Factors:
- Maintenance requirement (repair, calibration, servicing, etc)
- Description of maintenance tasks
- Maintenance downtime (MDT)
- Active maintenance times
- Maintenance delays (time awaiting spare part, delay for test equipment, work stoppage, awaiting personnel assistance, delay for weather, etc)

4. Logistics factors:
- Start & stop times for each maintenance technicians by skill level Technical manual or maintenance procedure used (procedure number, date)
- Test & support equipment used (item nomenclature, part number, manufacturer, serial number, time usage, operating time on test equipment when used)
- Description of facilities used
- Description of replacement parts (type & quality): Item nomenclature, part number, manufacturer, serial number, &operating time on installed / replaced item, describe disposition.

5. Other information: Failure mode, cause of failure, effects of failure

DEVELOPMENT OF SYSTEMATIC MAINTENANCE PROGRAM

The guidelines for preparing a sound maintenance program which is cost effective and functionally easy and efficient are as follows:

PHASE-1: IDENTIFY EQUIPMENT TO BE MAINTAINED
1.   Prepare an equipment list.
2.   Assign equipment number
3.   Obtain technical literature.
4.   Cross check technical literature and equipment specification.
5.   Prepare equipment record.

PHASE – II: ESTABLISH CONTROL OF MAINTENANCE

1.   Design a master maintenance schedule.
2.   Design periodic report for maintenance activities.
3.   Design equipment history form.
4.   Design equipment maintenance form.

PHASE-III: DEVELOP PAPER WORKS FOR MAINTENANCE
1.   Minimize the number of formats and entries.
2.   Develop overall planning for maintenance paper work.
3.   Establish functional paper work with crisp and structured formats

PHASE – IV: DOCUMENTATION
1.   Equipment data record: It gives details about the machine or equipment, which are critical.
2.   Breakdown status: This is required to keep the track of work progress and to maintain a fair workload leveling process. This indicates the no, of notifications (failures) with equipment no, description, breakdown duration, the object part details due to which the machine is not working or down.
3.   Comprehensive report: (Breakdown report) this will give the equipments which are down with its down time duration MTTR, MTBR, TBR and TTR. And also the equipments, which are out of factory limitations or specifications as criteria for, further maintenance.

REPORTS USED AND ITS DETAILS

1.   Equipment data: This database includes equipment number, equipment name, year of installation of the equipment, manufacturer's details, M/C specifications, etc. all these are fed and stored in the data base which is available in the system of online facility.
2.   Equipment history or Breakdown history: This includes equipment name, number, notification no, malfunction start and end, description of the problem, breakdown duplication and planner group.
3.   Preventive Maintenance planning schedule: This includes PM planning and scheduling of equipments with schedule start date, completing date, order, plan number and strategy.
4.   Analysis: This includes list of equipments reported under breakdown with equipment–name, code, number of breakdowns, Mean Time To Repair, Mean Time Between Repair, Time between repair, time to repair(down time).

The critical Machines are identified for detailed analysis, if their MTBR is <1500hrs. or MTTR > 40 hrs.   For the same, analysis report is generated or prepared which highlights equipment number, cause of malfunction or breakdown, damage caused, number of damages and also experts remedy to prevent damage.

METHODOLOGY

The Preventive Maintenance procedure involves:
1.   Breakdown is reported through notification from the user/concerned department. (Through ERP online / MSR or through mail)
2.   Notification is taken for rectification with malfunction start date and after rectification, the completion date should be mentioned with down time duration.
3.   If any material/spares are drawn from the store for any replacements during repair, the maintenance order is created. And the same would be entered in materials management module.
4.   After breakdown is rectified the same should be reported with the planner group. These rectifications can be done while during PM Scheduling & planning.

The Maintenance Analysis procedure involves:
1.   Prepare a list of critical equipments with cost center, with the help of PM study.
2.   Collect & enter breakdown details for all machines, with down time duration and parts / objects failure details.
3.   Collect break down data for the listed/selected equipment.
4.   Generate Analysis report by calculating or find out MTTR, MTBR using down time.
5.   Based on MTTR and MTBF report as shown in Fig. 1, Identify critical equipment using criteria i.e. MTBR < 1500 hrs or MTTR> 40 Hrs for detailed analysis and for further Maintenance.
6.   For those equipments, which violates or exceeds the criteria prepare analysis report. This can be done by suggesting remedies or future PM activities to improve MTTR and MTBR, after every breakdown is analyzed. The suggestions or remedies are written after discussing with experts and engineers and also with experienced operators.

RESULTS

The existing system configuration is not optimum in terms of fulfilling the desired objectives, it is necessary to implement a PM for malfunction activity whereby the system can be modified for improvement. From a PM & Analysis (Maintainability) perspective, improvements can be realized through a reduction in;
-      The number of maintenance actions required (i.e., improving reliability).
-      Maintenance tasks times and maintenance man hour.
-      The logistics support resources needed in the accomplishment of maintenance.
-      The cost of performing maintenance and so on.

These measures can be impacted in a number of ways, including increasing the standardization of components, improving testability, and system diagnostics, improving the accessibility to critical components, some times retrofitting also. This enhances the system's reliability, functionality and special features required.

CALCULATION OF PERCENTAGE OF DOWN TIME

The factory runs on all 365 days and 24 hours a day. Out of 260 machines, 37 machines are critical based on the breakdown report during the current year. From MTTR & MTBR report shown in Fig. 1,
Total available time   =365*24*37=324120 hrs.
Total downtime   = 4172.97 hrs.
The percentage Down Time is the percentage fraction of the total downtime for critical machines w.r.t. the Total available time for critical machines which is found to be 1.287%
The percentage down time is shown in Fig. 2. It is well within the fixed corporate target level and also it is almost same as the previous years. The Total MTTR is shown in Fig. 3. It is found to be within the maximum or fixed corporate target and the mean time to repair is less than the previous year which indicates a reduction in down time.

REPORT GENERATION

Easily understandable reports and equipment data fields are developed to have a user-friendly tables, which is easy to understand and can be accessed by all concerned personnel. Any modifications or updating of the data regarding any equipment can be made by looking at the screen, which in turn will be changed in the concerned data of the equipment.

Database is also created for equipment profile, equipment history, and maintenance reports like object part details, cause code details etc. and the equipment reports that can be produced are:
1.   Equipment history report: This allows the detailing of any work performed on any specified equipment.

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FIG. 1: MTTR AND MTBR REPORT

List of Equipment Reported Breakdown 2009-10

#		Equipment	Actual Breakdown	Mean Time to Repair	Mean Time Between Repair	Time Between Repair	Time To Repair
1	10000517	Exhaust - Lacquering Booth	2	4	7,141.00	14,282	8
2	16923003	INJECTION MOULDING MACHINE HMT	10	42.18	858.32	8583.17	421.83
3	25111023	16 TON POWER PRESS	3	35.26	3085.03	9255.08	105.78
4	25113002	63 TON POWER PRESS	2	39.13	6035.74	12071.48	78.27
5	25161002	CNC TURRET PUNCH PRESS	12	23.23	584.52	7014.22	278.78
6	25247001	CNC PRESS BRAKE	8	9.18	1079.48	8635.85	73.40
7	26246001	POWER SHEARING MACHINE-STAR	2	147.25	2767.50	5535.00	294.50
8	26246002	POWER SHEARING MACHINE-AMETEEP	7	8.67	1145.97	8021.78	60.72
9	31128004	CENTRE LATHE	1	5.50	7603.50	7603.50	5.50
10	31131001	CENTRE LATHE	1	1.00	8542.93	8542.93	1.00
11	31131002	CENTRE LATHE	1	50.75	16428.25	16428.25	50.75
12	31212001	CAPSTAN LATHE	5	23.85	3583.01	17915.07	119.23
13	32123001	RADIAL DRILLING MACHINE	1	0.57	8320.93	8320.93	0.57
14	32133002	RADIAL DRILLING MACHINE	3	8.21	1975.74	5927.23	24.62
15	32133003	RADIAL DRILLING MACHINE	1	237.02	8257.32	8257.32	237.02
16	34114002	HORIZONTAL MILLING MACHINE	1	7.25	8754.75	8754.75	7.25
17	34114005	HORIZONTAL MILLING MACHINE	1	7.70	7130.30	7130.30	7.70
18	34114006	HORIZONTAL MILLING MACHINE	8	41.60	927.65	7421.18	332.82
19	34234001	VERTICAL MILLING MACHINE	1	4.72	3887.45	3887.45	4.72
20	34234002	VER MILLING M/C (CNC RETROFIT)	5	132.24	1711.06	8555.28	661.22
21	34234003	VERTICAL MILLINING MACHINE	1	0.27	2477.73	2477.73	0.27
22	34234004	VERTICAL MILLING MACHINE	2	39.08	4260.43	8520.85	78.15
23	37432001	CIRCULAR SAW (NON-METAL)	1	3.78	13041.22	13041.22	3.78
24	41134004	SURFACE GRINDING MACHINE	2	10.87	3384.63	6769.27	21.73
25	42231002	CYLINDRICAL GRINDING MACHINE	1	17.97	10610.38	10610.38	17.97
26	44420001	BAND SAW MACHINE	9	14.68	1348.21	12133.87	132.13
27	53111007	SPOT WELDING M/C (PORTABLE)	2	1.63	6225.40	12450.80	3.25
28	53121010	SPOT WELDER	6	17.90	2450.05	14700.30	107.40
29	55111002	SOLDER MELTING POT	3	206.78	1504.56	4513.67	620.33
30	73865103	PCB IN-CIRCUIT TESTER (Genrad)	3	21.67	1274.33	3823.00	65.00
31	81121001	5 TON EOT CRANE	1	7.38	7192.12	7192.12	7.38
32	81122001	5 Tonne EOT Crane - Century Fab.	1	19.75	2377.92	2377.92	19.75
33	81122003	10 TON EOT CRANE -Century Fab Tech P Ltd	2	130.88	5251.75	10503.50	261.75
34	81131001	0.5 Tonne Jib Crane - Hi-Tech Engineers	1	31.25	59864.50	59864.50	31.25
35	81134001	5 TON JIB CRANE WITH MOTORISED TROLLY	1	4.00	10121.75	10121.75	4.00
36	81321002	CAGE LIFT	1	1.75	15398.00	15398.00	1.75
37	81731001	BELT CONVEYOR	3	7.80	6108.78	18326.35	23.40
		Total	115	36.29	3434.50	394968.00	4172.97

Identified machines (if MTBR < 1500 hrs or MTTR >40 hrs) for Detailed analysis

FIG. 2: CHART FOR PERCENTAGE DOWNTIME
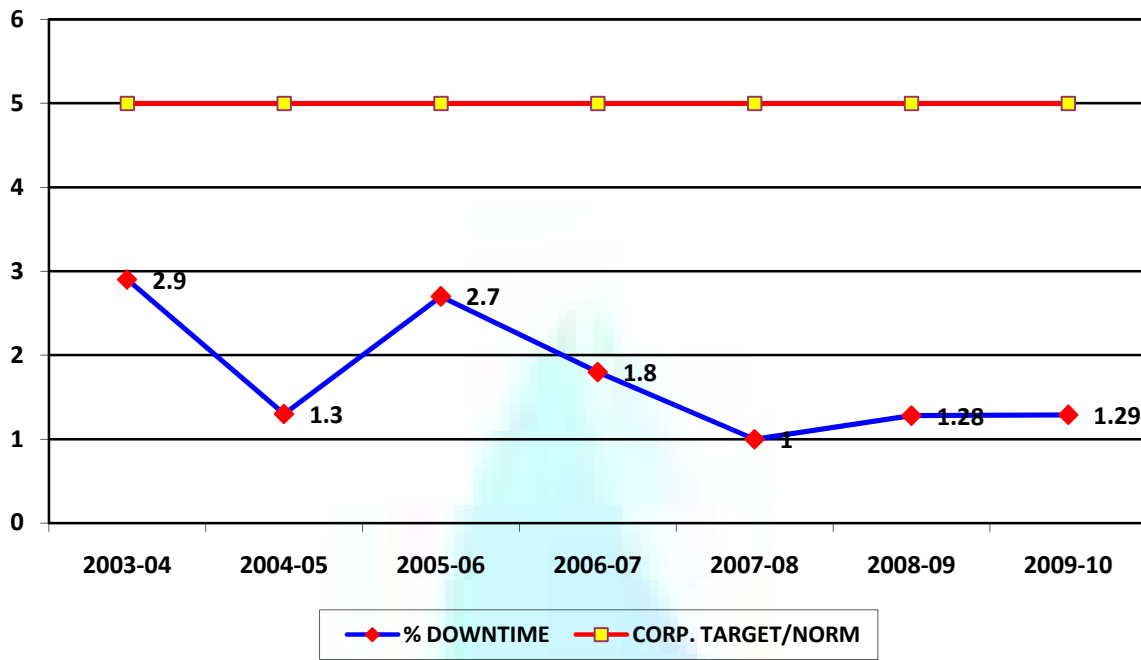
FIG. 3: CHART FOR MEAN TIME TO REPAIR (MTTR)
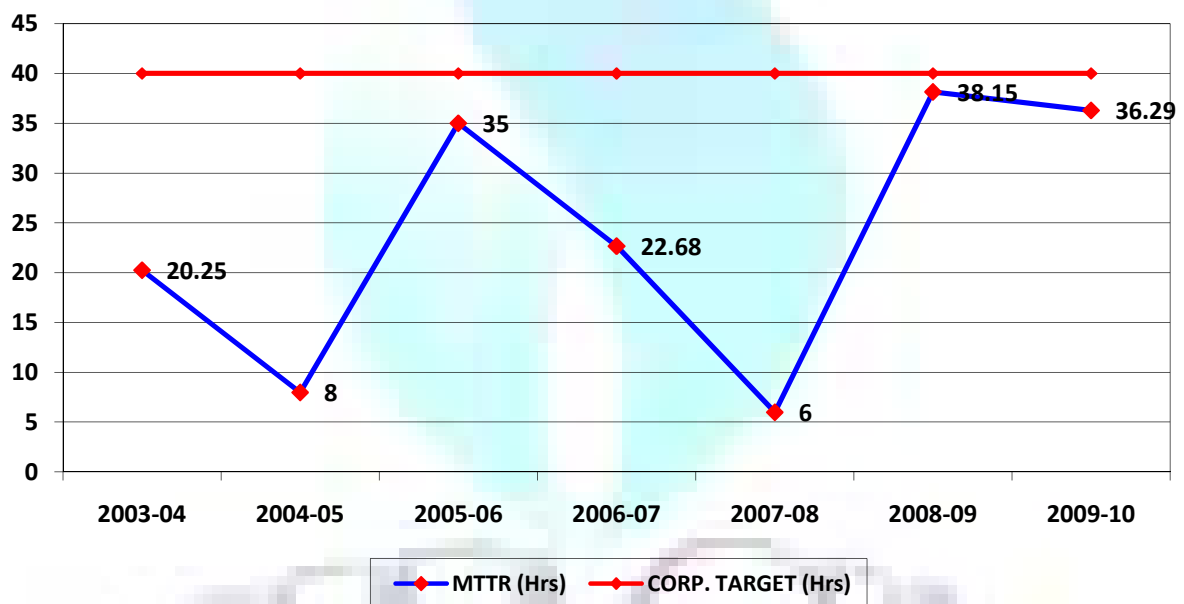
1. MTBF / MTTR Report: This report calculates the mean time between failure and the mean time to repair for a piece of equipment or even for the component of the equipment. This information can be useful to set frequencies for PM programmes and planning production schedules.
2. Periodic equipment wise Maintenance cost report: In order of highest to lowest.
3. Equipment down time report: In order to highest to lowest.

CONCLUSIONS

The Computer Aided Preventive Maintenance and analysis using breakdown history is designed to help the management in planning routine inspection to minimize down time, breakdowns and also to reduce the expenditure of the plant. It reduces clerical work like listing electrical equipments, number of failures and its causes, remedies and also indicates or reminds about preset scheduling dates for Preventive Maintenance.

The SAP implementation of PM helps to analyze the availability and maintainability of the plant facility like equipments or machines in order to reduce the down time and also repair time by identifying redundant problems. It also assists the maintenance department in carrying out the maintenance of machines in an organized manner. The main purpose of implementing the software is to:

- Reduce the paper work.
- Provide back history instantaneously.
- Have detailed history of breakdown of or parts, materials, its problems causes and remedies.
- Easy to operate and uses friendly i.e. any layman can understand and operate easily.
- Reports of equipment data, equipment location, preventive maintenance instructions and scheduling can be taken.
- Correct and suggest the appropriate PM tasks and also to analyze properly using connect down time with failure analysis terminology.

The present work helps to know the equipment details, its damages and causes with appropriate remedies, which will be discussed with experts and experienced operators. Reports of analysis depicts down time reduction year-to-year, if proper maintenance or corrective action is taken care. It makes or guides any layman to perform the PM tasks and also to operate the SAP software with least knowledge of maintenance. The software has security features, which allow only authorized personnel to easily operate, understand and work without any difficulty. Since SAP software technology has different modules like maintenance finance, HR, marketing, production sales etc. This will be accessed at all levels of the organizations but cannot be altered by any other module/ user department unless and until it is been authorized.

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AN EMPIRICAL STUDY OF CSR AND CG WITH REFERENCE TO RELIANCE INDUSTRIES AND INFOSYS LIMITED

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ABSTRACT

Any corporate can never be evaluated on the economic parameters only. They are also to be judged by their social and economic contribution. CSR (Corporate Social Responsibility) has become buzz not in India but also in all over the world. No doubt that importance of CSR emerged significantly in last few years; Indian corporate sector is also putting this as a part of their strategic and CG (Corporate governance) matter. Companies have become more transparent and vigilant towards their CSR goals and their reporting. This paper seeks to explore the trends in CSR practices among Indian corporate sector by studying the corporate social responsibility parameters and its implementation at various stages among top two Indian corporate units in last ten years. Researchers have first theoretically understood the concept and trends at international and at Indian level with the help of literature review and then researchers have made the empirical study of top Indian corporate houses by studying their CSR data of last ten years. Research topic is bit exhaustive, that is why Reserachers have used trend analysis to conclude the research.

JEL CODE

G34

KEYWORDS

Corporate Governance, Corporate Social Responsibility, Disclosures, Infosys, Reliance.

INTRODUCTION

The recent evidences and data show that most of the corporates are inclined towards social responsibility, environmental and economic impact and value added activities. (Hardjono and van Marrewijk , 2001). The concept of corporate social responsibility is there in the picture since many years. Initially it was started as philanthropy or whatever is required –company should do philosophy and now it has shifted to the matter of sustainability. CG (Corporate Governance) has made many norms mandate and this is resulting into more corporate moving towards different philosophical aspects of CSR. Corporate Social Responsibility has also been seen as part of ethical, legal and communal aspiration. When it comes to corporate image, majority of the enterprise who are engaged in CSR activities are rated as ethical companies- As per TNS and Times of India survey 2008. This is expected that firm's decision should be aligned with professional / business as well as societal goals. When it comes to Indian corporate, still many Indian corporate are engaged in more of charitable activities to project themselves as CSR oriented company, unlike international companies. It is due to mandate standards of corporate governance only which has opened eyes of many leading companies to focus more on CSR as planned and strategic activity and set an example. This research aims at proving, with systematic study, the CSR practices of most of the corporate is due to CG norms and its mandate requirement and not because of realisation on the part of company's Board. India legal system is still silent on this parameter and hence researchers have concluded the paper with interesting findings which would helpful to the legal aspects of company law also.

LITERATURE REVIEW

Corporate governance and corporate social responsibility have been discussed by various authors and researchers separately, but very few researchers have discussed the interrelationship between corporate governance and CSR as the research area. For this research theoretical articles have been reviewed to understand the topics and their interrelationship.

1. Dima Jamali, Asem M and Myriam R (2008) conducted research on "CG and CSR synergies and interrelationship" where researcher had used interpretive method to validate the data. Researcher, through in-depth interview tried to understand the CSR and its interrelationship with CG. Researcher concluded that despite convergence pressure arising from globalisation, local socio political environments significantly affect CG practices in developing countries. Another point which was focused by the author was that CG practices were getting more consideration in developing countries as it was considered as main requirement for the sustainable development.
2. Dr. Moon Urmila (2011) conducted study on Corporate Social Responsibility in India where researcher studied the various practices of CSR among Indian corporate and policy and governance from the part of government to understand the CSR initiatives from both the corporate as well as government side. Author concluded that corporate sustainability is recently evolved concept and amendments in company bills would benefit the government as well as majority of the stakeholders.
3. Caroll in his research mentioned different four types of CSR namely economic, legal, ethical and discretionary. For further study Lanton (2001) had divided Carolls (1979) studies into three broader categories namely ethical, altruistic and strategic.

During this research, researchers have studied committee reports of Indian committees on Corporate Governance like Kumar Mangalam Birla Committee and Narayan Murthy Committee report and other reports also to understand the requirement of CSR disclosures.

IMPORTANCE OF STUDY

To understand the importance of the study researchers have tried to explain the concept of both the variables and its increasing importance in today's world.
CORPORATE SOCIAL RESPONSIBILITY: Corporate Social Responsibility is the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large.
As discussed in this paper the corporate governance has evolved post 1990 and CSR prevails at international level since 1980's. History of CSR is too old but its importance has increased in recent years. Post UK and US crisis during 1990s, majority of the stakeholders have lost faith in the companies and there was tremendous downtrend in the market. It was in UK then, Cadbury committee was appointed under chairmanship of Sir Adrian Cadbury to understand the

reasons of such frauds. Cadbury committee, after extensive research suggested some of the norms and standards which should be followed by the companies over there named corporate governance. These corporate governance standards then studied by majority of developed and developing countries and further revised and introduced in various countries.

CORPORATE GOVERNANCE: Corporate Governance refers to the way in which a corporation is governed. It is the technique by which companies are directed and managed. It means carrying the business as per the stakeholders' desires. It is actually conducted by the board of Directors and the concerned committees for the company's stakeholder's benefit. It is all about balancing individual and societal goals, as well as, economic and social goals. – Web meaning

Corporate governance standards at one side include financial norms and BoD (Board of Directors) regulations, at the same time it also includes norms related to CSR. CSR parameters were included in the corporate governance standards, just to understand the role of corporate in society. This is because when corporate runs in society and uses the society resources, it becomes their responsibility to inform society about how resources are being used and what are the ways in which corporate can help, upgrade the society.

CSR is no more philanthropy concept. Under CG norms Company with proactive CSR policy are considered as properly governed and managed company. Good governance entails responsibility and due regard to the expectations of all stakeholders (Kendall, 1999). This means companies are answerable to all stakeholders (Dunlop, 1998). Thus one can say that both CSR and CG call on companies to complete their fiduciary and moral responsibilities towards stakeholders. This act of answerability is crucial for business to gain and retain the trust of its financial investors and other stakeholders (Page 2005). Both CG and CSR are considered as pre-requisite for the sustainable growth; their importance has been increased in recent past few years due to globalisation (Van den Berghe and Louche, (2005). Both the disciplines are considered as long lasting benefit generating activities and ensure endurance of business. At the same time due to mandate practices of corporate governance, CSR importance has also increased. Each company wants to project their company's image as effectively governed company so that it can retain trust of investors and gets good rating globally. This research aims at proving the statement that increasing importance of CSR practices at global level is result of corporate governance standards and not the voluntary initiatives.

STATEMENT OF PROBLEM
Though CG and CSR are buzz words and corporate are falling for it. There is a problem which exists in the form of disclosure. The corporate are not making sufficient disclosures with respect to CG and CSR.

RESEARCH OBJECTIVES
1. To understand CG and CSR practices among the top two Indian corporate.
2. To study increasing practices of CSR among Indian corporate.
3. To check the disclosures related to CSR is efficient or not.
4. To prove that inclination towards CSR is result of CG norms mandate

HYPOTHESIS
H0 : There is no relation in increasing importance of CSR practices by Indian corporate sector and CG requirement.
H1 : There is significant relation between CSR practices of Indian companies and corporate governance norms

RESEARCH METHODOLOGY
For this research, CSR and CG practices are studied in Indian context. Annual Reports (**year 2002 to 2012)** of top 2 listed companies are studied of last ten years. This is because research is based on understanding the corporate social responsibility practices and its trends of top Indian companies, Researchers have collected data of last ten years from CSR practices published in form of annual reports and also from website of company. CSR and CG related disclosures have been checked and accordingly compliance to the related norms is judged.
Detail method of RM has been explained in research tool.

SAMPLE SELECTION
For this research, Reliance industries and Infosys limited annual reports are analysed to prove the above mentioned hypothesis.

RATIONAL OF SAMPLE SELECTION
For this study, researchers have selected Reliance Industries and Infosys for two reasons which are mentioned below.
*   Both companies are top market capitalisation companies
*   Both companies have got some excellence awards and recognitions in the area of CSR as well as CG in past few years

TIME PERIOD OF STUDY
Researchers have collected data from year 2002-2003 to year 2011-2012 of both sample companies to understand the exact pattern of their CSR activities and then to derive the exact findings.

SAMPLE PROFILE
Researchers have selected two companies for proving the objectives and hypothesis. Reason for selecting two top listed market capitalisations is to understand how top companies are behaving towards CSR activities since last ten years and on the basis of that conclusion can be derived for the behaviour of rest of the companies.

❖ **RELIANCE INDUSTRIES LIMITED**
Market capitalisation: Rs. 272758.13 cr. As on 15th February 2013
The Reliance Group, founded by Dhirubhai H. Ambani (1932-2002), is India's largest private sector enterprise, with businesses in the energy and materials value chain. Group's annual revenues are in excess of US$ 66 billion. The flagship company, Reliance Industries Limited, is a Fortune Global 500 company and is the largest private sector company in India.
Reliance Industries Limited (RIL) is a conglomerate with business in the energy and materials value chain. The Company operates in three segments: petrochemicals, refining and oil & gas. The petrochemicals segment includes production and marketing operations of petrochemical products namely, polyethylene, polypropylene, polyvinyl chloride, poly butadiene rubber, polyester yarn, polyester fibre, purified terephthalic acid, paraxylene, ethylene glycol, olefins, aromatics, linear alkyl benzene, butadiene, acrylonitrile, caustic soda and polyethylene terephthalate. The refining segment includes production and marketing operations of the petroleum products. The oil and gas segment includes exploration, development and production of crude oil and natural gas. It's others segment includes textile, retail business, special economic zone (SEZ) development and telecom / broadband business. During the fiscal year ended March 31, 2012, RIL further increased its interest to 18.53% in EIH Limited.
(Source: http://in.reuters.com/finance/stocks/companyProfile?symbol=RELI.BO and www.ril.com)

❖ **INFOSYS LIMITED**
Market Capitalisation: Rs. 159937.32 cr. – as on 15th February 2013
Infosys Limited (Infosys), formerly Infosys Technologies Limited, provides business consulting, technology, engineering and outsourcing services. Its end-to-end business solutions include consulting and systems integration comprising consulting, enterprise solutions, systems integration and advanced technologies; business information technology (IT) services consisting application development and maintenance, independent validation services, infrastructure management, engineering services comprising product engineering and life cycle solutions and business process management; products, business platforms and solutions, including Finacle, its banking product, which offers solutions to address core banking, mobile banking and e-banking needs of retail, corporate and

universal banks globally, and areas, such as cloud computing, enterprise mobility and sustainability. On January 4, 2012, Infosys BPO Limited acquired Portland Group Pty Ltd. In October 2012, it acquired Lodestone Holding AG.

(Source: http://in.reuters.com/finance/stocks/companyProfile?symbol=INFY.BO)

CRITERIA FOR CSR AND CORPORATE GOVERNANCE ANALYSIS

Following criteria have been selected to analyse the importance of CSR among top India corporate:-

1. Whether company has separate CSR disclosure in annual report or not.
2. Whether CSR is part of corporate strategy and mentioned under corporate strategy.
3. Whether Board of Directors are involved in CSR?
4. Is Particular BoD along with Independent Director has special role in CSR of corporate?
5. Whether Stakeholders are benefited by CSR of company or not.
6. Whether company publishes separate sustainability report?
7. Whether sufficient content mentioned in CSR- Sustainability report
8. Whether CSR being discussed as part of BoD agenda or not.
9. Which programmes company runs for its employees?
10. Is there any financial disclosure about CSR expenditure in annual report?
11. Is there any disclosure about certain percentage of profit being spent towards CSR?
12. Does company conduct social audit of the project?
13. Disclosure about environment audit.
14. Whether annual report data are certified or verified by GRI (Global Reporting Initiative)

STATISTICAL TOOL USED FOR RESEARCH

As mentioned above in this research, researchers have assigned the score to each parameter and its level of disclosure in particular company and then efficiency of compliance has been measured after totalling the total disclosure score.

For better understanding score has been assigned in following manner:-

0= Poor disclosure

1= Moderate disclosure

2= Efficient disclosure

After that researchers will total up the score and will divide it with expected score to arrive at conclusion.

So hypothesis testing will be done like if calculated total ratio is more than 50% then disclosures can be said efficiently disclosed , if it is <50% but > 30% it is moderately disclosed and < 30% means poorly disclosed.

RESULTS

Researchers have used total 14 parameters for the evaluations hence maximum compliance would be 28 (14*2).

➢ Again data of 10 years (2002-2003 to 2011-2012) has been taken to prove the hypothesis as well as objective of the research. Hence total expected score from each corporate sector for this research would be 280. Each corporate will be evaluated on the basis of the total expected score of the compliance and then conclusion will be drawn regarding inclination of corporations towards CSR.

➢ Again Researchers have evaluated each parameter's disclosure efficiency by putting expected score of each year disclosure by comparing it with actual score of company.

➢ Researchers have used annual reports, sustainability report and sources like company's website to collect the data.

➢ Each year's disclosures has been calculated with the help of Microsoft excel.

➢ Researchers have calculated each year's disclosure and final total has been plotted here inform of tabular presentation.

TABLE 1: DATA ANALYSIS OF CSR DISCLOSURE OF TOP TWO INDIAN CORPORATE

Sr. No	Parameters	Reliance Industries (Total disclosure score from year 2002-2012)	Infosys (Total disclosure score from year 2002-2012)	Expected Disclosure	Total CSR Parameter disclosure efficiency of Reliance (in %)	Total CSR Parameter disclosure efficiency of Infosys(in %)
1.	CSR Disclosures	18	15	20	90	75
2.	CSR–Corporate Strategy	0	12	20	0	60
3.	Any BoD in CSR activity	0	0	20	0	0
4.	Role of Independent Director in CSR	0	0	20	0	0
5.	CSR and stakeholders	18	18	20	90	90
6.	Separate Sustainability report	16	10	20	80	50
7.	Sufficient content in sustainability report	16	10	20	80	50
8.	CSR is part of Board Agenda	0	0	20	0	0
9.	Benefits for employees	20	18	20	100	90
10.	Financial disclosures of CSR activities	16	6	20	80	30
11.	% of profit towards CSR activities	0	0	20	0	0
12.	Social Audit of the project	0	0	20	0	0
13.	Environment Audit	16	10	20	80	50
14.	GRI checked	16	10	20	80	50
	Total Calculated Ratio /Result	**136**	**109**	**280**	**49%**	**38%**

Above table shows how efficiently CSR parameters has been disclosed among Indian corporate. Researchers have calculated score of each parameter of all ten years as well as total score of each corporate of total ten years (all 14 parameters) to arrive at proper finding.

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FIGURE 1: COMPARATIVE ANALYSIS OF CSR DISCLOSURES OF RELIANCE AND INFOSYS (Years 2002-2012)
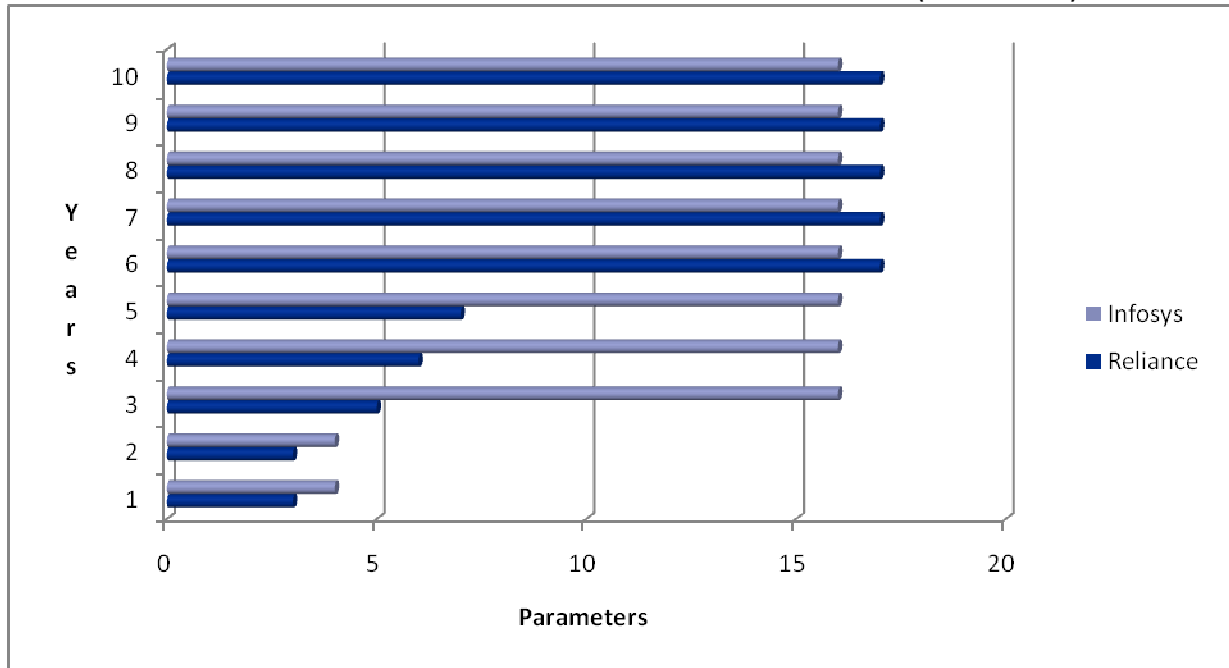
FIGURE 2: INDIVIDUAL COMPANY'S DISCLOSURES (SERIES = YEARS)(Years 2002-2012)
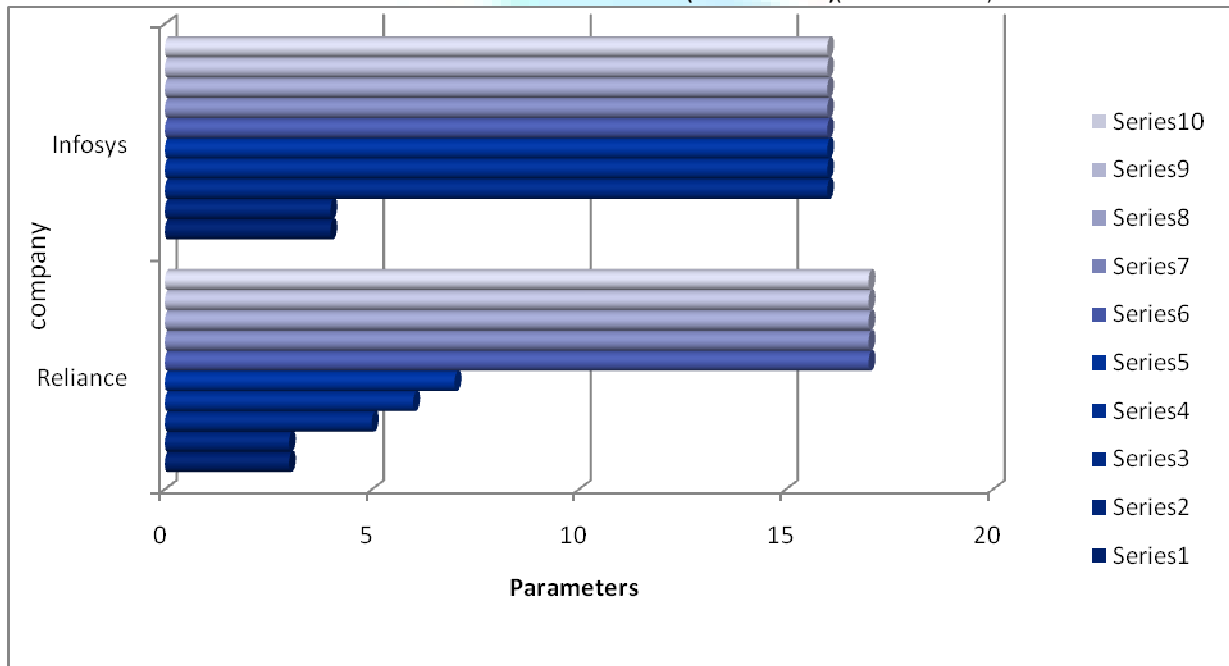
Above chart represents the level of corporate social responsibility among top Indian corporate sector having highest market capitalisation. Researchers have found that CSR practices of these corporate have been gradually increased from year 2002 to 2012. Disclosures of CSR were very ostensible initially while after year 2005-2006 it had moved up and shown relatively lofty move.

Researchers have also done individual corporate's CSR practices trend in last ten years which shows that Reliance industries CSR practices have moved gradually and has good amount of disclosures for the same. Even Infosys's disclosures towards CSR were insignificant during year 2002 to 2004 but it also rose after 2005-2006.

In both the analysis it can be seen that after corporate governance being introduced in India the importance of disclosures of certain items also increased. The same can also be seen in the area of CSR and related disclosures. Due to global CSR practices and adoption of sustainability as one of the goals had also influenced these both sample companies in making their corporate practices towards that.

Data and Hypothesis Testing: Researchers have used simple ration method in testing of data as well as hypothesis. As mentioned above that after assigning score researchers tried to calculated the total score and accordingly data has been tested like,

0= Poor disclosure

1= Moderate disclosure

2= Efficient disclosure

Total calculated ratio are 49% and 38% of Reliance Industries as well as Infosys respectively which means RIL's CSR disclosure is comparatively sound than Infosys.

Hence H0 stands correct which is increasing importance of CSR practices by Indian corporate sector is due to requirement of CG.

DISCUSSION

Year 2003-2004 was significant year for all Indian listed companies as in this particular year CG practices have been revised by SEBI. No doubt corporate governance came in India during 1998-1999 where Kumar Managalam Birla committee report mentioned some the mandatory and some of the non mandatory

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regulations of corporate sector. In that CSR was not majorly stressed, it is after Narayan murthy recommendation SEBI revised its clause 49 of listing agreement and enforced certain compliances and disclosures on Indian corporates. Indian being developing country had tried to adopt global corporate governance standards, and CSR is one of the most contemporary and in demand at global level since last many years. Many rating agencies and NGOs are rating companies on the basis of the CSR practices done by corporate. The main reason behind this could be it is duty of corporate to give back to the society and another reason could be corporate sector needs to fulfil need of all stakeholders and not only shareholders. CSR is now no more in philanthropy era it has now shifted to stakeholders' concept where each stakeholder's need should be performance criteria of corporate sector. As mentioned earlier new Company Bill is also stressing on making mandate on each Indian listed corporate- 2% of profit (above 5 crore) to be spent on CSR activities , which is welcome approach towards such noble practice and days are not far where CSR parameters used in this research paper may show 100% calculated ratio as result.

FINDINGS AND CONCLUSION

The researchers have used 14 parameters to evaluate 2 companies which are among the highest market valuation in their respective industry. Though the companies have very good brand name and are well known across the globe but when it comes to disclosures made by these two companies with respect to CSR and CG, none of them scored more than 50%, which is aggregate of last ten years to be qualified as "Efficient disclosure". Both the companies have less than 50% score which come under the category of "moderate disclosure". Therefore there is a need that the companies should start taking CSR and CG more seriously and have their disclosure more transparent so that they can be viewed equally well on the CSR and CG parameters. Another point of observation in this study is about role of Board of Director or independent director in CSR of corporate. Thus like global practices, our Indian corporate should also have separate committee to look after CSR domain and create accountability points where stakeholders can put trust on corporate.

From above study this is found that importance of CSR has been increased in sample Indian corporate after year 2006-2007, till that period CSR was treated as insignificant disclosure as a part of corporate governance disclosures -towards investors and general public. Findings can be drawn that importance of CSR has been increased after introduction of CG in India.

LIMITATIONS OF THE STUDY

- The period of study is 10 years which can be considered as limitation but not a major one as the CG and CSR started approximately 20 years back only
- The sample consisted of 2 companies namely Infosys and Reliance which can be a limiting factor
- Further the researchers used 14 parameters to evaluate the disclosure.

SCOPE FOR FURTHER RESEARCH

Researchers have used ten years in analysing the CSR practices of top two market capitalisation companies, but further study can also be done after taking sample of more than five companies and there is future scope of further research. Further the study can done segment wise where the research on disclosure can be carried out for a particular industry.

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ISSUES AND CHALLENGES IN INTEGRATING ICT INTO TEACHING AND LEARNING PRACTICES TO IMPROVE QUALITY OF EDUCATION

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ABSTRACT
Developments in Information and Communications Technology (ICT) and its applications in teaching and learning are calling for instructors to integrate ICT into instruction. It is the only option to accomplish the intended change in developing students. This study aims on exploring the process of integrating ICT into teaching and learning and its emerging challenges in University. The researcher used descriptive survey method to asses instructors' experiences in integrating ICT into instructional process. The results revealed that both the instructor and student respondents have positive attitudes towards ICT and considerable knowledge and positive understanding of ICT. However, the university fails to provide appropriate ICT-training courses for instructors to develop their technical ICT skills. Having said this, there are crucial examples of horizontal integration; that is, the instructors provide opportunities for the students to use ICT in meaningful contexts. The study suggest that there is a relationship between the practitioners' stages of concern and stages of adoption, which can be described as follows: the personal level of concern moves from the self-concerns' to task and impact-concerns', the personal adoption level is also likely to move from entry to invention. Although the researcher identified some crucial factors that has prevented the instructors and students from using ICT resources in teaching and learning, among these the institutional factors such as lack of proper access to ICT resources, overcrowded-classrooms, lack of technical and pedagogical support are more influential on the integration process.

KEYWORDS
ICT, integration, learning, pedagogy, teaching.

1. INTRODUCTION

It is through education (both formal and informal) that the individual is able to become a productive citizen and acquire the knowledge and skills needed to adapt to an ever-changing political, social and economic environment. The growth of ICTs in education is a global phenomenon (Francis & Ezeife, 2007) and this creates a competitive market for the provision of "borderless higher education" (Thorburn, 2004). The goal, and the very nature of ICT, is that a continuity of learning experience is delivered on a potentially global basis. Understanding the differences that exist on opposite sides of the world in the ICT process is one way of moving towards the development of ICT resources, materials, processes, and procedures that have global utility (Collins, 2002). Even though there is potential for major benefits for all concerned, in terms of gaining a high quality, cost effective, standardized ICT product and experience, ICT also continues to set a challenge for providers to develop new strategies for teaching and learning and raises fundamental questions about the learning process.

The university level nations have understand the importance of ICT in education and are seeking to enhance the teaching and learning environments in all areas of their education systems through ICT. Information and Communication Technology (ICT) integration have an impact on education (Becta ICT Research, 2006; Jimoyiannis & Komis, 2007). Promoting change has become a component with the potential to revolutionise and transform education (Becta ICT Research, 2006:7; Wang & Woo, 2007:148). Although the importances of ICT have been globally acknowledged the focus has shifted to ICT integration into pedagogy/teaching and learning and has become a great concern for educators. Dirksen and Tharp in Jimoyiannis and Komis(2007:150) state that "Only when technology has advanced and become an integral part of the instructor's instructional repertoire will it sees advantages that technology can provide." Selwyn (2002:3) indicated that ICT has not had the far-reaching and transformatory effect on education that has predicted over the last twenty years. Yet there is no system-wide effective and sustainable ICT integration in universities; the pace of integration is slow and instructors are still avoiding using ICT in their teaching and learning practices. The modern approach to instruction is to combine teaching methods with good interactive technology (ICT) in a supportive and positive classroom environment to cause student to take initiative to learn through the process of engagement and participation in a class session.

In Ethiopia, the ICTs donated by Minister of Capacity Building to universities were mainly used for administrative purposes. Some instructors have never had an opportunity to use computers for educational purposes and some have not received any training on ICT. Although some instructors have recently exposed to ICT during their studies at higher institutions, the Ministry of Capacity Building (2006) identified that the vast majority of instructors are unable to successfully integrate ICT into pedagogy/teaching-learning process, thus many instructors do not realise as the computer technology is very useful for instructional purposes in education (Ministry of Capacity Building, 2006). Based on this fact the researcher become interested to investigate the situation in the institution he is working. Thus, this study aimed to explore the extent at which Adam University instructors integrate ICT into the pedagogy/teaching-learning process.

2. REVIEW OF LITERATURE
2.1 INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN ETHIOPIAN EDUCATIONAL CONTEXT

The Ethiopiangovernment realises that ICTs have the potential to improve the quality of education and training in the 21st Century. They have made it one of their main aims to incorporate the effective and sustainable use of ICT in Education. In the Ethiopia ICT in Education Implementation Strategy and its corresponding Action Plan are components of a wider Ethiopian national e-education initiative, the Ministry of Capacity Building(2006) stated that ICTs are currently central to the changes taking place in education throughout the world. ICTs have the potential to enhance lifelong learning by providing unlimited opportunities for personal growth and development for all. It will also enhance the instructors' capacity of universities. The optimal use of ICTs in Ethiopian will help to address developmental challenges, help ensure quality teaching and training as well, as enhance Ethiopian's global competitiveness.

The rationale of the implementation of ICT in education consists of five strategic objectives (Ministry of Capacity Building, 2006). The first objective is that ICT of professional development for every instructor, department head and dean relating to the knowledge, skills and support they require for the effective integration of ICTs in teaching and learning. Secondly, the course work should support through effective, engaging and sustained software, electronic content and online learning resources. Instructors should contribute to these resources. Thirdly, every instructor and student should have access to ICT infrastructure. Fourthly, have access to an educational network as well as the Internet. Lastly, continuous assessment of current practices should take place. Support should give to instructors and leaders when exploring new ICTs, methodologies and techniques (Ministry of Capacity Building, 2006).

To attain the above objectives, university is implementing the following strategies (Ministry of Capacity Building, 2006). The first strategy is a system-wide approach. ICT initiatives should reach every institution and district. E-Learning should be a mainstream activity for every institution and classroom and should be embedded in such ways that would benefit all students and instructors across the education system. National targets will guide strategies for gradual integration of ICTs at all levels of education and training systems. The strategies are base on co-ordination and collaboration. The implementation of the e-Education policy will monitor and manage to foster inter-governmental collaboration to ensure that institutions should support to meet the interests of students and communities. Development, implementation and monitoring of targets will be coordinated to be reflecting in national and provincial ICT plans. Attention will

also be give to monitoring and evaluation; and regular reviews and reports will be conduct to inform about the implementation process. Success will be measure against nationally agreed indicators and targets. Information will be aggregate at district, provincial and national levels (Hare, 2007; Ministry of Capacity Building, 2006).

2.2   IMPORTANCE OF ICT INTEGRATING INTO PEDAGOGY /TEACHING-LEARNING AND ETHICS

ICT pedagogy/teaching-learning integration is defined as "the process of totally integrating the use of computers technology into the existing course through teaching and learning activities that address the course-area objectives" (Jefferies and Rogerson, 2003). Further, Jefferies and Rogerson contend that the biggest issue and challenge in the integration of ICT into the pedagogy/teaching-learning lies with the training of instructors. Collins (2002) states that the use of ICTs to create learning activities can bring about interesting opportunities for learning and can have a high impact in addressing certain course needs. ICT can use in different contexts and with various objectives. ICT integration can assist instructors to create an engaging learning atmosphere for students to explore. ICT integration imposes demands on instructors to manage learning in new and creative ways (Collin, 2002).

ICT when successfully integrated into teaching and learning can ensure the meaningful interaction of students with information. ICT pedagogy/teaching-learning integration can advance high order thinking skills such as comprehension, reasoning, problem solving and creative thinking and enhance productivity (Weigel, 2002). It is further a motivational tool to enhance productivity. Success in the combination of ICT into teaching and learning will ensure that all students will be equipped for full participation in the knowledge society before they leave for further education (Weigel, 2002). The challenge facing our education is to create a learning culture that keeps pace with these changes, and equips students with the knowledge, skills, ideas and values needed for lifelong learning. Various studies show that ICT teaching-learning integration can accommodate differences in learning styles and remove barriers to learning by providing expanded opportunities and individualised learning experiences (Becta ICT Research, 2004a ; Weigel, 2002).

Experience worldwide suggests that ICT teaching and learning integration play an important role in the transformation of education (Weigel, 2002). ICT can enhance educational improvement by enabling instructors and students to move away from traditional approaches to teaching and learning. "In a transformed teaching and learning environment, there is a shift from teacher-centered, task-oriented, memory-based education, to an inclusive and integrated practice where students work collaboratively, develop shared practices, engage in meaningful contexts and develop creative thinking and problem-solving skills" (Becta ICT Research, 2004a).

Further, ICT is utilizing in universities to improve communication between instructors and students in a number of diverse ways, including:

- providing online courses from the campus network;
- recording student attendance at lectures;
- holding joint lectures with a neighbouring university using video-conference facilities and utilizing satellite;
- offering distance learning using CD-ROM and web-based multimedia instructional materials;
- improving lecturers' instructional skills and evaluation abilities; and
- equipping lecture theatres with new media, such as computers, Internet access, and electronic boards.

With the use of ICT, emphasis is placing on practical activities and learning by active participation, with good communication maintained between lecturers and students. Through an integrated approach that utilizes traditional instructional media like overhead projectors together with ICT, students learn about theory and practice communication skills.

2.3   ISSUES AND CHALLENGES OF USING ICT FOR TEACHING-LEARNING

Bates in Seyoum(2004) points out that a great deal of ICT-based material is very poorly designing from the educational standpoint. Designing good quality educational courseware needs a high level of instructional design skills and teamwork. People with these skills are rare and the organisational changes required are beyond the capacity of many institutions. The software often has short, self-contained lessons created by non-educators. This may lead to unintended results. Students will be able to use educational software and multi-media programmes at university. Therefore, access to ICT and its resources will no longer be a barrier to learning and teaching with computers. The use of ICTs as a delivery medium has been widely criticised as incorporating poor teaching strategies. Segaole (2002:17) quotes Van der Brande as he claims that" Only three per cent of educational software has been written in a context of an articulated pedagogical rationale, there is often heavy emphasis on drill and practice and students are often restricted to a limited range of responses like multiple-choice questions, matching items or individual key-words". The emphasis has been mainly on comprehension and memorisation of facts and principles. Various studies show that the computer has not proved an easy medium for developing the higher level of learning skills, synthesis, evaluation or problem solving, where there are no fixed rules and or procedures (Seyoum, 2004).

2.4   INSTRUCTOR'S ROLE IN ICT TEACHING- LEARNING INTEGRATION

ICT on its own has no impact - it is the way that it is using in teaching and learning that changes education outcomes. As ICT continues to advance, instructors should support to adopt processes, as instructors are the key element to the successful integration of ICT (Asan, 2003:153; Francis & Ezeife, 2007:1). Instructors should bring about meaningful change by integrating ICT into the education system. In order to keep track with events in the 21st century, it is essential that instructors integrate ICT into the course, and bring about effective teaching and learning practices (Asan, 2003:153; Kovalchick & Dawson, 2004:192-193). The advances of the information age are helping to ensure that ICTs in education become an integrated part of the educational system. Instructors are facing with increasing pressure to integrate ICT effectively into their teaching and learning practices (Becta ICT Research, 2006:70). ICT can act as an agent of significant, and in some cases, radical change in instructors' practices, thereby significantly changing the way instructors teach and learn. Instructors should use ICT to change and enhance some of their existing practices by: preparing for lesson presentation, delivery of course, continuous assessment, communication with colleagues and access to information from a variety of sources (Day & Sachs, 2004:148; Wang & Woo, 2007:1).

Further, according to the Norms and Standards for education in Becta ICT Research (2006), one of the instructor roles states that an instructor is an interpreter and designer of learning programmes and material. Instructors are expecting to understand and interpret already existing learning programmes, design-learning programmes, select and prepare suitable textual and visual resources for learning. Instructors will be required to acquire certain computer skills.

Pedagogy/teaching-learning integration will assist many instructors to mediate learning content since information can be collect in various different ways, for an example through referencing into many Internet websites. Lockard and Abrams (2001) contend that pedagogy/teaching-learning integration is a way forward towards improving ICT skills for many instructors. ICT pedagogy/teaching-learning integration allows students to acquire a unified view of ICT, widening the context of their learning beyond a single key learning area.

The evidence in various studies suggests that instructors are still in the early stages of ICT development. Despite the fact that instructors in university have already received some basic ICT training, it has not yet been used into their teaching and learning practice. Williams, Wilson, Richardson, Tuson and Coles in Lockard and Abrams (2001) states that lack of confidence by instructors in their skills of using ICT can be a barrier to ICT integration. It has been observed that instructors show to be in a great need of developing their ICT skills and knowledge. It is also envisaged that high knowledge and skills in the use of ICT will encourage instructors to integrate ICT into the pedagogy/teaching-learning. Cabanatan(2003) further purports that it is important that training remains flexible enough to cater for differences in hardware and operating system and that it encourages instructors to be flexible enough to move between systems if necessary. As new concepts of learning have evolved, educators are expecting to facilitate learning and make it meaningful to individual students rather than just to provide knowledge and skills. Instructors are challenging to continuously re-train themselves and acquire new knowledge and skills while maintaining their jobs (Carlson & Gadio, 2002).

ICT can be used as a core or complimentary means to the instructors training process (Collins, 2003). Overall, the government and instructor training institutions seem to recognize the importance of integrating ICT in education and instructor training. In many cases, the national vision for ICT use in education has been integrated into instructor training Cabanatan (2003). Other countries including Ethiopia have developed extensive online resources and encouraged active exchanges of new pedagogical ideas to upgrade instructors' knowledge and skills at the national or international level (Cabanatan, 2003). Research has also observed in the analysis that a variety of ICT-integrated training environments have been created to provide more effective ICT instructor training (Becta ICT Research, 2005; Collins, 2003).

3. IMPORTANCE OF THE STUDY

Authorities at the various levels of educational administration are responsible for implementing the policy, for creating conducive working environment for the university practitioners in that the quality of education can be maintain and for guiding as well as orienting practitioners. the findings of this study will provide important information about the integration of ICT into pedagogy/teaching and learning process, hence these authorities are benefited from the findings of the present study. Specifically the outcomes of this study help Ministry of Education, Adama University's school deans and education department heads, instructors, students, and other concerned bodies in universities to design preventive, intervention and rehabilitative measures regarding the integration of ICT into teaching and learning, and issues and challenges affecting its uses. Furthermore, the researcher believes that this study has the following significances: it provides information to policy makers and university level educational officials about the integration of ICT into teaching and learning by instructors. It may help instructors to improve their methods of instructional process and school deans and educational department heads to make the necessary follow up with regard to the integration of ICT into teaching and learning process. it may also initiate and encourage for further and more extensive research in ICT integration into pedagogy/teaching-learning and serve as a stepping- stone.

4. STATEMENT OF THE PROBLEM

Various authors indicate as instructors are the key element to make the integration of ICT successful (Kalake, 2007:53; Thorburn, 2004:3). Instructors are in a position where they can make a difference because they can play a vital role in leading university reform, implementing innovations and making improvements. Research findings confirmed that the instructor holds the critical position in the effective and sustainable development of ICT integration in universities (Pelgrum, 2007:1-2). However, the focus should shift to the deans and department heads as the change agent to facilitate effective and sustained ICT integration. According to Vallance (2008:290) leaderships should facilitate the change process through this "change agent. The core of informed leadership is a person who internalizes the complexity of effective technology integration and that who exercise his or her influence to ensure the various enabling factors are in place and being addressed (Vallance, 2008:290)). Various authors indicated that TPD in ICT would not be successful unless the instructor vested in the process and drives the changing process (Becta ICT Research, 2005:5; UNESCO, 2002; Walsh, 2002:5).

Thorburn (2004:7) pointed that money; materials; time and human labor are wasting without the necessary effort to help instructors with effective ICT integration into education. Thus, the development and use of ICT through TPD is now central to educational reform initiatives (Becta ICT Research, 2004a:3). Professional development will continue throughout an instructor's professional life because, it is a tool that creates the opportunity for growth and learning, helping to adapt to change, refine practice, and implement innovations, increase effectiveness and decrease isolation (Francis & Ezeife, 2007:6). Sufficient, effective, supportive and ongoing TPD for ICT integration is one of the most crucial components for instructors' successful ICT integration into their teaching and learning practices (Carlson & Gadio, 2002:125).

Some instructors have been able to integrate ICT into their teaching, and more importantly engage students in making use of ICT as part of the process of learning. The progress report of MOE (2002) contains many positive examples of effective use of ICT by universities and individual instructors. However, there are still many barriers and impediments in the way of ICT becoming an integral part of teaching and learning. Regarding this the progress report of MOE (2002) listed the following faults while using ICT: (a) ICT tasks are not related to objectives of lessons; (b) lack of guidance by instructors; (c) lack of knowledge about when to use and when not to use ICT; (d) lack of instructor skills and confidence; and(e) lack of appropriate intervention by instructors. Despite the undisputable importance of ICT in education there are a number of issues that are not understood sufficiently (Walsh, 2002). These include the relationships between technological tools available for learning delivery and their links with ethics and pedagogy/teaching-learning. Beside this the challenge of ICT integration is as much at the centre of a conflict between old and new pedagogies/teaching-learning as it is in terms of how educational values are alternately influenced by institutional imperatives for change and existing social contexts. Thus, the gap between older instructors and students, who embrace a global "wired" culture at home, is as significant as the cross-cultural clash between traditional educational practices and the imperative of progressive new theories of learning (MoE, 2002). Currently a great emphasis has given to the use of ICT in teaching leaning process and many researches were conducted researches concerning this issue but not on the integration of pedagogy/teaching-learning, ethics and ICT, which is the timely issue of interest. Hence, thisstudy is aim to fill this gap and find solutions for the following basic research questions:

1.   What ICT resources (Internet, E-mail, word processing, databases, spreadsheets, digital scanners, and education software package and computer printer) knowledge, attitudes and skillsdo the selected instructors have?
2.   To what extent instructors integrate ICT to pedagogy/teaching-learning and ethics in the instructional process.
3.   What issues and challenges (trainings, attitudes, support, materials, and classroom conditions) affect the use of ICT in universities teaching- learning process?

5. OBJECTIVES

The main goal of this study is to explored the extent of integration of Information Communication Technology (ICT) in to pedagogy/teaching-learning, ethics), which is an important constructs for the development of an e-teaching and e-learning strategy and surveying the issues and challenges affecting its implementation in universities. The researcher also try to explore areas of overlap and commonalities in pedagogy/teaching-learning, ethics and Information Communication Technology (ICT) that facilitate a better use of ICT in education. The specific objectives of this study include:

- to improve the competencies of instructors through both pre-service and in-service education in integrating/infusing ICT as pedagogical tools and educational resources;
- to identify whether Adama University instructors use ICT in different teaching- learning environments or not;and
- to develop and put into operation university online instructors resource base and offline network of Adama university, to share instructor-developed educational courseware and innovative practices.

6. RESEARCH METHODOLOGY

The major components of this section are the methodology, source of data, the sampling techniques, instruments and procedures of data collection and method of data analysis. The study is a mixed approach (quantitative and qualitative) that focuses on practices of lecturers' of Adama University that the researcher works in. The researcher selected descriptive survey method to assess instructors' experiences in integrating ICT into pedagogy/ in instructional process. This research method is the most appropriate technique for collecting vast information and opinions from quit a large number of respondents. It is also relevant to gather detailed descriptions of the existing condition and current practices of an educational phenomenon. According to Merriam in (Creswell, 2009:12) a descriptive study is "a study in which the researcher explores entity or phenomenon bounded by time and activity and collects detailed information by using a variety of data collecting procedures during a sustained period of time".

SOURCES OF THE DATA: The primary sources for this study are sample instructors, education department heads and school deans and vice deans from the four schools of Adama University. Secondary sources for the presented study were printed materials.

SAMPLE POPULATION AND SAMPLING TECHNIQUES: Five schools, four from the main campus (Adama) and the remaining one from Assela branch were included. One-fourth of instructors from each sample schools were selected using random sampling technique. The total numbers of participants in this study were 200 (185 instructors, 10 school deans and their vices, and 5 educational department heads).

DATA GATHERING INSTRUMENT: This particular study use observation, individual interviews and questionnaires to collect the required information. The questionnaire was given to randomly select two hundred fifty participants, to one-third of the total number of instructors of the sample schools in order to express their knowledge, opinions, attitudes and preferences about ICT and its usage for teaching and learning.

Interview: the semi-structured interview was used to make the interviewer freer to search beyond the answers. Thus, clarification and elaboration on answers given can be pursued and this type of interview allows people to answer more on their own terms. The researcher choose semi - structured interview to allow instructors express their readiness to integrate ICT for teaching and learning.

Observation: The data gathered during observation assisted the researcher to interpret the findings that were genuine. The actual direct observation commenced in may 2010, during the teaching and learning process to get data on how instructors integrate ICT in to teaching learning and how they apply the ICT knowledge and skills. Creswell (2009) maintains that direct observation may be very reliable than what participants say in many instances. In this study, the researcher acts as the participant observer because he is amongst of the instructors in Adama University.

METHODS OF DATA ANALYSIS: The collected data were organized, presented in tables and then analyzed statically using such statistical methods percentages and means. Finally, the results of the analysed data were interpreted to answer the basic research questions.

7.   RESULTS AND DISCUSSION

This section attempts to analyze and present the data collected in response to the leading questions.

Instructors' knowledge and skills of basic ICT resources (Internet, E-mail, word processing, databases, spreadsheets, digital scanners, and education software package and computer printer): Hare (2007) states that universities that have good ICT resources and utilize them well have better standards. Computer access is one of the major factors, which influence the realization of teaching-learning processes at the university level. The information obtained from the surveyed university's instructors, department heads and school deans regarding the actual computer access are presented in Table 1 below.

TABLE .1: COMPUTER ACCESS IN SAMPLE SCHOOLS OF ADAMA UNIVERSITY

Schools	Non-extent(1)		Fair(2)		Good(3)		Very good(4)		Mean
	f	%	f	%	f	%	f	%	
School of Business	2	4.9	6	14.6	21	51.2	12	29.3	3.05
School of Engineering	3	5.6	8	14.8	26	48.1	17	31.5	3.06
School of Health	1	3.1	12	37.5	14	43.8	5	15.6	2.71
School of Humanity and Natural Science	2	4.2	17	35.4	21	43.8	8	16.7	2.73
School of Pedagogy and Vocational Teachers Education	1	4	1	4	10	40	13	52	3.40
Grand mean	*2.99*								

As it can, been observe from Table 1 above, the majority of respondent instructors, 51.2% & 48.1% from the school of Business and Engineering respectively; and 43.8% from the school of Health and Humanity responded that there is a good computer access in their schools. Only 52% instructors of the school of Pedagogy and Vocational Teachers Education responded that the computer access is almost very good. The mean values of responses of the sample instructors also show that the computer access is either good or almost very good. The grand mean, 2.99 of the responses show that the computer access in sample schools of Adama University is good. During observation, the researcher observed that Adama University has ICT classroom fitted with a few networked students' workstations, an instructor computer, a server and other technology such as a printer, and a video conference set that operates by a satellite dishes. The ICT laboratory assigned by this University for education purposes has access to the Internet and e-mail, which are the components of ICT resources required for integrating ICT into teaching-learning classroom practices. However, a single instructor was not seen using these resources and all the students present in the ICT laboratory during observation was seen using computer for different purposes, which are not related to teaching-learning process.

Table 2 presents the data obtained from the instructor respondents the extent use of computer at home for application of teaching and learning.

TABLE 2: USE OF COMPUTER AT HOME

Schools	Yes		No	
	f	%	f	%
School of Business	28	68.3	13	31.7
School of Engineering	36	66.7	18	33.3
School of Health	19	59.4	13	40.6
School of Humanity and Natural Science	33	68.8	15	31.3
School of Pedagogy and Vocational Teachers Education	21	84	4	16

Interestingly it was found that in spite of the instructors feeling that the use of instructional technology tools was beneficial for students, there was found to be no significant relationship between the pedagogy followed and perceived usefulness of instructional technology tools. As can be seen from columns of Table 2 above the majority (137 that is 68.5%) of instructor respondents in the four schools are using computer in their homes. Only few (63 that is 31.5%) instructor respondents are not using computer in their homes.

An explanation of the instructor responses about the frequency of using basic ICT resources like internet, E-mail, word-processing etc., are described below in Table3.

TABLE 3: FREQUENCY OF USING BASIC ICT RESOURCES

ICT resources	Daily(4)		Weekly(3)		Monthly(2)		Never(1)		Mean
	f	%	f	%	f	%	f	%	
Internet	36	18	107	53.5	29	14.5	28	14	2.76
E-mail	23	11.5	19	9.5	104	52.0	54	27	2.06
Word- processing	63	31.5	91	45.5	24	12	22	11	2.98
Databases	8	4	20	17	24	15	148	74	1.12
Spreadsheets	5	7	20	10	26	13	146	73	1.39
Digital scanners	2	3	9	10.5	44	22	145	72.5	1.34
Educational software package	12	6	35	17.5	129	64.5	24	12	2.18
Computer printer.	48	24	112	56.0	12	6	28	14	2.90
Grand mean	**2.09**								

Table 3, above shows that most of sample instructors of the surveyed departments are using ICT resources, which are very important to integrate ICT to the teaching – learning practices. As it can been seen in columns of this table most of instructor respondents (31.5%) are using Word- processing daily, however more than this percent of instructors (45.5%) are using this computer resource weekly. The resource used daily by most (24%) instructors next to Word-processing is Computer printer. The remaining computer resources are used daily only by few respondents. Columns of the above table indicate that more than 50% of respondents are using Internet (53.5%) and Computer printer (56.0%) Weekly and less than 18 % of respondents are using each of the remaining (E-mail 9.5%, Databases 17%), Spreadsheets 10%, Digital scanners   10.5 %, educational software package 17.5%) resources weekly. Out of these resources two (E-mail 52.0% and, Educational Software package 64.5%) are used by more than 50% of the respondents monthly and the other 3 (Databases 74%, Spreadsheets 73%, and Digital scanners-72.5%) are never used by the majority (more than 72%). The remaining resources (Internet 14%, E-mail 27% , Word-processing 11% and Educational Software package 12% and Computer printer(14%) are also never used by more than 10% of the respondents.

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In general, the instructor respondents of the surveyed schools are using basic ICT resources to integrate teaching- learning process. The grand mean (2.09) in the above table shows that most of the majority of instructor respondents in the sample University uses the computer resources. This implies that most of instructors in different schools of Adama University have knowledge and skills of basic ICT resources. However below 50% of instructors are using the resources in their daily teaching activities.

The question asked was whether teaching has changed since the instructors have been using ICT. The responses were that they still teach the same way as they did before being introduced to ICT, as they don't use ICT for learning but only for worksheets preparation and creating learning area mark lists. Some responded by saying that their teaching could change if all students can have an access to a computer at the same time because now less number of computer are available and some classes have more than 50 students.

When asked how students responded to instructors using ICT in class. The instructors' responses were: "My students haven't been taught using ICT, I haven't used ICT for teaching but I think my students can be excited, as they seem to love computers".

Table 4: illustrate regarding ICT competency of the instructors in different schools were explained.

TABLE 4: ICT COMPETENCY OF THE INSTRUCTOR RESPONDENTS

Schools	Unknown(1)		Not competent (2)		Competent (3)		Very-competent(4)		
	f	%	F	%	f	%	f	%	Mean
School of Business	6	14.6	5	12.2	22	53.7	8	19.5	2.78
School of Engineering	13	24.1	24	44.4	16	29.6	1	1.9	2.09
School of Health	5	15.6	13	40.6	12	37.5	2	6.3	2.34
School of Humanity and Natural Science	3	6.3	14	29.2	30	62.5	1	2.1	2.60
School of Educational Sciences and Voca. Educe	4	16	4	16	14	56	3	12	3.04
Grand mean	2.57								

Table 4 above indicates that only about 19.5% of instructors from the school of Business and Engineering, 12% and 6.3%, instructors from the school of Pedagogy and Vocational Teachers Education, and Health, are respectively very competent in ICT skills. The majority (53.7%, 29.6%, 37.5%, 62.5, and 56%) of instructors from the school of Business, Engineering, Health, Humanity and Natural Science, and Pedagogy and Vocational Teachers Education) of instructor, respondents are respectively competent in ICT skills. Whereas 12.2%, 44'4%, 40.6%, 29.2%, and 16% of instructors from the school of Business, Engineering, Health, Humanity and Natural Science, and Pedagogy and Vocational Teachers Education) of instructor respondents are respectively not competent in ICT skills. The ICT competence level of the remaining instructor respondents is unknown. Generally instructor respondents in Adama University are almost competent in ICT skills (grand mean=2.57). A lack of confidence in the instructor's computer skills appears to be a barrier to ICT integration. Although most instructors are interested in developing their ICT skills, it is important that they use those skills for pedagogy/teaching-learning integration. ICT need to be presented in a manner that course materials can be developed and delivered rather than as a separate unit (Seyoum, 2004). Reluctance to use ICT was more evident to foundation phase instructors; perhaps is because instructors in this phase lacked the support on how foundation phase students are to be taught with computers. One foundation phase interviewee stated, "I think ICT would make a lesson more interesting".

However most instructors had very firm ideas of how they would like to apply ICT in the classroom, they felt they could be held back by lack of technical skills and confidence. This lack of confidence may be from the fact that instructors appeared to be less likely to be using ICT for their own professional development, personal use or administration purposes, of which practicing ICT skills might reinforce skills on a regular basis. The main ICT resources that are used more frequently are word processing followed by spreadsheets for compiling learning area mark lists. It appeared that the majority of instructors are still in the early stages of ICT development, what would be referred to as the" entry" or " adoption" according to the National Standards for ICT in a Ethiopian context (Ministry of Capacity Building, 2006). The use of ICT in this university is relatively low and focused on a narrow range of ICT resources. There is a very little use of the Internet and the World Wide Web (WWW) by instructors, despite the fact that the university has an access to the Internet. The findings reveal that most instructors in this university see ICT as an extra learning area rather than an integrated resource within teaching and learning. Many instructors were still concerned with teaching ICT skills rather than teaching with ICT.

EXTENT OF INTEGRATION OF ICT TO PEDAGOGY/TEACHING-LEARNING AND ETHICS IN TEACHING–LEARNING PRACTICES

TABLE 5: INSTRUCTORS' USE OF ICT IN TEACHING FOR CONCEPTUAL DEVELOPMENT

Abbreviated items	Disagree(1)		Agree(2)		Undecided(3)	
	f	%	f	%	f	%
Empower students to select activities purposefully, applications and modes of communication.	49	24.5	132	66	19	9.5
Use information from online sources.	18	9	175	87	7	3.5
Select and use learning objects to create learning activities and sequences.	14	7	168	84	18	9
Provide processing and presentation tools.	46	23	138	69	16	8
Provide problem-solving challenges.	52	26	136	68	12	6
Engage students with virtual objects and worlds.	42	21	140	70	18	9

Table 5 above shows that more than 65% of instructor respondents empower students to purposefully select activities, applications and modes of communication(66%), use information from online sources (87%) and select and use learning objects to create learning activities and sequences (84%) Provide processing and presentation tools (69%), Provide problem-solving challenges (68%) and Engage students with virtual objects and worlds (70%). From the remaining instructors, less than 25% were not perform these activities and less than 10% of them did not decide whether they do these activities or not.

Instructor's visions for and the beliefs about working with ICT are an important influence on the successful application of ICT in education (Hare, 2007). According to the questionnaire responses and the interview results, it is clear that instructor's knowledge and ICT skills are in short supply. Therefore, the use of ICT should be improved and the focus should be on practical skills in the usage of ICT resources. According to the guidelines given to the university by the Ministry of Capacity Building, instructors are challenged to integrate ICT for teaching and learning. Instructors are to teach with ICT for a given periods in each learning area per term (Ministry of Capacity Building, 2006). They will have to use ICT to design an activity that students can learn from. This responsibility seems to be very difficult for instructors to deal with before mastering the basic computer literacy skills and showing confidence in the general use of ICT. In the university where this study is conducted, some instructors cannot use the computer for personal and administrative activities, let alone using it to teach students. Some rely on others to assist them in some administrative tasks like the spreadsheet for compiling mark lists, yet many instructors are required to teach without computers in every term. Hare (2007) suggests that the professional development in ICT has to be an essential part of the instructor's career; it should be ongoing, intensive and well planned to be effective and sustainable. Most interviewees felt that there should be some sharing of experiences and discussions about their readiness to use ICT for learning so that instructors receive support in keeping up to date with ICT developments.

To sum up the majority of sample instructors are using ICTfor conceptual development. All the interviewers agreed that it is important for the students to be exposed to ICT because students will learn new knowledge, attitudes and skills and it would make lessons to be more interesting. Others added by saying that ICT will make students to be competent as we are living in an information technology age.

Table 6 presents the data obtained from the respondents on the use of ICT in building positive learning - environment.

TABLE 6: INSTRUCTORS' USE OF ICT IN BUILDING LEARNING - ENVIRONMENT

Abbreviated items	Disagree(1)		Agree(2)		Undecided(3)	
	f	%	f	%	f	%
Provide communication and collaboration tools (chat, e-mail., messaging, discussion forums, & the like)	44	22	135	67.5	21	10.5
Provide opportunities for students to be part of broader communities.	46	23	137	68.5	21	10.5
Support student participation in online collaborative projects.	54	27	129	64.5	17	8.5
Make learning activities, information, courses and feedback available.	58	29	126	63	16	8
Support students using online resources to share with other students and experts.	56	28	128	64	16	8

As can be seen in Table 6 above, more than 60% of instructor respondents provide communication and collaboration tools (67.5%) and provide opportunities for students to be part of broader communities (68.5%). They support student participation in online collaborative projects (64.5%), make learning activities, information, courses and feedback available (63%), and support students using online resources to share with other students and experts (64%). More than 20% of the remaining respondent instructors did not perform techniques to use ICT in building learning – environment and less than 12% of them didn't decide whether they use different techniques to facilitate students use of ICT resources in their learning or not.

Table 7 describes **i**nstructors' practices in using ICT in teaching and learning processes in the sample universities.

TABLE 7: INSTRUCTORS' PRACTICES IN USING ICT IN TEACHING – LEARNING PROCESSES

Abbreviated items	Disagree(1)		Agree(2)		Undecided(3)		Mean
	f	%	f	%	f	%	
Preparing lectures and presentation	58	29	124	62	18	9	1.80
Communicating with others in the academic community	41	20.5	144	72	15	7.5	1.87
Preparing assignments and exams	43	21.5	140	70	17	8.5	1.87
Doing research	61	30.5	116	58	23	11.5	1.81
Preparing and reporting grade	48	24	140	70	12	6	1.82
Giving feedback on students learning	50	25	112	56	38	19	1.94
Track progress and record completion and achievement	38	19	134	67	28	14	1.95
Linking teaching with practical work	61	30.5	106	53	33	16.5	1.86
Align programs and resources with course frameworks	51	25.5	110	55	39	19.5	1.94
Giving information and material to others	23	11.5	140	70	37	18.5	2.07
Grand mean							**1.89**

Table 7 above shows that the majority (more than 60%) of instructor respondents are using ICT in Preparing lectures, assignments, exams and in grading and in presentation reporting grade, Communicating with others in the academic community , Track progress and record completion and achievement and Giving information and material to others . Less than 35% of the sample instructors did not use ICT in these instructional activities. More than half (50 %) of respondent instructors use ICT for doing research, giving feedback on students learning, linking teaching with practical work and aligning programs and resources with course frameworks and less than 35% of them did not use ICT in these three instructional activities.

As can be seen in Table 7 above even though ICT is used by instructors in the sample schools of the university (grand mean, 1.89) instructors are not using ICT for instructional activities as expected at this level of education. Thus, the percent of respondents who are using ICT for different activities is not nearly more than 70 (see column 4 of the above Table).

ISSUES AND CHALLENGES AFFECTING THE USE OF ICT IN UNIVERSITIES TEACHING- LEARNING PROCESS

In order to address questions concerning challenges affecting the use of ICT in universities teaching- learning process different items in the questionnaire were presented to instructors of the sample schools. The data obtained are presented in the following tables.

TABLE 8: INSTRUCTORS' EXTENT OF TRAINING ON INTEGRATION OF ICT IN TO THE TEACHING-LEARNING PROCESS

Schools	Always (3)		Occasionally(2)		Never(1)		Mean
	f	%	f	%	f	%	
School of Business	2	4.9	11	26.8	28	68.3	1.37
School of Engineering	7	13	32	59.3	15	27.8	1.82
School of Health	5	15.6	6	18.8	21	65.6	1.50
School of Humanity and Natural Science	3	6.3	12	25	33	68.8	1.38
School of Pedagogy and Vocational Teachers Education	2	8	16	64	7	28	1.80

As shown in Table 8 above the majority (more than 65%) of instructor respondents from the school of Business, Health and Humanity and Natural Science had never taken training on ICT integration in to the teaching-learning process. From the remaining respondents of these three schools only about 20% of respondent instructors (26.8%, 18.8% and 25% in the school of Business, Health and Humanity and Natural Science respectively) had taken this training occasionally and less than 15% of respondents of these schools had often taken this training.

As it can be seen in items 2 and 5 even if the number of respondents in the schools of Engineering (59.3%) and Pedagogy and Vocational Teachers Education (64%) who had taken training on integration of ICT is greater than the other schools' respondents still there are instructors who didn't take the training at all. Hence, most instructors agreed that they needed to develop their ICT skills and knowledge for the classroom practice but training seemed not to be available; Some instructors partially agreed that they are better at using computers for teaching after completing the computer training by them.

Most instructors stated that ICT training did not meet their needs for ICT integration. They claim that the training was not sufficiently relevant for ICT integration but it was mainly aimed at giving those basic ICT skills (of which they say they needed those skills). Most respondents expressed a need for more training in ICT skills and knowledge across all four contexts, that is, classroom practice, professional development, personal use and administration purposes but most particularly in relation to the use of ICT in the classroom practice. Interview comments mainly revealed a need for more training in the area of ICT pedagogy/teaching-learning integration. When instructors were asked if there were needs that they required to enhance their ICT integration, they identified the following: Training that is relevant for the classroom use; More practical examples of ICT integration lessons; Individual attention during ICT training; Opportunities to work and share ideas as a group regarding ICT integration; and More support from ICT coordinators.

The number of instructors in need of retraining is very large. Instructors provided evidence of the necessity for another ICT training to promote professional development in integrating Information Communication Technology (ICT) into classroom teaching. The training that was provided by the Adama University for small number of instructors is viewed as being very important to the instructors who were interviewed as they claim that it gave them the basic computer skills. One instructor said, "It was for the first time that I use a computer". Indeed, it seemed to be for the first time that most instructors observed received ICT training, because some struggled to even move a mouse or use keyboard keys. Instructors see a need to develop more confidence in using ICT as a necessary requirement to exploring more effective ways of using ICT for teaching and learning. As a result, their priorities are still for more basic computer skills and knowledge despite the fact that they have already received some basic ICT training. The evidence suggests that instructors are still in the early stages of ICT

development. While they are interested in developing their skills and knowledge, many instructors still regard ICT as an extra learning area in their teaching, which is why they felt it was better if students had a computer period added in their timetable.

While instructors need to be aware of broad range of ICT software and resources, their training needs should relate to the technologies that are available to them on day-to-day basis. The above is stated because during the training observation, the Internet lesson unit was unclear to instructors as it was not live but stored on a computer. Hare (2007) states that no matter how good the quality of the training is, if it is not related to the ICT resource available, it is 'likely to be seen by instructors as a waste of time and effort.It is important therefore that instructor training should be flexible enough in order for instructors to cope with ICT developments. It is clear, however that instructors needs have to be considered if training is to have the maximum impact (Seyoum, 2004).

During interview conducted with sample instructors regarding ICT training, one of the interviewee said that she still couldn't use computer, "I am computer literate". Other interviewees agreed that they are in a better position to use ICT for preparing mark lists and prepare worksheets for students but they were not sure whether they could use it for teaching students. The interviewees indicate that most of the instructors in Adama University have never been exposed to training on ICT integration into teaching learning except the orientations given for a few days for all and training on ICT for small number of instructors by the university.The interviewed instructors who have taken that training said that the training provide us the basic computer skills. Thus, the evidence shows that instructors are still in the early stages of ICT development and they have interest to develop their ICT skills and knowledge. Regarding the need for the continuity of ICT training Seyoum (2004) suggests that the professional development in ICT has to be an essential part of the instructor's career; it should be ongoing, intensive and well planned to be effective and sustainable.

To examine instructors' attitude towards ICT integration into teaching-learning process, nine items were presented to the instructors, followed by classroom observation and interviews. The results appear in Table 9.

TABLE 9: INSTRUCTORS' ATTITUDE TOWARDS ICT INTEGRATION INTO TEACHING-LEARNING PROCESS

Abbreviated items	Disagree(1)		Agree(2)		Undecided(3)	
	f	%	f	%	f	%
I am interested to use ICT in teaching-learning process.	41	20.5	145	72.5	14	7
I feel ICT training is appropriate to my teaching-learning	17	8.5	175	87.5	8	4
I feel I should develop my skills to keep up to date with developments in teaching- learning integration.	20	10	175	87.5	5	2.5
I need to develop my skills and knowledge of ICT.	17	8.5	173	86.5	10	5
I am interested in teaching-learning process through ICT but I don't have access.	51	25.5	124	62	25	12.5
I don't need to use ICT in my teaching-learning.	163	81.5	26	13	11	5.5
I am interested but training doesn't seem to be available.	44	22	136	68	20	10
I feel my knowledge and skills in ICT are adequate.	136	68	47	23.5	17	8.5
I feel that I am ready to integrate ICT into the teaching-learning process.	125	62.5	53	26.5	22	11

As shown in Table 9 above the majority (72.5%) of instructor respondents are interested to use ICT in teaching-learning process and most (more than 86%) of respondents feel that ICT training is appropriate to their teaching-learning and as they should develop skills to up to date with developments in teaching-learning integration . As it can be seen in item 6 and 7 of this table more than 60% of the instructor respondents need to develop their skills and knowledge of ICT and interested in teaching-learning process through ICT but I they don't have access and the training doesn't seem to be available to them. More than 62% of the respondents also do not feel their knowledge and skills in ICT is adequate and not ready to integrate ICT into the teaching-learning process. Only few respondents (less than 25%) feel that they have adequate knowledge and skills in ICT and are ready to integrate ICT into the teaching-learning process and the remaining instructors can't able to decide their position concerning this facto. There is an increased interest in the majority of instructors to know more about ICT and develop their ICT skills and knowledge and its integration in to pedagogy/ teaching learning.

Seyoum(2004) states that universities that have good ICT resources and utilize them well have better standards than universities where good ICT resources were not well used. The use of ICT resources by university-instructors is still very rare and very few instructors have their students use ICT resources frequently (Seyoum, 2004). Although policy-makers have clearly given statements about encouraging the use of ICT in universities, the use of ICT resources in this university is inadequate. The research findings in this university show that instructors are currently not using ICT resources available at the university teaching and learning. There is currently no professional development available for instructors. Many instructors are overwhelmed by the mandate to integrate ICT in every learning area and in each department. Adama university authorities should support and encourage instructors, as they get ready to integrate ICT in a meaningful and challenging way across the courses in teaching and learning process. The following information will give a description from the interview questions and responses of how ICT was or is being currently utilized in Sample University. The interviewees were asked exactly to explain how they used ICT in their classroom. In response, they said many students did not have access to ICT and the only time that these instructors used a computer was when they typed assessment activities for students. When asked if they feel that the training they received prepared them adequately for using ICT in their classroom. The first interviewee responded by saying that she still cannot use the computer well and she thinks of getting part time classes before she can proudly say, " I am computer literate", Other interviewees agreed that they are in a better position to use ICT for preparing mark lists and prepare worksheets for students but they were not sure whether they could use it for teaching students.

To assess instructors' opinions towards ICT, seven items focused on this issue. The results appear in Table 10.

TABLE 10: INSTRUCTORS' OPINIONS TOWARDS ICT

Abbreviated items	Yes		No	
	f	%	f	%
I like to know more about ICT.	178	89	22	11
I know the basics of ICT.	83	41.5	117	58.5
I use it effectively for myself but I am not skillful to teach others.	115	57.5	85	42.5
I found that using ICT is time consuming.	36	18	164	82
It makes my work easier.	149	74.5	51	25.5
I feel supported in my use of ICT.	145	72.5	55	27.5
It helps me communicate with colleagues.	144	72	56	28

Table 10 above is about the respondents' opinion towards ICT. As shown in this table, the majority (89%) of the respondents have opinions to know more about ICT and only 11% of them have no opinions. However more than half (58.8%) of the respondents do not know the basics of ICT. Only 57.5% of them use it effectively for themselves but not skillful to teach others. As seen in item four of Table 6, the majority (82%) of the respondents consider that using ICT is time consuming. However more than 70% of the instructors believe that ICT makes work easier, and they feel supported by their use of ICT and ICT helps to communicate with colleagues.

Table 11 presented the data focused on instructors' views on their roles in integration of ICT into teaching and learning process.

TABLE 11: INSTRUCTORS' VIEWS ON THEIR ROLES IN INTEGRATION OF ICT INTO TEACHING- LEARNING PROCESS

Effective integration of ICT can transform teaching-learning by empowering instructors to:	Disagree(1)		Agree(2)		Undecided(3)	
	f	%	f	%	f	%
Focus on student-centered/ interactive learning	30	15.0	159	79.5	11	5.5
Connect with student expectations, experiences and needs.	29	14.5	164	82	7	3.5
Develop critical and ethical understandings of the value of the use of ICT.	23	11.5	166	83.0	11	5.5
Ensure that use of ICT adds value to the intended learning.	17	8.5	172	86.0	11	5.5
Design learning programs that ensure the integrity of the learning area and the inclusion of all students.	24	12.0	161	80.5	15	7.5
Scaffold learning using appropriate technologies, content, services and environments.	31	15.5	150	75.0	19	9.5
Appraise the effectiveness, efficiencies and ethics of the use of ICT while designing learning courses.	26	13.0	160	80.0	14	7.0
Make connections with learning goals and prior knowledge.	32	16.0	156	78.0	12	6.0
Understand the potential of ICT to support learning.	25	12.5	164	82.0	11	5.5

As shown in Table 11 above, the majority (more than 74%) of the respondents replied that effective integration of ICT can transform teaching-learning by empowering instructors to: focus on student-centered/interactive learning; connect with student expectations; experiences and needs; develop critical and ethical understandings of the value of the use of ICT; ensure that use of ICT adds value to the intended learning; appraise the effectiveness; efficiencies and ethics of the use of ICT while designing learning courses; understand the potential of ICT to support learning; scaffold learning using appropriate technologies; content, services and environments; make connections with learning goals and prior knowledge and understand the potential of ICT to support learning. Only less than 20% of these instructors believe as the effective integration of ICT in to teaching learning process do not empower instructors to the above activities. Instructors who were interviewed were generally positive and wanted to develop their ICT skills and knowledge for integration. These instructors had basic ICT skills but they felt that they are not yet competent to integrate ICT for pedagogy/teaching-learning. Instructors were asked what their barriers of not using ICT for teaching and learning. The interviewees responded by saying that the appropriate training and an ongoing support were not received from the ICT coordinators. It was therefore clear that these two areas of development (training and support) needed to be addressed for the expansion of instructors' skills and knowledge for ICT integration.

TABLE 12: PRIORITY CONTEXT FOR DEVELOPING KNOWLEDGE AND SKILLS IN ICT RESOURCES PROCESSING

Alternatives	Ranking							
	1st		2nd		3rd		4th	
	f	%	F	%	f	%	f	%
Professional development	25	12.5	43	21.5	110	55.0	22	11.0
Classroom practice	128	64.0	17	8.5	34	17.0	21	10.5
Personal use	30	15.0	125	62.5	24	12.0	21	10.5
Administration	14	7.0	21	10.5	39	19.5	126	63.0

As shown in table 12 above the majority of lecturer respondents rank classroom practice(64%) first, Personal use (62.5%) second, Professional development (55%) third, and administration (63%) fourth as their priority context for developing knowledge and skills in ICT resources processing. A majority of the instructors agreed with the following statements: to keep up-to-date with ICT integration; to learn more about using ICT for teaching and learning; and to improve ICT skills and knowledge for the students' benefit. Respondents were asked to describe the priorities for developing their ICT skills and knowledge in each of the four contexts. Hence, they ranked classroom practice, personal use, and professional development and administration purposes respectively. Their responses were similar, as most instructors placed the majority of their ICT training priority in the context of the classroom practice. The following information was learned during the interviews with instructors: After the collection of data through the interviews, there were some concerns and problems that the instructors had (at the university where the study took place) with integrating ICT for pedagogy/teaching- learning. Most of the concerns were grouped into the following findings: The need for training to use ICT for teaching- learning; Instructors' preparedness to integrate ICT; and Attitude towards ICT integration.

To examine obstacles to do not use ICT resources in the teaching and learning activities, different items were presented to the instructors, followed by classroom observation and interviews. The results appear in Table 13.

TABLE 13: OBSTACLES TO DO NOT USE ICT RESOURCES IN THE TEACHING – LEANING ACTIVITIES

Schools	Ranking											
	1st		2nd		3rd		4th		5th		6th	
	Lack of skills		Lack of training		Lack of support		Not accessible		Lack of confidence		Lack of time	
	f	%	f	%	F	%	f	%	f	%	f	%
School of Business	13	31.7	9	22	8	19.5	3	7.3	2	4.9	6	14.6
School of Engineering	14	25.9	11	20.9	10	18.5	8	14.8	9	16.7	2	3.7
School of Health	10	31.2	12	43.8	6	18.8	4	12.5	-	-	-	-
School of Humanity and Natural Science	13	27.1	15	31.3	11	22.9	3	6.3	6	12.5	-	-
School of Pedagogy &VTE	7	28	11	44	5	20	2	8	-	-	-	-

As can be seen in Table 13 above, the respondents ranked the obstacles to use computer sources in their activities, accordingly lack of computer skills is the first most problem for 31.7% of respondents of the school of business, 25.9%, 31.2%, 27.1% and 28% of instructor respondents in the school of Engineering, Health, Humanity and Natural Science, and of the instructors of the school of Pedagogy and Vocational Teachers Education respectively. More than 20% of the instructor respondents in each sample school responded that lack of training is the second most obstacles to use computer resource. As indicated in column 4 of the above table, lack of support is the third problem for more than 18% of instructor respondents in the sample schools. Lack of computer resource access, and lack of instructor's confidence are the 4th and 5th problems for less than 17% of respondents in the sample schools of Adama university. Lack of time to use computer resources is the problem of only 6 (14.6%) respondents in the school of Business and two respondents in the school of Engineering but it is not the problem for the others.

8. FINDINGS

In this part of the study, an attempt is made to explain the findings of the study with reference to the basic questions formulated understatement of the problem.

The information collected through these instruments about instructors' use of ICT resources for integrating into learning and teaching; the extent of their training for using ICTs for pedagogy/teaching-learning:

- shows that ICT resources at Adama University is fairly accessible for instructors, however most informants have never use the resources like the digital cameras, database, digital scanners, spreadsheets and educational software package of the university's ICT laboratory andsupportive staff office. This implies that most respondent instructors of the sample university are not familiarized with some of the ICT resources.
- Instructors access to integrate ICT resources into teaching and learning showed to be fairly accessible;

- Respondents were asked to describe the priorities for developing their ICT skills and knowledge in each of the four contexts. Hence, they ranked classroom practice, personal use, and professional development and administration purposes respectively.
- There was an increased level of interest on the majority of instructors who wish to know more about ICT integrations into teaching-learning / pedagogy;
- A very low level of ICT resources competence was discovered in most instructors, which was shown by the non-utilization of the ICT resources laboratory for learning in this university;
- Most instructors agreed that they needed to develop their ICT skills and knowledge for the classroom practice but training seemed not to be available;
- While like the digital cameras, database, digital scanners, spreadsheets and educational software package were almost never used;
- It was found that the majority of instructors use ICT resources like Internet, e-mail, word-processing and the printer for administrative purpose rather than integrating teaching-learning process; the reasons given by most of the respondent instructors for not integrating ICT resourses into teaching-learning include :
    - Lack of skills, training, pedagogical support, technical support, and lack of time and instructors reserved attitudes;
    - the majority of sample instructors are using ICT for conceptual development;
    - a very low level of ICT resources competence was discovered in most instructors;
- A majority of the instructors agreed with the following statements:
    - to keep up-to-date with ICT integration,
    - to teach more by using ICT,
    - to improve ICT skills and knowledge for the students' benefit.

9. RECOMMENDATIONS

The recommendations for further research listed below are based upon limitation discovered in both literature and findings regarding the integration of ICT for pedagogy/teaching-learning.

- The role of the deans, department heads, ICT leaders/coordinators and instructors in the ICT integration into teaching and learning and the utilization of the ICT resources should be specified.
- The positive and the negative affect that ICT integration into teaching learning in the sample university need attention.
- The type of ICT instructors training that can be offered in order to equip instructors with all the necessary skills for ICT integration.
- There should be follow up mechanisms of ICT integration in this university;
- Sample University should offer ICT integration training, given that all instructors should be able to integrate ICT for pedagogy/ teaching-learning;
- Further research can be conducted regarding instructors support (related to instructional process & ICT integration) received from the School of Pedagogy and Vocational Teachers' Education with collaboration of ICT coordinators.

10. CONCLUSIONS

The study has examined the extent of integration of Information Communication Technology (ICT) in to pedagogy/teaching-learning, ethics), which is an important constructs for the development of an e-teaching and e-learning strategy and surveying the issues and challenges affecting its implementation in universities. Achieving meaningful technology use is a slow process that is influenced by many factors. When educators and researchers look for ways to help instructors use technology effectively, it may be important to look at what they have (in terms of equipment) in addition to what they do not have (in terms of positive technology inclinations). Understanding instructors' visions for technology use and their beliefs about teaching and learning may be necessary if we want to initiate an adoption of modern technology interventions in teaching pedagogy.

In conclusion, the researcher would like to point to the words of Kalake(2007), stating that to spend on ICT in universities does not necessarily guarantee improved teaching and learning environments and improved ICT student outcomes. Education is a long-term growth and integrating ICT in education is new to most instructors, therefore it can take time for instructors to learn and apply ICT into teaching and learning. It is a responsibility that is ever changing due to technological advance and it cannot be completed in a short period. It is very clear that instructors will not get much scope in order to integrate ICT in curriculum or the teaching-learning process. In the sample university, the ICT education scenario is struggling with the following problems:

- Only at the awareness development level are objectives being achieved, but higher order thinking skills regarding the use of ICT tend not to be occurring.
- Technology, pedagogy and content area integration is a rare feature. All components are dealt with separately, which creates confusion for students.
- Time duration of the courses related to ICT education is too short to develop knowledge and necessary skills among students to achieve higher order thinking skills.
- There is a lack of availability of proper infrastructural facilities at most of the schools/faculties in integrating ICT into teaching-learning process.
- There is a mismatch between available hardware and software to develop required learning resources.
- Support from technical staff for maintenance is limited.

ICT integration can have a positive impact in teaching and learning process, which takes place in the teaching and learning situation. It is not the ICT itself, but the approach in which it is used that makes a worthy or a worthless resource. The instructors continues to be the mediator in the teaching and learning situation, thus it is imperative for instructors to be prepared in order to make ICT resources to be functional in the university.

It is very important that ICT instructor training should be relevant to the integration of ICT for teaching and learning rather than just giving instructors computer knowledge and skills. To help instructors overcome the pressures of seeing ICT as an additional burden, and encourage greater integration of ICT, it will be important that future ICT instructor training focus on ICT integration skills and knowledge. It is important that instructors are able to relate the ICT training they are offered to their existing goals and objectives. It is further important that there is an ongoing provision for instructor development to enable instructors to move-on with ICT integration once they have acquired the basic computer skills, which many in this selected university feel they need. Future ICT instructor training and development opportunities should focus on the benefits of instructors and not simply how to use computers, this can be done through broadening the awareness of a wide range of ICT resources with less emphasis on word-processing and spreadsheets, and more on resources which are currently not in use such as the Internet, e-mail, multimedia software. To date, ICT instructor training regarding ICT integration for teaching and learning has been short of what is required, as it has not sufficiently provided the instructors with the required skills of integrating ICT for learning. It is evident that what delays ICT integration in the selected university is the lack of appropriate ICT integration training, lack of administrative support, instructors' confidence in using ICT, reluctance towards the use of ICT and the roles to be played by instructors in ICT integration.

ICT should be seen as a tool for life-long learning for instructors as well as their students. It should be the aim of the instructors in a selected university to teach students with computers and to allow students to have access to computers and software suitable for them, e.g. Microsoft PowerPoint and the Internet. Instructors should focus on using the resources available on the computer laboratory and store to make ICT integration successful at a selected university. Instructors have to be encouraged to make decisions about their own ICT development needs on an ongoing basis. This will ensure more involvement and integration of ICT within the teaching and learning process.

Opportunities for professional development have to be continuously available for instructors to continue improving their computer, knowledge, skills and attitudes. Professional development should not only provide instructors with perspective on the operational use of ICT, i.e. the use computer hardware and software, but also focus on the skills involving the use of computer-based tools to support teaching and learning. Instructors would therefore need to understand the rationale for integrating compoture-based tools into teaching and learning environments.

ICT should be a compulsory course in the universities for instructors so that instructor can begin their teaching career as experts in the ICT field. University vice presidents, school deans and concerned bodies should offer mandatory workshops and courses to help instructors gain the knowledge and skills they require to

teach their students with ICT resources. This is a better way to make sure that instructors continue to learn the latest ICT information. Instructors should not only attend workshops, but they should also come back and share the information as a team. Thus, instructors will have time to reflect on aims, instructional methods and assessment as they design ICT interactive lessons for their students.

Many exciting applications of information technology in classrooms validate that new technology based models of teaching and learning have the power to dramatically improve educational outcomes. But, classroom computers that are acquired as panaceas end up as doorstops. Unless other simultaneous innovations in pedagogy, curriculum, assessment, and school organization are coupled to the usage of instructional technology, the time and effort expended on implementing these devices produces few improvements in educational outcomes and reinforces many educators' cynicism about fads based on magical machines. To further the study, it is imperative to further research into whether instructors who use technology are smartly predisposed to democratic, collaborative, problem based pedagogy, or does technology bring these behaviors into the classroom? Does improved student learning occur only when technology is introduced along with different teaching practices? What teaching practices are best suited to maximizing the potential of technology to improve student learning?

11. LIMITATIONS

This study investigated the readiness and extent of instructors to integrate ICT for pedagogy/teaching- learning in a selected university in the Adama. The focus of the investigation was in one university, and therefore the findings cannot be generalized to instructors in other universities. Despite that, this selected uses ICT mainly for administrative duties; one main setback was the inability of instructors to use the provided computer laboratory for teaching and learning. There was no instructor who dared to try to take students for a computer-based lesson. Thus, a few instructors mainly occupied the computer laboratory for administrative purposes and to browse the Internet for lesson based research only.

12. SCOPE FOR FURTHER RESEARCH

The researcher believes that, it would be better to examine the practice of instructors in all universities of the country. Most reliable and valid information can be found if one could do so. However, due to constraints of time, financial and materials, as well as to make study more manageable and to complete the study within the available time the dimension of this study is confined to Adama University.

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A CRITICAL EVALUATION OF CUSTOMERS PERCEPTION: AN EMPIRICAL STUDY ON THE LEVEL OF SERVICE QUALITY OFFERED BY ETHIOPIAN INSURANCE COMPANY

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ABSTRACT

The major objective of this study is to investigate the level of customer perception on service quality and its impact on customer satisfaction and loyalty to three customer Groups served by Ethiopian Insurance Company (EIC). A structured questionnaire was distributed to 300 customers at different branches of Ethiopian Insurance Corporation operating in Addis Ababa.150 questionnaires were collected from which only 100 questionnaires were usable. This implies that the 50% (nominal response rate) was pushed down to 33% (real response rate).Regular use of appealing materials associated with services; establishing branches at convenient locations; keeping promises whenever promising, issuing error free bills& pertinent documents; providing prompt services to customers; demonstrating a strong will to help customers; keeping customers to feel safe in their transactions; instilling confidence in customers; being consistently courteous with customers, availability of convenient operating hours; being highly responsive to handle complaints; were found as significant predictors of customer satisfaction of EICO. In this study, samples were taken from Addis Ababa area and excluded the EICO branch offices in different regions due to time and other resource constraint. Provides an insight on the level of the service performance of EIC' and assists the company to make & implement customer oriented-policies.The study identified a number of specific service quality components that need to be given undivided attention by the EIC to maximize its service delivery capability.

KEYWORDS
customer satisfaction, insurance sector, loyalty, SERFPERF, service quality.

INTRODUCTION

The Ethiopian Insurance Corporation was established by proclamation NO 26/1975 which brought all 13 private insurance companies in the country under the ownership and control of the Derg Government. The Ethiopian Insurance Corporation served solely the Ethiopian economy for nearly two decades up until the new economic orientation of the transitional government opened up new vistas as giving the chance to the formation of the present 17 private insurance companies. The Ethiopian insurance industry has experienced many ups and downs through a bit over century old history of public service for public good.

The chance for the industry to exhibit an immense growth is to make a periodic survey as to how it is serving its customers as compared with other rival companies operating in the insurance industry. The company should say good-bye to the stereotyped models of thinking and work hard and should be customer-focused. There is widespread customer dissatisfaction in the insurance industry, stemming from insurers' failure to satisfy customers' needs. Therefore, further research to improve the industry's understanding of service quality is required. Using data from insurance industries of various countries, service quality is measured using the SERVQUAL methodology to identify quality determinants and existing Quality gaps in the industries. The American Customer Satisfaction Index shows that, between 1994 and 2002, the average customer satisfaction had gone down by 2.5% for life insurance and 6.1% for personal property insurance respectively (www.theasci.org).

REVIEW OF LITERATURE

In this section service quality, Customer Satisfaction, Inter-Relationship among Service Quality, Customer Satisfaction and Customer Loyalty will be examined .

SERVICE QUALITY

One of the determinants of success of a firm is how the customers perceive the resulting service quality, as the perceived service quality is the key driver of perceived value (**Cronin, 2000**). It is the perceived value, which determines customer satisfaction and result in customer loyalty. Many firms including banking industries begin to track their customers' satisfaction through measuring their level of service quality perceived by their customers.

Most researchers agree that customers have expectation and these expectations serve as reference points against which the delivered services are evaluated. When it comes to measurement of service quality, however, there is an unresolved controversy of using expectation and determinants of service quality. **Parasuraman et al. (1985; 1988)** include expectation as a standard for evaluation of performed service. On the other side (**Cronin and Taylor, 1992; Teas, 1994**) have advocated excluding expectations and measures solely performance. As a result, two competing measurement paradigms are used in service researches: the disconfirmation paradigm (i.e. SERVQUAL) which is based upon a comparison of perception of service with expectation, and the performance –only paradigm (i.e., SERVPERF) which measures only the perceived/ performed aspects of the service.

CUSTOMER SATISFACTION

Customer satisfaction is a key factor in formation of customer's desires for future purchase (**Mittal & Kamakura, 2001**). Furthermore, the satisfied customers will probably talk to others about their good experiences. Although satisfaction has been defined as the difference between expectation and performance, but there are differences between quality and satisfaction. For example, Parasuraman **et al. (1991)** say that satisfaction is a decision made after experience while quality is not the same. On the other hand, in satisfaction literature, expectations for goods is "would", while in service quality literature, expectations for goods is "should". Cadotte &**Turgeon (1988)** have introduced another group of factors known as neutral factors. Besides, **Liljander & Strandvik (1993)** say that experience is not needed for evaluating service quality, and service can be evaluated on the basis of the knowledge about service provider, while satisfaction is an inner view, resulted from customer's own experience from the service. Finally, several researches have been done on the relation between service quality and satisfaction: findings of some of these researches show that satisfaction results in service quality (Parasuraman et al., 1988). Also, the research conducted by **Sureshchandaret al. (2002)** shows that, there is a two-way relation between satisfaction and service quality.

SERVICE LOYALTY

Many service organizations have developed customer loyalty programs as a part of relations development activities. Customer loyalty is a complicated concept. Oxford Dictionary defines loyalty as a state of true to allegiance. But the mere repeated purchase by customers has been mixed with the above mentioned definition of loyalty. In service domain, loyalty has been defined in an extensive form as "observed behaviors" (**Bloemer et al., 1999**).**Caruana (2002)** argues that behavior is a full expression of loyalty to the brand and not just thoughts.

INTER-RELATIONSHIP AMONG SERVICE QUALITY, CUSTOMER SATISFACTION AND CUSTOMER LOYALTY

There is no clear message in the literature on the causal ordering of service quality and customers satisfaction, and on which of the two constructs is a better predictor of customer loyalty (**Bolton and Drew, 1991; Cronin and Taylor, 1992**). One group of researchers upholds that satisfaction is antecedent to service quality (**Brady and Robertson, 2001**). Another group of researchers believe that the service quality is antecedent to satisfaction (**Brady and Robertson, 2001, Bloemer et al., 2002; Newman 2001**). A third perspective maintains that there is a non-recursive relationship between service quality and satisfaction (**Taylor and Cronin, 1994**). The impact of service quality, customer satisfaction on customer loyalty is complex.

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THIS RESEARCHER ATTEMPTED TO ANSWER THE FOLLOWING QUESTIONS:
- What is the overall level of satisfaction with the tangibility, reliability, responsiveness, assurance, empathy & service recovery, dimensions of services provided by EIC?
- What are the most important perceived service quality dimensions which influence customer satisfaction and customer loyalty?
- What is the overall level of satisfaction of customers in relation to services provided by EICO?

STATEMENT OF THE PROBLEM

The insurance industry is at its lowest level of development because of the command economy that has been in place. However, as a result of change in government from the command economy to market economy many private insurance companies have been established however, the level of service delivered by these insurance companies is not up to expectation of the insurance customers.

OBJECTIVE OF THE STUDY

The main objective of the study is to examine the level of service quality offered by the Ethiopian Insurance Corporation to various groups of customers.

HYPOTHESIS OF THE STUDY

The following hypothesizes were formulated and tested using multiple regression techniques.

Ho_1: There is a positive and significant relationship between tangibility dimensions and loyalty of customers.
Ho_2: There is a positive and significant relationship between reliability dimension and loyalty of customers.
Ho_3: There is a positive and significant relationship between responsiveness dimension and loyalty of customers.
Ho_4: There is a positive and significant relationship between assurance dimension and loyalty of customers.
Ho_5: There is a positive and significant relationship between empathy dimension and loyalty of customers.
Ho_6: There is a positive and significant relationship between service recovery dimension and loyalty of customers.

RESEARCH METHODOLOGY

A structured questionnaire was distributed to 300 customers at 6 branches of Ethiopian Insurance Corporation operating in Addis Ababa. Simple random sampling techniques were used to select those branch offices operating in Addis Ababa. Then a convenient sampling techniques were used to collect data from each customer coming to be served by the company for two weeks time.150 questionnaires were collected from which only 100 questionnaires were usable. This implies that the 50% (nominal response rate) was pushed down to 33% (real response rate).both descriptive statitistics and inferential statistics have been applied to analysis the data collected from the target respondents.

RESULTS AND DISCUSSION

After the data has been collected, it was edited & cleaned for some level of incompleteness and was ready for analysis using SPSS software package -version 17.The results of the investigation are consolidated herein under two major subsections: general profiles of respondents using descriptive statistics and SERFPERF Analysis Using Multiple Regressions analysis.

I: GENERAL INFORMATION OF RESPONDENTS

The detailed breakdown of the general information of EIC customers has been described in the following table respectively. The general information section of the questionnaire was designed to know about: the respondents' number of year (s) in business, the number of years in being a customer, type of insurance &type of organization.

TABLE 1: NUMBER OF YEAR IN BUSINESS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<5years	86	84.3	86.0	86.0
	6-10 years	14	13.7	14.0	100.0
	Total	100	98.0	100.0	
Missing	System	2	2.0		
Total		102	100.0		

84% of the respondents were in business for less than 5 years while 13.7 % were in business from 6-10 years.

TABLE 2: TYPE OF INSURANCE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Life insurance	16	15.7	16.0	16.0
	Property insurance	70	68.6	70.0	86.0
	Liability insurance	14	13.7	14.0	100.0
	Total	100	98.0	100.0	
Missing	System	2	2.0		
Total		102	100.0		

68.6% of the respondents were property insurance followed by life insurance policy holders.

TABLE 3: THE NUMBER OF YEARS IN BEING A CUSTOMER

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<5years	62	60.8	62.0	62.0
	6-10years	28	27.5	28.0	90.0
	11-20 years	10	9.8	10.0	100.0
	Total	100	98.0	100.0	
Missing	System	2	2.0		
Total		102	100.0		

60% of the respondents were customers less than five years followed by 27.5% from 6-10 years.

TABLE4: TYPE OF ORGANIZATION

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Government	56	54.9	56.0	56.0
	Private	28	27.5	28.0	84.0
	Non-Government	16	15.7	16.0	100.0
	Total	100	98.0	100.0	
Missing	System	2	2.0		
Total		102	100.0		

54% of the respondents were from the government while 27.5 were from the private sector.

II: **FINDINGS ON CUSTOMERS' PERCEPTIONS WITH RESPECT TO SERVICES DELIVERED BY EICO**

Descriptive statistics was used to analyze average score of tangibility dimensions with respect to the services delivered by the Ethiopian Insurance Corporation.

TABLE 5: TANGIBILITY DIMENSIONS

	N	Sum	Mean	Std. Deviation
have ample parking space	100	391.00	3.9100	.90000
Establishes its branches at convenient location	100	387.00	3.8700	1.00156
use neat appearing employees and agents	100	368.00	3.6800	.80252
Uses modern equipment & technology	100	361.00	3.6100	.72328
Uses visually appealing physical facilities	100	354.00	3.5400	1.06761
usually uses appealing materials associated with services	100	318.00	3.1800	1.09526
Valid N (list wise)	100			

The average mean score for all tangibility dimensions are above average. The average score varies from having ample parking space (3.91) to usually use appealing materials associated with services (3.18)

TABLE 6: RELIABILITY DIMENSION

	N	Sum	Mean	Std. Deviation
Uses consistent customer -focused easy to understand underwriting policies	100	387.00	3.8700	1.00156
keeps promises when promise to do something by a certain time	100	342.00	3.4200	.98658
Offers services right the first time without unnecessarily discomforting customers.	100	330.00	3.3000	.83485
Issues contracts with clear ,transparent and non ambiguous terms	100	320.00	3.2000	1.02494
Provide indemnity without hassles	100	319.00	3.1900	.96080
Offers products and services of utmost quality	100	319.00	3.1900	.96080
Settles customers claims with no unnecessary delays	100	317.00	3.1700	.81718
Issues error free bills, statements receipts, contracts, claims and other documents	100	298.00	2.9800	.93182
shows sincere interest in solving customers problems	100	297.00	2.9700	1.06794
Provides services within the specified contract time limits	*100*	*289.00*	*2.8900*	*.81520*
Valid N (list wise)	*100*			

Table 6 indicated that Issuing error free bills and other relevant documents, claims and other documents; showing sincere interest in solving customer's problems and *Providing services within the specified contract time limits are below average score/neutral point.*

TABLE 7: RESPONSIVENESS DIMENSIONS

	N	Sum	Mean	Std. Deviation
Adapt methods of communication to suit customers needs	100	311.00	3.1100	.89775
Tells customers exactly when the services will be performed	*100*	*285.00*	*2.8500*	*.80873*
Employees are always willing to help customers	*100*	*273.00*	*2.7300*	*.73656*
Employees do their best to give prompt service to customers	*100*	*267.00*	*2.6700*	*1.01559*
Valid N (list wise)	*100*			

Table 7 indicated that adapting methods of communication to suit customer needs is the only score above average while the remaining items under responsiveness dimensions were below the neutral point.

TABLE 8: ASSURANCE DIMENSIONS

	N	Sum	Mean	Std. Deviation
Keeps customers feeling safe in their transactions	100	342.00	3.4200	.98658
Committed to be consistently courteous with customers	100	320.00	3.2000	1.02494
Regularly instilling confidence in customers	100	319.00	3.1900	.96080
Enables its employees and agents with the necessary knowledge to give professional services to customers	100	317.00	3.1700	.81718
claimants are assured of best possible attention	*100*	*297.00*	*2.9700*	*1.06794*
Valid N (list wise)	100			

Table 8 indicated that one of the assurance dimensions, that is "claimants are assured of best possible attention" is below the neutral point.

TABLE 9: EMPATHY DIMENSION

	N	Sum	Mean	Std. Deviation
Operating hours are convenient to all customers	100	333.00	3.3300	1.04500
Employees give the customers best interest at heart	100	330.00	3.3000	.83485
Committed to ethics and promote ethical behavior	100	319.00	3.1900	.96080
gives customers individual services	100	301.00	3.0100	.83479
Employees demonstrate integrity and trustworthiness'	*100*	*298.00*	*2.9800*	*.93182*
Employees give customers personal attention	*100*	*290.00*	*2.9000*	*.59459*
Employees understand the specific needs of customers	*100*	*289.00*	*2.8900*	*.81520*
Valid N (list wise)	100			

Table 9 indicated that the average score for three of the empathy dimensions including Employees demonstrate integrity and trustworthiness'; Employees give customers personal attention & Employees understand the specific needs of customers were found below the neutral point.

TABLE 10: SERVICE RECOVERY DIMENSION

	N	Sum	Mean	Std. Deviation
Responsive to deal with complaints quickly wherever possible	100	333.00	3.3300	1.04500
Members who lodge complaints get fair treatment	100	330.00	3.3000	.83485
Provides an effective complaint handling mechanism	100	301.00	3.0100	.83479
Employees give prompt response to members complaints	*100*	*298.00*	*2.9800*	*.93182*
Adopts and implements satisfactory disputes settlement mechanisms	*100*	*290.00*	*2.9000*	*.59459*
Encourages members to freely and openly lodge their complaints without fear	*100*	*289.00*	*2.8900*	*.81520*
Valid N (list wise)	*100*			

Table 10 indicated that giving prompt response to member's complaints by employees, adopting and implementing satisfactory disputes settlement mechanisms and Encouraging members to freely and openly lodge their complaints without fear were below the neutral point.

TABLE 11: LEVEL OF SATISFACTION OF CUSTOMERS

	N	Sum	Mean	Std. Deviation
The Overall level of satisfaction with the service recovery dimensions of services provided by EIC	100	368.00	3.6800	.69457
The overall Level of satisfaction with the reliability dimensions of services provided by EIC	100	355.00	3.5500	.90314
The overall level of satisfaction with the tangibility dimension of services provided by EIC	100	319.00	3.1900	1.08892
The overall level of satisfaction with the assurance dimensions of services provided by EIC	100	318.00	3.1800	.59255
the overall level of satisfaction with empathy dimension of services provided by EIC	100	308.00	3.0800	.83702
The overall level of satisfaction with the responsiveness dimension of services provided by EIC	100	305.00	3.0500	.78335
Valid N (list wise)	100			

As indicated on table 11, the highest mean score registered by respondents was for service recovery dimensions while the lowest score had been obtained for responsiveness dimensions.

TABLE12:LOYALTY

	N	Sum	Mean	Std. Deviation
I am likely to promote EIC to others	100	308.00	3.0800	.87247
I am willing to continue as a customer with EIC-Remain Loyal	100	305.00	3.0500	.89188
Valid N (list wise)	100			

As indicated in table 12 the average scores for the two items under the loyalty dimensions were found to be a bit above the neutral point.

III: SERFPERF ANALYSIS USING MULTIPLE REGRESSIONS

Reliability & Collinearity test was made before running multiple regression analysis.

RELIABILITY TEST

Cronbach's Alpha test has also been taken for the 38 item (Insurance service quality factors) and the result was 0.881 which is more than 0.70 and confirmed the reliability of the questions exceeding the conventional minimum of 0.7 (Nunnally and Bernstein 1994). The Cronbach's alpha coefficient is .881 above the minimum threshold which is .70.

TABLE 13: RELIABILITY STATISTICS

Cronbach's Alpha	N of Items
.881	38

Reliability test were undertaken and the following Cronbach's Alpha values were obtained for each SERFPERF component. Tangibility (.783), reliability (.846), responsiveness (.728), assurance (.847), Empathy (.763), Service recovery (.790).The coefficient alpha values range from .729 to .847 for the individual items exceeding the conventional minimum and demonstrating high internal consistency and hence reliability of each dimension. These values together with the strong loadings of the scale items on their corresponding factors support the convergent validity of each scale's component dimensions.

Collinearity Test

Prior to running the multiple regressions analysis, checking the correlations among the predictor variables in order to determine whether the predictors are sufficiently correlated or not is necessary to identify Multi-Collinearity problem. This is especially important to do when one is using a relatively large set of predictors, and/or if, for empirical or conceptual reasons, one believes that some or all of the predictors might be highly correlated. The Collinearity test run was valid for all components. In other words, all the VIF (Variance inflation factor)and tolerance values were<10 and>.1 respectively.

Multiple Regression Analysis

A simultaneous linear regression was carried out to determine the most important dimensions in order to create the regression equation. Tangibility, reliability, responsiveness, assurance, empathy and service recovery are the independent variables and the respondent's to remain loyal to the EIC   is the dependent variable.

TABLE 14A :TANGIBILITY-MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.874ª	.763	.748	.44781

The R square value indicated in table 14a,tells how much of the variance in the dependent variable (overall satisfaction with the EIC service) is explained by the model (which includes the five variables stated above).In this case the value is .763 expressed as a percentage (multiply by 100) it becomes 76.3% this means that the model explains 76.3% of the variance in overall service quality of the EICs.This is quite respectable result -particularly when compared with most of social science researches.

TABLE 14B :TANGIBILITY-ANOVAS

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	60.100	6	10.017	49.949	.000ᵇ
	Residual	18.650	93	.201		
	Total	78.750	99			

Null Hypothesis 1: there is No significant relationship between tangibility dimensions and loyalty of customers with EIC.

To assess the statistical significance of the result it is necessary to look in the table labeled ANOVA. This tests the null hypothesis that multiple R in the population equals 0.As can be seen from the ANOVA table, the independent variables significantly predicts *overall loyalty of customers , F* = 49.949 /p < .000. The null Hypothesis is not accepted.

TABLE 14C :TANGIBILITY- -COEFFICIENTS

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1(Constant)	4.829	.556		8.685	.000
Uses modern equipment & technology	*.304*	*.103*	*.247*	*2.959*	*.004*
Uses visually appealing physical facilities	.702	.136	.840	5.166	.000
use neat appearing employees and agents	.370	.146	.333	2.538	.013
usually uses appealing materials associated with services	.786	.183	.965	4.301	.000
have ample parking space	.628	.069	.634	9.096	.000
establishes its branches at convenient location	.807	.058	.906	13.824	.000

a. Dependent Variable: I am willing to continue as a customer with EIC

As indicated on table 14c, the largest predictor variable usually uses appealing materials associated with services (.965) while the smallest predictor variable is Use of modern equipment & technology (.247)

RegressionEquation:Y=4.829+.247EQp+.840VAP+.333NAP+.965AMAT+.635APS+.906CLOC

TABLE 15A :RELIABILITY -MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.971a	.942	.936	.22488

The R square value indicated in table 15a, tells how much of the variance in the dependent variable (overall satisfaction with the EIC service) is explained by the model (which includes the five variables stated above).In this case the value is .941 expressed as a percentage (multiply by 100) it becomes 94.1% this means that the model explains 94.1% of the variance in overall service quality of the EICs.

TABLE15B: RELIABILITY -ANOVAS

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	74.199	9	8.244	163.030	.000b
	Residual	4.551	90	.051		
	Total	78.750	99			

a. Dependent Variable: I am willing to continue as a customer with EIC

Null Hypothesis 2: there is No significant relationship between reliability dimensions and loyalty of customers with EIC.

As can be seen from the ANOVA table15b, the independent variables significantly predicts *overall loyalty of customers, F*= 163.030 /p < .000.The null Hypothesis is not accepted.

TABLE15C: RELIABILITY - COEFFICIENTS

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1(Constant)	4.590	.274		16.772	.000
keeps promises when promise to do something by a certain time	1.126	.131	1.246	8.578	.000
Issues contracts with clear ,transparent and non ambiguous terms	.713	.060	.820	11.927	.000
Settles customers claims with no unnecessary delays	.678	.100	.621	6.776	.000
shows sincere interest in solving customers problems	.612	.073	.732	8.411	.000
Offers services right the first time without unnecessarily discomforting customers.	.690	.055	.646	12.597	.000
Provides services within the specified contract time limits	.790	.158	.722	5.001	.000
Issues error free bills, statements receipts, contracts, claims and other documents.	.888	.106	.927	8.413	.000
Provide indemnity without hassles	.514	.069	.554	7.436	.000
Uses consistent customer -focused easy to understand underwriting policies	.437	.044	.491	9.952	.000

a. Dependent Variable: I am willing to continue as a customer with EIC

As indicated on table 15c, the largest predictor variable keeping promises when promising to do something by a certain time (1.246) while the smallest predictor variable is use of consistent customer -focused easy to understand underwriting policies (.491).

TABLE16A :RESPONSIVENESS- MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.953a	.908	.901	.28069

The R square value indicated in table 16a,tells how much of the variance in the dependent variable (overall satisfaction with the EIC service) is explained by the model (which includes the five variables stated above). In this case the value is .596 expressed as a percentage (multiply by 100) it becomes 100% this means that the model explains 59.6% of the variance in overall service quality of the EICs.

TABLE16B: RESPONSIVENESS -ANOVAS

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	71.501	7	10.214	129.645	.000b
	Residual	7.249	92	.079		
	Total	78.750	99			

a.　　　　Dependent Variable: I am willing to continue as a customer with EIC

Null Hypothesis 3: there is No significant relationship between responsiveness dimensions and loyalty of customers with EIC.

As can be seen from the ANOVA table16b, the independent variables significantly predicts overall loyalty of customers, F = 35.039 /p < .000.The Null Hypothesis is not accepted.

TABLE16C: RESPONSIVENESS -COEFFICIENTS

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	3.833	.196		19.598	.000
Tells customers exactly when the services will be performed	.667	.051	.605	12.955	.000
Employees do their best to give prompt service to customers	1.353	.066	1.541	20.646	.000
Employees are always willing to help customers	1.495	.102	1.235	14.667	.000
Adapt methods of communication to suit customers needs	.745	.137	.750	5.420	.000
Keeps customers feeling safe in their transactions	.967	.110	1.069	8.769	.000
Regularly instilling confidence in customers	**.319**	**.084**	**.344**	**3.817**	**.000**
Committed to be consistently courteous with customers	.505	.048	.580	10.495	.000
a. Dependent Variable: I am willing to continue as a customer with EIC					

As indicated on table 16c, the largest predictor variable is doing their best to give prompt service to customers by employees (1.541) while the smallest predictor variable is instilling confidence in customers regularly (**.**344.).

Regression Equation: Y=3.833+.605TCUs+1.541ProSEr+1.235Hlpcust+.750+1.069SafTran+.344 Confid+.580 Court

TABLE 17A:ASSURANCE -MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.706[a]	.499	.472	.64807

The R square value in table 17a, tells how much of the variance in the dependent variable (overall satisfaction with the EIC service) is explained by the model (which includes the five variables stated above). In this case, the value is .596 expressed as a percentage (multiply by 100) it becomes 100% this means that the model explains 49.9% of the variance in overall service quality of the EICs.

TABLE 17B: ASSURANCE - ANOVAS

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	39.271	5	7.854	18.701	.000[a]
	Residual	39.479	94	.420		
	Total	78.750	99			
a. Dependent Variable: I am willing to continue my membership with EIC						

Null Hypothesis 4: there is NO significant relationship between assurance dimensions and loyalty of customers with EIC.

As can be seen from the **ANOVA** table 17b, the independent variables significantly predicts *overall loyalty of customers, F* = 18.701 /p < .000.The null hypothesis is not accepted.

TABLE 17C: ASSURANCE -COEFFICIENTS

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.183	.283		4.175	.000
Keeps customers feeling safe in their transactions	.618	.194	.684	-3.190	.002
Regularly instilling confidence in customers	.690	.142	.743	4.849	.000
Committed to be consistently courteous with customers	.757	.100	.870	7.571	.000
Enables its employees and agents with the necessary knowledge to give professional services to customers	.539	.131	.494	4.116	.000
claimants are assured of best possible attention	**.360**	**.108**	**.431**	**3.322**	**.001**

a. Dependent Variable: I am willing to continue my membership with EIC

As indicated on table 17c, the largest predictor variable is the level of commitment to be consistently courteous with customers (.870) while the smallest predictor variable is claimants are assured of best possible attention (.431).

Regression equation: Y=1.183+.684KCFs+.743Inc+.870Cco+.494know+.431ClAass

TABLE 18A:EMPATHY- MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.736[a]	.542	.507	.62611

The R square value in table18a, tells how much of the variance in the dependent variable (overall satisfaction with the EIC service) is explained by the model (which includes the five variables stated above).In this case the value is .542 expressed as a percentage (multiply by 100) it becomes 100% this means that the model explains 54.2% of the variance in overall service quality of the EICs.

TABLE 18B: EMPATHY- ANOVAS

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	42.685	7	6.098	15.556	.000ᵃ
Residual	36.065	92	.392		
Total	78.750	99			

a. Dependent Variable: I am willing to continue being a customer with EIC

Null Hypothesis 5: there is No significant relationship between Empathy dimensions and loyalty of customers with EIC.

As can be seen from the ANOVA table 18b, the independent variables significantly predicts overall loyalty, F = 15.556 /p < .000.The null hypothesis is not accepted.

TABLE 18C: EMPATHY- COEFFICIENTS

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.353	.598		2.262	.026
gives customers individual services	.667	.270	.624	2.473	.015
Operating hours are convenient to all customers	1.037	.312	1.215	3.326	.001
Employees give customers personal attention	1.032	.221	.688	4.668	.000
Employees give the customers best interest at heart	.190	.131	.178	1.452	.150
Employees understand the specific needs of customers	.788	.157	.721	5.030	.000
Employees demonstrate integrity and trustworthiness	1.238	.277	1.293	4.472	.000
Committed to ethics and promote ethical behavior	.235	.121	.253	1.942	.055

    a.   Dependent Variable: I am willing to continue being a customer with EIC

As indicated on table 18c, the largest predictor variable is Operating hours are convenient to all customers (1.215) while the smallest predictor variable is Employees give the customers best interest at heart (.178).

Regression Equation: *Y=-1.353+1.215ind+.688pera+.721need+-1.293intg*

TABLE 19A: SERVICE RECOVERY -MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.723ᵃ	.523	.493	.63537

The R square value in table 19a,tells how much of the variance in the dependent variable (overall satisfaction with the EIC service) is explained by the model (which includes the five variables stated above).In this case the value is .523 expressed as a percentage (multiply by 100) it becomes 100% this means that the model explains 52.3% of the variance in overall service quality of the EICs.

TABLE 19B: SERVICE RECOVERY -ANOVAS

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	41.207	6	6.868	17.012	.000ᵃ
Residual	37.543	93	.404		
Total	78.750	99			

B:dependent Variable: I am willing to continue being a customer with EIC

Null Hypothesis 6: there is No significant relationship between Empathy dimensions and loyalty of customers with EIC.

As can be seen from the **ANOVA** table19b, the independent variables significantly predicts *overall loyalty of customers, F* = 17.012 /p < .000.The null hypothesis is not accepted.

TABLE 19C: SERVICE RECOVERY -COEFFICIENTS

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.682	.495		1.376	.172
Provides an effective complaint handling mechanism	.596	.271	.558	2.197	.031
Responsive to deal with complaints quickly wherever possible	1.039	.316	1.217	3.285	.001
Adopts and implements satisfactory disputes settlement mechanisms	1.068	.224	.712	4.775	.000
Members who lodge complaints get fair treatment	**.034**	**.105**	**.032**	**.323**	**.747**
Encourages members to freely and openly lodge their complaints without fear	.952	.134	.870	7.090	.000
Employees give prompt response to members complaints	1.307	.279	1.365	4.690	.000

    a. Dependent Variable: I am willing to continue being a customer with EIC

As indicated on table 19c, the largest predictor variable is giving prompt response to member's complaints by employees (1.365) while the smallest predictor variable is Members who lodge complaints get fair treatment (.032).

Regression Equation: Y=.682+2.197EFcom+3.285Rcomh+4.775Adsp+7.090Ecoml+4.690Prem

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FINDINGS

Based on the results and discussions addressed above in the data analysis section of this report one can safely arrive at the following conclusions.

- **Tangibility**: Using modern equipment & technology; using neat appearing employees and agents; availability of ample parking space; establishing its branches at convenient location have a significant relationship with customer's loyalty.
- **Reliability**: Issuing contracts with clear, transparent and non- ambiguous terms; offering services right the first time without unnecessarily discomforting customers; providing services within the specified contract time limits & Providing indemnity without hassles.
- **Responsiveness**: Telling customers exactly when the services will be performed; doing their best to give prompt service to customer; willing to help customers by employee using a consistent customer -focused easy to understand underwriting policies have a significant relationship with customer's loyalty.
- **Assurance** : Instilling confidence in customers; high level of commitment to be consistently courteous with customers ; enabling its employees and agents with the necessary knowledge to give professional services to customers; assuring claimants of best possible attention have a significant relationship with customer's loyalty.
- **Empathy:** Giving customers personal attention; understanding the specific needs of customers; demonstrating integrity and trustworthiness have a significant relationship with loyalty of customers.
- **Service Recovery:** Adopting and implementing satisfactory disputes settlement mechanisms; Encouraging members to freely and openly lodge their complaints without fear; giving prompt response to member's complaints has a significant relationship with the level of customer satisfactions.

RECOMMENDATIONS

As per the findings the following are measures to be taken by the company among others.

- The insurance company needs to modernize and upgrade its service infrastructures so as to provide service to its various customers with easiness and high level of comfort.
- Front Line staff needs to be given additional training on customer services in order retain its customers as well as attract others before it is too late to switch to other competitors operating in the industry.
- Service recovery strategies need to be developed and the employees should be oriented how to recover service failed for different reasons.
- A periodic survey should be under taken by the research division of the corporation in order to capture possible sources of dissatisfaction in the service delivery process.

CONCLUSION

The insurance industry has started developing dramatically after the free market economy is in place. To cope up with tough and stiff competition, the company management is required to revisit its service delivery process from start to finish. Based on its asseseement it has to develop a customer service tool kit to enhance the customer handling skills and knowledge of it staffs as well as design a customer service recovery strategy to take care of any possible failure.

LIMITATION OF THE STUDY

The Ethiopian Insurance Corporation is operating throughout the country. However, this study has been limited to branches operating in Addis Ababa. Moreover, despite the fact that the data collection process was undertaken for two weeks the response rate was not up to the expectation. This may b attributed to language difficulties of the questionnaire were distributed with an English version. The English version questionnaire would have been presented in Amharic/native language using back translation technique.

FURTHER AREA OF INVESTIGATION

*Organizations cannot avoid service failures; therefore, they should develop effective recovery strategy to turn dissatisfaction to satisfaction. One area of investigation can be "t*he effects of service recovery strategy on customer satisfaction and loyalty"; the other area may be undertaking a comparative study on different customer groups/product categories such as life insurance, motor insurance customers among others in order to identify cash abundant and cash hungry product portfolios of the company.

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KEY VARIABLES IN SMEs ELECTRONIC DATA INTERCHANGE ADOPTION: THE EXPERTS' PERSPECTIVE

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ABSTRACT

Studies on the adoption of Electronic Data Interchange (EDI) in developing countries are just starting to emerge, and most are exploratory in nature. Progress has been made in developing conceptual models and on thecomprehension of adoption of EDI from the IT Manager's perspective. However, in order to validate the conceptual model of EDI adoption in Jordan, a reliable and valid questionnaire instrument has yet to be developed. Therefore, the aimsof this research are: first, to examine content validity (CV), and , pre-test (PT) a questionnaire instrument. Second, using the questionnaire, this project seeksto identify issues that faceIT Managers working inEDI adoption;, to determine factors that have already been identified as affecting IT Managers in EDI adoption; andto perform a pre-test on the results of the questionnaire in order to gain feedback and makemodifications before completing the questionnaire for data collection. Primary elements for each factor were determined from both information system adoption literature and antecedent exploratory studies on EDI adoption. Validation of elements identified was achieved using variations of a quantitative related tocontent validity. The outcome was a result of content validation that is also discussed. Finally, the article focuses on the limitations of content validation, then looks at possible future research directionsin EDI adoption.

KEYWORDS

EDI, Adoption and Content validity.

1. INTRODUCTION

The EDI standard is a term that describes the means by which automatic, inter-organizational computer-to-computer communication is facilitated (Becker, 2012). EDI is also a business strategy that utilizes technology to achieve business objectives and enhance business relationships. In order to realize the economic benefits that EDI offers, Jordanian SMEs have established ambitious targets for itsadoption. However, while the technology has been available for more than a decade, the adoption rate in Jordan is extremely low. This suggests that the current strategies for adopting EDI are constrained by demand-side factors (Musawa & Wahab, 2012). The issue of demand constraint factors gives researchers anopportuny to examine the issues associated with EDI adoption. Specific studies on EDI adoption are scarce, and most are exploratory in nature. Progress has been made toward developing conceptual models for IT managers' adopting EDI. However, a reliable questionnaire instrument that will allow the examination ofthe conceptual model of EDI adoption in Jordan has yet to be developed. Validating the final data collection instrument is a critical step before examining model EDI adoption (MEDIA). This is because the rigor of positive outcomes through quantitative research is depends validation of the questionnaire usedto collect the data (Straub, Boudreau, & Gefen, 2004).

The purpose of this article is to showcontent validity and pre-testtheEDI adoption questionnaire instrument for this research. This aim is broken down into three sub-aims, which are as follows:

(i) Identify factors that affect IT Managers in the domain of EDI adoption
(ii) Determine whether the factors affect IT Managers in the domain of EDI adoption
(iii) Perform a pre-test on the resulting questionnaire to determine whether the questions are comprehensible to participants and to obtain feedback for modifications and improvements.

By meetingthese aims, this article are willproduce a reliable measure for researchers who hold a particular interest in the study of EDI adoption from anIT Manager's point of view. The questionnaire instrument established in this article is expected to provide assistance to the overall intent of adopting EDI in order to encourage its adoption. This article also contributes to theory by emphasizing the implementation of content validity in a new context.

After having introduced the subject, this article willproceed to provide a short summary of antecedent research literature that addresses EDI adoption in Section Two. Section Three provides a brief summary of the content validation method, and Section Four presents a brief summary of the methodsused to perform content validation and thepre-test study. The outcomes of the content validation and pre-exam study are offered and discussed in Section Five, and finally, the limitations and possible future research directions are presented in the concluding section.

LITERATURE REVIEW

This article uses secondary literature to definecore terms such as EDI, IT Manager and adoption. Musawa&Wahab(2012), for example, said the (EDI) standard is unambiguous,independent of any particular machine, and flexible enough to handle most simple electronic transactions. They say that EDI is standardized computer (application system) to computer (application system) data exchange in electronic formats between companies. According to Gramignoli, Ravarini, &Tagliavini(1999), an IT manager is someone who has the ability to develop dependable and cost-effective software applications, to supervise a reliable andresponsivedata-process,to effectively manage IT human resources, and to integrate business strategy with the IT planning process.

A review of the literature showed very little research on EDI adoption by SMEs, particularly in Jordan. One recent study carried out by MusawaandWahab (2012) focused on SMEs adoption context, and looked at three factors as determinants of EDI adoption: perceived benefits, organizational readiness and perceived pressure. The study was carried out in Nigeria, and so explored the Nigerian context, but it did not include abehavioural intention variable. Stapleton andFouopiLemouchele(2011) used a case-study approach based on institutional isomorphism theory to draw up theoretical propositions and test the strength of thetheory in explaining EDI adoption in Cameroon. Nurmilaakso(2008)investigated the organizational and technological factors that canexplain the adoption of e-business functions in European companies and migration from EDI-based to XML-based e-business frameworks. Leung and Law's (2009) study examined the adoption of EDI among hotel systems, examining specificallymanagement support for IT departments in a sample of Hong Kong hotels. Leung andLaw's (2012) model includes factors like perceived benefits, external pressure, and organizational readiness in terms of how they affect EDI adoption. Within organizational readiness the study included financial resources and IT competence, and adds IT managers' attitude toward and awareness of EDI. Although the earlierstudy examined the adoption of EDI, itlacked a theoretical underpinning, since it was a data-led study. The second was acase study, and was therefore also exploratory in nature.

An analysis of EDI adoption studies shows that although researchers have begun to examine EDI adoption, studies are still exploratory in nature. Without using validity measures, including content validity, to develop a reliable questionnaire instrument, the outcomes and interpretations may or may not correspond to an actual situation. This research is still in progress and should lead towards a confirmatory study by developing and validating a questionnaire that uses a content validitymethod.

1.1 EDIADOPTION FACTOR

The methodsusedin this research were adopted from the EDI adoption model proposed by BenbasatandDexter (1995), and the model of understanding information technology usage proposed by Taylor andTodd (1995). Acovou *et al*.'s (1995) model combines research on adoption of innovation theory (Rogers, 1983), which developed a model looing atthree aspects of EDI adoption influences: technological factors (perceived benefits), organizational factors (organizational readiness), and environmental factors (external pressure) (Figure 1) as the main reasons for EDI adoption, and examined the model usingseven

case studies. Taylor andTodd's (1995) theory is derived from the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975). A list of the different theories and approaches is offered in Table 2.

2. VALIDATIONS IN INFORMATION TECHNOLOGY RESEARCH: CONTENT VALIDITY (CV)

Although the use of statistical techniques such as content validity, pre-test, pilot study, factor validity, reliability and statistical conclusion validity arecritical in maintaining a rigorous research program, they are rarely (particularly content validity)applied in the majority of information system studies (Van Slyke, Johnson, Hightower, & Elgarah, 2008). Since content validity is a major focus of this research, more discussion is offered in the following sub sections. Content validity is defined as the "degree to which items in an instrument reflect the content universe to which the instrument will be generalized" (Boudreau, Gefen, & Straub, 2001). In general, content validity involves the evaluation of a new survey instrument in order to ensure it contains all essential items and eliminates undesirable items ofa particular construct domain (Boudreau, et al., 2001; Kitchenham et al., 2002). Although content validity is a highly desirable and recommended practice that ensures rigor in any empirical research (Boudreau, et al., 2001), its application is limited in information system research (Straub, et al., 2004). Examples of a few studies that have utilized the content validity approach are: Pavlou, Liang andXue(2007), Halonen(2007), TorkzadehandDhillon(2002), Smith, Milberg, andBurke (1996), Lewis, Snyder, andRainer (1995), Moore andBenbasat(1991), and Davis (1989). However, it is not widely used in any of the previous studies that focus onEDI adoption related issues. Although only two approaches that comprise judgmental and statistical information are available to determine content validity, its application is unique to each study (Chang, Torkzadeh, & Dhillon, 2004). The application of content validity differs in terms of when it is used, how it is conducted, and how experts evaluate the content. The judgmental approach to establish content validity involves literature reviews and then follow-ups with the evaluation by expert judges or panels. The validation of items is based on a high degree of consensus on the items in question; thus, it is judgmental in nature (Davis, 1989; Moore & Benbasat, 1991; Smith et al., 1996; Torkzadeh & Dhillon, 2002; Kitchenham & Pfleeger, 2002; Straub et al., 2004). An empirical or quantitative approach was first introduced by Lawshe (1975), andinvolves estimating the statistical validity ratio(Lawshe, 1975; Lewis, et al., 1995). The judgmental approach of content validityprocedure requires researchers to be present alongsideexperts in order to facilitate validation. Therefore, it is also sometimes called "face validity" (Wacker, 2004). However, it is not always possible to have multiple experts of a particular research topic inone location. When experts are located in different geographical areas, it poses a limitation to conducting validity on a survey instrument. In contrast, a quantitative approach allows researchers to send content validity questionnaires to experts working indifferent locations;meaningdistance is not a limitation. In order to perform content validity for EDI adoption research a quantitative approach is considered more suitable in comparison to a judgmental approach (Lewis, 1995; Lawshe, 1975). This is because EDI adoption studies are still emerging; academic experts are few and located in different places. Therefore, the quantitative approach has been pursued in this research is discussedin the next section.

3. RESEARCH METHOD

Content validity of the EDI adoption instrument was performed using a quantitative approach (Lawshe, 1975). With regards to information system research, theapproach was successfully applied to validate information resource management instruments (Lewis, et al., 1995). In order to validate the content of EDI adoption survey instruments using the quantitative approach (Lawshe, 1975; Lewis et al., 1995) the following steps were taken:a sample of items for each construct was identified by employing an exhaustive review of the literature on technology adoption, specifically, EDI adoption. The literature review led to the identification of a total of 97 items for adoption, 32 items for usage and 24 items for impact related constructs. A content validity questionnaire was then generated that comprised definitions of constructs and associated items on a three-point Likert-type scale. The identified experts withexperience in EDI adoption were then approached. A total of 12 experts were identified. The content validity questionnaire was then sent to the experts ase-mail attachments. The purpose of the study and instructions to complete the questionnaire were detailed in acovering e-mail. The experts were askedto rate each item's relation to different constructs of EDI adoption on a 3-point scale: "1=not necessary"; "2=useful but not essential"; "3=essential". They were also askedto provide comments onitems that were not understandable or to note if items needed to be reworded or new items need added. Responses from all experts were then collated by counting the number indicating "essential" for each item. For the each item, the content validity ratio (CVR) was estimated and evaluated for a statistical significance level of 0.05. This was done usingLawshe's (1975) method mentioned in the previous section. The items that were eliminated from the list were not significant at the 0.05 level. The list of items along with CVR values is presented and discussed in Section 5 (see Tables 1 and 2). A pre-test of the resulting instrument was conducted with respondents from EDI industry, academics and researchers, as well as individual IT Managers. The respondents were asked whether they could understand the wording of the questions and to suggest improvements. The outcomes of the pre-test are provided in the following section.

4. OUTCOMES AND INFORMATION SYSTEM DISCUSSIONS

Due to space limitation an inclusion of the complete list of items with CVR and the final questionnaire isnot possible within this paper. However, a brief summary of CVR is provided in Tables 1 and 2. The CVR questionnaire was comprised a total of 39 items, of which 17 were perceived benefits, 13 organizational factors,fiveenvironmental factors,three intention factors, and one adoption-related factor. The findings presented in Table 2 illustrate that ofthe 17 listed perceived benefits, 10 were considered essential for the final questionnaire by the majority of respondents, as the CVR value was significant at 0.05. From the total of 13 organizational factors, only seven were considered essential, and only four environmental factors elements wereconsidered essential.

TABLE 1: SUMMARY OF CONTENT VALIDITY RATIO

CVR	AI
0.99 - 1	13
0.89 - 0.98	0
0.79 - 0.88	12
0.69 - 0.78	0
0.59 - 0.68	2
0.49 - 0.58*	6
0.39 - 0.48*	0
0.29 - 0.38*	4
0.19 - 0.28*	0
0.09 - 0.18*	2
0 - 0.08*	0
TOTAL	25
RLH	0
GRAND TOTAL	39

Table 2 illustrates the overall items, average CVR and average mean for each construct. The average CVR value for the seven constructs fell between the minimum value of 0.**18** and maximum value of 1 at the 0.05 level of statistical significance. This illustrates that the constructs possess a high level of content validity, which means that the items are representative of construct universe (Table 2).

TABLE 2: SUMMARY OF FACTORS, TI, SI, ACVR AND AM

Factors	TI	SI	ACVR
Behavioural Intention	3	3	1
Direct benefits	10	5	.60
Indirect benefits	7	5	.79
Financial resources	8	4	.69
Technological resources	5	3	.77
External pressure	3	2	.78
Internal pressure	2	2	.92
Adoption	1	1	1
Total	39	25	

The experts also provided a number of suggestions regarding rewording. These suggestions were incorporated during the pre-test questionnaire design. However, due to space limitations discussion of improvements is not includedwithin this paper. Also, the experts agreed that for the final questionnaire, the seven-point Likert scale would be more suitable in comparison to the five-point Likert scale. This is because seven-point Likert scale values are widely spread in comparison to five-point Likertscale and it gives more choices. This change will prevent a respondents' bias, which occurs when respondents select only a neutral value. Therefore, the seven-option Likert scale will be used for the final study. The experts who evaluated the content of the instrument came fromseveral countries, namely, Jordan, the KSA, Egypt, Syria, Iraq and the UAE. Therefore, the content of the questionnaire is not only valid forJordan, but forthe aforementioned countries as well. Therefore, in order to conduct a comparative study it may possible to pre-test and further validate the questionnaire in the context of a number of countries such as the KSA, Syria and Iraq. The findings also suggest that the content validity experts rated essential mainly those items that were adopted from the previous exploratory studies on EDI adoption (Benbasat & Dexter, 1995; Dwivedi, Choudrie, & Brinkman, 2006; Musawa & Wahab, 2012; Taylor & Todd, 1995). In contrast, the items adopted from the general technology adoption studies (Davis, 1989) were mostly rated but considered not essential. This study thus confirms that the items investigated in the exploratory studies are important in order tounderstand IT Managers' EDI adoption behavior. The pre-test respondents supported the content of the questionnaire. However, they noticed a few spelling and typographical errors. The respondents also expressed concern about the length of the questionnaire. They suggested that the current questionnaire might ne too long and lead to a low response rate. Therefore, the length of the questionnaire should be reduced without losing measurement content. Following the responses from pre-test participants, a number of changes were incorporated.

4.1 REMAINING RESEARCH WORK

The confirmatory study that will investigate EDI adoption must be completed, the next step is to conduct a pre-test of the questionnaire using respondents from a target sample. The primary aim of the pilot study will be to determine the initial response rate, and to ensure appropriate levels of the initial scale reliability. Further, the pilot could alert researchers toany difficulties that respondents might face when completing the questionnaire. For example, whether the questionnaire's length, wording and the instructions are optimal to ensure completion (Dwivedi, et al., 2006). Following the pre-test, an appropriate sample frame will be considered in order to select survey participants. In the context of Jordan, the SME is considered the most appropriate sample frame. This is because there is an exhaustive list of SMEs using EDI in Jordan and regular updates canbe provided. The sampling techniques will be determined according to the type of sample frame. For example, if one has to draw a random sample from the SME list, it is appropriate to consider a stratified random sampling technique. This allows selection of participants from alldistricts, wards and sub wards. In order to generate enough data, determination of an appropriate sample size should be based on the initial response rate obtained from the pilot. Once the above steps are completed the questionnaires will be administered and monitored for response rates. If necessary, a reminder will be sent to participants after two weeks. Late responses will be considered to examine for a non-response bias.

5. CONCLUSIONS

This research is an initial step towards a confirmatory study that examines EDI adoption in the IT Manager context. Further, this study validates the contents of a survey instrument using a quantitative approach. It also pre-tested the survey questionnaire, which was formed using content validation. Although this is an initial step towards the confirmatory study, the paper contributes to both theory and practice. This paper contributes to theory by confirming the application of the content validityapproach in a novel context. The survey instrument developed and validated in this research paper will contribute to practice by assisting professionals from the EDI community. This will be fulfilled by this research since it aims to demonstrate how an improvement inthe use of EDI and in turn its IT Manager base can be obtained. This can also provide assistance to policy makers by showing how a reduction in EDI rejection can be achieved. The survey will help explain the reasons of non-adoption, and formulate a plan for accelerating the adoption process. The final survey instrument will also help researchers interested in examining the adoption of new e-presentation standards within IT Manager contexts in developing countries.

6. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Since the content validity questionnaire set outa definition of each construct and related items, it increased the length of the instrument. For example, the content validity instruments in this study were 10 pages long. This discouraged many experts from participating in the content evaluation at first instance. Since the number of experts who validated the content was few, the generalizability of the findingsislimited. However, conducting a confirmatory study will overcome this problem and provide an opportunity to do further analysis. Although this study is focused on utilizing a quantitative approach, it is also advisable to employ qualitative methods such as observation and interviews to investigate the EDI adoption. It will help to obtain in-depth and diverse views of IT Manager adoption and will complement the findings obtained from quantitative study.

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IMPACT OF PARTICIPATIVE MANAGEMENT IN DISPUTE SETTLEMENT: A STUDY ON JUTE MILLS IN WEST BENGAL

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ABSTRACT

For most of the people living in West Bengal are employed in Jute Mills to maintain their livelihood. All the Labour Welfare Centers and Holiday Homes have an Advisory Committee comprising of representatives from Trade Unions, Managements and Government Officials. There is also a Tripartite Advisory Committee at Siliguri for smooth functioning of the boards activities in the districts of north Bengal. This paper presents a study of impact of participative management in dispute settlement in West Bengal on Jute Mills in the area from Shealdha to Naihati route, with a purpose to review the existing status of impact of participative management in Jute Mills in West Bengal and identifying the areas of dispute settlement reforms for strengthening the Industrial mechanism.

KEYWORDS

Participative Management, Dispute Settlement, Industrial Management, Third Party, Policy Rramers, Relationship Management**.**

1. INTRODUCTION

1.1 PARTICIPATIVE MANAGEMENT

The impact of Participative Management has been accepted as one of the philosophies of Industrial Management. In India it is a borrowed concept It was experimented in Western Europe first with the active Participation of Trade Union Movement as a component element of a prolonged political struggle. India attempt to implement the idea after western line. This was more as a result of Government initiative rather than to meet the growing demand of the working class. Starting from 1947, Government Of India initiative various scheme ,such as Work Committee in 1947 followed by Joint Management Council in 1958, Shop Councils and Joint Committee in 1975, Worker Participation in Management in Commercial & Services Organization in 1972

In recent times the concept of Worker Participation in Management has seized the imagination of the leader of the India policy. It has stirred the passion of the working class and is a subject matter of discussion among the policy framers on Industrial Management. The Government of the country believes that Worker Participation will ensure effective functioning of the unit and improve production and productivity of the unit. The Government concern for Participative Management was 1st manifested when Industrial Dispute Act 1947 and Factories Act 1948 were enacted. But various Committee constituted after reviewing the working of various Legislative measure admitted that those have failed to solve the purpose. This failure was duly recognized and a second round of experiment in Participative Management initiated in 1958 with establish of Joint Management Council

The concept of Participation of Worker in Management arises from philosophy of Co-operative Management. Although the term participative became popular in the field of industry since the days of Industrial Revolution. India was acquainted with it since long before the Industrial Revolution. Participative was applied as a Principle of Organization of Village Republics of India. ThereVillageRepublics were formed and administered by the citizen of a particular Locality. This Participative idea gave the citizen a right to Participate in administration of Rural Government. The idea of Work Participation in Management occupies an important position in modern industrial world. The concept of Worker Participation arises out of the need for working out a satisfactory relationship between employer and worker. Since the early stage of industrialization the conflict between employer and employee appeared to be inevitable and the conflict took concrete pattern with the advance of capitalism. Therefore conflict between employer and employee is the characterized product of capitalistic system of economy.

The Conflict Management and the working force gave birth to Trade Union activities and in the process the working class acquired power to fight the employers. Trade Union objectives was jobs security and financial benefits. The Trade Union leaders, from their expenses, raised the slogan of Joint Council in the matter of management for attaining industrial peace. The slogan of Joint Council led to workers demand for participation in management in industrial units. In the field of industry, the idea of participation was advocated by the socialistic worker of 18th century for minimizing the social justice and labour exploitation. The Socialist thinker strategy believed that the worker should not treated as the means of production only. Applied to industry, the concept of Participation Sharing the decision making authority by the Worker of the Industrial Organization through proper representative, at all level of Management. The Work Force nourish a desire to take part in decision making process where he is employed. The worker want to be liberalized from the position of slaves. The success of Industrial Units largely depend on the commitment work force to the organisation. The concept of 'Power Utilization' develop from Human Resource Movement is to reduce the excessive hierarchical authority and to encourage the work force to take the role of partner in industrial fields. It is believed that worker if allowed to participative in the working of his organisation would commit themselves to the production plan and contribute to productivity of the firm

In present situation people want smooth progress because Conflict between Management and Worker causes loss in maydays, downfall in level of production and lack of proper planning. It does not arises from economic or other factor. Non co-operation, no participation, attainted a situation where proper understanding between Management and Workers is not possible. Proper understanding between employer and employee can be established through a structure of Participative Management when the employee are in position to share the decision making authority with Management. Participative Management structure can be build up in the industrial field by the application of the idea of Co-operative Management. The question of Worker Participation in Management should not be taken as a separate issue of management problem. It is related to the very fabric of our society and the question of political democracy. The changing pattern of society must be associated with the changing pattern of production and distribution. We have to strike a balance between Technology, Political system and Productive Organization.

In India a series of law have been enacted to ensure Worker Participation in Management in all the stages of production. The Government has taken the role of a benevolent leader fostering the relationship between Worker & Employer. But despite the statutory obligation in introducing Worker Participation the actual progress has not been note worthy. The problem should be solved on Tripartite basis. The Government should provide necessary legal structure and create an atmosphere of healthy Industrial Relation. The employer must modernize their outlook and accept worker as co-partner, and the working force should be socially conscious and aware of their status vis-à-vis their social responsibility.

1.2 DISPUTE SETTLEMENT

At one time the conflict between the Capitalist and Labour was looked by the Government as a problem of Law and Order. But this was not a sensible attitude. For, Industrial Disputes resulting in stoppages of production affect National Income badly and it is necessary from the point of view of the economy and of the consumers that the disputes are resolved as early as possible. The Government of India passed the Industrial Disputes act of 1929 under which disputes between the Management and the Workers would have to be taken to special industrial courts (which, however, were never establish).

Grievance procedure is a problem solving, dispute setting machinery which has been set up following an agreement between labour and management. It is a means by which trade union or an employee make the claim that there has been a violation of the labour agreement by the company**.** This is no doubt unhealthy sign. Jute Mills is one of the pioneer industries in India. The effort to introduce industrial democracy in shop floor should have found its place in this industry. But such a large number of Personal Dispute cut a route of Industrial Democracy. Industrial Dispute begin with having faith in co-operation spirit of both the parties, Strike and Lockouts and Disputes due to personal reason, Speak of absence of such faith, Goodwill and sense of co-operation.

The following practices are becoming common in recent years as to solve industrial dispute:

A)   JOINT MANAGEMENT COUNCIL

These councils will enable the workers to Participate in Management, help them to understand the problems and difficulties of the industry concerned and bring about better relationship between the Management and Labour. Wherever Joint Management Councils have been set up, there have been better industrial relations, a more satisfied labour force, reduction in waste, increase in productivity, better profit and closer understanding between the parties. Workers are also serving as Directors on the boards of all Nationalized Banks. The Government has also introduced since October, 1975 the scheme of Workers Participation in industry at the shop floor and plant levels. Another scheme of Workers Participated in Management in Commercial and Service organization in the public sector, having large scale public dealing and employing at lest 100 persons, was announced in 1977. The scheme has been introduced at shop floor/plant level in 118 public sector undertaking.

B)   CODE OF DISCIPLINE

In 1958 the Indian Labour Conference evolved a Code of Discipline in industry. The code was ratified by the National Trade Union Organization and also by principal organization of employers. According to the code of discipline employers and workers voluntary agree to maintain and create an atmosphere of mutual trust and co-operation in the factory and to settle all disputes and grievances by Mutual Negotiation, Conciliation and Voluntary arbitration and avoid resort to direction action.

C)   INDUSTRIAL TRUCE

A joint meeting of the Central Organization of employers and workers adopted an Industrial Truce Resolution in November, 1962, to the effect that during an emergency in the country, there would be neither interruption nor slowing down of production, and that production would be maximized and defence efforts promoted in all possible ways. The Truce Resolution and Code of Discipline, both Voluntary Instrument, emphasis settlement of disputes through Voluntary Arbitration. An analysis of the number of disputes resolved by different methods of settlement during the 9 year period (1972-80) shows that out of a total of 21,261 industrial disputes, 6082 or (28.6%) were resolved by mutual settlement and 8,174 (or 38.4 %) by Government intervention.

D)   NATIONAL ARBITRATION PROMOTION BOARD

The Board was set up in July, 1967 by the Government to promote voluntary arbitration to settle industrial disputes. The Board comprises representatives of the employers and workers organization, public undertaking and the central and state governments. The National Arbitration Promotion Board attempts to ensure that employers and workers take greater recourse to the voluntary approach to settle Industrial Disputes.

2. REVIEW OF PREVIOUS STUDIES

Problem Of Business Leadership: A Case Study On The Migrant Saha Community From Certain Districts Of Present Bangladesh To South Calcutta. : Ramani Mohan Debnath (1982)

In this research the leadership quality of Saha is being discussed mentioning the up and down of their leadership. Their migrant from Bihar and establishment problem and solution, their diffused authority, decision making, business practice, delegation process, as well as the policies regarding employment on the basis of major criterion of trust-worthiness and their business operate is being discussed.

Works Participation In Management: Maindra Nath Ray (1990)

In this research philosophies of industrial management with respect to worker's participation, sharing the decision-making authority by the workers of industrial organization, all appropriate levels of management. Conflict and understanding between management has been widely accepted. The growth and development of the concept of worker, manager, organization and its application in different economics and social situations practice, dynamics area with latest trend, widen reforms proper outlook, new system-collective bargaining, labor management concept, trade union relation with management has been discussed.

Personality Factor As Determinants Of Success and Failure: Amaren Bhattacharyya (1975)

In this research effort had been made to check up how far or to what extent personality factor contribute toward the success and failure. The prediction of such determinants is a vital problem but the good success has been done in solving the personality character of worker, individual, manager, employee attitude towards each other. It was revealed that there was no such significance that solving of the problem among them is impossible.

A Comparative Study Of Attitudes Relation To Organizational Climate And Need Satisfaction Of The Middle Manager Of High And Low Producing Industrial Organizational : Hirerdra Nath Gupta (1980)

In this research investigation had been made towards the attitude of middle manager attached to industrial organization which determine as to how they are being influenced by external internal factor. The more emphasis on issue of relation pattern between managerial attitude and higher productivity has also certain lacuna that moves with the counter has been appliedin a good way.

Study Of Aspiration Of Industrial Workers And Its Impact On Their Attitude To Management: Swapan Kumar Sarkar (1986)

In this research the emphasis is laid to unearth the underlying reason which were instrumental to such failures of expected production, maintaining good human relationship, level of aspiration status of industrial worker, economic needs, fear of loosing jobs, spirit and co-operation grievances has been discuss in detail. The area of frustration has been solves by the behaviorists brand/approach, aggression and regression.

3. OBJECTIVES

i. To study the Nature and Development of Participative Management in Jute Mills.

4. DATA BASE METHODOLOGY

A survey was conducted among the Jute Industry during the period from June 2005 to May 2008 with the help of questionnaire which was sent to target respondents belonging to Owners, CEO/GM, Sr Manager, Personnel Manager, Jr Manager, Workers & members associate with trade Union, Government Employee related to Jute Industry from the seven Jute Mills.

5. LIMITATION OF THE STUDY

In spite of all possible efforts to make the analysis more comprehensive and scientific, a study of the present kind is bound to have certain limitations. Some of them are follows:

1.   The study was confined to Kolkata based Jute Mills
2.   The study is limited to selected Jute Mills in west Bengal only.
3.   The Questionnaire might not have tapped all dimensions of the close variable.

6. ANALYSIS & RESULT

The Questionnaire relates to Impact of Participative Management in dispute settlement had 02 subject questions apart from introductory and reference questions. The numbers of questions were deliberately kept low with the objective of attaining high responses rate which are as follows:

Question 1 Is the Workers Participation in management is successfully implemented in solving the dispute settlement?

Question 2. Is their any Impact of Participative Management in dispute settlement ?

RESULT OF QUESTIONNAIRE

Question 1 Is the Workers Participation in management is successfully implemented in solving the dispute settlement

Group	Can't say	Not Needed	Immediate needed	Gradual	Total
Owner, CEO/GM, Sr Manager	8	21	--	10	39
Personnel Manager, Jr Manager	30	8	--	7	45
Workers & Member Associate with Trade Union & Others	--	--	68	10	78
Total	38	29	68	27	162
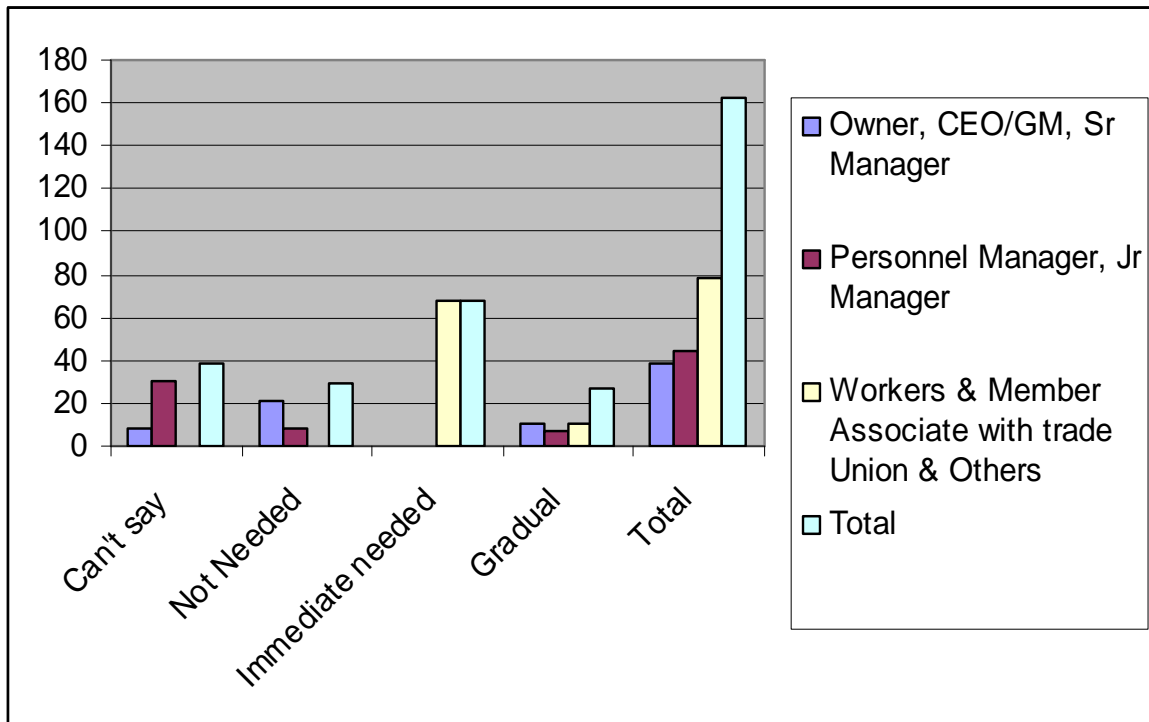
41.98% of the respondent feel that there is a immediate need for WPM in solving the dispute settlement. Only 17.91% respondent say that there is no need for WPM and only 23.46% are not aware of it or confused.

Question 2. Is their any Impact of Participative Management in dispute settlement?

Group	Can't say	Not/No Impact	Unfavourable	Positive	Total
Owner, CEO/GM, Sr Manager	--	21	18	--	39
Personnel Manager, Jr Manager	38	5	2	--	45
Workers & Member Associate with Trade Union & Others	--	--	72	6	78
Total	38	26	92	6	162
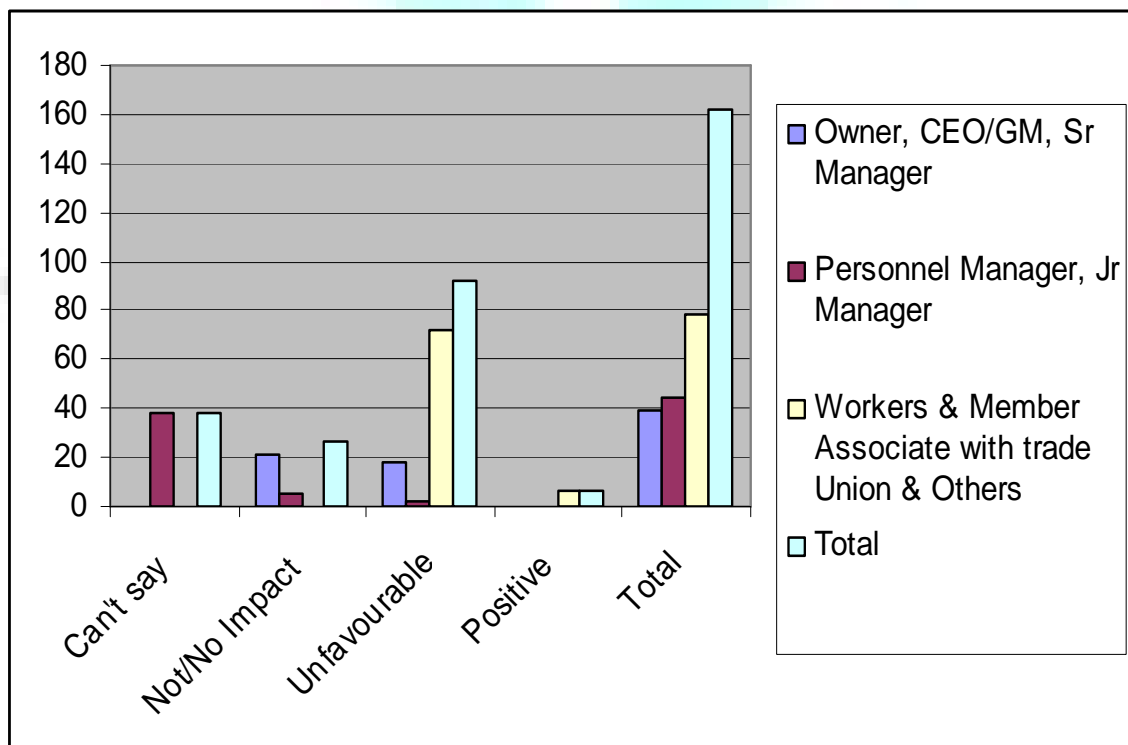
56.79% of the respondent were of opinion that impact of participative management in dispute settlement is unfavorable because it takes long time for judgment. Only 3.71% of the respondent feels that impact of participative management is positive. It is very slowly progressing in Jute Mills in West Bengal

7. CONCLUSION AND SUGGESTION

The Implication & Suggestions or Practical Applications of any Research must necessarily be sought to the extent to which it is applicable in actual life set-up. In order to improve the quality and content of the Research, the following points may be considered for incorporation on **"Impact of Participative Management in Dispute Settlement"**:

1. It is a need of an hour for Works Participation in Management to solve the Dispute that arises in Jute Mills.
2. Impact of Participative Management is poor and Proper Rules or Laws must be made to make it faster.

Proper slogans like "There is no individual on this team" "Win together , or loose together" must be put on the hanging. Some suggestions are as follows:-

1. Action plan must be headed by competent persons.
2. Heads of various Department which are dealing with HRD efforts should encourage to share their experiences and develop it professionally.
3. HRD mechanism if properly organized, systematically introduced and constantly Monitored can generate a number of favorable process and create supportive Climate results in Proper Trust Review, Feedback, and Counseling, Role Analysis.
4. A Good Management redresses grievances must be their so that as many as problems can be solved by exit interview, gripe boxes opinion survey, open door policy.
5. Team Work should be given preference and it can be effective only when Supportive Environment, Role Clarity, Subordinate Goals, Participative Leadership is given.
6. Ideal **"Impact of Participative Management in Dispute Settlement"** needs a comprehensive legal framework, the management desires and a will to implement the law, and a philosophy to attain high standards of code of conduct and discipline.

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THE IMPACT OF CASE TOOLS ON SOFTWARE DEVELOPMENT

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ABSTRACT

Now-a-days everything has to go faster because of the increasing speed of changing market-demands new products replace old ones much earlier than before, so the development of new products has to go faster. Thus the production lines have to be developed faster, too. A very important role in this development is software engineering because many production processes are 'computer aided', so software has to be designed for this production system. It seems very important to do the software engineering right and fast. Software engineers had to design software without help of computers, by programming each step at one time. This way is much too costly and time-consuming. In order to speed up the process the bottlenecks in building software systems are to be found. This is hard to do because of the increasing role of computers in our society. Technology is developed further every day, so faster and bigger computers enter the scene. The software running on these computers can be more extensive because they can handle more information in the same time, so there is an increasing amount of data to go with it. Finding the right data out of this increasing amount of information is getting harder and harder, so finding the bottleneck is harder to do.

KEYWORDS

CASE Tools, Software Development, Impact, Productivity, Quality.

1. INTRODUCTION

For the most part, the available CASE technology is intended to automate certain phases of the software development life cycle which focus on how the current technology alters the nature of software engineering efforts. Papers which investigate into the knowledge a software engineer needs to possess and how the software engineer's work content has or may change are included. The current CASE technology exists to automate phases of the software development life cycle, thus affecting software development in the short term, but we cannot ignore the CASE research efforts toward a higher generation language. Such a language should affect software development in the long term. It suggesting how these languages may alter the nature of software engineering in the future is presented. CASE stands for Computer Aided Software Engineering which is software that supports one or more software engineering activities within a software development process, and is gradually becoming popular for the development of software as they are improving in the capabilities and functionality and are proving to be beneficial for the development of quality software.

2. DEVELOPMENT OF CASE TOOLS

2.1 INTRODUCTION

CASE tools are designed to enhance and upgrade the computing system adopted and used. This is very important with regards to the dependence on a computer-based environment for business and/or personal pursuits. It is an important part of various business growth strategies. The CASE tools are developed for the following reasons:

1. Firstly Quick Installation.
2. Time Saving by reducing coding and testing time.
3. Enrich graphical techniques and data flow.
4. Optimum use of available information.
5. Enhanced analysis and design development.
6. Create and manipulate documentation.
7. Transfer the information between tools efficiently.
8. The speed during the system development increased.

2.2 STANDARDIZE THE DEVELOPMENT PROCESS

CASE tools are the software engineering tools that permit collaborative software development and maintenance. Almost all the phases of the software development life cycle are supported by them such as analysis; design, etc., including umbrella activities such as project management, configuration management etc.

TO FACILITATE SINGLE DESIGN METHODOLOGY

CASE tools help the organization to standardize the development process. It also facilitates coordinated development. Integration becomes easy as common methodology is adopted.

RAPID APPLICATION DEVELOPMENT
To improve the speed and quality of system development organizations use CASE tools.
TESTING
CASE tools help in improving the testing process through automated checking and simplified program maintenance.
DOCUMENTATION
In a traditional software development process, the quality of documentation at various stages depends on the individual. At various stages of SDLC CASE tools improve the quality and uniformity of documentation. It also ensures the completeness of the documentation.
MANAGEMENT
It improves project management activity and to some extent automates various activities involved in project management.
REDUCE THE MAINTENANCE COST
Use of CASE tools makes the software easy to maintain and hence reduce the maintenance costs.
INCREASEPRODUCTIVITY
Automation of various activities of system development and management processes increases productivity of the development team.
2.3 ENVIRONMENT OF CASE
The heart of a well-designed I-CASE system is a repository, which is used as a knowledge base to store information about the organization, its structure, enterprise model, functions, procedures, data models etc. The meaning represented by diagrams and their detail windows is stored in the repository. The repository steadily accumulates information relating to the planning, analysis, design, construction and maintenance of systems. In other words: The repository is the heart of a CASE system.
Two types of mechanisms have been used in CASE software to store design information:
A *dictionary*, which contains names and descriptions of data items, processes, etc.
A *repository*, which contains this dictionary information and a complete coded representation of plans, models and designs, with tools for cross-checking, correlation analysis and validation.

FIG. 1

Coding Support
Backup and Recovery
Documentation tools
Analysis and Design
Export / Import
The Repository
Project management
Prototyping tools
Configuration management
Modeling Tools
Query and report Generator
Information Security

CASE Tools
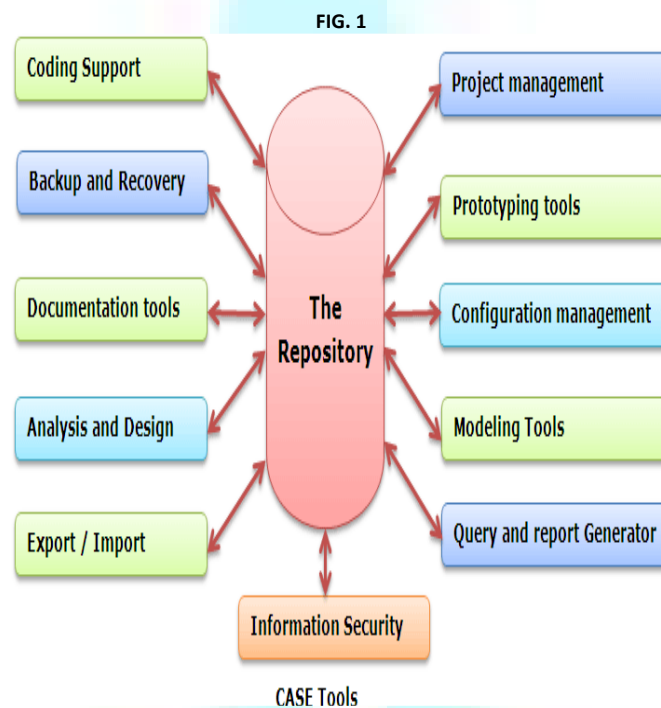
When an enterprise takes these actions ahead of its competition, it gain a major competitive advantage. An enterprise should also be up-to-date because the rapid advances in computer technology allow the competition to get ahead of you. Some significant trends in the development of new system environments include:
Low-cost MIPS, the price of fast processors is decreasing and even faster everyday
Distributed computing environment, end-users are moving towards multilayered distributed computer architecture
CASE and I-CASE tools, highly integrated, repository-driven, computer-aided systems engineering tools are making it possible to generate application code directly from graphical specifications
Forward/reverse engineering tools, re-engineering tools enable analysts to convert low-level data definition and unstructured process code into standardized data elements and structured code.
New development methodologies, more efficient development life-cycle processes are making it possible to develop applications more rapidly and in closer coordination with end users.
Growth of standards, standards are emerging that will govern the future evolution of hardware and software.

3. POSITIONING OF CASE TOOLS IN A SOFTWARE APPLICATION DEVELOPMENT
On the basis of their activities, sometimes CASE tools are classified into the following categories:
1. Upper CASE tools
2. Lower CASE tools
3. Integrated CASE tools.
UPPER CASE: Upper CASE tools mainly focus on the analysis and design phases of software development. They include tools for analysis modeling, reports and forms generation.
LOWER CASE: Lower CASE tools support implementation of system development. They include tools for coding, configuration management, etc.
INTEGRATED CASE TOOLS: Integrated CASE tools help in providing linkages between the lower and upper CASE tools. Thus creating a cohesive environment for software development where programming by lower CASE tools may automatically be generated for the design that has been developed in an upper CASE tool.

CASE Tool And Application Development
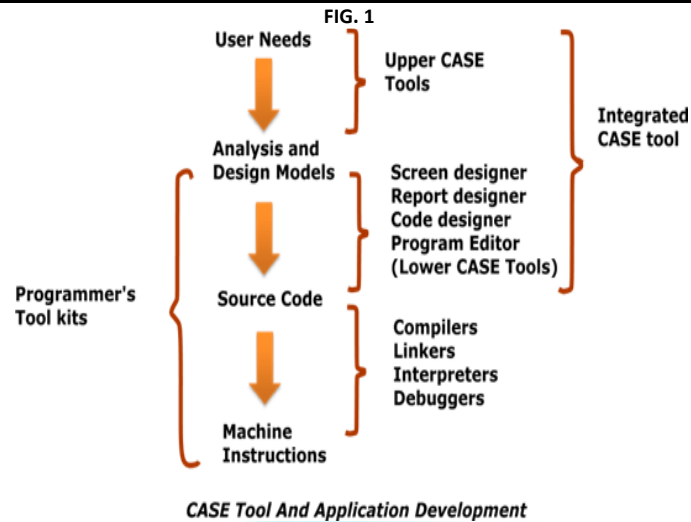
4. IMPLEMENTATION OF CASE TOOLS

Before implanting CASE and designing tools, a series of steps should be followed:

Conduct a technology-impact study to determine how the basic business of the organization should change to maximize the opportunities presented by rapid technological change

Evaluate how the organization should be re-engineered to take advantage of new technology

Establish a program for replacing the old systems with the most effective new technology

Commit to an overall integrated architecture

Select a development methodology

Select a CASE-tool

Establish a culture of reusability

Strive for an environment of open interconnectivity and software portability across the entire enterprise

Establish interoperate network links to most trading partners

Determine how to provide all knowledge to workers with a high level of computerized knowledge and processing power

Determine the changes in management-structure required to take full advantage of innovative systems, architectures, methodologies and tools.

5. CASE SOFTWARE DEVELOPMENT ENVIRONMENT

CASE tools support extensive activities during the software development process. Some of the functional features that are provided by CASE tools for the software development process are:

Creating software requirements specifications

Creation of design specifications

Creation of cross references

Verifying/Analyzing the relationship between requirement and design

Performing project and configuration management

Building system prototypes

Containing code and accompanying documents.

Validation and verification, interfacing with external environment.

Some of the major features that should be supported by CASE development environment are:

• A strong visual support
• Prediction and reporting of errors
• Generation of content repository
• Support for structured methodology
• Integration of various life cycle stages
• Consistent information transfer across SDLC stages
• automating coding / prototype generation.
• Link checkers
• Program checkers
• Web security test tools.

6. SOFTWARE QUALITY AND CASE TOOLS

Software quality is sacrificed by many developers for more functionality, faster development and lower cost. However, one must realize that a good quality product actually enhances the speed of software development. It reduces the cost and allows enhancement and functionality with ease as it is a better structured product. The high quality software development process is most important for the development of quality software product. Software quality involves functionality for software usability, reliability, performance, scalability, support and security. Quality in such tools is represented in all life cycle phase's viz., Analysis/ Design development, test and deployment. Quality is essential in all the life cycle phases.

ANALYSIS: A poor understanding of analysis requirements may lead to a poor product. CASE tools help in reflecting the system requirements clearly, accurately and in a simple way. CASE tools support the requirements analysis and coverage also as we have modeling. CASE also helps in ambiguity resolution of the requirements, thus making high quality requirements.

DESIGN: In design the prime focus of the quality starts with the testing of the architecture of the software. CASE tools help in detecting, isolating and resolving Structure deficiency during the design process. On an average, a developer makes 200 to 250 errors for every thousand lines of code. Assuming only 8% of these errors are serious, if software has ten thousand lines of code you may still have around 50 serious coding errors in your system. One of the newer software developments processes called the Agile process helps in reducing such problems by asking the developer to design their test items first before the coding. A very good approach that is supported by CASE tools specially running time development of C, C++, JAVA or .NET code is to provide a set of automatic run time Language tools for development of reliable and high performance applications.

TESTING: Functionality and performance testing is an integrated part of ensuring high quality product. CASE support automated testing tools that help in testing the Software, thus, helps in improving the quality of testing. CASE tools enhance the speed breadth and reliability of these design procedures. The design tools are very important specifically in case of a web based system where scalability and reliability are two major issues of design.

DEPLOYMENT: After proper testing software goes through the phase of deployment where a system is made operational. A system failure should not result in a complete failure of the software on restart. CASE tools also help in this particular place. In addition, they support configuration management to help any kind of change thus to be made in the software.

QUALITY IS TEAMWORK: It involves integration of workflow of various individuals. It establishes a traceability and communication of information, all that can be achieved by sharing workload documents keeping their configuration items.

6.1. IMPLEMENTATION

Whenever a new system is installed, the implementation integrates a number of related and different tasks. The process has to be efficiently organized and it is for this very reason that CASE tools are developed. With the help of CASE, the installation process can be automated and coordinated within the developed and adopted system life cycle.

CASE tools are the software engineering tools that permit collaborative software development and maintenance. Almost all the phases of the software development life cycle are supported by them such as analysis; design, etc., including umbrella activities such as project management, configuration management etc. In general, standard software development methods such as Jackson Structure programming or structured system analysis and design method are also supported by CASE tools. CASE tools may support the following development steps for developing data base application:

- Creation of data flow and entity models
- Establishing a relationship between requirements and models
- Development of top-level design
- Development of functional and process description
- Development of test cases.

6.2. ADVANCEMENT OF SOFTWARE DEVELOPMENT

A CASE tool must have the following characteristics in order to be used efficiently:

- **A standard methodology:** A CASE tool must support a standard software development methodology and standard modeling techniques. In the present scenario most of the CASE tools are moving towards UML.

- **Flexibility:** Flexibility in use of editors and other tools. The CASE tool must offer flexibility and the choice for the user of editors' development environments.

- **Strong Integration:** The CASE tools should be integrated to support all the stages. This implies that if a change is made at any stage, for example, in the model, it should get reflected in the code documentation and all related design and other documents, thus providing a cohesive environment for software development.

- **Integration with testing software:** The CASE tools must provide interfaces for automatic testing tools that take care of regression and other kinds of testing software under the changing requirements.

- **Support for reverse engineering:** A CASE tools must be able to generate complex models from already generated code.

- **On-line help:** The CASE tools provide an online tutorial.

7. CONCLUSION

In this paper we have suggested that the issue of CASE tool utilization, by shifting the focus more towards the development- and maintenance *process* and increasingly adopting to CASE tools – especially when it comes to development and maintenance of software application.The positioning paper looks at CASE-tools and how they influence in the SDLC for gaining project success. They have explored CASE-tools adoption by focusing on the individual user in an organization that has implemented such tools for system development and maintenance. We argue that this is a somewhat backwards approach to the issue, which does not catch the big challenge with development and maintenance of software application. The detailed model of the positioning paper is clear and well arguable; however, we propose different concepts that follow our new focus, which leads to an interesting field for investigation.

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K-JOIN-ANONYMITY FOR DATABASE ON DATA PUBLISHING

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ABSTRACT

Privacy for microdata is common problem in external database and data publishing. K-anonymity is one technique to protect micro data against linkage and identification of records. While in previous k-anonymity algorithms exist for producing k-anonymous data, due to privacy issues, the common data from different sites cannot be shared directly and assumes existence of a public database that can be used to breach privacy. During anonymization process, public database are not utilized. In existing generalization algorithm creates anonymous table by using microdata table. Omission of public database leads to a high information loss. So we introduce new concept k-join-anonymity (KJA) that reduces information loss while publishing data and it is more effective generalization. KJA permits utilization of existing generalization techniques. In KJA, we adapt k-anonymity algorithm proposing two methodologies. First generalizes combination of micro data table and public database under the constraint that each group should contain at least one tuple of microdata table. In second anonymizes micro data table then refines the resulting groups using public database.

KEYWORDS
Microdata, Privacy, k-anonymity, k-join-anonymity.

1.   INTRODUCTION

Many organizations are increasingly publishing microdata tables that contain unaggregated information about individuals. These tables can include medical, voter registration, census, and customer data. Microdata is a valuable source of information for the allocation of public funds, medical research, and trend analysis. However, if individuals can be uniquely identified in the microdata, then their private information (such as their medical condition) would be disclosed, and this is unacceptable. Microdata are useful for several tasks such as health research etc., Privacy for microdata aims at limiting the risk of linking published data to a particular person [1]. There are three types of microdata attributes are relevant to the privacy preservation. They are
1.   Identifiers (IDs)
2.   Quasi Identifiers (QIs)
3.   Sensitive attributes (SAs)

IDENTIFIERS
Attributes like Name, Social Number or License Number that uniquely identify individuals
QUASI-IDENTIFIERS
Attributes like Age, Gender and Zip Code which exist in other existing external databases and may be used by combination to identify an individual that are named quasi identifier.
SENSITIVE ATTRIBUTES
Attributes like Income of Bank Customers or Disease of Hospital Patients that are important for data holder to remain private for individuals and they are named sensitive attributes.
EXAMPLE 1

Identifier	Quasi Identifiers			Sensitive
Name	Birthdate	Gender	Zipcode	Disease
Arun	21/1/79	Male	637202	Flu
Marry	10/3/81	Female	637201	Hepatitis

Several concepts have been proposed to achieve privacy preservation. Most database literature has focused on k-anonymity [8], [10]. Specifically, a table T is k-anonymous if each record is indistinguishable from at least k-1 other tuples in T with respect to the QI set. The process of generating a k-anonymous table given the original microdata is called k-anonymization. The most common form of k-anonymization is generalization, which involves replacing specific QI values with more general ones.
The concept of K-join-anonymity permits the utilization of existing generalization techniques and protects the microdata against the linkage and identification of records during the data publishing.

2.   PROBLEM DEFINITION

All the previous k-anonymity techniques are not utilizing the existence of a Public Database during the anonymization process. This omission leads to unnecessarily high information loss. Grouping the fields that contain tuples with different quasi identifiers values. Publicly available databases (voter lists, city directories) can reveal the "hidden" identity [2], [3]. Attacker can re-identify the sensitive information by using background knowledge. By using micro data table alone its create the anonymous table. Not utilizes the Public Database for generalization algorithm[5]. Sensitive attributes are not consider while data publishing. Attacker have the Background Knowledge about microdata by using public database (example: voter list, city directory). Unnecessarily high information loss.

EXAMPLE 2

Medical Data   **Voter List**
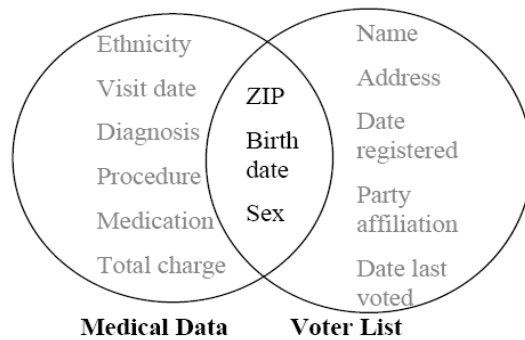
In the above example attacker use the public database (voter list) to know the details of the microdata like medical data. By using background knowledge attacker know the privacy data. In the existing system there is possible for information leakage and data linking and identification problem. In this anonymous table created for microdata table alone.

To avoid the identification of records in microdata, uniquely identifying information like names and social security numbers are removed from the table. However, this first sanitization still does not ensure the privacy of individuals in the data. A recent study estimated that 87% of the population of the United States can be uniquely identified using the seemingly innocuous attributes gender, date of birth, and zip code [9]. In fact, those three attributes were used to link voter registration records (which included the name, gender, zip code, and date of birth) to supposedly anonymized medical data (which included gender, zip code, date of birth and diagnosis). This "linking attack" managed to uniquely identify the medical records of the individual [10].

2.1. ATTACKS ON K-ANONYMITY

In this section we present two attacks, the **homogeneity attack** and the **background knowledge attack**.

Observation 1. *k-Anonymity can create groups that leak information due to lack of diversity in the sensitive attribute.*

Observation 2. *k-Anonymity does not protect against attacks based on background knowledge.*

3.   RELATED WORK

Definition 1. (Quasi-identifier)**.** *A set of nonsensitive attributes {Q_1,…,Q_w} of a table is called a* quasi-identifier *if these attributes can be linked with external data to uniquely identify at least one individual in the general population.*

One example of a quasi-identifier is a primary key like social security number. Another example is the set {Gender, Age, Zip Code}in the Group Insurance Company dataset that was used to identify the governor of Massachusetts as described in the introduction. Let us denote the set of all quasi-identifiers by *QI*. We are now ready to formally define *k*-anonymity.

Definition 2. *The schema of a microdata table (MT) consists of the unique ID, QI and sensitive attributes.*

Definition 3. *The schema of a public database (PD) consists of the unique ID and all QI attributes appearing in MT.*

Using PD, the attacker identifies the QI values of an individuals.

The concept of K-anonymity utilization of existing generalization techniques and protects the microdata against the linkage and identification of records during the data publishing. Anonymized table (AT) is created by using microdata table and not utilizing public database. Identifiers and sensitive information are removed and generalization is performed in the AT.

Sets of attributes (like gender, date of birth, and zip code in the example above) that can be linked with external data to uniquely identify individuals in the population are called *quasi-identifiers*. To counter linking attacks using quasi-identifiers, Samarati and Sweeney proposed a definition of privacy called *k-anonymity* [8,10] A table satisfies *k*-anonymity if every record in the table is indistinguishable from at least *k i*1 other records with respect to every set of quasi-identifier attributes; such a table is called a *k-anonymous* table. Hence, for every combination of values of the quasi-identifiers in the *k*-anonymous table, there are at least *k* records that share those values. This ensures that individuals cannot be uniquely identified by linking attacks.

It propose the privacy is common problem while data publishing, formerly, K-anonymity methods of Privacy Protection have great influence on the data precision[6]. This paper also analyzes the reasons of the influence, and proposes an improved algorithm. The algorithm defines a Weight-related of attribute in order to select attributes for generalization. This approach effectively prevents sensitive data loss in the generalization. Experimental results show that the improved algorithm of K-anonymity model increases the data precision effectively.

It proposes and evaluates an optimization algorithm for de-identification of data. This powerful de-identification procedure is known as *k*-anonymization[7]. A *k*-anonymized dataset has the property that each record is indistinguishable from at least *k* − 1 others. In addition, they implemented data-management strategies that avoid repeatedly sorting the entire dataset for markedly reduced node evaluation times. But it does not provide sufficient protection against attribute disclosure.

All the previous work shown the necessity of considering an attacker's background knowledge when reasoning about privacy in data publishing [3]. However, in practice, the data publisher does not know what background knowledge the attacker possesses. Thus, it is important to consider the worst-case.

In [3] this paper, they initiate a formal study of worst-case background knowledge. They propose a language that can express any background knowledge about the data. We provide a polynomial time algorithm to measure the amount of disclosure of sensitive information in the worst case, given that the attacker has at most k pieces of information in this language. We also provide a method to efficiently sanitize the data so that the amount of disclosure in the worst case is less than a specified threshold.

4.   K-JOIN-ANONYMITY

K-join-anonymity permits the utilization of existing generalization techniques and protects the micro data against the linkage and identification of records during the data publishing. Join table is created by using both micro data table and public database. Identifiers and sensitive information are removed from the join table. Reduce the loss of information and provide privacy for micro data by utilizing the public database. The goal of k-join-anonymity is to provide the same privacy guarantees with k-anonymity incurring, however, less information loss. To achieve this, it shrinks the G-boxes using public knowledge about universe (U) tuples. In some applications, the entire U is available to the publisher, e.g., as in the company payroll example. First generalizes the combination of microdata table and public database under the constraint that each group should contain at least one tuple of microdata table. Second anonymizes microdata table, and then refines the resulting groups using public database.

Definition 4. (*k*-join-Anonymity) *A table T satisfies k-join-anonymity if for every tuple t ∈ T there exist k - 1 other tuples t_{i1} , t_{i2} ,……, t_{ik-1} ∈ T such that t[C] = t_{i1} [C] = t_{i2} [C] = …….. = t_{ik-1} [C] for all C ∈ QI.*

The Anonymized Table *T**. Since the quasi-identifiers might uniquely identify tuples in *T*, the table *T* is not published; it is subjected to an *anonymization procedure* and the resulting table *T** is published instead.

ALGORITHM

TOP DOWN GREEDY ALGORITHM

1.   IF |T| ≤ k THEN
2.   RETURN;

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3.   ELSE {
4.   Partition T into two exclusive subsets T1 and T2 such that T1 and T2;
5.   IF |T1| > k THEN
6.   recursively partition T1;
7.   IF |T2| > k THEN
8.   recursively partition T2;
9.   }
10. Adjust the groups so that each group has at leastk tuples;

K-JOIN-ANONYMOUS ALGORITHM
1.   read quasi-identifier from MT, RT and JT is   empty.
2.   read quasi-identifier from PT, RT and JT is empty.
3.   FOR i=1 to n DO
4.   JT=(MT,PT);
5.   FOR i=1 to m DO
   a) marked 0 on the Tuple of table T;
   b) read into an Tuple;
   c) FOR j=1 TO m DOto find the Tuple which containthe attribute most close to othertuple;
   d)The Tuple of the smallest mark dowith a generalization, and be integrated   into the RT;
   e) Repeat the step 4 until all tuples of JTwere generalized;
6.   Output the table of RT.

SYSTEM ARCHITECTURE

FIGURE 1: SYSTEM ARCHITECTURE
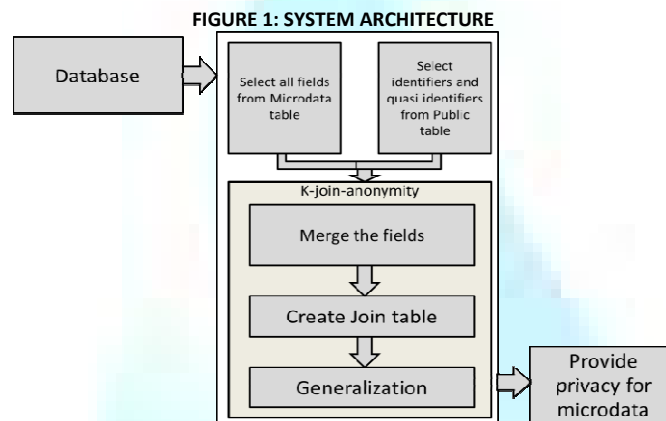
Definition 5. *Ananonymized table AT of join table is k-join-anonymous if the mapping of each record in join table is indistinguishable among the mapping of at least k-1 other join table tuples.*

Definition 6. (**Distance between two numeric values**) *Let D be a finite numeric domain. Then the normalized distance between two values* v_i, $v_j \in D$ *is defined as:*

$$\delta_N (v_1, v_2) = |v_1 - v_2| / |D|,$$

where $|D|$ is the domain size measured by the difference between the maximum
and minimum values in D.

4.1 THE GENERALIZATION OF ATTRIBUTE VALUES

FIGURE 2.1: ZIP DOMAIN

$Z5 = \{******\}$

$Z4 = \{63****\}$

$Z3 = \{637***, 638***\}$

$Z2 = \{6374**, 6381**, 6384**\}$

$Z1 = \{63740*, 63742*, 63812*, 63815*, 63845*\}$

$Z0 = \{637408, 637422, 638128, 638155, 638451\}$
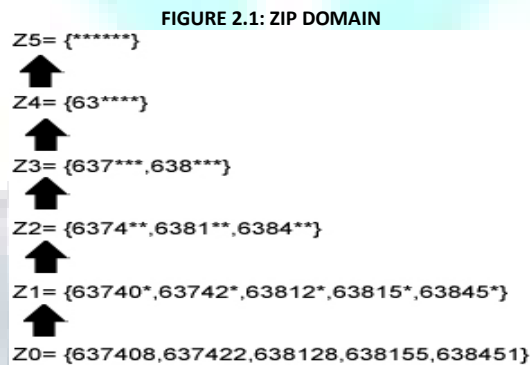
FIGURE 2.2: VALUE GENERALIZATION HIERARCHIES

******

63****

637***   638***

6374**   6381**   6384**

63740*,63742*,63812*,63815*,63845*

637408,637422,638128,638155,638451
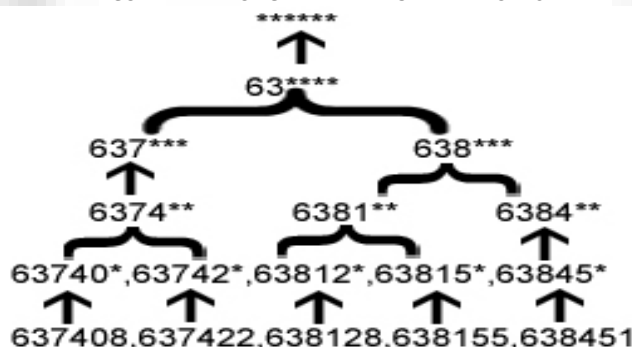
On a data table, replaced the original value of attribute with another value that can indicate a larger geographical area and have the same semantic, this process is known as a generalization[6]. For example, zip= 637408 can become zip= 63740* and zip=63740* and zip=63742* can become zip=6374**, the generalization value and the original value maintain the right consistency and expand the area represented by the attribute. In relational database system, a domain are used to present of attribute a set of value that attributes assume, in order to facilitate the description of generalization on the attribute, there is need to expand the concept of attribute domain. The original table of data is as specific as possible, but in order to achieve K anonymous, it is necessary to generalize the original data, so reached the level of a more wide. After a generalization, a set of attribute value become a high-level domain. for example, in Figure 2.1 the zip code 637408 is located in the bottom of the domain Z0, generalization of the zip is refers to more widely domain, with Z1 instead of Z0, the operation can be considered from Z0 to Z1 mapping, 637408 → 63740*.

FIGURE 3: PRIVACY FOR MICRODATA
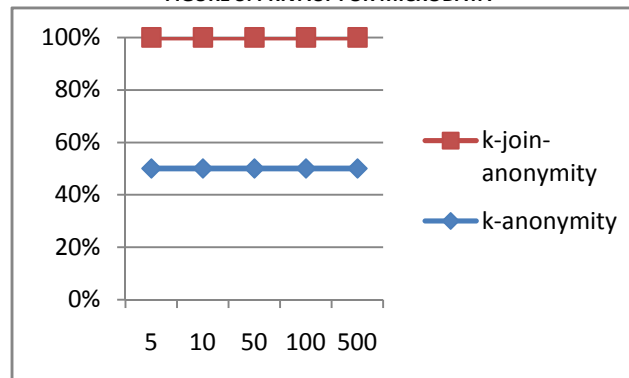
In the Figure 3. Represent the privacy for microdata in k-anonymity and k-join-anonymity. By using k-join-anonymity the information loss will be reduced and utilization of public database, microdata table join table was created and generalization is applied to join table.

5. CONCLUSION

In existing generalization algorithm creates anonymous table by using microdata table. Omission of public database leads to a high information loss. So We introduced new concept k-join-anonymity (KJA), that reduces information loss while publishing data and it is more effective generalization. KJA permits utilization of existing generalization techniques. The privacy for microdata is achieved by using k-join anonymity. In this method, information loss is reduced and public database also taken for anonymization process.

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COMMUNICATION APPREHENSION: A CONCEPTUAL OVERVIEW

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ABSTRACT

Researchers and industry experts have extensively discussed the importance and role of communication skills in the today's world. Communication skills are commonly understood as the ability to write, speak and present in English. It is important to note that several factors can affect the development of communication skills and one of them is Communication Apprehension. "CA" or Communication Apprehension is defined as the ""individual's level of fear or anxiety associated with either real or anticipated communication with another person or persons" (McCroskey 1977). Studies of communication apprehension deal with problems related to communication avoidance and anxiety. This paper discusses the concept of communication apprehension, causes of communication apprehension and suggests possible areas for further research.

KEYWORDS

Communication apprehension, PRCA 24, communication avoidance, anxiety, communication.

INTRODUCTION & IMPORTANCE OF THE STUDY

Good communications means what you intent to say has been conveyed to the receiver without any distortions or misunderstanding in the meaning. This is important in personal communication with friends and relatives well as professional life where communication is with a co-worker on one-on-one basis or in a meeting with several or more people. Good communication skills help to get the job done well and on time. People who communicate well in any form are often able to contribute to the company more. Such communicators are highly valued in today's complex and competitive business world, and are often earmarked for promotion and increased responsibility. Poor communicators are not   necessarily incompetent communicators, but they are often known to suffer from fear or anxiety that profoundly affects their ability to communicate well and may well affect their self esteem and social skills. This debilitating condition often not discussed or even acknowledged is called "Communication Apprehension". It can also be understood as the anxiety an individual experiences when he or she engages or anticipates communication in different forms.

Over the years many communication experts have tried to understand the impact of individual's fear and anxiety on his ability to communicate orally. It has often been observed that higher the level of anxiety one experiences the greater the negative impact on communication and sometimes even in other areas of life. Communication skills are commonly understood to be oral & written English, however the apprehensions one experiences in areas like public speaking are not language specific. Everyone will agree that competent communication skills are essential for success in any business area. Therefore having apprehensions while communicating with others will affect the degree of success.

Usually communication apprehensive people may not appear apprehensive unless they are exposed to a communication in unfamiliar surroundings and people. It has been noticed that individuals rarely face communication apprehension in friendly and safe environment. Friendly environment affirms positive and helpful reaction while communicating, so we feel comfortable in sharing information, in answering questions, and in giving speeches in friendly environment.

Two prime factors affecting communication apprehension are hereditary and the existing circumstances of the person. In other words, we can either be born with certain innate characteristics or we can acquire them through learning. However the existing surrounding conditions are more dominating than genetic inheritance. Some of the elements, which are supposed to be the situational-causes of communication apprehension are low childhood nurturance, subordinate status, unfamiliarity, dissimilarity, the degree of attention from others, evaluation and prior history including schooling and higher education. If an individual is introduced to a novel situation, which may develop concerns and fears like how to deal with the new situation, this concern can result in anxiety. A person may be communication apprehensive in one situation but not in another. Additionally, as communication does not confine itself to just talk, a person may, for example, be apprehensive about communicating by engaging in talk but feel quite comfortable while writing.

Hence it is important to study and understand what type of anxiety affects the individual to be able to address his or her apprehensions.

RELATED LITERATURE

Recent researchers have expanded Communication Apprehensions to include *state-like* communication apprehension, or anxiety associated with particular communication contexts. Personal traits also contribute to Communication Apprehensions.

Glaser (1981) presented his 'Negative Cognitive Appraisal Model' which assumes that the quiet child is criticized for his or her early language performance and the child learns to expect negative reactions and subsequently as a reaction he learns to avoid them by keeping quiet.

Gumperz's (1982) presented "Interactional Model" of communication that takes communication as the outcome of exchanges involving more than one active participant. According to Gumperz (1977: 199) contextualizing cue is "any aspect of the surface form of utterances which, can be shown to be functional in the signaling of interpretative frames when mapped onto message content."

Later on, Neer (1987) developed a contextual model of Communication Apprehension, to assess the apprehension felt by a student toward communicating within the context of the classroom environment, which was targeted at the classroom environment about Participation

Wilder (1999) gave the five basic sources of fear of speaking in public. These fears take one of five forms: I) career terror, ii) perfectionism, iii) panic IV) avoidance and v) trauma. Wilder defines the five fears as follows: career terror is "rooted in the awful feeling that your job, your career, your future is on the line every time you step before a group, enter a meeting, or pick up the telephone". Perfectionism paralyzes the speaker when they demand of themselves that each speech or presentation be perfect. Panic is the combination of unreasonable expectations with fear of failure and real physical symptoms. Avoidance "is a self-sabotage that virtually guarantees anxiety, fear, and diminished performance". Trauma is fear rooted in a long history of being told you're not good enough.

This paper relies extensively on the works of James McCroskey who first defined the term " communication Apprehension" with reference to the anxiety real or anticipated in relation to communication.

OBJECTIVES OF THIS PAPER

This paper hope to throw light on the concept called "communication apprehension" that affects the individual's communication competency and discuss research done in understanding communication apprehensions. The broad objectives of this research paper are to discuss the concept of "communication Apprehension" as given by James McCroskey, recognize the different types of apprehensions- general and specific communication apprehensions, understand the causes and effects of communication apprehension and suggest ways to treat communication apprehension. The papers also elucidates on the important research done in this area by earlier researchers.

DEFINITION OF COMMUNICATION APPREHENSION

One of the primary elements found to be associated with poor communication skills development is a phenomenon known as Communication Apprehension(CA), that is, an "individual's level of fear or anxiety associated with either real or anticipated communication with another person or persons" (McCroskey 1977). Communication Apprehension is one perspective dealing with general concern about problems with communication avoidance and anxiety (McCroskey, 1984a) and it has received substantial attention from communication scholars.

This definition makes two important points about CA. First, it is an anxiety-based response and is similar to the wide range of phobias that can be found in the areas of psychology and psychiatry. The second issue that is raised by this definition is that CA can be produced by merely thinking about or anticipating having to communicate. In effect a person does not have to be placed in a communication situation to be effected by CA. Rather the thought of communication alone can generate significant levels of anxiety

James McCroskey (1970) was the first person to float the idea of Communication Apprehension in "Communication Monographs". He operationally defined a one-dimensional 24-item scale called the Personal Report of Communication Apprehension (PRCA) that has been the dominant and frequently used assessment measure. PRCA scale does not purport to be a direct measure of actual communication. Rather, it is a measure of anxiety related to anticipated communication (Chan and McCroskey, 1987). The scale provides six questions for each of the four specific communication settings: Public speaking, participation in meetings, Group discussion and dyads (two person conversations). Questions are randomized within the questionnaire and responses are scored on a five point Likert scale based on whether the subject agrees or disagrees with the statement. Choice of "1" indicates strongly agree and choice of "5" indicates strong disagreement. The instrument contains a mix of positively and negatively contained phrases for the subject to evaluate to avoid bias. Scoring is done by adding the responses of positively worded statements and subtracting from the responses of negatively worded phrases. Completing the scale allows the user to know where he or she falls within the normative range of scores. Scores on the PRCA24 scale should range between 24 and 120 (if they are below 24 or more than 120, a computational error has been made). The PRCA24 scale is designed to measure a general trait of communication apprehension—how a person typically reacts to oral communication with others. The higher a person scores on the PRCA, the more apprehension that person generally feels about communicating.

Another definition of CA is anxiety or fear of communicating in different situations. According to Berger, McCroskey & Baldwin (1984), it is "the way a person *feels* about communication, not *how* they communicate". Even those who have high level of proficiency in a language can experience CA. Some people may be good at communicating through writing but they may have problems speaking in front of an audience. Some may be good at interpersonal communication, but may not feel comfortable making presentations and vice versa.

TYPES OF COMMUNICATION APPREHENSION

Communication apprehensions are often learnt as people learn the expectation about outcomes of communication interchanges with others. When expectations are confirmed people develop confidence and when they are different from expectations, the person is unable to successfully predict actions of others. This leads to anxiety and is often reduced by avoiding communication opportunities or minimizing opportunities for interactions.

To a person of high communication apprehension, avoidance of communication opportunities removes the possibility of unpleasant feelings and consequences and thus avoidance of communication opportunities may take the form of a reward than possible opportunities to interact. Although McCroskey (1970) gave the construct of CA he did not specify whether it is a trait of an individual or a response to the situational elements of a specific communication transaction (a state). Trait like CA is viewed as relatively enduring, personality type orientation toward a given mode of communication across a wide variety of contexts (McCroskey, 1984a). A trait is a relatively consistent aspect of our personality or communication. It tends to be enduring and omnipresent. When CA exists as a trait, it means that the anxiety over communication is present regardless of any environmental circumstance. No matter whom we are speaking with, no matter where or when, an anxiety reaction exists. Thus communication of any sort public or intimate, serious or banal is problematic. Even talking with a parent or spouse can prove difficult. For those with high CA there is little escape from the anxiety that plagues them. The anxiety one experiences with trait CA is as real as any other phobia experienced. Individuals with high apprehensions are not necessarily incompetent communicators but often perceive themselves to be so.

Trait CA can also have strong physical symptoms like increased blood pressure, heart rate and breathing before communicating. State CA is on the other hand relatively short-lived and is usually caused by situational cues such as novelty, evaluation apprehension and formality. However research has shown that trait - like personality variables though resistant to change are often changed during adulthood. Therefore people having high CA can undergo treatment and change. Trait like communication apprehension indicates that communication apprehension is a part of the personality of an individual. Such a trait is most important for those people who have either very high or very low levels of communication apprehension. It is this trait that the total score on the PRCA scale was designed to measure. An extreme score on this measure suggests that the behavior of an individual is influenced as much, if not more, by general fear or anxiety about communication as by any specifics of a communication situation in which the individual find himself or herself. At the extremes of the trait, an individual either experiences high degrees of anxiety in most communication situations or experiences very low degrees of anxiety in most communications situations. At one end are the people who are called "high CAs" (those who have high communication apprehension), and at the other end are the people who are called "low CAs" (those who have low communication apprehension). The people who are called "moderate CAs" (those who have moderate communication apprehension) are those who fall in the normal range. All three of these terms refer to trait communication apprehension.

Generalized Context CA refers to apprehensions in general context such as fear of public speaking. This implies that people can be highly apprehensive about communication in one type of context while having less or no apprehension in another context. McCroskey (1984a) identified four classic types of CA contexts: public speaking, speaking in formal meetings, speaking in small group discussions and speaking in dyadic interactions. McCroskey (1984a) argued that even research into twins has provided evidence that something other than environmentally based learning impacts on human behavior tendencies. He also stated that significant social traits like sociability can be measured in infants' shortly after birth and that there are significant differences on these traits. The interaction between heredity and environment can be understood as a precursor of adult predispositions and tendencies of CA. The causes of situational CA are much clearer than those offered for trait like CA. Buss (1980) suggested that factors such as novelty, formality, subordinate status increased apprehension.

Communication apprehension can be divided into oral communication apprehension and written apprehension. The term is also used specifically to refer to oral communication as measured by McCroskey's (1986) Personal Report of Communication Apprehension (PRCA). Writing apprehension (WA) refers to an avoidance of written tasks, a feeling of frustration and poor performance when faced with a writing task and a fear of having one's writing read publicly and evaluated (Daly and Miller, 1975, Scott and Timmerman, 2005, Mabrito 1991 and 2000).

Finally Richmond & McCroskey (1998) suggest that there are at least four types of communication apprehensions: (1) trait-like communication apprehension, which cuts across time, receiver, and situation; (2) context-based communication apprehension, which is associated with a single type of communication context cutting across receiver and time; (3) audience-based communication apprehension, which is associated with a single receiver or group of receivers cutting across context and time; and (4) situational communication apprehension, which is specific to a given context with a given receiver at a given time

THE CAUSES OF COMMUNICATION APPREHENSION

The causes of situational apprehension may be generated by the following eight elements: novelty, formality, subordinate status, conspicuousness, unfamiliarity, dissimilarity, excessive attention, and evaluation from others. The first day of a new class or a new job can be a difficult situation to deal with initially. It is the novelty of the situation that causes the anxiety. In fact, such novel situations may prevent people from being comfortable communicating with others.

Formal situations are associated with highly prescribed behaviors. In these situations, the prescribed behaviors are deemed appropriate and there is little scope for deviation from them. The same is true for subordinate status. In this situation, the person holding the higher status (e.g., an instructor to a student) defines what appropriate behavior is. Being conspicuous can also increase a person's communication apprehension. For example, when a person is put "on the spot," such as when giving a speech or introducing a speaker to an audience, the person can experience heightened anxiety. Unfamiliarity is involved when a person attends a social gathering and only knows one or two other people. Generally, the more unfamiliar the people and situation around one, the more apprehensive

a person feels. In much the same way, dissimilarity of those around one causes communication apprehension to increase. For the most part, talking to people who are similar to oneself is easier than talking to people who are different. For example, if an individual is an English major, he or she may find it hard to carry on a conversation with a person who is engineering major. There are always exceptions. Some people are less comfortable when they are talking to people who are like themselves than when they are talking to people who are very different, or even strangers. This happens because the former is more likely to make evaluations that may prove threatening. Likewise most people do not like others staring at them. Neither do they care to be ignored by others. A moderate degree of attention from others is usually the most comfortable situation. Excessive attention, such as staring or having someone probe into one's private thoughts, can cause the level of communication apprehension to rise sharply.

The underlying assumption of expectancy learning or learned helplessness, as applied to communication apprehension, is that people develop expectations about other people and situations and about the probable outcomes of communication with those people and/or in those situations. A person develops confidence in his or her communication to the extent that such expectations are fulfilled. When expectations are not met, the individual develops a need to form new expectations. If expectations are not continually met, the person may develop a lack of confidence. Anxiety is produced when no appropriate expectations can be formed. Fear is produced when expectations lead to negative outcomes that are difficult or impossible to avoid. These two occurrences, according to expectancy-learning theory, are the foundation of communication apprehension.

When a person engages in communicative behaviors that work i.e. when he or she receives reinforcement for the communication, that person develops positive expectations for those behaviors. The behaviors become a regular part of the person's communicative "storehouse". One of the most general expectations in life is to have regularity in one's environment. People expect to be reinforced for some behaviors and not reinforced for others. Reinforcement, or the lack of it, is the outcome that people learn to expect by continually engaging in certain behaviors over time and across situations. From this process, three things can happen: (1) people develop new positive expectations, (2) people develop new negative expectations, or (3) people become helpless. Negative expectations are developed in much the same way as positive expectations. People discover that some communicative behaviors lead to punishment or lack of reinforcement, and they tend to reduce those behaviors.

CONSEQUENCES OF COMMUNICATION APPREHENSION

The consequences of CA are emotional, educational, and social. Shyness and reticence affect the social skills necessary to make friends and build strong social and professional networks. It has been observed that shy students tend to confine their career aspirations to vocations that require little oral communication. Students with high CA often resist participating in class interactions and related activities. This in turn has a negative, spiraling effect--they are perceived as less capable, and are thus called on less frequently in class discussion. Their lack of initiative makes them less prone to attention by the teachers. A person's communication behavior also affects the way he or she is perceived by others. Higher and confident participation leads to greater perception of credibility, attractiveness and often leadership.

Trait CA particularly has a profound effect on those who suffer from it. Since it is a predominant feature of their personalities and cuts across contexts and specific relationships and situations, it has an impact on most aspects of their lives. In response to threats of all kinds, humans have two basic tendencies—fight or flight. For those with high CA the typical response if flight. This comes in the form of avoidance or withdrawal from communication. Avoidance involves managing communication demands so that communication does not take place. In educational settings, they may miss oral communication assignments. At work they are unlikely to volunteer for team projects, rather preferring to work alone. When communication cannot be avoided, they may attempt to withdraw from communication. At school they will choose seats in low interaction areas of the room along the back and sides.

Socially, people with high CA tend to have smaller friendship networks and professionally gravitate to professions they believe will involve low or less communication tasks or responsibilities.

Behavioral interventions are generally additional approaches to the communication tasks and work on an individual's physiological and or psychological state and include systematic desensitization, cognitive restructuring, assertiveness training, stress release exercises and visualization techniques. Pedagogical approach focuses more directly on communication tasks and seeks to promote success in communication tasks as a means to reduce apprehensions. Some researchers have also suggested structuring programs in which the writer should be allowed to view writing as a successful experience. More research is required to identify techniques suitable for classroom use.

APPROACHES TO TREATMENT OF COMMUNICATION APPREHENSION

Although skills' training is an important aspect of communication competence, it is not necessarily an effective way of managing Communication Apprehension. Improving skills does not necessarily reduce CA and vice-versa. Forcing an individual with high CA to make additional oral presentations may in fact increase the apprehension. It cannot be assumed that simply increasing the subject's opportunity to participate in writing and oral communication assignments will result in anticipated improvement in the skills. They may acquire the skills and they may perform, but it does nothing to improve their feeling for communication and may even reinforce their beliefs about how difficult or unpleasant it is because *how we feel about communication is a critical factor in communication competence*.

Systematic Desensitization (SD) and Cognitive Restructuring (CR) have consistently demonstrated that they can reduce levels of trait communication apprehension. Systematic Desensitization is a form of treatment or therapy for phobias, fears, and aversions that people have. The idea is to reduce a person's anxiety responses through counter-conditioning - a person who learned to be afraid of something is associating fear with that object or behavior, and the way to eliminate this is to teach the person to replace the feelings of anxiety with feelings of relaxation when the object or behavior is present. Cognitive Restructuring, on the other hand is a set of techniques for becoming more aware of our thoughts and for modifying them when they are distorted or are not useful. CR uses reason and evidence to replace distorted thought patterns with more accurate, believable, and functional ones. SD proceeds from the belief that anxiety is a learned or conditioned response to communication and therefore tries to condition the relaxation response to communication. This involves relation training such as using relaxing imagery to put the individual in a state of deep relaxation and pairing the communication with relaxation. In SD, the basic premise is - the physical & behavioral tension that the body resorts to is in response to anxiety thus if the tension is managed then the problem is managed.

Cognitive Restructuring works on the premise that the individual is thinking the wrong kinds of thoughts in response to the anxiety. The goal then is to identify the unproductive thinking and replace it with more productive thoughts. So that if they find themselves thinking about how stupid they appear, or how incompetent they seem, or that the audience is silently laughing at them, the therapists goal is to replace those thoughts with more productive and success oriented thoughts. This takes considerably more time to accomplish than SD although the techniques are similar.

CONCLUSIONS AND AREAS FOR FURTHER RESEARCH

Communication apprehension is relatively new area in India; however the potential to apply it in educational or business areas is very high. Apprehensions about communications can prevent the individual from effectively communicating. Therefore an apprehensive communicator may not be distinguishable from an incompetent communicator. Research can be undertaken to study if there is relationship between mother tongue and communication apprehension as well as educational factors and communication apprehension. Since we have a plethora of languages and dialects a study of mother tongue interference particularly with reference to English speaking can help students from vernacular mediums understand and address their fears of speaking and writing English confidently.

In the education field a study of apprehensions based on gender and social background will also contribute in more focused syllabus for both undergraduate and post graduate courses.

Further studies in CA will also contribute to give goal directed training to students to reduce their apprehensions and improve their employability. This is very relevant today as competence in English has become an important factor in enhancing career prospects in almost any sector. Students are technically trained in their respective specializations but many fail to impress during the interviews due to weak communication skills which may be linked to communication apprehensions not identified or acknowledged therefore not treated.

In conclusion communication apprehension can affect many aspects of our lives and result in loss of many opportunities. What is important is acknowledging and understanding the apprehensions and taking the right steps to facing the problem. Even trait CA is treatable using the right approaches as discussed above. As a society we are becoming more vocal and laying greater emphasis on overt and expressive behaviors. Our business environment is also demanding professionals who are confident communicators underlying the fact that more research into communication apprehensions specific to Indian society will go a long way in enhancing career prospects and opportunities for the new India.

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COMPETITIVE FRAMEWORK FOR SMALL AND MICRO FIRMS IN JAMMU & KASHMIR STATE

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ABSTRACT

Small and micro business firms play a very important role in economic development especially in developing countries. Small business sector is recognized as an integral component that lifts up countries out of poverty. These are the driving force for economic growth, job creation, and poverty reduction in developing countries. They have been the means through which accelerated economic growth and rapid industrialization have been achieved. Furthermore small and micro scale business has been recognized as a feeder service to large- scale industries. Present study seeks to analyze the problems faced by small and micro level firms in management of their business. The study also helps in developing a model which will develop a value system and enhance competitive advantage in small and micro firms. The study also recommends various strategies and approaches which could be implemented to so that small and micro firms could develop their organizational competitiveness.

KEYWORDS

Economic Development, Competitive Scope, Comparative Advantage, Organizational Capabilities.

INTRODUCTION

The small and micro level firms are recognized as the most important component in the development of any country's economy whether it is developed or developing. Most of the developed countries such as USA, UK, France etc have made themselves very strong economies on the basis of these small and micro firms. Other developing economies are now a day's strengthening their small and micro business firms to reach at the level of developed economies. India as a developing economy is also today focusing much on the development of these micro and small industries in various sectors and at various locations. Jammu and Kashmir State is not so much advanced in case of these firms but the J&K govt. is now paying much focus and attention towards these firms. These small and micro firms pay a vital role in economic development, creation of employment, utilization of local resources, balancing local area development and boosting industrialization. These small and micro firms also act as a feeder service to medium and large firms. Despite of many advantages small and micro level firms has to face many challenges for their survival in the market. Lack of financial resources, lack of management experience, poor location, laws and regulations, general economic conditions and other critical factors such as poor infrastructure, corruption, low demand for products and services, and poverty, shortage of raw materials, handicap in obtaining finance, inadequate competent personnel, inability to control costs and problems of dumping of cheap foreign products and others are the major obstacles in the way of small and micro firms in Jammu and Kashmir State.

OBJECTIVES

1. To analyze various problems faced by small and micro firms in Jammu and Kashmir State.
2. To develop a frame work which could develop value system in small and micro firms?
3. To suggest a model which could help small and micro firms to sustain in compex business environment?
4. To identify dimensions whose activities could be integrated to implement a synergistic approach?
5. To recommend various strategic measures that must be adopted by small and micro firms for long term growth in Jammu and Kashmir State.

MATERIAL AND METHOD

Present study has been worked out with the help of primary as well as secondary data. The primary data has been collected with the help of a pretested questionnaire from the people who are directly or indirectly linked to small and micro level firms in Jammu and Kashmir State. The secondary data has been collected from reports of small and micro firms as well as from different govt. as well as private agencies that are monitoring the working of these firms in Jammu and Kashmir State. The data and information so collected from primary as well as secondary resources has been analyzed statistically and certain cartographic has been applied to develop a framework which could help these firms to sustain business in long run.

RESULT AND DISCUSSION

Business environment has been very complex today. Millions of big, medium and small firms are striving very hard every day to survive in the market. Big and medium firms have some advantages over other small firms so they can easily survive but small and micro firms need well devised implemented approaches which can make them for critical success. The various approaches and dimensions which could help small and micro firms to sustain against various competitive forces have been given in table 1 below:

1. **POTENTIAL ENTRANTS**

This is the first competitive force which affects the proper functioning of small and micro business firms. Achieving economies of scale, managing adequate funds for working capital requirements, managing product and services differentiation through effective communication, brand loyalty and equity management, distribution upgradation through sales and trade incentives and achieving govt. subsidies and other sanctions which could restrict entry of big firms in small segments are the most helpful approaches which could improve the functioning and performance of small business firms and restrict entry of new firms in your segment in Jammu and Kashmir.

2. **SUPPLIER'S ENVIRONMENT**

Supplier's environment is the second competitive force which affects small and micro firms business. Suppliers are heavily paid by big firms to grab more resources and moreover their bargaining power is a major threat as well. Purchasing raw material from independent suppliers, seeking govt. support in getting resources at cheaper rates, enhancing quality management procedures during purchase of raw material, implementing feasible backward vertical integration, maintaining a long term relation with suppliers are the most feasible approaches for small and micro firms in Jammu and Kashmir State.

3. **BUYER'S ENVIRONMENT**

Buyer's Environment is the third competitive force affecting business of small and micro firms and is the most sensitive segment under consideration. Providing value product to consumers and customers, maintaining a proper after sale service, providing sale discounts and other offers at low demand time, enhancing localized positioning strategy, implementing a well diffusion process are the different approaches and measures which will make small firms to maintain a value relation with its buyers.

4. **SUBSTITUTE THREAT**

The threat of substitute products has recently increased to a great extent as millions of firms are mostly offering the similar category products. The measures which could help micro and small firms to sustain against their substitutes include accessing long term growth and expansion strategies of substitute products,

determining communication tools used by firms providing substitute products, maintaining own competitive scope and identifying niches not attracted by substitutes.

5. RIVALRY

This force comes into existence with the number of your competitors present in the market which are mostly in the same stage of business as you are. More number of competitors means high rivalry and less number of competitors means low rivalry. The approaches and measures which could be helpful in competing against competitors in Jammu and Kashmir State are analysis of competitor's resources, assessment of competitive advantage and capabilities of competitors, maintaining a pricing strategy in comparison with competitors pricing, accessing prevailing assumptions in the market and analyzing consumer and customer potential.

TABLE 1: FRAMEWORK FOR MANAGING SMALL AND MICRO FIRMS BUSINESS

S. No.	Generic Forces	Management Approaches for small and Micro business Firms
	Potential Entrants	a) Achieving economies of scale.
		b) Managing adequate funds for working capital requirements.
		c) Managing product and services differentiation through effective communication, brand loyalty and equity management.
		d) Distribution upgradation through sales and trade incentives.
		e) Achieving govt. subsidies and other sanctions which could restrict entry of big firms in small segments.
	Supplier's Environment	a) Purchasing raw material from independent suppliers.
		b) Seeking govt. support in getting resources at cheaper rates.
		c) Enhancing quality management procedures during purchase of raw material.
		d) Implementing feasible backward vertical integration.
		e) Maintaining a long term relation with suppliers.
	Buyer's Environment	a) Providing value product to consumers and customers.
		b) Maintaining a proper after sale service.
		c) Providing sale discounts and other offers at low demand time.
		d) Enhancing localized positioning strategy.
		e) Implementing a well diffusion process.
	Substitute Threat	a) Accessing long term growth and expansion strategies of substitute products.
		b) Determining communication tools used by firms providing substitute products.
		c) Maintaining own competitive scope.
		d) Identifying niches not attracted by substitutes.
	Rivalry	a) Analysis of competitor's resources.
		b) Competitive advantage and capabilities of competitors.
		c) Maintaining a pricing strategy in comparison with competitors pricing.
		d) Accessing prevailing assumptions in the market.
		e) Analyzing consumer and customer potential.

CONCLUSION

Michael Porters competitive forces model can be effectively used by micro and small business firms in Jammu and Kashmir State for upliftment of their business perspectives. A framework has been proposed in this paper which can help small and micro firms to devise certain measures which will improve the productivity of their operations. The small and micro firms can access the nature of competitive forces which could be through potential entrants, rivalry, suppliers, buyers or substitutes affecting their business and accordingly with the help of different approaches and measures suggested in this paper could be used to achieve better compatibility in the area under consideration.

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A GOSSIP PROTOCOL FOR DYNAMIC LOAD BALANCING IN CLOUDS

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ABSTRACT

The components of the middleware layer run on every processing node of the cloud environment in a decentralized design. To achieve scalability, it envisions that all key tasks of the middleware layer, including estimating global states, placing site modules and computing policies for request forwarding are based on distributed algorithms. Further, it relies on a global directory for routing requests from users on the Internet to access points to particular sites inside the cloud. A gossip protocol P, executes in a middleware platform and meets the design goals. It provides an optimal solution for a simplified version of the resource allocation problem and an efficient heuristic for the hard problem. The protocol proposed continuously executes, while it's input and consequently its output dynamically changes. Hence to reduce the demand, a time and cost based slot mechanism have been implemented to convert the application into a business oriented application for cloud providers which will be efficient for cloud providers and consumers to minimize the cost of accessing the cloud applications. It will reduce the waiting time of the consumer for accessing the resource in cloud at traffic less environment with efficient cost.*

KEYWORDS
Middleware platform, Heuristic solution, Resource allocation, gossip protocol.

I.INTRODUCTION

loud computing is a popular trend in current computing which attempts to provide cheap and easy access to make the computational resources. Compared to previous paradigms, cloud computing focuses on treating computational resources as measurable and billable utilities. From the clients point of view, cloud computing provides an abstraction of the underlying hardware architecture. This abstraction saves them the costs of design, setup and maintenance of a data center to host their Application Environments (AE). This economy of scale provides benefits to both parties, but leaves the providers in a position where they must have an efficient and cost effective data center. This approach centers around a decentralized design whereby the components of the middleware layer run on every processing node of the cloud environment. To achieve scalability, it is envisioned that all key tasks of the middleware layer, including estimating global states, placing site modules and computing policies for request forwarding are based on distributed algorithms.

The core contribution is a gossip protocol P*, which executes in a middleware platform and meets the design goals outlined above. The protocol has two innovative characteristics. First, while gossip protocols for load balancing in distributed systems have been studied before, has no results are available for cases that consider memory constraints and the cost of reconfiguration, which makes the resource allocation problem hard to solve (memory constraints alone make it NP-hard). An optimal solution is provided for a simplified version of the resource allocation problem and an efficient heuristic for the hard problems. Second, the protocol proposed is continuously executes, while its input and consequently its output dynamically changes. Most gossip protocols that have been proposed to date are used in a different way. They assume static input and produce a single output value. The benefit of a single, continuous execution vs. a sequence of executions with restarts is that in which global synchronization can be avoided and that the system can continuously adapt to changes in local input. On the other hand, its drawback is that the behavior of a protocol with dynamic input is more difficult to analyze. Also, the cost of the system to react to a high rate of change in local output can potentially be higher than implementing a set of changes after each synchronized run. Based on the work thus far, it is believed that, for a gossip protocol running in large-scale dynamic environments, the advantages of continuous execution with dynamic input outweigh its potential drawbacks.

II. SYSTEM MODEL

FIG. 1: SYSTEM DESIGN
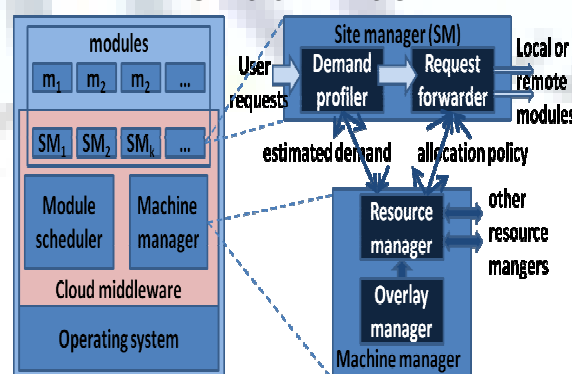
A cloud environment spans several datacenters interconnected by an internet. Each of these datacenters contains a large number of machines that are connected by a high-speed network. Users access sites hosted by the cloud environment through the public Internet. A site is typically accessed through a URL that is translated to a network address through a global directory service, such as DNS. A request to a site is routed through the Internet to a machine inside a

datacenter that either processes the request or forwards it. In this paper, we restrict ourselves to a cloud that spans a datacenter containing a single cluster of machines and leave for further work the extension of our contribution to an environment including multiple datacenters.

Each site manager handles user requests to a particular site. It has two important components: a demand profiler and request forwarder. The demand profiler estimates the resource demand of each module of the site based on the request statistics, QoS targets, etc This estimate is forwarded to all machine managers that run instances of modules belonging to this site. Similarly, the request forwarder sends user requests for processing to instances of modules belonging to this site. Request forwarding decisions take into account the resource allocation policy and constraints such as session affinity. Figure shows the components of a site manager and how they relate to machine managers. The remainder of this paper focuses on the functionality of the resource manager component.

III. FORMALIZING THE PROBLEM OF RESOURCE ALLOCATION BY THE CLOUD MIDDLEWARE

The specific problem addressed is that of placing modules (more precisely: identical instances of modules) on machines and allocating cloud resources to these modules, such that a cloud utility is maximized under constraints. As cloud utility we choose the minimum utility generated by any site, which we define as the minimum utility of its module instances. We formulate the resource allocation problem as that of maximizing the cloud utility under CPU and memory constraints. The solution to this problem is a configuration matrix that controls the module scheduler and request forwarder components. At discrete points in time, events occur, such as load changes, addition and removal of site or machines, etc. In response to such an event, the opti- mization problem is solved again, in order to keep the cloud utility maximized. We add a secondary objective to the optimization problem, which states that the cost of change from the current configuration to the new configuration must be minimized.

A. THE MODEL

We model the cloud as a system with a set of sites S and a set of machines N that run the sites. Each site $s \in S$ is composed of a set of modules denoted by M_s. We consider a system that may run more than one instance of a module m, each on a different machine, in which case its CPU demand is divided among its instances. The demand $\omega_{n,m}(t)$ of an instance of m run- ning on machine n is given by $\omega_{n,m}(t) = \alpha_{n,m}(t)\omega_m(t)$, where

$n \in N$ $\alpha_{n,m}(t) = 1$ and $\alpha_{n,m}(t) \geq 0$.

It is called that the matrix A with elements $\alpha_{n,m}(t)$ the configuration(matrix) of the system. A is a non-negative matrix with $1^T A = 1^T$

A machine $n \in N$ in the cloud has a CPU capacity Ω_n and a memory capacity Γ_n. We use Ω and Γ to denote the vectors of CPU and memory capacities of all the machines in the system. An instance of module m running on machine n demands $\omega_{n,m}(t)$ CPU resource and γ_m memory resource from n. Machine n allocates to module m the CPU capacity $\hat{\omega}_{n,m}(t)$ (which may be different from $\omega_{n,m}(t)$) and the memory capacity γ_m. We define the utility $u_{n,m}(t)$ generated by an instance of module m on machine n as the ratio of the allocated CPU capacity to the demand of the instance on that particular machine. We further define the utility of a module m as

$u_m(t) = \min_{n \in N} \{u_{n,m}(t)\}$

and that of a site as the minimum of utility of its modules. Finally, the utility of the cloud U_c is the minimum of the utilities of the sites it hosts. As a consequence, the utility of the cloud becomes the minimum utility of any module instance in the system.

B. THE OPTIMIZATION PROBLEM

For the above model, we consider a cloud with CPU capacity Ω, memory capacity Γ, and demand vectors ω, γ. We first discuss a simplified version of the problem. It consists of finding a configuration A that maximizes the cloud utility U_c.

Maximize $U_c(A,\dot{\omega})$ OP(1)

subject to $A \geq 0$, $1^T A = 1^T$ (a)

$\hat{\Omega}(A, \omega)1$ Ω (b)

Our concept of utility is max-min fairness and our goal is to achieve fairness among sites. This means that we want to maximize the minimum utility of all sites, which we achieve by maximizing the minimum utility of all module instances.

Constraint (a) of OP(1) relates to dividing into shares the CPU demand of each module into the demand of its instances. The constraint expresses that all shares are non-negative and add up to 1 for each module.

maximize $U_c(A(t+1), \omega(t+1))$

minimize $c*(A(t), A(t+1))$

subject to

$A(t+1) \geq 0$, $1^T A(t+1) = 1^T$

$\hat{\Omega}(A(t+1), \omega(t+1))1$ Ω

$sign(A(t+1))\gamma$ Γ.

(OP(2))

This optimization problem has prioritized objectives in the sense that, among all configurations A that maximize the cloud utility, we select one that minimizes the cost function c. While this paper considers only events in form of changes in demand, OP(2) allows us to express (and solve) the problem of finding a new allocation after other events, including adding or removing sites or machines.

IV. THE PROTOCOL FOR DISTRIBUTIVE RESOURCE ALLOCATION

In this section, we present a protocol P, which is a heuristic algorithm for solving OP(2) and which represents our proposed protocol for resource allocation in a cloud environment. P is a gossip protocol and has the structure of a round- based distributed algorithm (whereby round-based does not imply that the protocol is synchronous). When exe- cuting a round-based gossip protocol, each node selects a subset of other nodes to interact with, whereby the selection function is often probabilistic. Nodes interact via 'small' messages, which are processed and trigger local state changes. In this work, node interaction follows the so-called push-pull paradigm, whereby two nodes exchange state information, process this information and update their local states during a round.

P runs on all machines of the cloud. It is invoked at discrete points in time, in response to a load change. The output of the protocol, the configuration matrix A, is distributed across the machines of the system. A controls the start and stop of module instances and determines the control policies for module schedulers and request forwarders. The protocol executes in the resource manager components of the middleware architecture. A set of candidate machines to interact with is maintained by the overlay manager component of the machine manager. We assume that the time it takes for P to compute a new configuration A is small compared to the time between events that trigger consecutive runs of the protocols. At the time of initialization, P reads as input a feasible configuration of the system (see below). At later invocations, the protocol reads as input the configuration matrix produced during the previous run.

A. Functionalities the protocol P Uses

a) Random selection of machines: P relies on the ability of a machine to select another machine of the cloud uniformly at random. In this work, we approximate this ability by using CYCLON, an overlay protocol that produces a time-varying network graph with properties of a random network [3].

b) Resource allocation and module scheduling policy.

c) Computing a feasible configuration: P requires a feasible configuration as input during its initialization phase. A simple greedy algorithm can be used for this purpose, which we present in [4] due to space limitation.

B. Protocol P': An Optimal Solution to OP(1)

We developed the protocol P', which is a distributed solution to OP(1). P' is a gossip protocol that produces a sequence of configuration matrices

$A(r)$, $r = 1, 2, \ldots$,

such that the series of cloud utilities $U_c(A(r), \omega)$ con- verges exponentially fast to the optimal utility. Due to space limitation, P' is described and its properties proved in [4]. We would encourage the reader to look up this protocol, as it is quite simple and enables a better understanding of P, which can be

seen as an extension of P'. During each round of P', two machines perform an equalization step whereby CPU demand is moved from one machine to another machine in such a way that their relative demands are equalized.

C. PROTOCOL P: A HEURISTIC SOLUTION TO OP (2)

OP(2) differs from OP(1) in that memory constraints of individual machines are considered and a secondary objective is added for the purpose of minimizing the cost of adapting the system from the current to a new configuration that maximizes the utility for the new demand. Introducing local memory constraints to the optimization problem turns OP(1), which we showed can be efficiently solved for many practical cases [4], into an NP-hard problem [2].

P employs the same basic mechanism as P' as it attempts to equalize the relative demands of pairs of machines during a protocol round. Due to the local memory constraints, such a step does not always succeed.

P uses the following approach to achieve its objectives. First, pairs of machines that execute an equalization step are often chosen in such a way that they run instances of common modules. To support this concept, we maintain on each machine n the set N_n of machines in the cloud that run module instances common with n. To avoid the possibility of the cloud being partitioned into disjoint sets of interacting machines, n is occasionally paired with a machine outside of the set N_n to execute an equalization step. This dual approach keeps low the need for starting new module instances and thus keeps the cost low. Second, during an equalization step, P attempts to reduce the difference in relative demand between two machines, in case it cannot equalize the demand. Further, P attempts to execute an equalization step in such a way that the demand for a specific module is shifted to one machine only. This concept aims at increasing the probability that an equalization step succeeds in equalizing the relative demands, thus increasing the cloud utility.

The pseudo code of P is given in Algorithm 1. To keep the presentation simple, we omit thread synchronization primitives which prevent concurrent machine to machine interactions. Note that setting $\alpha_{n,m} = 0$ implies stopping module m on machine n.

During the initialization of machine n, the algorithm reads the CPU demand vector, the CPU and memory capacity vectors, and the row of the configuration matrix for n Then, it starts two threads: an active thread, in which the machine periodically executes a round, and a passive thread that waits for another machine to start an interaction.

Algorithm 1 Protocol P computes a heuristic solution for OP(2) and returns a configuration matrix A.

The active thread executes r_{max} rounds. In each round, n chooses a machine n_0 uniformly at random from the set N_n with probability p and from the set $N − N_n$ with probability $1 − p$. Then n sends its state (i.e., row_n (A)) to n_0, receives n_0's state as a response, and calls the procedure equalizeWith(), which performs the equalization step.

```
Initialization
1: read ω, Ω, Γ, rown (A), Nn ;
2: start the passive and active threads
active thread
3: for r = 1 to rmax  do
4:        if rand(0..1) < p then
5:            choose n0  at random from Nn ;
6:        else
7:            choose n0  at random from  N – Nn ;
8:        send(n0 , rown (A));rown0 (A) =receive(n0 );
9:        equalizeWith(n0 , rown0 (A));
10:       sleep(roundDuration);
11: write rown (A);
passive thread
12: while true do
13:       rown0 (A)=receive(n0 );send(n0 , rown (A));
14:       equalizeWith(n0 , rown0 (A));
```

```
proc equalizeWith(j, rowj (A))
1: l = arg max{vn , vj }; l0 = arg min{vn , vj };
2: if  j ∈ Nn   then
3:        moveDemand1(l, rowl (A), l0 , rowl0 (A));
4: else
5:        moveDemand2(l, rowl (A), l0 , rowl0 (A));
```

```
proc  moveDemand1(l, rowl (A), l0 , rowl0 (A))
1: compute Δω   such that
```
$$\frac{1}{\Omega_l}\left(\sum_{m}^{P}\omega_{l,m} - \Delta\omega\right) = \frac{1}{\Omega_{l0}}\left(\sum_{m}^{P}\omega_{l0,m} + \Delta\omega\right)$$
```
2: let mod be an array of all modules that run on both l and l0 , sorted by increasing ωl,m
3: for i = 1 to |mod| do
4:        m = mod[i]; δω = min(Δω, ωl,m );
5:        Δω  – = δω; δα = αl,m  δω  ;ωl,mαl0 ,m  + = δα;  αl,m  – = δα;
```

```
proc  moveDemand2(l,rowl(A),l0,rowl0(A))

1: compute Δω such that
```
$$\frac{1}{\Omega_l}\left(\sum_{m}^{P}\omega_{l,m} - \Delta\omega\right) = \frac{1}{\Omega_{l0}}\left(\sum_{m}^{P}\omega_{l0,m} + \Delta\omega\right)$$
```
2: let mod be an array of all modules
   that run on l, sorted by decreasing
   ωl,m
    γm ;

3: for i = 1 to |mod| do

4:     m = mod[i]; δω = min(Δω, ωl,m );
```

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Then, from the set of modules that run on both machines, taking an instance with the smallest demand on l, it proceeds to shift the demand from l to l0, until a total of Δω demand is shifted, or it has exhausted the set of modules. moveDemand2() equalizes (or reduces the difference) of the relative demands of the two machines, by moving demand from the machine with larger relative demand.

V. PRICE AND TIME SLOT NEGOTIATION

The *PTN* mechanism consists of the following: 1) an aggregated utility function; 2) negotiation strategies; and 3) a negotiation protocol.

A. UTILITY FUNCTIONS

A utility function $U(x)$ represents an agent's level of satisfaction for a negotiation outcome x. Since each Cloud participant has different preferences for different prices and time slots, a price utility function, a time-slot utility function, and an aggregated utility function are used to model the preference ordering of each proposal and each negotiation outcome.

B. .NEGOTIATION STRATEGY

This work considers bilateral negotiations between a consumer and a provider, where both agents are sensitive to time and adopt a time-dependent concession-making strategy for *PTNs*. Since both agents negotiate on both price and time slot, generating a counterproposal can be making either a concession or a tradeoff between price and time slot. Hence, an agent's strategy for multi-issue negotiation is implemented using both the following: 1) a tradeoff algorithm and 2) a concession making algorithm.

C. NEGOTIATION PROTOCOL

The negotiation protocol of the PTN mechanism follows:

Rubinstein's alternating offers protocol in which agents make counteroffers to their opponents in alternate rounds. Both agents generate counteroffers and evaluate their opponent's offers until either an agreement is made or one of the agents' deadline is reached. If a counterproposal is accepted, both agents found a mutually acceptable price and time slot. If one of the agents' deadline expires before the y reach an agreement, the negotiation fails.

FIG. 2: AGENT BASED CLOUD TESTBED
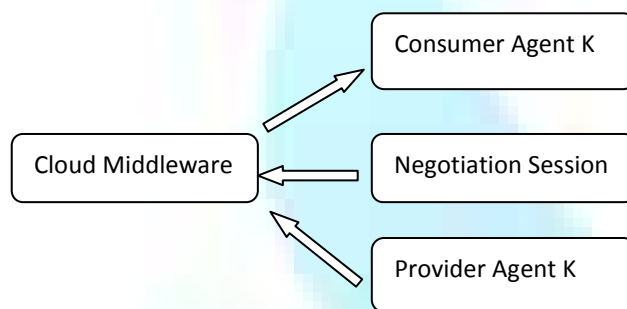
VI. RELATED WORK

The problem of application placement in the context of resource management for datacenters has been studied before (e.g., [2], [7]), and solutions are already available in middleware products [8]. While these product solutions allow for a fair resource allocation in a similar way as our scheme does, they rely on centralized architectures, which do not at all scale to system sizes we consider in this paper.

Distributed load balancing algorithm have been extensively studied for homogeneous as well as hetero- geneous systems, for both divisible and indivisible demands. These algorithms typically fall into two classes: diffusion algorithms (e.g., [11]) and dimension exchange algorithms (e.g., [12]). Convergence results for different network topologies and different norms (that measure the distance between the system state and the optimal state) have been reported, and it seems to us that the problem is well understood today. The key difference to the problem addressed in this paper is that these algorithms do not take into account memory constraints. Considering memory constraints makes the problem NP- hard and does require a new approach.

VII. CONCLUSION

With this paper, we make a significant contribution towards engineering a resource management middleware for a site hosting cloud environment. We identify a key component of such a middleware and present a protocol that can be used to meet our design goals for resource management: fairness of resource allocation with respect to sites, efficient adaptation to load changes and scalability of the middleware layer in terms of both the number of machines in the cloud as well as the number of hosted sites.

We presented a gossip protocol, that computes the heuristic solution to the resource allocation problem and evaluated its performance. In all the scenarios we investigated, we observe that the protocol qualitatively behaves as expected based on its design. Regarding fairness, the gossip protocol performs close to an ideal system for scenarios where the ratio of the total memory capacity to the total memory demand is large. The simulations suggest that the protocol is scalable in the sense that all inves- tigated metrics do not change when the system size (i.e., the number of machines) increases proportional to the external load (i.e., the number of sites). Note that if we would solve the resource allocation problem expressed in OP(2) by P in a centralized system, then the CPU and memory demand for that resource allocation system would increase linearly with the system size. Another novelty of this work is formulating a novel time-slot utility function that characterizes preferences for different time slots. These ideas are implemented in an agent based Cloud testbed. This strongly suggests to us that a centralized solution for the problem we address in this paper will not be feasible.

(a) Fairness among sites (0 means optimal fairness).

FIG. 3
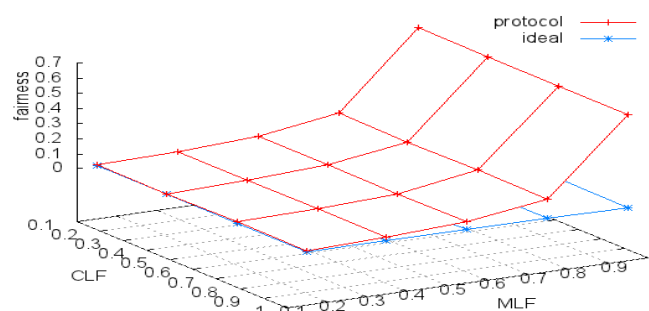
(b) Cost of change in configuration over all machines.

FIG. 4

The results reported in this paper are building blocks towards engineering a resource management solution for large-scale clouds. Pursuing this goal, we plan to address the following issues in future work: (1) Develop a distributed mechanism that efficiently places new sites. (2) Extend the middleware design to become robust to machine failures. (3) Extend the middleware design to span several clusters and several datacenters, while keeping module instances of the same site "close to each other", in order to minimize response times and communication overhead.

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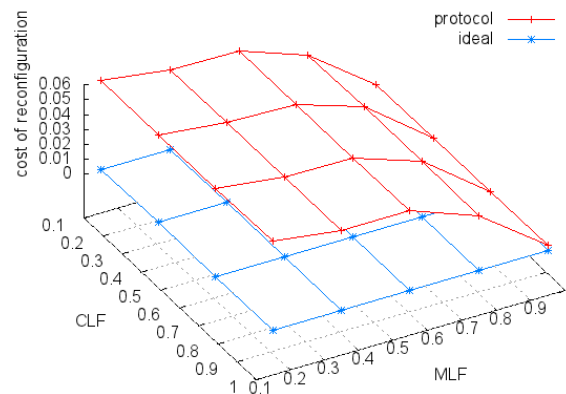1. Adam and R. Stadler, *'Service middleware for self-managing large scale systems,'* IEEE Trans. Network and Service Management, vol. 4, no. 3, pp. 50–64, Apr. 2008.
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CHANGING CONSUMER SHOPPING EXPERIENCE IN SHOPPING MALL OF INDIAN SHOPPERS

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ABSTRACT

Large scale organized players are fast making inroads replacing traditional stores with modern stores. Retail formats which are adoptions of western formats may not necessarily be suitable for Indian retail environment. Consumer shopping behavior in shopping malls explores the experience of consumers during shopping in malls. Beyond explaining the shopping activities that interest the shoppers most, important attributes of shopping experience, the frequency and purpose to visit the mall are also detailed. The findings of the study indicate applications to the marketers and managers for an effective, efficient and productive mall performance. The findings also provide a direct evidence that malls are now a day's treated as a one stop destination for various purposes like dining, entertainment, hanging out, information seeking and shopping, a phenomenon called as (shoppertainment) compelling mall managers to transform the malls that would offer stores with attractive product, merchandise, sophisticated atmospherics and facilities to lure the target customers.

KEYWORDS

Shopping Experience, Shopping Behavior, Shoppertainment Store Attribute.

INTRODUCTION

Retailing the biggest private sector in the world is of the prime movers of an economy. The real estate market in India continues to be on its buoyant growth trend. Specialized retailers, all over the world, are developing rapidly in segments such as consumer durables books, music, lifestyle goods household furnishings, healthcare and beauty. India is an emerging retail market and its retail sales are increasing by an average of 10percent a year. The globally respected consultancy firm A.T. Kearney (2004), has rated India as the most attractive retail market. Organized retailers from within and around the globe are on a spree to set up shop in the Indian market. This has intensified the level of competition amongst the players and the Indian consumers had the opportunity to experience the rapid exposure to brands. Retailers will have to be very much market oriented to meet up the customer expectation attitudes and behavioral variables. The shopping experiences of consumers are guided by their expectation. A shopping mall is a group of retail business planned, developed, owned and managed as a unit (Kotler, Armstrong, 2006. 407.) According to Mckeever et al. 1977, Prendergast et al. 1998) shopping mall as a part of urban panorama has been considered as consumers "nesting places" or habitant. (Swinyard, 1998) these places are important venues that enhance peoples experience. Experience is the consequence of acquiring and processing stimulation in the mall over repeated visits. Shopping, buying and utilizing are three activities which contribute the customer's behavior in holistic manner Tauber (1972)

LITERATURE REVIEW

Reid & Brown (1996) proposed that the customer's orientation towards shopping may shed light into the way he/she indulged in shopping and it also told the reason when he/she chooses a particular retail store including (shopping mall). Store atmosphere plays a vital role in consumer experience. Atmospheric involves a conscious designing of space to affect customer's sensory experience. (Koo,2003) in his study said a positive store experience enhanced satisfaction and would lead to increased shopping frequency, and therefore lead to increased sales. Store atmospheric specifically in reference to design and ambient factors, was a significant variable as it influences consumer preference, interpersonal service quality, merchandise quality and monetary price perception as well as shopping experience cost (Baker et al 2002; Thang & Tan 2003), Newman and Patel (2004), reported that sore atmosphere was one of the crucial factors and determinants of store choice.

Walkefield and Baker found out that the architectural design of the mall was the dimension which contributed the most to mall excitement, while a mall's interior design had strong influence on customer's desire to stay longer in mall. Wakefield and Baker (1998), also found a positive and strong relationship between malls layout and desire to stay/ mall excitement.

This tells us that the customer not only evaluates the product assortment inside the mall but they also do look for the intangible that the mall offers like colors, ambience, fragrance lighting and music Prior researches suggest that use of light colors exhibit a sense of spaciousness and impart a sense of excitement among the minds of the consumer more over even the use of serene music along with warm colors helped the mall by increasing the customer desire to stay (Solomon,1994 Peter Olson,1994) According to Sway (2007), scent marketing can make a consumer feel comfortable and put consumer in a good mood that could positively influence purchase decisions.

A positive emotional experience engendered by store atmosphere will increase the estimated spending and time spend in the store. According to Donovan et.al 1994) this partly is due to emotional variable evaluated apart from cognitive variable e.g. quality and price perception.

Lindquist (1974) included merchandise in his nine attributes list explaining that merchandise consisted of quality, assortment, service and price. Lindquist (1974), confined fact that merchandise was a key image factor.

Zimmer and Golden (1998), Chowdhury Reader and Sirvastava (1998) are the authors who accepted product quality and range as being important components in the store image developments. The fact that when the consumer's found products in the retail store attractive, they had positive perceptions thus the customers are satisfied towards the store. Tang and Tan (2003), as well Collins-Dodd and Lindey (2003), claimed that merchandise had an essential influence on the brand perception and store image as well. Sullivan et al. (2002), consumer tends to seek store with a greater assortment of merchandise to satisfy their needs. Lindquist (1974), Zimmer and Golden (1998), Chowdhury et al (1998) Mc Goldrick (2002) had studied price as one of the merchandise components. Thompson and Chen (1998) laid stress on the price/quality linkage where price means "not waste money and is linked to durability quality. Bhupta and Vaish (2010), in their study stated that the developers and retailers need to plan the merchandising by the consumer needs. Chebat, Sirgy and Grzesknoswiak (2010), opined that one way to generate more traffic is to build a strong mall image perceived by the shoppers delivering unique benefits.

Previous research conclusion regarding convenience and location were somewhat contradictory as well as one hand, Burns and Warren (1995), found, that consumer's travels beyond their local shopping area to other shopping centre in order to access a wider selection of products than that available locally, and this

satisfied the need of uniqueness. On this conclusion research based on consumer responses by SeVerin et al (2001) and Yilmaz (2004) showed that convenient location has the greatest impact on consumer's choice of center. Opening hours and time taken to reach the outlet are one of the main criteria which the consumers look for while selecting a shopping outlet (Kaufman, 1996). With retail location point of view, consumers give higher preference to shopping outlet which is nearby to their homes..Loudon and Bitta (1993), discovered that consumer's seeked high convenience, they despised spending time and effort for a particular product. They also found that convenience is also an important criterion for customers who would either visit or made purchase in a mall very infrequently.

According to Kaufmann (1996), consumers are getting more and more inclined towards "one stop destination" for their complete shopping desire. Huff (1964 and 1966) concluded that the convenience of access were the primary characteristics that consumers sought, when choosing a shopping center to visit. The demand of one stop shopping had been a major drives of increasing scale of operations in retail (Messinges and Narasimhan 1997), multipurpose shopping can take many forms. Ghosh (1986) briefly commented to both the shopper and retailer. Malls would afford those pursuing a multi-purpose agenda the opportunity to do so more effectively and in a pleasant environment.

Shopping centre entertainment was a strategic marketing tool that could extend a shopping centre's trading areas, lengthen shopper stays, and increased revenues for tenants (Shim & Eastlick 1998). That is, entertainment (such as movie theatres, food courts and fashion shows) could enhance the ambience of a shopping centre conducive to an exciting and pleasant experience for shoppers. Few studies have incorporated entertainment as an attribute of the shopping centre image. Beyond the pioneering shopping centre study that measured entertainment items including movie theatre and themed restaurants was conducted by Bellenger, Robertson and Greenberg (1977). The entertainment mix of a shopping centre could comprise *specialty entertainment* (such as movie theatres), *special event entertainment* (such as fashion shows) and *food* (such as food courts and cafés). Besides an entertaining and pleasant ambience, a safe shopping environment was also central to consumer patronage.

Convenience orientation was a key benefit that shopper's seeked in the modern environment. In this sense, consumer's perceptions of convenience (e.g., opening hours, location, and parking) would have a positive influence on their satisfaction with the service (Berry et al. 2002). Consumers' perceived expenditure of time and effort interacts to influence their perceptions of service convenience (Berry et al. 2002), and retail facilities can be designed to affect those time and effort perceptions. For example, a central location can reduce the transaction costs associated with shopping (e.g., transportation cost, time spent). In addition to a convenient location, other convenience incentives provided by retailers, such as longer operating hours or ample parking, can draw patrons to a store Hansen and Deutscher (1977–1978)

RESEARCH GAP

The forgoing discussion brings the fact that the rate of growth in the retail sector in India creates a requirement for research from the consumer's perspective. A very few detailed studies on consumers shopping experience related to malls had been done in an Indian context. Most of the studies are based on USA and European environment. The lack of studies in this domain has triggered the interest to bridge the gaps.

OBJECTIVES

From the above research gap the following objectives were derived to study about the shopping experience of the Indian consumers. The research was conducted keeping in view the following main objectives
a) To indentify various shopping activities of the customers.
b) To explore important attributes of shopping experience among Indian shopper
In order to understand the shopping experience dimension of consumer's, related to mall attributes the given model has been developed.

FIG.1: MODEL OF CONSUMER SHOPPING EXPERIENCE
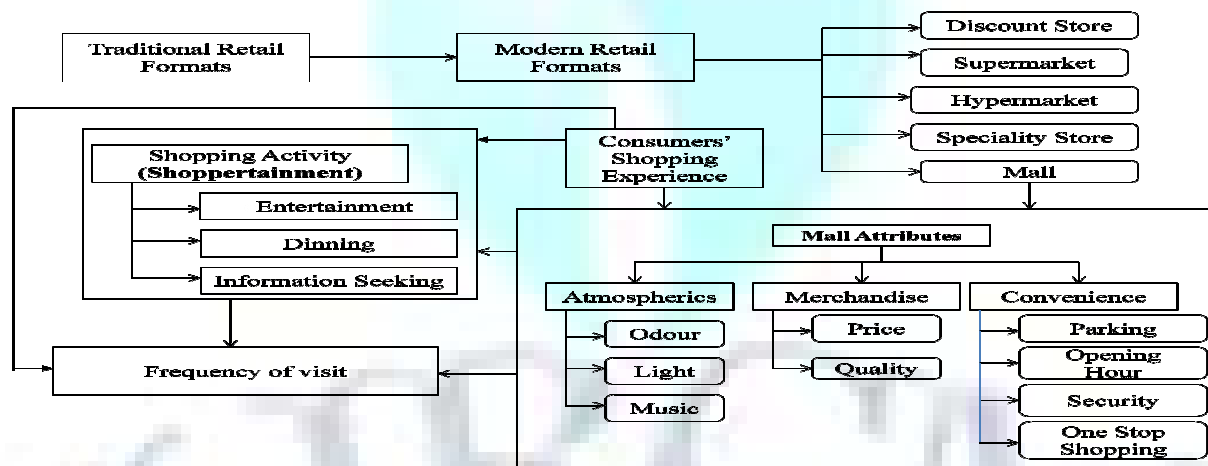
Source: Researcher

The Indian, consumer's are gradually moving from local Kirana shopping to mall shopping" with the number of domestic and international brands available in store. These modern retail formats provide a wide variety of products and services to customers and offer an ideal shopping experience with an amalgamation of product, entertainment and service all under a single roof. Indian consumers are fast embracing modern retail formats.

MODERN RETAIL FORMATS

1) Discount stores: Discount stores or factory outlets offer discounts on the MRP through selling in bulk reaching economies of scale or excess stock left over at the seasons. The product category range includes variety of perishable and non perishable goods.
2) Supermarket: This is a large, low cost, low margin high volume self service operation designed to serve the customer's need for food, luxury and household maintenance products. E.g. Food World, Subhiksha and Nilgiris
3) Hypermarket: Hypermarket in India deals with varied shops selling different types of essential commodities along with luxury items. The hyper market is mainly concentrated in urban areas only. It has a heterogeneous mixture of large and small individual retailers. Most of this hypermarket sells branded products of both domestic and international manufacturers. It offers product with different price brands for each and every section of the society. The operators of hypermarket are Reliance Retail, Bharti Wal Mart.
4) Specialty stores: These are stores that focus on specific market segments, specializing on particular products, gift items and so on. These include chains such as the Bangalore based kids Kemp, the Mumbai book retailer Crossword, Times Groups music chain Planet M.
5) Malls: It is the largest form of organized retailing. They lend an ideal shopping experience with an amalgamation of product, service and entertainment, all under a common roof.eg Shoppers stop.

The model indicates that the consumer's shopping experience depends upon the strategies adopted by the mall managers. Productive mall performers are those who provide dining, entertainment under one roof which affects the frequency of visits of the customers to the malls .The model explains that the consumer shopping experience depends upon the mall attributes including Atmospherics, Merchandise, and Convenience adopted by mall managers and shopping activities including Entertainment, Dining, and Information seeking (shoppertainment) influences the consumers shopping behavior which as a result affects the frequency of visit of the customers to the malls. The attributes derived are

MALL ATTRIBUTES

1) Atmospherics: Atmospherics was defined by Kotler (1973), p.48 as "the effort to design buying environments to produce specific emotional effects in the buyer that enhance his/ her purchase probability". He referred to five – dimensional experience, based upon our five senses. Later research defined the term atmospherics to 'ambient factor's that emphasized sound (e.g. music), feel (environmentally based not product based (e.g. crowding, arousal), smell (overall odor) and sight (environment related e.g. (wall color).

2) Merchandise: A huge contributes to store loyalty lies with the relative offerings in terms of variety of assortment. Varity is the number of different merchandise categories a retailer sells while assortment refers to the number of item in a merchandise category.

3) Convenience: Convenience refers to the easiness that consumer seeks while shopping.

4) Shopping Activity: The favorite destinations for the people are now changing. Being a common utility product, a branded pair of jeans, and some leisure time in the cinema theatres or a general hangout, more urban crowds are attracted towards the mall. Several brand squeezed into one place Entertainment zones, shopping delights and food court. The whole concept of "Shoppertainment" is what's changing the scene of Indian Retail Industry.

RESEARCH METHODOLOGY

The research methodology for the study involved a research design comprising the elements of shopping activities and various attributes of malls that influence customers shopping experience. Shopping activities further comprised of Entertainment, Dining, Information seeking, and mall attributes comprising of Atmosphere, Merchandise and Convenience. A questionnaire in English was drafted. Each question was measured using five point Likert scale, which ranged 1 to 5, where 1 resembled the response as "strongly disagree" while 5 resembled "strongly agree" to measure 19 items. The questionnaire was divided into three parts. Part one employed questions to measure necessary and relevant demographic details of the respondents. Part two of the questionnaire used questions to capture the shopping behavior of the respondents (e.g. frequency of shopping, time taken while shopping in the mall, etc). Part three aimed at measuring the respondent's reaction towards the various dimensions of shopping experience. The data obtained by a pilot study was subjected to Reliability test and Cronbach alpha value .836 was obtained for the construct. Further it was scrutinized by industry expert and academicians for its validity. A few changes were incorporated on the suggestion of experts.

The questionnaire on the basis of sampling design was subjected to shoppers intercepted post shopping activity. The population of the study consisted of both male and female shoppers who come to shop in shopping mall in Delhi. Sampling frame consisted of shopping mall in Delhi in order to have representative sample, a list of selected retail stores in Delhi was generated. The sample size consisted of 500 shoppers as used in previous studies.

From the total number of 550 questionnaires, 500 were found completely usable for the purpose of the study. The percentage of the respondents was constructed depicting the complete demographic of the sample. **Table1** indicates the demographic profile of the respondents. There were (39.2%) of male respondent and (60.8%) of female respondents in the sample. The largest set of respondents was found to be of the age group 20-30 years (46%), following were the respondents of age group groups 31-40 years (24 %) and 41-50 years (16%) respectively. Unmarried respondents were found to be more as in the sample accounting for nearly (62.4%) and married respondents were about (37.6%) of the total sample. With respect to the educational level, graduates were the most recurring with (48%) followed by postgraduate (29 %.). Percentage of undergraduates included in the sample was (23%). About the occupation of the respondent the statistics revealed that (34%) of the respondents were salaried professionals, (50%) were students, (8%) were self employed, (7%) of the respondents were homemaker and a considerably low percent of the respondent with (1%) fell in the category of retired. According to the statistics in terms of monthly income, illustrated the major portion of the respondents were earning a monthly income ranging from 25000-50000 INR (40%), followed by the respondents who specified that had a monthly income of below 25000 INR accounting for (30%) of the total sample. Others who followed had 50000-75000 INR (21%), 75000- 100000 INR (8%) and above 100000 INR (1%).

Table 2 indicates the shopping behavior of the respondents included in the sample. The given table shows that the majority people i.e. (57%) visit malls for shopping and entertainment followed by dining (16%), window shopping (14%) and for information seeking (13%). The percentage of the respondents who visited malls not for shopping but for entertainment were (49%), for dining (21%) for information seeking (20%) and window shopping (10%). Majority of the respondents i.e. (50%) visited shopping malls with their friends, (30%) with their families, (15%) with their colleagues and the lowest number of respondents (5%) visited with their relatives. With regards to the percentage of average money spend while shopping in the malls, (72%) of the respondents spend <Rs 5000, between Rs 5000- 10000, (25%), Rs10000- 20000, (2%) and the Rs 20000-30000 (1%). The table indicates that (75%) of the respondents spend 1-3 hrs. in the mall, (11%) of the respondent spend 3-6 hrs, (10%) of the respondent spend <1 hr. and the lowest number of respondent i.e. (4%) >6 hrs. in the mall. In terms of frequency of visiting the shopping mall, results indicate that (61%) of the respondent visit the malls on the basis of their shopping needs where as about (23%) of the respondents visited once a week, (11%) of the respondents were found to be visiting the mall twice a week and a handful of the respondents were observed to visit the malls thrice a week.

DEMOGRAPHIC PROFILE OF THE RESPONDENTS

Gender	Frequency	Percentage
Male	196	39.2
Female	304	60.8
Total	500	100

Age	Frequency	Percentage
<20	70	14
20-30	230	46
31-40	120	24
41-50	80	16
>50		
Total	500	100

Marital Status	Frequency	Percentage
Married	188	37.6
Unmarried	312	62.4
Total	500	100

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Qualification	Frequency	Percentage
Undergraduate	115	23
Graduate	240	48
Postgraduate	145	29
Total	**500**	**100**

Occupation	Frequency	Percentage
Home maker	40	7
Self employed	80	8
Salaried	180	36
Retired	15	3
Student	230	46
Total	**500**	**100**

Approx Monthly Income	Frequency	Percentage
Below 25000	150	30
25000-50000	200	40
50000-75000	105	21
75000-100000	40	8
>100000	5	1
Total	**500**	**100**

SHOPPING BEHAVIOR OF THE RESPONDENTS

1) Visit shopping mall for shopping and

	frequency	percentage
Entertainment	285	57
Dining	80	16
Window shopping	70	14
Information seeking	65	13
Total	**500**	**100**

2) Visit shopping mall not for shopping but for

	frequency	Percentage
Entertainment	245	49
Dining	105	21
Window shopping	50	10
Information seeking	100	20
Total	500	100

3) Shopping companion

	frequency	percentage
Family	200	30
Friends	325	49
Relatives	15	9
Colleagues	10	12
Total	**500**	**100**

4) Average money spend

	frequency	percentage
<5000	360	72
5000-10000	125	25
10000-20000	10	2
20000-30000	6	1
>40000	0	0
Total	**500**	**100**

5) Average time spend

	frequency	percentage
<1 hr	50	10
1-3 hrs	375	75
3-6 hrs	55	11
>6 hrs	20	4
Total	**500**	**100**

6) Frequency of shopping visit

	frequency	percentage
Once a week	115	23
Twice a week	55	11
Thrice a week	25	5
As per shopping needs	305	61
Total	500	100

Source: Researcher

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FIG.2: MALL ATTRIBUTES INFLUENCING CONSUMERS SHOPPING EXPERIENCE
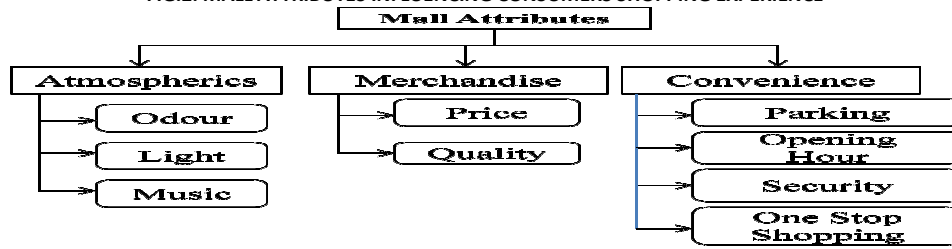
Source: Researcher

Findings of the study reveal that the entertainment emerges as the most significant activity at malls. Amongst the other important activities were dining and information seeking. The activity like window shopping is least important.

Interior design, décor and lighting of the malls were observed to have acceptance from the respondents. The respondents gave preference to the dimensions like merchandise and convenience. The respondents preferred one stop shopping, convenient opening hours, and parking facilities, wide product assortment and a place for recreation with friends and acquaintances. The study also reveals that the young customers of Delhi were favorably inclined towards the mall than their older counterparts. Atmospherics gave a positive store experience and enhanced the satisfaction which increased the shopping frequency. The design of the mall contributes to the mall excitement which influenced the customer's desire to stay longer in malls. The product quality, range and a store with greater assortment of merchandise satisfied their needs. Customers were more inclined towards "one stop destination" for their complete shopping desire.

LIMITATIONS

Some of the limitations too were identified in the study. The response of the respondents ranged from non response to partial response as they had come for shopping and entertainment and did not want to be intercepted fir a filling a questionnaire. Many were not ready to discuss the details of their response as they felt it was bothering their shopping visit.

Also shopping mall managers did not appreciate their shoppers being disturbed hence an inside shop interception for collecting response was not possible and the response was generated only outside shops.

An inside shop response would have generated a more valid data giving further detailed insight to the study being conducted.

CONCLUSION

In India the consuming class is emerging owing to the increasing income levels and dual career families with high disposable incomes. With the retailers eyeing their presence in the market, it is pertinent for them to identify the target shoppers as well as to identify the prime activities while shopping in an organized retail outlet and understand their needs/ desires of the targeted customers and deliver their offerings accordingly. Hence they can get not only maximum wallet shares of the customers but also their mind shares. A mall is a place where customers can get everything, and also is a good place to hangout with friends as a means of socialization along with purchase products of their interest and relevance. The findings of the present paper were quite similar to the literature reviewed, in a way that the customers were influenced by the music, color and lights of the malls which increased their desire to stay longer in them. The design of the store contributed to the mall excitement. Customers were more inclined towards one stop destination for their complete shopping desire as well as entertainment.

MANAGERIAL IMPLICATIONS

The result of the current study might have implications to the managers and marketers for an efficient, effective and productive mall performance. Malls are fast becoming a place for socialization and recreation and customers have high expectation from the malls. Hence mall managers should understand that malls have something more than a place to buy products. They should transform the malls in such a way that would offer energetic and vibrant stores with attractive product merchandise, scores of entertainment bundled with modern, more sophisticated atmospherics and facilities to enhance the shopping experience of the customers with the impact to lure the target customers.

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AN EFFICIENT MINING PROCEDURE FOR GENE SELECTION BY USING SELECT ATTRIBUTES

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ABSTRACT

We propose a novel gene selection algorithm based on select attributes. The proposed algorithm eliminates gene redundancy automatically and yields a very small number of cancer related genes. Using the selected genes on the cancer classification, the robust classification accuracy has been produced across different types of classification methods. By comparing the number of selected genes and the classification accuracy obtained by our methods with others, our gene selection algorithm is very competitive compared to most recent gene selection methods. In addition, it has been convinced by the literature research that our identified genes are biologically relevant to cancer. Therefore our method will be a useful supplementary tool for the future studies in the application of microarray datasets.

KEYWORDS

Classification, DNA Microarray, Gene Selection, Select attribute, WEKA.

1. INTRODUCTION

The main reason for gene mining is to find and separate genes that are characterized for conferring essential traits. The availability of molecular biological technique is more. It has allowed for rapid development and identification of nucleic acid derived sequence.
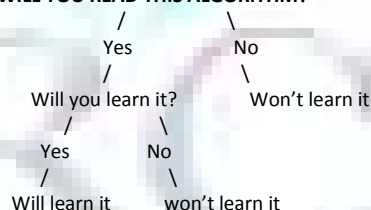
WHERE IS GENE LOCATED?

A cell is made up of chromosomes. 23 pairs of chromosomes present in a single cell. The Chromosome is made up of genes. The genes consist of DNA which is made up of four chemical letters .i.e A, C, T, G. In a cell both DNA and RNA are present. Both did a replication process.DNA was convert into RNA is called transcription process. RNA was convert into DNA is called reverse transcription process. Protein was obtained from the RNA with the help of translation process. The advantages of gene mining is, it is used in clonning method,pregnancy cases,agriculture. The disadvantage of gene mining is,high tech,costly. In this paper large number of attributes are present,so using the select attributes and then classify with various algorithm it produce different output for various algorithms.compare all output and find which one is low output, it is the final accuracy. Furthermore, using the selected genes on the cancer classification, the robust classification accuracy has been produced by some different classification methods.

2. METHODS USED FOR GENE MINING

2.1 CLASSIFICATION

Classification is a data mining algorithm that creates a step-by-step guide for how to determine the output of a new data instance. The tree it creates is exactly that: a tree where by each node in the tree represents a spot where a decision must be made based on the input, and you move to the next node and the next until you reach a leaf that tells you the predicted output. Sounds confusing, but it's really quite straightforward. Let's look at an example.

```
                    WILL YOU READ THIS ALGORITHM?
                        /                \
                      Yes                No
                      /                    \
              Will you learn it?        Won't learn it
                /            \
              Yes            No
              /                \
        Will learn it      won't learn it
```

This simple classification tree seeks to answer the question "Will you understand classification trees algorithm?" At each node, you answer the question and move on that branch, until you reach a leaf that answers yes or no. This model can be used for any unknown data instance, and you are able to predict whether this unknown data instance will learn classification trees by asking them only two simple questions. That's seemingly the big advantage of a classification tree it doesn't require a lot of information about the data to create a tree that could be very accurate and very informative.

2.2. GAUSSIAN PROCESS

Implements Gaussian process for regression without hyper parameter tuning. To make choosing an appropriate Noise level easier, this implementation applies normalization / standardization to the target attribute as well. Missing values are replaced by the global mean / mode. Nominal attributes are converted to binary ones.

2.3. LINEAR REGRESSION

Regression is the easiest technique to use, but is also probably the least powerful.. This model can be as easy as one input variable and one output variable.Of course, it can get more complex than that, including dozens of input variables. In effect, regression models all fit the same general pattern. There are a number of independent variables, which, when taken together, produce a result a dependent variable. The regression model is then used to predict the result of an unknown dependent variable, given the values of the independent variables.

2.4. MULTILAYERED PERCEPTRON

It is a feed forward artificial neural network model that maps sets of input data onto a set of appropriate output. An MLP consists of multiple layers of nodes in a direct graph, with each layer fully connected to the next one. Except for the input nodes, each node is a neuron with a non linear activation function. MLP

utilizes a supervised learning technique called back propagation for training the network. MLP is a modification of the standard linear perceptron and can distinguish data that is not linearly separable.

2.5. SMO REG

SMO reg implements the support vector machine for regression. The parameters can be learned using various algorithms. The algorithms is selected by setting the reg optimizer. The most popular algorithm(reg smo improved) is due to shevade, keerthi et al and this is the default reg optimizer.

3. NUMERICAL EXPERIMENTS

In order to exam our algorithm, we carry out some experiments on datasets, namely Breast cancer datasets. Breast cancer dataset have an attribute is 11 and instance is 699. Using select attributes, select few attributes out of 11 attributes and classify with various algorithm. Find the output. Do the procedure repeatly until the output becomes low. This process is called as selecting best method by various search models. Use all methods and find best method.

3.1 Find accuracy

Breast cancer datasets

Instance 699

Attributes 11

There are Sample code number, Clump thickness, Uniformity of cell size, Uniformity of cell shape, Marginal adhesion, Single epithelial cell size, Bare nuclei, Bland chromatin, Normal nucleoli, Mitoses, Class. In select attributes, cross validation is select in the attributes select mode. Then number of folds are represent in %. Here choose only four attributes there are clump thickness, bare nuclei, bland chromatin, class.

TABLE 1: SELECT ATTRIBUTES 4

Algorithm	Accuracy
Gaussian processes	0.7105
Linear regression	0.4353
Multilayered perception	0.4408
SMO reg	0.562

FIG. 1: GRAPH FOR 4 ATTRIBUTES
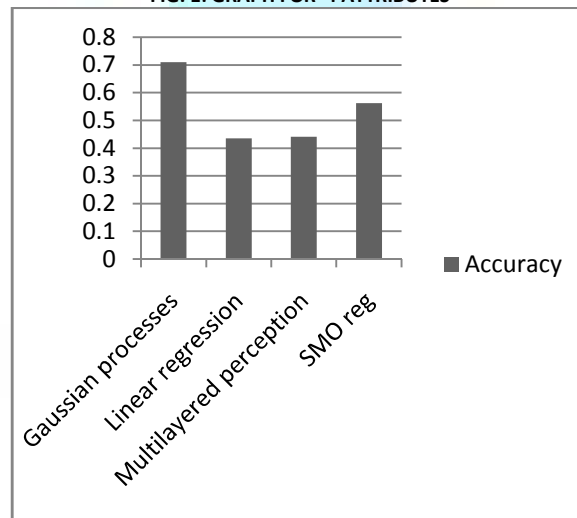
Here choose only five attributes. They are clump thickness, Uniformity of cell size, Bare nuclei, Bland chromatin, Class.

TABLE 2: SELECT ATTRIBUTES 5

Algorithm	Accuracy
Gaussian processes	0.6444
Linear regression	0.4003
Multilayered perception	0.4243
SMO reg	0.4747

FIG. 2: GRAPH FOR 5 ATTRIBUTES

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Here choose only six attributes. They are Clump thickness, Uniformity of cell size, Bare nuclei, Bland chromatin, Normal nucleoli, Class.

TABLE 3: SELECT ATTRIBUTES 6

Algorithm	Accuracy
Gaussian processes	0.6342
Linear regression	0.3933
Multilayered perception	0.4351
SMO reg	0.4335

FIG. 3: GRAPH FOR 6 ATTRIBUTES

Here choose only seven attributes. They are clump thickness, uniformity of cell size, uniformity of cell shape, bare nuclei, bland chromatin, normal nucleoli, class.

TABLE 4: SELECT ATTRIBUTES 7

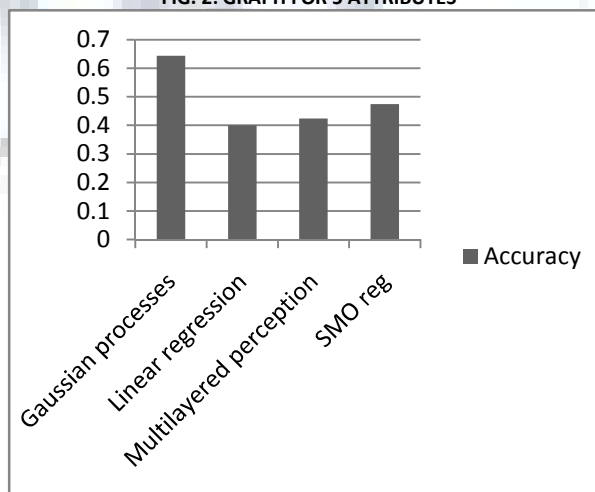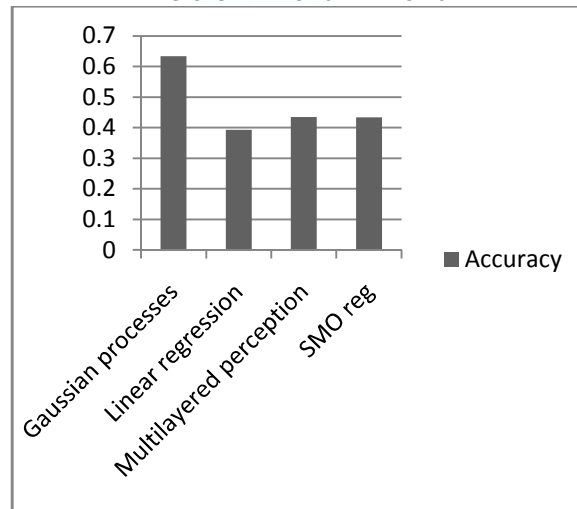| Algorithm	Accuracy
Gaussian processes	0.6338
Linear regression	0.3929
Multilayered perception	0.4284
SMO reg	0.4262

FIG 4: GRAPH FOR 7 ATTRIBUTES
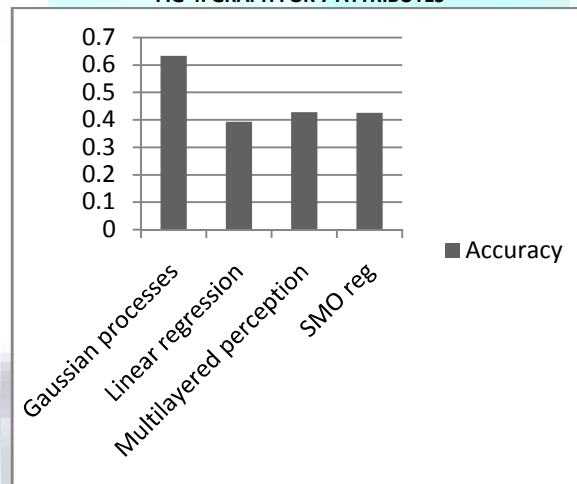
4. COMPARISON WITH PREVIOUS WORK

The gene selection problem and classification problem have been studied by several authors. For comparison, we list the number of selected genes and classification accuracy obtained by different methods and it is listed above.   Here select few attributes and find the accuracy. When the accuracy becomes low, this process is stopped.

5. BIOLOGICAL INTERPRETATION OF THE SELECTED GENES

In this section, explain about the genes in this datasets selected by the algorithm and analyze their relationship with the occurrence of disease, which are based on the identified genes closely correlated with the pathogenesis of specific or general diseases.
In summary, the majority of the genes selected by our method are relevant to the pathogenesis of disease. Some of them have definite biological meaning while the others remain to be explored. It reflects the complexity of cancerous pathogenesis.

6. CONCLUSION

Gene selection procedure is conducted on the microarray datasets through these algorithms. It can reduce the gene redundancy automatically and collect a very small number of related genes. By using the selected genes on the classification, rather high classification accuracy is obtained. The number of selected genes

and the classification accuracy obtained by our methods was compared with others, our gene selection algorithms are very hard or difficult compared to most recent gene selection methods.

7. ACKNOWLEDGMENT

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THE IMPACT OF MERGERS AND ACQUISITIONS ON THE FINANCIAL PERFORMANCE OF IDBI BANK

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ABSTRACT
The objective of present study is to investigate and analyze the impact of Mergers and Acquisitions on the financial performance of IDBI bank. This study has been undertaken to understand the fruitfulness of M&A's since the deals have been roaring in current scenario. The main aim of the study was to know the ultimate result of M&A undertaken by the IDBI bank. IDBI as a development bank in India have made deals with IDBI commercial bank and United Western Bank. Whether the impacts of these deals were positive or negative? To find out this we have gone through both primary and secondary data, mainly we chose the bank's ratios to analyze before merger period and after merger period performance of the bank, total of 10 years. Despite the many obstacles including the poor performance of United Western Bank and its huge debts IDBI has succeeded to show positive performance. Mainly the deal was very much helpful to IDBI to access the acquired banks network. The study has showed that impact of M&A deals were positively affected the bank's financial performance. Despite the positive results by the M&A's, bank has to prove consistent performance and should give more importance on liquidation.

KEYWORDS
M And A Concept, Importance Of M And A, Ratio Analysis, Financial Statement Analysis.

INTRODUCTION
Banking industry is one of the vital sectors of Indian economy. Banking business extended from small savings to biggest business deals. Banking business is not like what it was a few decades ago. Banking, banking industry and their priorities have undergone too many changes right from their beginning to till now. Today the banking industry is really in transition phase on the one hand, public sector banks and development banks facing a cut-throat competition from the private sector banks on the other hand. PSBs (public sector banks) and development banks were not like what they are today. The concept of globalization influenced much on PSBs and development banks. There are so many issues, challenges threats; they are facing for their survival in the era of globalization[1]. However, they struggled hard to retain themselves to keep their business alive. From the past two decades the heat to become leading bankers has doubled, which resulted in the fundamental changes of what they had believed as their principles.The LPG heat much influenced on 'development banks' rather than PSBs and private sector banks. As India opened its economy to the whole world, number of private banks entered the economy with the globalised and sophisticated service. The Development banks were established by the government of India for the purpose of making revolution in the industrial sector, the objectives, and the fundamental principles, however, sought to be unsuccessful and threatened much from the changes. Now the development banks are in the threshold of 'change' to serve and to enhance their business across the national boundaries. It is the only choice they left with.The concept of 'development banks' and their establishment was basically initiated by the world bank. However, 'building up of a structure for financial institution began with the establishment of ICFI in 1948'[2]. They are protected and funded by their regional governments. These banks were specially meant to under developed and developing countries, when they were badly in need of rapid establishment and growth of industries. Today situation is different, most of the countries emerging with huge economic power. As a result development banks are losing their fundamental business principles, even though they are in use and need. They silently change their business face.IDBI (Industrial Development Bank of India) is one of the predominant development bank of India is too in the transition phase. It is quite necessary to IDBI to interface with the overall banking industry, to keep their performance in upward direction. IDBI often many a times updated itself whenever it felt threatened by other banks.

NEED FOR THE STUDY
As there are number of changing factors influencing on the performance of IDBI bank ltd, it is essential to bring those changes into a frame. precisely M&A's and thereby analyzing the impacts of those changes is much useful to the concerned field of study. Whenever the study like this have been undertaken with a view to research, generally they reveal the valuable information to the industry, bank, researchers and students.Hence, there is a need to study the impact of changes and the performance indicators to broaden the performance of the bank at the globalised concept.

LITERATURE REVIEW
"The Impact of Mergers and Acquisitions on Acquirer Performance: Evidence from Turkey"[3]. The objective of this present study is to investigate the impact of Merger & Acquisition (M&A) deals on the performance of acquirer Turkish companies. A total of 62 companies involved in M&A deals between 2003 and 2007 were included in the sample. Analysis of both stock market and accounting data weakly support the hypothesis that acquirer companies are negatively affected by M&A activities.In recent years, mergers and acquisitions (M&As) have received a great deal of attention in Turkey. After long years, where total peak in 2007 and 2008. Last five years' M&A volume reached a level of USD 97 billion.

"Analyzing A Bank's Financial Statements"[4]. A careful review of a bank's financial statements can highlight the key factors that should be considered before making a trading or investing decision. Investors need to have a good understanding of the business cycle and the yield curve - both have a major impact on the economic performance of banks. Interest rate risk and credit risk are the primary factors to consider as a bank's financial performance follows the yield curve.

3. "The Value Effects of Bank Mergers and Acquisitions"[5]

Study extract: The literature on the value of bank mergers and acquisitions presents a clear paradox. Empirical evidence indicates clearly that on average there is no statistically significant gain in value or performance from merger activity. On average, acquired firm shareholders gain at the expense of the acquiring firm. This is documented over the course of many studies covering different time periods and different locations. It is true whether one looks a t accounting data or the market value of equity. Even more disturbing is that the market is unable to accurately forecast the ultimate success of individual mergers, as indicated by the absence of any correlation between changes in accounting - based performance measures and stock market returns around the merger announcement.

"IDBI merger with IDBI bank ltd."[6]. New Delhi - Industrial and Development Bank of India (IDBI) which has won the race for acquisition of ailing United Western Bank (UWB), held a board meeting on September 21 to discuss the Reserve Bank of India's (RBI) draft scheme for amalgamation, even as global rating agency Standard & Poor's has warned that UWB's huge bad loans may affect the acquirer's financial profile negatively.

7. Aharon David Y et al., (2010), analyzed the stock market bubble effect on Merger and Acquisitions and followed by the reduction of pre bubble and subsequent, the bursting of bubble seems to have led to further consciousness by the investors and provide evidence which suggests that during the euphoric bubble period investor take more risk. Merger of banks through consolidation is the significant force of change took place in the Indian Banking sector.

8. Sinha Pankaj & Gupta Sushant (2011) studied a pre and post analysis of firms and concluded that it had positive effect as their profitability, in most of the cases deteriorated liquidity. After theperiod of few years of Merger and Acquisitions(M&As) it came to the point that companies may have been able to leverage the synergies arising out of the merger and Acquisition that have not been able to manage their liquidity. Study showed the comparison of pre and post analysis of the firms. It also indicated the positive effects on the basis of some financial parameter like Earnings before Interest and Tax (EBIT), Return on share holder funds, Profit margin, Interest Coverage, Current Ratio and Cost Efficiency etc.

9 DeLong (2003), based on a sample of 54 bank mergers announced between 1991 and1995, tests several facets of focus and diversification. The study finds that uponannouncement, the market rewards the merger of partners that focus their geography andactivities and earning stream. Only one of these facets, focusing earning streamsenhances long-term performance.

10 Cornett and Tehranian (1992) and Spindit and Tarhan (1992) provided evidence for increase in post-merger operating performance.

12 Berger and Humphrey (1994) reported that most studies that examined pre-merger and post-merger financial ratios found no impact on operating cost and profit ratios.

11 Kuriakose Sony et al., (2009), focused on the valuation practices and adequacy of swap ratiofixed in voluntary amalgamation in the Indian Banking Sector and used swap ratio for valuationof banks, but in most of the cases the final swap ratio is not justified to their financials.

12 Mantravadi Pramod & Reddy A Vidyadhar (2007) evaluated that the impact of merger on theoperating performance of acquiring firms in different industries by using pre and post financial ratio to examine the effect of merger on firms. They selected all mergers involved in public limited and traded companies in India between 1991 and 2003, result suggested that therewerelittle variation in terms of impact as operating performance after mergers. In different industriesin India particularly banking and finance industry had a slightly positive impact of profitability on pharmaceutical, textiles and electrical equipments sector and showed the marginal negative impact on operative performance. Some of the industries had a significant decline both in terms of profitability and return on investment and assets after merger.

13 R. Srivassan et al., (2009) gave the views on financial implications and problem occurring inMerger and Acquisitions (M&As) highlighted the cases for consolidation and discussed thesynergy based merger which emphasized that merger is for making large size of the firm but noguarantee to maximize profitability on a sustained business and there is always the risk ofimproving performance after merger.

14 in a related study of the Chilean banking industry, Kwan(2002) found that the high rate of economic activities experienced in Chile was mainly from productivity's improvement from the large banks formed as a result of mergers and acquisitions.

SCOPE OF THE STUDY
Each and every study along with its certain set of objectives has the scope for the future study. And this study further gives a helping hand to the researchers and students who undertakes the related study/research concerning to this topic with a new scope.The scope of this study further may also extent to; financial statement information users, for bank in order to formulate the strategies and for information seekers.The scope of this study has been confined to analyze the performance of IDBI bank ltd impacted by the changes.

OBJECTIVES OF THE STUDY
➢   To understand the conceptual frame work of development banking.
➢   To know the bank profile, its objectives, area of operation strength and weaknesses.
➢   To know the changes those are impacting on performance of the bank.
➢   To study and evaluate the bank financial performance through financial tools
➢   To suggest the remedies if any, to improve the financial performance of the bank.

HYPOTHESIS OF THE STUDY
A test of hypothesis is a process that focuses on making a decision between two hypothesis and two hypothesis is formulated to test one of them as true.
H_1- positive impact of mergers and acquisitions on the financial performance of IDBI bank.
H_0 – null hypothesis is negative impact on financial performance of idbi bank.
Null hypothesis is accepted if only the bank's performance is negatively affected by M&A. otherwise, alternative hypothesis will be accepted.

RESEARCH METHODOLOGY
The study is based on both the primary as well as secondary data. However, much importance is given to secondary data as a source of the study.
➢   **PRIMARY DATA**
Primary data is the first hand data and to extent it is accurate relevant and unbiased. This includes personal interaction with the authorized officials, senior managers and other officials of idbi bank ltd.
➢   **SECONDARY DATA**
Secondary data has been collected from the official report and publishes of the bank. In addition to that, data is also collected from reports and statements of annual reports & magazines, journals, internet and text book and others

DISCUSSION OF FINANCIAL PERFORMANCE ANALYSIS
In order to know to which extent the mergers and acquisition affected on the performance of idbi bank, it is essential to analyze its financial statements. Since financial statements indicate the overall information, and it has greater importance in taking precise decisions, it has been chosen to show the impact of M&A on idbi. For the purpose of analysis the chapter has been divided into two major aspects i.e. financial statement analysis which includes balance sheet and profit and loss account and Ratio analysis.

1. FINANCIAL STATEMENT ANALYSIS

➢ **Balance Sheet**

BALANCE SHEET OF IDBI BANK LTD FOR LAST FIVE YEARS (Rs in crores)

	Mar '06	Mar '07	Mar '08	Mar '09	Mar '10
Capital and Liabilities:					
Total Share Capital	723.79	724.35	724.76	724.78	724.86
Equity Share Capital	723.79	724.35	724.76	724.78	724.86
Share Application Money	0.00	0.00	0.00	0.00	0.00
Preference Share Capital	0.00	0.00	0.00	0.00	0.00
Reserves	5,648.26	5,511.60	6,075.13	6,719.52	7,502.26
Revaluation Reserves	0.00	2,063.91	2,022.07	1,979.56	1,937.72
Net Worth	**6,372.05**	**8,299.86**	**8,821.96**	**9,423.86**	**10,164.84**
Deposits	26,000.92	43,354.04	72,997.98	112,401.01	167,667.08
Borrowings	47,530.21	42,404.38	38,612.55	44,417.04	47,709.48
Total Debt	**73,531.13**	**85,758.42**	**111,610.53**	**156,818.05**	**215,376.56**
Other Liabilities & Provisions	8,661.60	9,781.05	10,261.89	6,160.40	8,030.62
Total Liabilities	**88,564.78**	**103,839.33**	**130,694.38**	**172,402.31**	**233,572.02**
Assets					
Cash & Balances with RBI	2,680.09	5,406.47	6,694.83	8,590.82	13,903.47
Balance with Banks, Money at Call	2,682.69	1,504.62	2,063.94	2,628.50	679.36
Advances	52,739.07	62,470.82	82,212.69	103,428.34	138,201.85
Investments	25,350.53	25,675.31	32,802.93	50,047.60	73,345.46
Gross Block	2,306.30	3,856.40	3,894.76	3,873.95	4,085.27
Accumulated Depreciation	1,503.79	1,089.08	1,173.59	1,127.40	1,250.35
Net Block	802.51	2,767.32	2,721.17	2,746.55	2,834.92
Capital Work In Progress	8.40	11.05	44.80	77.56	162.04
Other Assets	4,301.50	6,003.73	4,154.02	4,882.96	4,444.91
Total Assets	**88,564.79**	**103,839.32**	**130,694.38**	**172,402.33**	**233,572.01**
Contingent Liabilities	71,190.85	100,300.28	89,811.14	96,523.34	101,597.45
Bills for collection	7,348.64	8,227.54	14,226.75	20,053.80	26,695.59
Book Value (Rs)	88.04	86.09	93.82	102.71	113.50
Source : Dion Global Solutions Limited					

Balance sheet of idbi for the last five years, the period which witnessed the mergers and acquisition has considerably impacted. It increased both assets and liabilities gradually though, there was a slight decrease in 2008. It could be the result of amount spent on new M&A.

➢ **Profit and loss account**

PROFIT AND LOSS ACCOUNT IDBI BANK LTD FOR LAST FIVE YEARS (Rs in crores)

Particulars	Mar '06	Mar '07	Mar '08	Mar '09	Mar '10
Income					
Interest Earned	5,380.72	6,345.42	8,020.84	11,631.63	15,272.63
Other Income	1,280.45	1,046.74	1,751.26	1,475.72	2,341.96
Total Income	**6,661.17**	**7,392.16**	**9,772.10**	**13,107.35**	**17,614.59**
Expenditure					
Interest expended	5,000.82	5,687.49	7,364.41	10,305.72	13,005.22
Employee Cost	318.51	282.90	384.61	569.24	756.99
Selling and Admin Expenses	317.16	404.42	365.50	504.21	720.90
Depreciation	143.55	122.00	83.50	52.70	90.98
Miscellaneous Expenses	320.24	265.05	844.62	816.93	2,009.37
Preoperative Exp Capitalized	0.00	0.00	0.00	0.00	0.00
Operating Expenses	1,033.27	1,013.90	1,092.36	1,481.66	2,067.76
Provisions & Contingencies	66.19	60.47	585.87	461.42	1,510.48
Total Expenses	**6,100.28**	**6,761.86**	**9,042.64**	**12,248.80**	**16,583.46**
Net Profit for the Year	**560.89**	**630.31**	**729.46**	**858.54**	**1,031.13**
Extraordinary Items	-0.11	0.00	0.00	0.00	0.00
Profit brought forward	787.45	1,030.71	1,314.90	21.04	71.20
Total	**1,348.23**	**1,661.02**	**2,044.36**	**879.58**	**1,102.33**
Preference Dividend	0.00	0.00	0.00	0.00	0.00
Equity Dividend	108.57	108.65	144.95	181.20	217.46
Corporate Dividend Tax	15.23	18.47	22.27	30.79	31.47
Per share data (annualized)					
Earnings Per Share (Rs)	7.75	8.70	10.06	11.85	14.23
Equity Dividend (%)	15.00	15.00	20.00	25.00	30.00
Book Value (Rs)	88.04	86.09	93.82	102.71	113.50
Appropriations					
Transfer to Statutory Reserves	-198.28	217.31	256.10	346.39	283.00
Transfer to Other Reserves	392.00	1.69	1,600.00	250.00	100.00
Proposed Dividend/Transfer to Govt.	123.80	127.12	167.22	211.99	248.93
Balance c/f to Balance Sheet	1,030.71	1,314.90	21.04	71.20	470.40
Total	**1,348.23**	**1,661.02**	**2,044.36**	**879.58**	**1,102.33**
Source : Dion Global Solutions Limited**					

Mergers and acquisitions have greater impact on the overall performance of the company. In order to show the difference of performance it has been divided into before merger and after merger for the purpose of analysis.

COMPARATIVE ANALYSIS

a)   **Before merger period:**

TABLE NO. 1: SHOWING THE NET PROFIT FOR BEFORE MERGER

Year	Mar '01	Mar '02	Mar '03	Sep '04	Mar '05
Net profit (Rs in crores)	690.97	424.29	473.59	570.90	415.52

Source: Bank's Financial Statements.

INTERPRETATION

We can clearly see that the performance of IDBI bank is quite inconsistent, it is very important to consider the threatens faced by the bank during the period of 2001 to 2005. The net profit fall suddenly in 2002 because the bank spent much amount on acquisition of IT related firms. In 2004 bank earned substantial income due to the announcement of idbi and idbi bank merger. However in this phase we can see many variations in the performance.

b)   **After merger period:**

TABLE NO. 2: SHOWING THE NET PROFIT FOR AFTER MERGER

Year	Mar '06	Mar '07	Mar '08	Mar '09	Mar '10
Net profit (Rs in crores)	560.89	630.31	729.46	858.54	1,031.13

Source: Bank's Financial Statements.

INTERPRETATION

After the merger, performance has been considerably increased due to the merger and acquisitions effect. We can clearly see the impact of M and A on the financial performance of the bank. Merger of idbi and idbi bank have grabbed the synergistic effects subtly. After the acquisition of United Western Bank the net profit earning went up, it is continued up to the year 2010. During the late 2006-07 idbi bank acquired TATA home finance which had also boosted up the banks performance.

2 RATIO ANALYSES

a)   Liquidity Ratios, b) Leverage Ratios, c) Profitability Ratios, d) Activity Ratio, e) Market ratio, f) Statement of cash flow/ Cash flow ratios.

A.   **LIQUIDITY RATIOS**

➢   **Current Ratio:**

TABLE NO. 03: SHOWING THE CURRENT RATIO OF IDBI.

Year	Mar '06	Mar '07	Mar '08	Mar '09	Mar '10
Current ratio	0.49	0.61	0.40	0.79	0.55

Source: Bank's Financial Statements.

➢   **Quick ratio:**

TABLE NO. 04: SHOWING QUICK RATIO OF IDBI

Year	Mar '06	Mar '07	Mar '08	Mar '09	Mar '10
Quick ratio	6.89	7.55	9.07	18.98	19.49

Source: Bank's Financial Statements.

B.   **LEVERAGE RATIOS**

➢   **Debt to Equity Ratio:**

TABLE NO. 05: SHOWING TOTAL DEBT EQUITY RATIO OF IDBI

Year	Mar '06	Mar '07	Mar '08	Mar '09	Mar '10
Total debt/equity	4.08	6.95	10.74	15.10	20.38

Source: Bank's Financial Statements.

➢   **Fixed asset turnover ratio:**

TABLE NO. 06: SHOWING FA TURNOVER RATIO OF IDBI

Year	Mar '06	Mar '07	Mar '08	Mar '09	Mar '10
Fixed assets turnover ratio	2.77	1.81	2.35	3.27	4.18

Source: Bank's Financial Statements.

C.   **PROFITABILITY RATIOS**

➢   **Net Profit Margin:**

TABLE NO. 07: SHOWING NP MARGIN RATIO OF IDBI

Year	Mar '06	Mar '07	Mar '08	Mar '09	Mar '10
N P Margin ratio	8.47	8.74	7.84	6.71	5.95

Source: Bank's Financial Statements

➢   **Return on Assets:**

TABLE NO. 08: SHOWING ROA OF IDBI

Year	Mar '06	Mar '07	Mar '08	Mar '09	Mar '10
(ROA)	0.63	114.58	121.72	130.02	140.23

Source: Bank's Financial Statements.

D.   **ACTIVITY RATIOS:**

TABLE NO. 09: SHOWING TOTAL ASSETS TURNOVER RATIO

Year	Mar '06	Mar '07	Mar '08	Mar '09	Mar '10
Total Assets Turnover Ratios	0.08	0.07	0.08	0.08	0.08

Source: Bank's Financial Statements.

E.   **MARKET RATIO**

➢   **Dividend per Share – DPS:**

TABLE NO. 10: SHOWING DPS OF IDBI

Year	Mar '06	Mar '07	Mar '08	Mar '09	Mar '10
Dividend per share	1.50	1.50	2.00	2.50	3.00

Source: Bank's Financial Statements.

➢   **Earnings Per Share- EPS:**

TABLE NO. 11: SHOWING EPS OF IDBI

Year	Mar '06	Mar '07	Mar '08	Mar '09	Mar '10
EPS	7.75	8.70	10.06	11.85	14.23

Source: Bank's Financial Statements.

➢ **Dividend Payout Ratio:**

TABLE NO. 12: SHOWING DPR OF IDBI

Year	Mar '06	Mar '07	Mar '08	Mar '09	Mar '10
DP Ratio	22.07	20.16	22.92	24.69	24.14

Source: Bank's Financial Statements.

➢ **Book Value per Share:**

TABLE NO. 13: SHOWING BOOK VALUE OF IDBI

Year	Mar '06	Mar '07	Mar '08	Mar '09	Mar '10
Book Value	88.04	86.09	93.82	102.71	113.50

Source: Bank's Financial Statements.

F. STATEMENT OF CASH FLOW/ CASH FLOW RATIOS

➢ **Operating Cash Flow to Total Debt:**

TABLE NO. 14: SHOWING ADJUSTED CASH FLOW

Year	Mar '06	Mar '07	Mar '08	Mar '09	Mar '10
Adjusted cash flow time to total debt	37.25	75.57	89.88	125.17	149.23

Source: Bank's Financial Statements

FINDINGS, SUGGESTIONS AND CONCLUSION

IDBI Bank, with which the parent IDBI was merged, was a vibrant new generation Bank. Idbi is the fastest growing banking company in India. The bank had consequence much from its new M&As. The Bank also had the least NPA and the highest productivity per employee in the banking industry.

FINDINGS

✓ It is found in the study that bank performance before the merger and acquisition is not up to the mark. Bank was not effective in maintaining consistent earnings.

✓ It can be seen from the study, bank's financial performance is gradually increased and went up with a huge earnings in 2010.

✓ By analyzing the key financial ratios of idbi bank it is found that bank maintaining a moderate of liquidity position. Current ratio of the bank clearly indicates the position; however, bank's quick ratio is extremely good, which reveals the high quick liquidity of the bank.

✓ Bank is extremely good in leverage. Idbi bank's leverage goes on increasing; it is because of the reason that bank intended to acquire the new firms. However it is always associated with the risk. It is also an inkling that bank seeks to acquire the new firms in the later coming days. Bank's fixed asset turnover ratio indicates higher investments on fixed asset.

✓ Banks' profitability is considerably decreasing. It is due to high investment in new ventures. As it requires much time to adapt. Its new firms into its current business, net profit margin will performs moderate.

✓ The activity ratio of the bank reveals that the bank is maintaining evenly its total asset turnover, which has no impact on the performance of bank despite the mergers and acquisitions.

✓ Banks new acquisition did not affected negatively on Maintaining of DPS and EPS they been gradually increasing, it is a good sign to bank attract the shareholders.

✓ IDBI is maintaining a good dividend payout ratio, which is sign of banks financial performance. Book value of the bank is up to the mark.

✓ Banks operating cash flow to total debt is extremely good. Bank has better cash flows towards the total debt, which is highly necessary for such banks who involved in the activities of mergers and acquisitions.

SUGGESTIONS

✓ Banks performance compared to before merger has been improved. Hence, bank should maintain the same performance in future.

✓ Bank is better in quick liquidity, but it is moderate in maintaining overall liquidity position. I recommend bank has to improve the liquidity position which is highly necessary for the creditors point of view.

✓ As I found in earlier bank's profitability is considerably fell down during the last 5 years. Bank need to improve its operational aegis in this area.

✓ Bank is extremely good in maintaining the activity ratios as well as operating cash flows despite of the mergers and acquisitions. Bank should maintain the same in future

✓ Bank is presently good in financial performance though its new acquisitions may negatively affect in the later coming days.

CONCLUSION

It is very obvious that firms seek global identification when they reach maturity in business to some extent. Things are not different in case of idbi bank. After the voyage of 5 decades in development banking activities idbi bank desired to go near to the public, and eventually chose the retail banking by merging with its parent idbi. As far as mergers and acquisitions concerned to idbi bank, they were well planned and when the plannings are perfect success is obvious. By merging with its parent idbi, it has become possible to provide retail banking service along with development banking service. Merger with UWB bank provided the pave for accesing the advanced banking facilities like, ATMs, new branches, internet banking etc., Idbi acquired tata home finance to encroach in home finance business and to provide diversified service to its cutomers. IDBI has emerged to global standards by M&As with various concerns, of them is joint venture with Federal Bank to provide the insurance service.

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LIVELIHOOD ACTIVITIES: THE DETERMINANTS AND IMPORTANCE OF OFF-FARM EMPLOYMENT INCOME AMONG RURAL HOUSEHOLDS IN TIGRAY REGION, NORTHERN ETHIOPIA

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ABSTRACT

This study examined the livelihood activities: determinants and importance of off-farm employment income among rural households in Tigray region, using evidence from Endamokonni and Degua Tembien districts of Tigray region, northern Ethiopia. Results were based on data collected from a survey of 205 randomly selected rural households.The study found that Off-farm employment is relatively more important to the poorest group. But the better off households benefit much from farming.Given participation, the factors that affect the level of per capita off-farm employment income were analyzed using two-step Heckman selection model. This considered for possible self-selection in the estimation procedure. Households with large farm size, informally educated heads and those who live in Endamokonni district earned significantly higher income from wage work. Households with older heads, more adult males, more children with five years old or under, higher livestock holding and those who live far-off from major market earned lower off-farm wage income, in case they participated. Given participation, male-headed families earn higher income from off-farm self-employment than the female-headed counterparts. Number of adult male and children with six to ten years old in the family negatively and significantly related with the level of per capita self-employment income. This may be because off-farm self-employment income was expressed in per capita terms.

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KEYWORDS
Ethiopia, Heckman's Model, Off-farm Income, Rural Households.

1. INTRODUCTION

Development policies of rural sector have often targeted in improving farm productivity to combat the major economic problems like poverty, food insecurity and inequality among the rural families. However, there is growing evidence that the rural sector is more than farming in developing countries. The rural economy is not based solely on agriculture but also on a diverse array of off-farm employment activities (Reardon, Berdegue & Escobar, 2001). Off-farm employment is very broad concept. Generally, it consists of wage employment and self-employment activities that earn income in return to the households' labor supplied outside their own farm. Wage employment includes paid development work, farm wage, skilled and unskilled regular wage (salary) employment and casual daily works. Self-employment on the other hand, comprises selling firewood and charcoal, stone mining, grain and livestock trading, petty trading, weaving, mat making, pottery and handcraft etc. Households may also get incomes outside the farm and/or off-farm employment sources of income, which we referred as the non-labor income. It includes remittance income received from relatives and friends not presently living with the household, from pension, gifts, renting out assets, inheritances and government aids.

Wide range of literatures from developing countries has identified the significant role of off-farm employment on reducing rural poverty, inequality, and income vulnerability. In Latin America for example, rural households earn 40-45% of their income from nonfarm sources (Reardon et al., 2001). Moreover, several studies in Africa have reported that off-farm earnings account for a substantial share of farm households' income. According to Haggblade, Hazell, and Reardon (2007), off-farm employment income account for about 35% of rural incomes in Africa. DFID (2004) and Oluwatayo (2009) suggested that income from household members' participation in non-farm activities has been contributing significantly to farm households' welfare in Nigeria. The situation is likely to be similar in other countries of sub-Saharan Africa, except the result from Tanzania where share of off-farm income to total income of rural farm households is only 8% (Mduma &Wobst, 2005). Similar result is also found in Ethiopia. Davis (2003) on his study of "rural non-farm economy, livelihoods and their diversification: issues and options", has reported that some 20 % income of rural households in Ethiopia originates from nonfarm sources. Similarly, Hagos and Holden (2003) in their study in northern Ethiopia have documented that per capita off-farm income accounts for about 34% of households' per capita consumption expenditure.

Despite of the few studies made on livelihood activities in Ethiopia, there have been no well documented recent studies which analyze for the livelihood (off-farm) activities in rural Tigray, Northern Ethiopia. Thus, the aim of this study is to provide empirical evidence on the livelihood activities of rural households in Tigray region (Northern Ethiopia): Describe and characterize livelihood activities, analyze the determinants of off-farm work income and the importance of off-farm income across different income groups. The study is conducted in Tigray region, Northern Ethiopia. The region belongs to the Sudano-Sahelian agro-climatic region of Ethiopia. Its climate is characterized by one long dry season from October to May followed by a short rain season from March to April in some parts of the region and the long rainy season mostly from late June to early September. The region is characterized by erratic rainfall and frequent droughts, and on average it receives between 550 and 650 mm rainfall annually (Nigisti, 2007). Tigray region has seven administrative zones, each of which is further divided into a number of districts and Kebeles. The seven zones are Eastern, Central, Southern, Southeastern, Northwestern, Western and Mekelle. The survey has been conducted in two rural districts of Tigray: Endamokonni and Degua Tembien districts located in the Southern and Southeastern Zones of Tigray respectively.

Degua Tembien is located at $39^0 10'$ E longitude and $13^0 38'$ N latitude. The capital of the district is Hagereselam, which is located 50 km far from the regional capital, Mekelle city. The district has total 124,590 (115,815 rural and 8775 urban) projected population and 27,319 rural households in 2010 (CSA, 2007). The average altitude of the district is 2618 meters above sea level and its daily temperature ranges from $18^0 c$ to $25^0 c$. The annual rainfall of the Woreda ranges from 600- 800 mm (Admasu, Kiros &Memhur, 2011).

The second site, Endamokonni , is found at a distance of 660 km from Addis Ababa and 120 km from Mekelle town. It is located at $12^0 47'$N latitude and $39^0 32'$E longitude with average elevation of 2400 meters above sea level (REST, 1996). According to the information obtained from the agriculture and rural development office of the district, Endamokonni has mean annual rain fall of 785 mm and mean annual minimum and maximum temperature of $9^0 c$ and $22^0 c$, respectively. The district has a total population of 91,256 and total households of 20,465 (CSA, 2007).

The rural people in these districts are mainly dependent on rain fed subsistence agriculture. Crops like barely, wheat, pea, Teff, lentil and faba beans are mainly cultivated in the area. The main livestock types are cattle, sheep and goats. Livestock provides drought and draft power, food and income. Off-farm employment activities for e.g; petty trade and sale of labor are also important livelihood strategies in the study area. Wage labor employment opportunities are available locally on the farms of the better-off households, and in the nearby towns. The productive safety-net program (PSNP) is also playing very important role in reducing food insecurity.

The remaining part of this paper is organized as follows: Section two presents the literature review, which deals with the theoretical and empirical review on livelihood (off-farm) activities. Section three presents the data source, methodology and model specification. In this section the sources of data, the methods used to obtain the data and the theoretical and econometric models used to analyze the data set are presented. The analysis of empirical results are presented and discussed in section four. The last section is the conclusion and recommendations part of the study.

2. LITERATURE REVIEW

2.1. DEFINITION OF TERMS AND CONCEPTS

Off-farm employment: defined as activities from which the farmers earn income apart from their farm work. It may include agricultural wage work on other people's farm, non-agricultural wage-employment or self-employment in commerce, mining, manufacturing and transport, and service sectors. Thus, unlike non-farm employment off-farm employment, is broader concept used to denote all works (agricultural or non agricultural) performed outside the own farm.

Off-farm income: is the income earned from all sources excluded the income from the household's own farm or rented in plot.

Farm income: is the income from the farm households own farm or rented in plot, which includes net income from crops and animals.

Crop income: is obtained by subtracting gross costs from the volume harvested times median sales prices at the regional level.

Livestock income: consists of net income from sold live animals and both consumed and sold raw animal products, such as meat, eggs, milk, skin etc.Net livestock income is obtained by subtracting gross production expenditure from the quantity of animals sold times producer median prices and the quantity of produced raw animal products time's consumer median prices in the relevant region.

Household income:consists of all receipts in cash, in kind or in services that are received by the household or by individual members of the household at annual or more frequent intervals, but excludes windfall gains and other such irregular and typically one-time receipts (ILO, 2003). It is the sum of off-farm employment income, farm income, and non-labor income from rented out assets, remittance, inheritance, social benefits, and net transfers.

Household: is defined in this research as people living under the same roof and eating food from the same pot. That is, a household member who did not live independently during the survey time at least for six months.

Rural: is any locality that exists primarily to serve agricultural hinterland.

Rural household: is a household that lives in the countryside and that may involve in both farm and off-farm activities.

Kebele:is the lowest administrative unit of settled rural area.

2.2. THEORETICAL MODEL

The basis for the household's livelihood decision is the theory of agricultural household model, where the household has a dual role of producer and consumer. If markets are perfect, the household first maximizes profit by choosing different sets of income generating activities based on its resources and prices, and then maximizes utility by choosing between different levels of consumption and leisure given profits. However, in case the markets are imperfect production and consumption decisions become non-separable (Bardhan & Udry, 1999).

2.3. LIVELIHOOD DIVERSIFICATION

Different terms such as off-farm, on-farm and non-farm are used to show diversification of activities and incomes. According to Barrett and Reardon (2000), the rural households activities and the corresponding income can be grouped using a three-way classification by sector (e.g., farm versus non-farm), function (wage versus self-employment), and space (local versus migratory).

The classification of activities based on sector follows the distinctions of national accounting systems; as primary (agriculture, mining and other extractive activities), secondary (manufacturing), and tertiary (services). This leads directly to the distinction between agricultural or farm income and non-agricultural or non-farm income. Hence, It does not matter where the activity takes place (on the farm premises, in town or abroad), at what scale (in a huge factory or by a single person), with what technology, or whether the participant earns profit or labor income (wages or salary) from the activity (Barrett *et al.*, 2001).

The second is functional classification. This includes wage employment (i.e., involving in wage or salary contract) and self employment (e.g., entrepreneurial activity).

Given the sectoral and functional classification of an activity, the third one is spatial classification (local and migratory), which in turn holds some important sub categories (Barrett & Reardon, 2000; Barrett *et al.*, 2001). Local activities are divided in to two sub categories (i) "at home or on-farm" (ii) "local away from home or off-farm". On the other hand, migratory or "distant away from home" activities can be categorized further in to: (a) domestic rural (e.g., inter-zone migration), (b) domestic urban and (c) foreign. From the three ways of classification presented above, this study emphasis on spatial classification (on-farm/off-farm type).

People in most part of the world (rural or urban) diversify their income. They collect their income from different sources, hold their wealth in different assets or use their assets in more than one activity. Before, we try to state the rationale for households livelihood diversification it is better to define what income diversification refers to. The definition for income diversification differs among authors. Ersado (2003) defined income diversification as an increase in the number of sources of income or the balance among the different sources. Delgado and Siamwalla (1997) defined diversification as the switch from subsistence food production to the commercial agriculture. Others authors for example, Escobal (2001) define income diversification as an expansion in the importance of non-farm income. This definition of income diversification is linked to the concept of structural transformation at the national level, defined as the long term decline in the percentage contribution of agriculture sector to gross domestic product (GDP) and employment in growing economies. Income diversification can also be defined as the process of switching from low value crop production to higher value crops, livestock, and nonfarm activities. Thus, many analysis of income consider income diversification as strategies employed to earn cash income in addition to primary production activities from a variety of sources (Dercon & Krishnan, 1996).

The United Kingdom Department of Foreign and International Development (DFID) (2004) incorporate "a livelihood" which comprises the capabilities, assets and activities required for a means of living. Livelihood diversification thus, refers to attempts by individuals and households to find new ways to raise income and reduce risk, which differ by the freedom of choice. Livelihood diversification includes both on-farm and off-farm activities which are undertaken to generate income additional to that from the main household agricultural activities, via the production of other agricultural and nonagricultural goods and services, the sale of wage labor or self-employment and other strategies to spread risk (Oluwatayo, 2009).

2.4. EMPIRICAL LITERATURE REVIEW

Having seen the basic classifications of incomes and activities, and the definitions of livelihood diversification above, the reasons why households and individuals do diversify their income are presented below. Mostly the question, why do rural households diversify their livelihoods arises on livelihood studies. Barrett and Reardon (2000) have attempted to answer for this question on their study of income diversification and household livelihood diversification strategies in rural Africa. They stated that farm households diversification of activities emerge from diminishing or time-varying returns to factors of production, from market failures (e.g. for credit) or frictions (e.g. for mobility or entry into high-return niches), from ex ante risk management, and from ex post coping with adverse shocks. Where returns to productive assets (e.g. land, labor or livestock) vary across time or among individuals within a household or households within a community, individuals, or households will diversify their assets, activities and incomes.

In addition, incomplete markets (e.g. for land, labor, credit, or insurance) may induce farm households to diversify their livelihood. For example, a smallholder household endowed with much labor but relatively little land will in the absence of well-functioning land markets hence apply some labor to its own farm and hire some labor out for off-farm wage employment in agriculture. Because when individuals or households are not endowed with the ratio that maximizes returns and there are not well-developed asset markets through which they can exchange assets to achieve the optimal mix, diversification becomes the usual

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response. Similarly, where markets for credit or insurance are incomplete, individuals are typically unable to smooth consumption even they desire credit to smooth the production or income variability. For many institutional, infrastructural, technological, and informational reasons, financial markets are usually incomplete in rural Africa. So, individuals must act outside of financial markets in order to reduce consumption variability driven by real income variability. Diversification is a primary means by which many individuals reduce risk (Barrett et.al, 2001).

On the contrary, missing markets can discourage diversification. According to Reardon 1997missing credit markets can hinder diversification into activities or assets characterized by substantial barriers to entry (as cited in Reardon et al., 2001). On the other hand, if off-farm options can be accessed easily, but credit markets are incomplete, non-farm earnings can be a crucial means for overcoming working capital constraints to purchasing necessary variable inputs for farming (e.g. fertilizer, seeds, equipment, labor) or to make capital improvements (e.g. bunds, ridges, irrigation) to one's farm (Woldehanna & Oskam, 2001).

Diversification also serves as a copping response for ex post shocks. When crops fail or livestock die, households must reallocate labor to other pursuits, whether formal off-farm employment (e.g. wage labor), informal off-farm employment (e.g. hunting), or non-agricultural activities (e.g. weaving and brewing). One implication of diversification as risk management rationale is that the need for self-insurance is a function of the availability of substitute social insurance, provided through transfers by the government, by non-profit organizations, by community or family members. Since social insurance can at least partly substitute for self-insurance, one would expect greater need for asset, activity, and income diversification where social insurance is relatively scarce. This might be indicate by the high dependence of African farm households on non-farm income, as governments, communities, and relief agencies offer meager and frequently slow safety nets, and the social foundations of traditional safety nets appears to be stretched (Barrett et.al, 2001;Ellis, 2000).

De Janvry and Sadoulet (2001) have reported that low access of land, human capital, migration assets and ethnicity play negative role on non-agricultural income. Atamanov (2011) has also tried to estimate the determinants of non-farm earnings using double hurdle model for the participant households. According to this literature age increases the level of non-farm earnings from public and private organizations but doesn't affect the level of income from self-employment. Males reap high-income form both wage and self-employment activities than their female counterparts. Education positively affects non-farm income, even for self-employment income, though education does not affect participation in self-employment. Access to infrastructure and market characteristics also increases level of earning from wage and self-employment activities. Asset ownership in the form of livestock increases significantly earnings from non-farm activities.

Ibekwe, Eze, Ohajianya, Orebiyi, Onyemauwa, and Korie (2010) have reported a result that supports the distress diversification hypothesis, for they found a negative relationship between nonfarm-income and the farm output per hectare of land using a survey data from south east Nigeria. The study tries also to show the effect of other variables like education, age of the household head, farm size, household size and farm investment. Education of the head has positive and significant effect on the level of non-farm income at 5% significant level. The variables like farm size, household size and farm investment have a negative and significant correlation with non-farm income. The coefficient for age of the household head was not significant and negatively correlated with non-farm income.

Regarding to the income diversification of the farm households, studies found that the existence of substantial entry or mobility barriers (particularly in labor market and financial and credit) to high return niches within non-farm economy make the poor to have less diversified asset and income portfolio and enter only into less remunerative activities (Barrett, Bezuneh, & Aboud, 2001; Barrett & Reardon, 2000). Barrett et al (2001) has extended and explains the difference in income portfolios and livelihood diversification pattern are associated with labor market segmentation, barrier to entry, location and potential income growth.

Oluwatayo (2009) has made similar study on poverty and income diversification among households in rural Nigeria. Tobit regression model has used to show the determinants of livelihood diversification. Male headed, small sized family, non-poor households with formal education and better income and access to credit facility were found to affect the livelihood index positively. Besides, Determinants of income share from different sources of non-farm activities among rural households in the same country has explored by other group of researchers (Olugbenga, Adewunmi, John & Adebayo, 2011). The study indicates that education, experience in non-farm activity, and distance to urban center were the major determinants of income shares from different sources of non-farm activities.

Freese (2010) has documented findings from Burkina Faso; which are consistent to the results found from other sub-Sahara African countries. The empirical paper uses Heckman two-step selection model to determine the probability of participation and level of income generated in the non-farm sector. The regressions are applied to the pooled data, as well as the wealthiest and poorest expenditure quintiles respectively. The analysis shows education and proximity to community structure positively and significantly affects income from non-farm activities for the wealthier quintile and pool data. For the poorest quintile, distance to health centers, household age and number of adults influence the success in non-farm earnings.

The recent literature on off-farm labor market participation by Babatunde and Matin (2010) in rural Nigeria has also tried to analyze the determinants of participation in off-farm labor employment and incomes from them. Tobit model has been used to estimate the determinants of income from off-farm involvement. The result indicates family size and land size have positive effect on the level of off-farm income. Exceptional negative effect of family size is reported for self-employed and remittance incomes.

Berg and Kumbi (2006), Nigisti, (2007) and Bezabh et al, (2011) have also made studies on the determinants of nonfarm employment participation in different parts of Ethiopia. Woldehanna and Oskam (2001) have also made deep study in northern Ethiopia, Tigray on the paper titled "Economic Analysis and Policy Implication of Farm and Off-farm Employment". The literature tries to answer some questions among these I present here what I believe it could be in line with my study. Farmers engage in different off-farm activities to diversify their income and enable them to feed themselves during crop failure, but the main worry is whether it is possible to support farmers to enable them participate without scarifying the farm productivity. To address this problem they analyze the link between farm and off-farm activities and their determinants. Eventually, they found a substantial increase of farm income as a result of income diversification in general and promoting off-farm employment in particular. This may because off-farm income helps to finance farming activities such as purchase of farm labor and other inputs such as seeds, fertilizer and pesticides. Still there are contradictory hypothesis regarding off-farm employment that on the one hand it produce more cash and on the other hand less labor to be employed on the farm. But, the evidence implies the positive impact of off-farm employment on farm productivity outweighs than its compromising effect. This is because one if labor was unemployed/under employed on farm, off-farm employment may have no effect on farming, second farmers can make crop choice go friendly with off-farm work and thirdly if the marginal productivity of labor off-farm is better than on their farm still they can hire labor on their farm and supply their labor off-farm. Reardon 1997 confirmed that, if there are entry barriers and rationing in the labor market, diversifying income in to off-farm activities would be more difficult for poor than for rich households (cited in Reardon, 2001).

Hagos and Holden (2003) have examined the welfare impacts of credit access and program participation measured by changes in household's per capita expenditure, the change in household's level of off-farm income over time and others. They found significantly positive impact of credit on the level of off-farm income among households located in Kebellesthat are close to major markets.

3. SIGNIFICANCE OF THE STUDY

The study is significant for it increases individuals' understanding regarding the livelihood activities in rural Tigray; factors that influence the level of off-farm employment income and the importance of off-farm employment incomes across the different income groups. The outcome of this study can also use for local administrators and NGOs in order to devise interventions that can help to improve the livelihoods of the rural poor. Particularly this paper can serve as a source of reliable information for farmers and policy makers. The findings can also use as reference for researchers who are interested to conduct further study on the field.

4. STATEMENT OF THE PROBLEM

Some studies, for example Freese (2010) in Burkina Faso, Raphael and Matin (2010)and Idowu, Awoyemi, Omonona, and Falusi (2011) in rural Nigeria, Mduma and Wobst (2005) in Tanzania, have documented the driving forces for off-farm labor participation. Woldehanna and Oskam (2001) have also analyzed the interaction between farm and non-farm activities, in Ethiopia. In spite of the few studies which analyze the driving forces for off-farm work participation and its impact on reducing economic problems like poverty, inequality, vulnerability etc. studies that examine for the livelihood activities (specifically for the determinants and importance of off-farm employment income) in rural Tigray are scarce.

Woldehanna (2000) has also reported that rural households in Tigray often involve in different off-farm activities outside their farm. However, those who participate may not equally reap the benefit from off-farm work. Thus, it needs an investigation to identify the factors that lead to this income differences among farm households. Hence, this study addresses the potential constraints and opportunities among rural households to benefit from certain off-farm activities; it also examines the importance of off-farm income across different income classes.

5. OBJECTIVES

The general objective of the study is to analyze the livelihood activities of rural households in Tigray region (Northern Ethiopia).

SPECIFIC OBJECTIVES

The specific objectives of the study are to:

❖ Describe and characterize the livelihood activities of the study area
❖ Identify the factors that affect the amount of income earned from off-farm work
❖ Examine the importance of off-farm employment income among different income groups

6. HYPOTHESES

Table1 shows hypothesized/expected effects of the independent variables over off-farm employment income.

TABLE1: EXPECTED SIGNS FOR EXPLANATORY VARIABLES IN THE MODEL

Independent variables	Expected signs	
	Off-farm wage income	Off-farm Self employment income
1.Individual/household characteristics		
Age of the household head	-	-
Sex of the household head (male=1)	+	+
Education status of household head	+	+
Number of children 5 years old or under	-	-
Number of children 6-10 years old	_	_
Number of adult male in the household	+	+
Number of adult female in the household	+	+
2. Households' asset variables		
Per capita livestock holding	-	-/+
Cultivated farm size per capita	-	-
3.Financial constraint indicators		
Credit	-/+	+
Non-labor income	-	
4.Infrastructure and location characteristics		
Distance to major (Woreda) market	-	-
Distance to the nearest all weather road	-	-
District	+/-	+/-

7. ORGANIZATION OF THE STUDY

The remaining part of this paper is organized as follows: section eight presents research methodology. Section nine presents the empirical results while the last section concludes the paper with the potential policy implications of the study findings.

8. RESEARCH METHODOLOGY

8.1 DATA SOURCE AND DATA COLLECTION METHODS

In this survey both primary and secondary data were collected from different sources. A Semi-structured interview schedule was developed to collect the necessary primary data in which both quantitative and qualitative data were gathered from the sample respondents through face-to-face interview. The questionnaire included information on households demographic characteristics, livelihood activities that the households involve in, off-farm employment activities in which at least one member of the household participates in during the survey period, number of labor hours/days these individuals supplied to off-farm wage work and wage rate per day and annual earnings from off-farm self-employment activities. In addition, gross income from sale of crop, livestock and livestock products and value of crop and livestock or livestock by products used for household consumption and variable costs like expenditure on fertilizer, seed, pesticide, herbicide, purchased livestock feed, and expenditure for livestock medicine were collected. Qualitative data were also gathered from focus group discussion and informal discussions with farmers and personal observations. In addition, secondary data has been collected from available reports and records of the agriculture and rural development offices of the study districts, Ethiopian CSA Mekelle branch and published journals from websites and unpublished literatures from different sources.

8.2. SAMPLE AND SAMPLING METHOD

Multistage stratified sampling method was applied to select the respondents. The choice of the two districts was made purposively. The reasons why these districts were chosen were: first, there is a substantial variation in the nature and availability of off-farm activities. Second, there are variations between the two districts in their access to information, market and infrastructure facilities. The choice of Kebelles is made in such a way that: first the 23 rural Kebelles in Degua Tembien and 18 Kebelles in Endamokonni are clustered in to two, based on their distance to Hagereselam and Maichew towns respectively. Then one Kebelle from the nearest and another one form the far-off clusters have been chosen from both districts randomly. For Endamokonni and Degua Tembien, the first cluster includes Kebelles within the radius of 10 kilometers, while the second cluster include Kebelles lie at radius larger than 10 Killometers from Maichew and Hagereselam towns respectively. Kebelle Shimta and Meswaeti are chosen from the nearest and far-off clusters respectively in Endamokonni district. Similarly, Kebelles Limat and Seret are chosen from the nearest and far-off clusters respectively in Degua Tembien district. Next, all Kushets from the kebelles chosen above have taken to choose our sample respondents. The respondent households are chosen from the list of household heads in each Kebelle using systematic random sampling method. Total sample of 205 rural households, 96 households from Endamokonni and 109 from Degua Tembien are chosen using probability proportional to size.

8.3. METHODS OF DATA ANALYSIS

To examine the determinants of off-farm employment income sources, incomes from off-farm work were disaggregated in to off-farm wage income and off-farm self-employment income. This separation was preferred because we expected the factors that affect income from these activities may be different.

8.3.1. ECONOMETRIC MODEL

We applied Heckman Selection model to identify the factors that affect off-farm employment income (off-farm wage employment and off-farm self employment income separately). Sample selection bias is a potential problem in predicting the income earned from off-farm work due to unobservablity nature of the dependent variable for some observations. An estimate of off-farm income regression, that does not take selection bias in to consideration suffers from omitted variable problem, what we call it the effect of selection on incomes. Hence, Heckman selection model has been employed. This approach is chosen because it

considers for selection bias that could arises due to missed data. The most common version of the Heckman procedure is to estimate in two stages. In the first stage, a probit is estimated on the decision to work off-farm with data from both participants and non-participants, and then using the estimation result inverse mills ratio is calculated. In the second stage estimation of the OLS model on level of off-farm income using data from the participant households only while including inverse mills ratio to account selection bias is then undertaken. Alternatively, a single stage estimation procedure using a likelihood function can be carried out. In this study, the determinants of income from off-farm wage work and off-farm self employment were estimated using Heckman's two stage procedures. In order to fulfill objective two the following functional form is used.

$$Y_i = f(Z_1, Z_2, Z_3, Z_4) \tag{1}$$

The econometric model for the functional form stated in equation (1) can be specified as:

$$Y_i = C_{0i} + C_{1i}Z_1 + C_{2i}Z_2 + C_{3i}Z_3 + C_{4i}Z_4 + \varepsilon \tag{2}$$

Where, Y_i represents the amount of wage income and self-employment income. Z_1, Z_2, Z_3 and Z_4 denotes for the vector of independent variables used during analysis. C_{0i}, C_{1i}, C_{2i}, C_{3i}, and C_{4i} represent for the row vectors of coefficients that have been estimated, and ε_i error term with standard properties. The model in equation (2) can be specified in more appropriate and compacted form as shown in equation (3) to estimate off-farm employment income(Green, 2003 and Verbeek ,2004).

$$\log I_i^* = X_1'_i \beta_1 + \varepsilon_{1i} \tag{3}$$

Where, I_i^* implies individual household's off-farm employment income, It is observable for the participants. Yet it is unobservable for the non-participant households. $X_1'_i$ is a vector of observable factors that affect the level of off-farm employment income and ε_{1i} error term. Let the selection model for household's participation in some off-farm work be explained by the equation stated below. Here, the equation indicates that households participation depends on some value h_i^* of a latent variable.

$$h_i^* = Z_1'_i \alpha_1 + \mu_{1i} \tag{4}$$

Thus, we can determine the participation and actual off-farm employment income from the selection equation as stated below.

$$h_i = \begin{cases} 1 \text{ if } h^*_i > 0 \\ 0 \text{ if } h^*_i \leq 0 \end{cases} \tag{5}$$

With the decision to participate in off-farm work given by $h_i=1$ if individuals participated and $h_i=0$ otherwise, where h_i is a variable indicates participation in off-farm employment, Z is a vector of variables that affect households decision to participate in some off-farm activities and μ_{1i} the corresponding error term. And the outcome equation (for this study actual off-farm employment income equation) is explained as:

$$\log I_i = \begin{cases} X_1'_i \beta_1 + \varepsilon_{1i} \text{ if } h^*_i > 0 \\ \text{Unobserved if } h^*_i \leq 0 \end{cases} \tag{6}$$

Assuming: $\mu_{1i} \sim N(0, \delta^2)$

$\varepsilon_{1i} \sim N(0,1)$

Corr $(\mu_{1i}, \varepsilon_{1i}) = \rho$

The conditional expected income of individual households who participate in off-farm employment becomes,

$$E\{I_i | h_i = 1\} = X_1'_i \beta_1 + E\{\varepsilon_{1i} | h_i = 1\}$$

$$= X_1'_i \beta_1 + \rho \phi(Z'_{1i}\alpha_1) \big/ \Phi(Z'_{1i}\alpha_1) \tag{7}$$

$$= X_1'_i \beta_1 + \rho \lambda$$

If the correlation coefficient $\rho=0$, estimating the model using OLS gives unbiased result. The term $\rho \phi(Z'_{1i}\alpha_1) \big/ \Phi(Z'_{1i}\alpha_1)$ is known as inverse Mill's ratio; usually represents by lambda, λ and reflects for the selection variable that captures selection bias. Simple statistics like percentages, means and quartile groups were used to analyze the first and third objectives of the study.

9. RESULTS AND DISCUSSION

9.1. DESCRIPTIVE STATISTICS

Farm households in the study area were found to diversify their livelihood activities and income. Even though farm households mainly relied on agriculture, which consists of crop and livestock production or both, off-farm activities have been found to support the life of many poor farm households in Tigray.

To describe the livelihood activities in the study area, the main sources of income and corresponding rate of participation for the sample households by source of income is presented. Moreover, the composition of total household income by source has presented to show the importance of the different sources of income.

Table 2 shows the participation rate and composition of households' total income. About 97.6 % of the sample households derived their income from farming which accounted 61.1% (49.5% crop income and 11.6% livestock income) of the total annual household income. The remaining 39% of household income was obtained from different off-farm sources, which includes off-farm wage employment, off-farm self-employment and non-labor income. The result indicates that 73.7% of the sample households in the study area have at least one member in the household being involved in off-farm employment activities during the survey period. In this study off-farm employment activities are categorized in to off-farm wage employment and off-farm self-employment activities. About 56% of the households have reported some income from off-farm wage, which accounts for 22.5% of total household income. Wage employment in turn can be classified in to: paid public development work, manual off-farm work and non-manual (skilled) off-farm work (Woldehanna & Oskam, 2001; Ellis, 2000). But, for this study since non-manual (skilled) off-farm work is scarce, simply we categorized off-farm wage employment in to off-farm wage work excluded paid public development work and paid public development work (food for work/ cash for work program). Among the sample households 40.4% participate in food /cash for work program; which constitutes 2.4% of the total household income. Only 27.3% of the total sample households are involved in wage work excluded paid public development work. This accounts for 20.3% of the annual household income. Paid development work involves community soil and water conservation programs including forestation, construction of community services like school, health center, road, farmers training center and other community work done under the food for work program.

About 37.6 % of the sample households are involved in self-employed non-agricultural activities; which accounts only one-tenth of the total household income. It includes activities like grain and livestock trade, sell of handcraft, coffee/tea selling, stone and sand collection, fire wood and charcoal selling, shop-keeping, selling local drinks, petty trade and other local services. Most of the off-farm work participants respond that the income obtained from off-farm source is used for consumption and some farmers use it for buying oxen, fertilizer and farm instruments. But very few use it for investment in non-farm activities and none of the households uses off-farm employment income for saving. This gives us some insight that expanding off-farm sector could promote the farm sector. Because this enables farmers to get sufficient amount of income which in turn is used for farm investments.

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TABLE 2: HOUSEHOLD PARTICIPATION IN DIFFERENT LIVELIHOOD ACTIVITIES AND COMPOSITION OF TOTAL HOUSEHOLD INCOME

Income by source	Participation rate (%)	Mean share of total income (%)
Total farm income	97.6	61.1
Crop income	96.6	49.5
Livestock income	74.2	11.6
Total off-farm income	82.4	38.7
Off-farm work income	73.7	32.8
Total wage income	56.1	22.5
Total wage income excluded paid public development work	27.3	20.3
Paid public development work	40.4	2.4
Self-employed income	37.6	10.3
Non labor income	17.1	5.9

Source: Computed from own survey data, (2012)

Note: All income sources are net costs. Crop income is computed by subtracting explicit variable costs (like costs for seed, fertilizer, herbicides or pesticides, hire labor, rent in oxen or motor etc) from the amount of own harvest consumed plus sold times by the prevailing market price in the area. Similarly, livestock income is calculated as the value of live animals and raw animal products/services sold and consumed net of some inputs such as purchased feed, hired labour and veterinary services. The method is used in reports on livestock income (FAO, 2011).

9.1.1. CHARACTERIZING OFF-FARM EMPLOYMENT PARTICIPATION RATE BY SEX OF THE HOUSEHOLD HEAD AND DISTRICT

Table 3 indicates the participation rate of households in different off-farm employment activities by sex of the household head and district. In the survey data, 28.8% of the household heads were females. On average, 20.5% of the participant households were female headed. But, there is a difference in participation of female households in various off-farm employment activities across the study sites. Female headed households took larger percent for both off-farm self-employment and paid public development work participation than their male counterparts in Endamokonni district. This may be due to the availability of large market for self-employment activities that are appropriate for females. The reason why female headed households hold larger rate of participation than male headed households in food /cash for work program is because female headed households were poorer than male headed households in the area and the program usually targets to the poorest households that able to work. This is based on our survey data that indicates the average annual agricultural income for male and female-headed households were Birr 9363.35 and 4183.95 respectively. But, the reverse is true in Degua Tembien district: female-headed households take fewer participation rates in all off-farm activities. The following possible reasons can be forwarded: the main reason can be because of the difference in biophysical environment of the two sites. Other reasons can be due to the existence of small market for off-farm products /services appropriate for females in Degua Tembien, and also possibly because of the sample from Degua Tembien constitutes small number of female headed households by chance. In both districts female-headed households participate less in off-farm wage employment excluded paid development work. This is due the existence of less time available for females. Besides, traditionally the society considers that nonfarm wage work as belongs only for males. Another reason could be since employers mostly demand male labor for off-farm wage work.

TABLE 3: OFF-FARM WORK PARTICIPATION RATE BY SEX OF THE HOUSEHOLD HEAD AND DISTRICT

Type of off-farm activities	Endamokonni (N=96)		DeguaTembien (N=109)	
	Male	Female	Male	Female
Off-farm self employment	17.7	25	28.4	4.6
Total wage employment	37.5	27.1	40.4	8.3
Wage-employment excluded paid development work	19.8	10.4	23.9	0.9
Paid development work	25	26	22.9	7.3
Total off-farm work participation	46.9	32.3	58.7	10.1

Source: Computed from own survey data, (2012)

9.1.2. IMPORTANCE OF OFF-FARM EMPLOYMENT INCOME ACROSS DIFFERENT ECONOMIC GROUPS

In this part, the relative importances of various income sources across different income strata of rural households were presented. A useful method of analyzing income composition across different economic groups is sorting by deciles, quintiles or quartiles. But, only 204 observations have full information to analyze income composition. Therefore, quartile group is appropriate in this case. In order to better reflect household's living standards the quartiles are constructed based on per capita household income. The first and the fourth quartiles could be used as proxy for the relatively poorest and richest groups respectively.

Table 4 shows income composition by per capita income quartiles. We found that the importance (share) of farm income increases with per capita household income while the importance of off-farm income decreases. The richest households (households with the highest per capita income) derived most of their income from farming which accounted 80.6% of their annual total income. The first quartile or lower 25% households, in contrast, derive their largest (66.5%) income from off-farm sources, which in turn constitutes 44.3% wage income, 10.3% self-employment income and 11.9% non-labor income. Though aggregate farm income contributed less for the poorest group, crop income was very important next to off-farm income for them, which accounted for over 58% of their overall income. Thus, households who were better in agricultural income obtained less from off-farm activities. This implies off-farm activities serve as a survival strategy for the rural poor in Tigray. Therefore, this is in line with the empirical argument that rural households in Africa engage themselves in off-farm /non-farm activities more out of necessity than choice (DFID, 2004).

The large contribution of wage income to the poorest group of households implies that off-farm wage does not require initial capital. Hence, the poor can enter easily**.** Finally, non-labor income consists of income received from relatives or friends, gifts, pension, remittance, renting out assets, inheritances and government food aid. In this study, we found that non-labor income decreases with an increase in per capita household income. This is because non-labor income, in our case, largely derives from government food aid; and government food aid intern is a program, which mainly targets to the poorest of poor.

TABLE4: AVERAGE COMPOSITION (%) OF ANNUAL NET HOUSEHOLD INCOME BY PER CAPITA INCOME QUARTILES

Income source	Per capita income quartiles			
	1st	2nd	3rd	4th
Total farm income[1]	33.1	55.3	75.6	80.6
Crop income	58.6	32.9	52.4	54
Livestock income	-25.5	22.3	23.2	26.6
Total off-farm income[2]	66.5	44.3	24.3	19.3
Off-farm employmentincome[3]	54.6	39.8	20.4	16.3
Off-farm wage income	44.3	21.7	14.3	9.7
Off-farm Self employed income	10.3	18.1	6.1	6.6
Non-labor income	11.9	4.5	3.9	3

Source: Computed from own survey data, (2012)

[1]Total farm income= Crop income +Livestock income
[2]Total off-farm income=Off-farm employment income+ non-labor income
[3]Off-farm employment income=Off-farm wage income +off-farm self employment income

9.1.3. DESCRIPTIVE STATISTICS FOR THE DEPENDENT AND INDEPENDENT VARIABLES

Table 5 presents definition and descriptive summary of the variables used for the regression analyses. The result shows that while most of the sample households were male headed; the remained 25.85% were female headed. Over 52 % of the household heads in the sample were illiterate, 8.3% are informally literate while the rest 28.3% and 11.2% were formally literate with grades 1-6 and above grade 6 respectively. The mean age of the household heads in the sample was 45 years. The mean number of children with 5 years old or under in the household for the sample was 0.87. On average, there were 0.78 children with 6-10 years old per household for the sample.

On average, an individual farmer owned 0.21 livestock units. The average per capita farm size was 0.456 tsimdi, which is smaller than 1 tsmdi (0.25 hectare), the average landholding in Tigray. The mean annual per capita non-labor income of the sample households was Birr 72.39 with a 6% share of total net household income (see Table 2). Almost 65% of the sample households acquired loan either from formal or/and informal sources during the survey period. On average, it took 0.408 and 1.79 hours to reach the nearest all weather road and nearest major market from individual's home respectively.

TABLE 5: DESCRIPTIVE STATISTICS OF VARIABLES

Variable	Description	Mean/ percent	Std.dev
Offwpart	Dummy for participation in off-farm wage work Yes=1 Otherwise=0	 56.10% 43.90%	
Offspart	Dummy for participation in off-farm self employment Yes=1 Otherwise=0	 37.56% 62.44%	
pcoffwinc	Annual per capita household wage income (Birr)	218.739	383.384
pcoffsinc	Annual per capita household Self-employed income (Birr)	149.907	365.054
sex_hh	Sex of the household head Male=1 Female=0	 74.15% 25.85%	
age_hh	Age of the household head (years)	45.12	12.475
educ_hh	Education status of the household head Illiterate=0 Informally literate=1 Grade1-6 for head=1 Grade above 6 for head=1	 52.2% 8.29% 28.29% 11.22%	
child1	Number of children with 5 years old or under	0.873	0.836
child2	Number of children 6-10 years old	0.785	0.775
adumale	Number of adult male household members	1.444	0.972
adufem	Number of adult female household members	1.419	0.874
pctlu[1]	Per capita livestock holding (excluded oxen) in TLU	0.17	1.208
Pcfarmsize[2]	Per capita area cultivated by household in the survey year (tsimdi)	0.458	0.561
pcnlaborinc	Annual per capita non-labor income (Birr)	72.394	257.523
credit	Dummy whether the household demands loan during the survey year (yes=1) (No=0)	 35.12% 64.88%	
dalwroad	Distance to nearest all weather road in hours	0.408	0.459
dmajormkt	Distance to nearest major market in hours 1.797 0.86	1.797	0.869
district	Dummy for study Woreda Endamokonni=1 DeguaTembien=0	 46.83% 53.17%	

Source: Computed from own survey data, (2012)

[1]Tropical Livestock Unit conversion factors are for cattle=0.7, sheep or goats=0.1, horses=0.8, mules=0.7, donkeys=0.5, calves=0.15chickns=0.01;
[2]Tsimdi is equivalent to 0.25 hectare.

9.2. ECONOMETRIC RESULT ANALYSIS

9.2.1. ESTIMATION PROCEDURE

The data was tested for multicollinearity, hetroskedasticity and normality problems using different STATA 11. Multicolinearity test helps to identify highly correlated independent variables. In this case household size has shown serious multicollinearity problem; and we exclude from our model. The most commonly applied diagnostic test for multicollinearity problem is Variance Inflation Factor (VIF). As a rule of thumb, if the VIF of a variable exceeds 10, that variable is said to be highly colinear (Gujarati, 2004). In order to apply probit and Heckman's selection model normality and homoskedasticity of the error term should hold (Green, 2003). Hence, these assumptions required to be tested. We tested for heteroskedasticity (for the log-lin model) and normality of the error terms for the different regression outcomes. We use Breurusch-pagan hetroskedasticity test to check existence of hetroskedasticity problem for errors. To check for normality of data, skewness and kurtosis as well as the Shapiro-Wilk and Shapiro-Francia tests are used (Park, 2008). The homeskedasticity (for the log-lin model), and normality assumption for the log-linear off-farm income models are not rejected. The level of per capita off-farm work income equations has transformed in to log-linear functional form for in an attempt to eliminate the heteroskedasticity problem.

9.2.2. HECKMAN TWO STEP MODEL ESTIMATES FOR OFF-FARM EMPLOYMENT INCOME

In this section, the determinants of income from off-farm wage work and off- farm self-employment sources are analyzed. This can help in particular to understand why some households are better able to derive income from specific off-farm activities than others. Since many households do not derive income from off-farm wage and off-farm self-employment activities, off-farm employment income is not observed for the non-participants. Hence, if we apply OLS using data from the participant samples only we may get biased and inconsistent results. For this reason, Heckman's two step selection model was applied to estimate the income equations, because Heckman model helps us to consider observations that have missed data. Heckman model was also used by other authors in similar contexts (Hagos & Holden, 2003; Brick et al., 2005).

The covariates that we used to analyze the participation in off-farm activities were also used to identify the factors that affect income from them. To avoid identification problem that could arise during estimation, the variable number of children with 6-10 years old was excluded from off-farm wage income equation and used only in the corresponding selection equation. Similarly, per capita non-labor income was excluded from the outcome equation for off-farm self employment. The results for the outcome equations of the Heckman models are presented in Table 6. Here, results for the outcome equations are estimation results for determinants of per capita off-farm employment income (per capita off-farm wage and per capita off-farm self-employment income) after correcting

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for selection bias. The estimate for mills lambda for the off-farm wage participation, λ=1.456, given at the bottom of table 6 is statistically significant at 5% significant level (with, p=0.05). Similarly the estimate for mills lambda for off-farm self-employment participation, λ= -1.372 is significant at 10% level with (P=0.076). This indicates the existence of selection bias. Hence, applying ordinary least square (OLS) method without correcting for selection bias can give us biased and inconsistent coefficients.

The first stage, which represents participation, is not discussed now; here we focused on the second stage, which described the determinants of off-farm employment income given that households participate in certain activities. Most of the explanatory variables relate with logarithm of per capita off-farm wage income as expected. But, education level for head (specifically grade1-6), number of adult male and female in the household and per capita farm size contradicts to what we expect prior. Sex and education status for household head (informal and formal above grade 6) and distance to the nearest all weather road relates with level of off-farm self-employment income as expected. But, the sign of coefficients for age of household head, number of adult male and female in the household, per capita farm size and distance to the nearest market are found different from prior expectation.

Household and individual characteristics affect both the participation in off-farm employment and the corresponding earnings, although their sign is different for some of these variables. Variables that indicate household asset position significantly affect the level of off-farm wage income per capita; but their effect is not significant for off-farm self employment income. Access to infrastructure, represented by distance to the nearest all-weather road and distance to the nearest major market were not significant for off-farm wage employment participation. However, distance to the nearest major market significantly relates with off-farm wage income at 10% level. The dummy for study site (district) significantly affects both the likelihood of wage work participation and incomes from it. Most of the variables that affect off-farm self-employment participation become insignificant for the level of income from these activities. For example, credit, per capita non labor income, per capita total livestock units, distance to the nearest all weather road, distance to the nearest major market and dummy for study site significantly affects participation in off-farm self employment; while their effect is not significant for the level of off-farm self employment income.

Sex of the head, number of adult male in the house household and number of children with 6 to 10 year old significantly relates with the level of per capita off-farm self employment income. The detail explanations for the determinants of income from off-farm (wage and self employment) are presented below.

Male headed households found to earn higher income from off-farm self-employment than female headed counterparts. But the effect of sex of head on the level of per capita off-farm wage income is not significant, given participation. Higher earning for male-headed families favors with prior expectation. This is because most of the time females in the study area involve in traditional enterprises that earn low return and can perform at farmyards. Besides, females may not get enough time to involve in profitable activities like long distance trade that demands more time and resource. Therefore, females, if they provide with skill enhancing training and time saving technologies it is possible to improve their income from off-farm self employment.

Age and informal education for head have also identified as essential determinants of off-farm wage income. Being older for the head of the household lowers the level of off-farm wage income per capita. But, age doesn't have a significant effect on the level of income from off-farm self-employment. This is because as individuals get old they may be paid less or work less frequently in off-farm wage work as they physically become weak. Unlike wage work off-farm self-employment does not need much physical and mental energy. Informal education for household head positively and significantly affects per capita off-farm wage income. But, the coefficients for formal education (grade 1-6 and above 6 for head) are insignificant at 10% level. This is because in this study most of the off-farm wage income is derived from manual wage work and food/cash for work program, which does not need formal education at all. But, for informal education it is due to the existence of some social services that demand informal education, for e.g., priests paid for their service in churches. The effect of education (formal and informal) on off-farm self-employment income is not significant.

Number of adult male household members with 15 to 64 years old significantly decreases earnings from both off-farm wage and off-farm self-employment. This result is specific to the study sites. A lot of possible reasons can be provided for this result. First, most of the adults in the survey area were students during the survey period, thus they spent few time for off-farm wage work and earn less. Second possible reason is, those adults who are not students, even though they like to work the demand for wage labor in those districts is small. Thus, all adults who are willing and able to work for wage may not get job in the nearby towns; as an option they can go to Mekelle city, but it has transportation and other related costs. Therefore, their contribution to the off-farm earnings becomes less as off-farm earning is expressed in per capita terms. Similar reasons can be provided for off-farm self employment income.

The number of tropical livestock units per capita has a negative and significant effect for off-farm wage earnings. This is because as livestock management needs intensive labor it may compete for the scarce family labor that can allocate to off-farm wage work, hence lowers off-farm wage income. In addition, livestock holding is an indication of household wealth. Some of the wage income in our sample comes from cash / food for work program participation. But, the wealthy farmers can't be targeted for the program. Thus, livestock holding relates negatively both with the participation in off-farm wage work and income from it. Farm size increases off-farm wage income, given participation. This implies individuals with large farm size; unless they earn high income from off-farm wage they cannot be involved in it. This indicates the reservation wage for families with large farm holding is high.

Location and infrastructural characteristics as proxy by: district dummy, distance to the nearest all weather road and distance to the nearest major market have also significant effect on off-farm wage income. Distance to the major market lowers income from wage employment, but its effect for off-farm self employment income is not significant. This means that residence in far off areas hinders off-farm wage work participation, and in case they participate inadequate access to market limits wage income.

Finally, individuals in Endamokonni obtain significantly higher income from off-farm wage employment than those in Degua Tembien. This may be due the size of the nearest major market they can access easily. As Maichew town with total population of 37581 has larger market relative to Hagereselam town with a total population of 8022 CSA (2007), both the availability of wage employment and wage rate is higher in Maichew town than do in Hagereselam. Therefore, it is logical for households to get higher wage income in Endamokonni district than their counter parts in Degua Tembien.

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TABLE 6: HECKMAN TWO STEP ESTIMATES FOR OFF-FARM EMPLOYMENT INCOME

Explanatory Variables	Log off-farm wage Income per capita		Log off-farm self employed income per capita	c
	Coef.	Std. Err.	Coef.	Std. Err.
sex_hh(male=1)	0.345	0.333	0.992	0.594*
age_hh	-0.042	0.019**	0.001	0.016
Informally literate (yes=1)	1.237	0.560**	0.221	0.702
Grade 1-6 for head (yes=1)	-0.096	0.381	0.429	0.369
Grade >6 for head (yes=1)	0.322	0.554	0.068	0.533
Adumale	-0.449	0.161**	-0.483	0.208**
Adufem	-0.114	0.143	-0.243	0.164
child1	-0.422	0.217*	0.243	0.211
Child2	-------	--------	-0.495	0.201**
Pcnlaborinc	-0.000	0.000	-------	------
Credit(yes=1)	-0.090	0.260	-0.056	0.353
Pctlu	-0.182	0.109*	-0.010	0.137
Pcfarmsize	0.477	0.237**	0.269	0.351
Dalwroad	-0.060	0.292	-0.175	0.487
Dmajormkt	-0.278	0.164*	0.422	0.279
district(Endamokoni=1)	0.754	0.342**	-0.212	0.343
Mills lambda	1.455	0.742**	-1.372	0.772*
_cons	7.060	0.832***	6.282	1.019
Number of observations	205		205	
censored observations	90		128	
uncensored observations	115		77	
Wald chi2 (30)	59.59		60.39	
Prob > chi2	0.0001		0.0004	

***, **and * significant at the 1%, 5%, and 10% level, respectively

10. CONCLUSION AND RECOMMENDATIONS

10.1. CONCLUSION

In this study the livelihood activities of rural families in Tigray, Northern Ethiopia were analyzed. Specifically, the determinants of households' income earned from off-farm employment activities were analyzed. Besides, the main livelihood activities in the area were characterized and the importance of off-farm employment income across different income groups was examined using simple descriptive statistics. Since we expect the factors that affect incomes earned from different off-farm activities may be different, we disaggregated off-farm activities in to off-farm wage work and off-farm self employment.

The result shows that 73.7% of the sample households in the two districts participated at least in one of the off-farm activities and derive some income from these activities. On average, the sample households derived just over sixty percent of their income from farming and almost forty percent from off-farm sources. Off-farm employment accounted one third of the total net annual household income and the smallest portion comes from non-labor income sources: like remittance, pension, renting out assets, government aid etc. The poorest group of households were found to drive two thirds of their income from off-farm sources; in which the largest amount obtained from wage income, while off-farm self employment and non labor income sources constituted the smallest part. On the contrary, the relatively richest group derived about eighty percent of their income from farming and only nineteen percent was derived from off-farm sources. Hence, the share of off-farm income was negatively related with total per capita household income. This implies, off-farm employment is very important to the poorest. But the better off households benefit much from farming.

The regression result indicates the determinants of off-farm employment income given participation are not the same to the determinants of participation.

Age of the household head, number of adult male and number of children with 5 years old or below in the household, per capita livestock holding and distance to major market are significantly associated with lower per capita off-farm wage income. Families with informally educated household heads earn higher per capita off-farm wage income over households with illiterate heads. Per capita land holding is positively associated with the level of per capita off-farm wage income among the participant households. District dummy have significantly positive effect as in the participation equation.

Unsurprisingly, once they took part in some off-farm self-employment activities, male-headed households earned more than their female counterparts. Number of adult male and children with 6 to 10 years old in the family negatively and significantly related with earnings from off-farm self employment at 5% level. Poor access to infrastructure as proxy by distance to the nearest all weather road negatively related with off-farm earnings, but its effect was not significant even at 10% significant level.

10.2. LIMITATIONS

The study is undertaken in the southeastern and southern zones of Tigray, Degua Tembien and Endamokoni districts. That is, due to the existence of resource and time constraints the study is confined to these areas only. Among all other options of rural households' livelihood strategies, the scope of this study is mainly limited to off-farm employment in the two districts. Since farmers do not keep records and due to mind lapse, we face difficulty to get exact values for some questions.

10.3. RECOMMENDATIONS

Off-farm work plays very important role on the livelihood of the poorest of poor, because it is very important source of income for them next to crop income. Thus, respective bodies should work more on enhancing the livelihood of this segment of rural households by introducing interventions that improve crop production and support the off-farm sector in order to create job opportunities that poor households can participate and benefit directly.

Poor access for market and infrastructure lowers off-farm employment participation (though not significant for off-farm wage employment) and corresponding earnings (though not significant for off-farm self employment). Thus, local markets (towns) should be promoted by introducing infrastructure facilities like road, electricity, water and others in order to create new self-employment opportunities and make profitable for the already existed ones. Connecting rural centers with all weather roads can also help to reduce transaction costs related with searching wage employment.

Even though they have more probability to participate in off-farm self employment activities, female-headed households earn lower than their male counterparts from these activities. This is because most of them are involved in low return small scale traditional non-farm activities like: weaving, spinning, pottery, preparing local drinks, selling tea or coffee and shop keeping, Thus, they should be provide with skill enhancing training in order to improve the quality of commodities they provide and get attractive return from these activities. Besides, they should also be obtain market, which can help them to enlarge the scale of their enterprises, hence could reduce costs related with those activities and make them profitable.

Older household heads are less likely to participate in off-farm wage and earn less in case they participate. Thus, the governmental and non-governmental agencies should find sustainable aid to old ages because they cannot supplement their agricultural produce with other sources.

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THE RELATIONSHIP BETWEEN THE CAPITAL STRUCTURES WITH THE PROFITABILITY IN TEHRAN STOCK EXCHANGE

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ABSTRACT
In the present research, effect of capital structure on profitability of the companies accepted in Tehran stock exchange has been studied. Totaldebtto total assets ratio was selected as measure of capital structure and value-based performance measure (economic value added) and traditional performance measures (return onassets and return onequity) were selected as measures of performance and profitability of the companies. The statistical population under study consists of 100 corporations among the companies registered in Iran-Tehran Stock Exchange during the period 2006-2011, other than investment and financial intermediation companies. To test the research hypothesis, simple methods were applied. Research findings indicate a linear and significant reverse relationship between variables of capital structure and ROA, ROE and EVA and relationship between capital structure and ROA is more significant than that of other two variables.

KEYWORDS
Capital Structure (CS),Economic Value Added (EVA), Return On Assets (ROA), Return OnEquity (ROE).

INTRODUCTION
The corporate performance has been considered by the beneficiaries among managers and profitability of the companies in future and its predictability can help them make decision in sale and purchase of shares, give credit to companies and can be a warning for managers to improve their performance. Performance evaluation is one of the most important issues considered by the stockholders, creditors, governments and managers. Performance evaluation is an activity which the managers perform for reaching their goals and strategies. Selection of a measure for evaluation of suitable performance and reaching goals of the company using this measure increases importance of selection of a suitable measure for performance evaluation [9].

Managers use performance evaluation in order to evaluate them and the covered sections. Investors (stockholders) are interested in application of their capital in order to evaluate success of the managers. Creditors evaluate performance regarding rate of credit. The most important aspect which is considered for investors is whether value has been created for them or not. In other words, has their investment value increased as result of management's performance or not?

On the other hand, the decisions on both financing and investment in the corporations are those made on providence. The resources of financing in the companies are divided into two parts based on their financing policies including internal financial resources and external financial resources. In the internal financial resources, the company starts to finance from the profit it has gained; it employs the profit in the mainly operational activities of the company for producing further yield, instead of distributing the dividend between the shareholders, and in external financial resources, it proceeds to finance from the liabilities and equity [24]. Use of external resources has benefits and risks in terms of capital cost and its divided interest or profit and is effective on return and share price and accounting profit.

PROBLEM STATEMENT
The companies finance their required funds in different ways, however, different factors such as company size, condition of management, production and sale rate, raw material acquisition sources, access to financing markets as well as their economic and political environments have made them cautious of making optimal decisions in this field [14].

Loan and capital have been defined as two main groups of financing the companies, meanwhile, use of the resources which has resulted from debt creation causes to increase leverage and as a result, risk of the company while creating considerable amount of fixed cost. It is of special importance to study financing based on leverage method considering different factors. It means that selection of any cheap or expensive debt by the company causes to create suitable profitability opportunities due to critical condition while changing capital cost [7].

On the other hand, performance evaluation is one of the most important subjects considered by Stockholders, creditors, governments and managements considering development of capital market. Investors tend to be aware of success of the managers in application of their capital. They like to find how much credit has been created out of the performed investment. Therefore, role of performance evaluation measures in reflection of the companies' performance has increased through their available information content. It should be noted that maximization of share market value of the companies is one of the main goals of any company. For this purpose, analysts seek to find the measures to take action regarding maximization of the company's value and increase of the stockholders' wealth considering the cost of capital and Rate of Return on Investment.

Considering the realities of preference of economic measures based on Economic Income such as EVA over the traditional measures for evaluating performance of the companies, this question is raised that to what extent decision of the people about performance of the companies conform to realities of their performance. In this research, two major measures used by stockholders regarding traditional evaluation of performance i.e. ROE and ROA and value-based performance evaluation measure i.e. EVA have been used to determine profitability of the companies. We seek to find if making decision about use of different financial sources by commercial unit management is effective on their profitability. For this purpose, financial leverage ratio has been used for measure of capital structure and its relationship with profitability.

Therefore, in the present research, we have studied effect of capital structure on traditional measures of performance (ROA and ROE) and economic value added measures (EVA) in the companies.

LITERATURE REVIEW AND EXTRACTION OF HYPOTHESES

Stewart (1993) compared the accounting general criteria with EVA.He believed that the EVA criterion is more general than other similar criteria, such as income, dividend, equity interest output as well as cash flow. It was also shown that the changes in market value of selected companies group (especially in their market value added) have weak correlation with accounting general criteria, while the maximum correlation is between EVA and market valueadded [22].

Modigliani and Miller first studied issue of capital structure in 1958 and they discussed whether use of debts in capital structure was effective on value of the company and capital cost. They concluded that debts would have positive effect on value of the company and limited effect on WeightedAverage Cost of Capital. They later reviewed their primary theories considering income tax of the company and present a new theory. In their new theories, they argued that whereas borrowing creates tax benefit for the company, the companies are expected to use borrowing among different financing sources because more use of borrowing will cause increase of the company's value [13].

Rajan et al, 1995 in their comprehensive research entitled "do we know about capital structure? Some evidence from international data" studied determinants of capital structure pattern of the companies from the international viewpoint. Rajan *.&*Zingales, in their joint research studied balance sheets of many corporates in seven large industrial countries in the world (America, England, Canada, France, Germany, Italy and Japan). They calculated debt ratios using book and market values of equity and then studied relationship between four fundamental variables of accounting (value of fixed assets, market to book value, sale logarithm and profitability) and capital structure of the companies by estimating multivariate regression model. Results of this research showed that debt ratio has negative relationship with two factors of market to book value and profitability of the company and positive relationship with two factors of fixed assets and company size [19].

Chain, 1997 studied relationship between capital structure and profitability ratios for 267 companies during 1994-1985 in Kuala Lumpur stock exchange and some ratios such as debt ratio, equity ratio, financial leverage ratio etc were used for variable of capital structure and ROE, ROI and EPS ratios were used as profitability ratio. Results showed that there was significant relationship between capital structure ratios and profitability ratios.

Tian et al, (2007) studied relationship between capital structure and corporate performance using information of 167 Jordanian companies during 1989-2003 and concluded that there was significant relationship between short term debts to total asset, total debts to total asset, long term debts to total asset and total debt to equity ratio and ROA ratio [23].

In another study, Céspedes et al, (2010) examined the relationship between the capital structure and the ownership structure in 7 countries of Latin America and concluded that there is a positive relationship between the leverage and the ownership concentration. Furthermore, the results achieved by this investigation indicate a positive relationship between the leverage and the growth variables as well as a negative one between the leverage and the profitability, the bigger companies have more tangible assets [6].

Lee (2009) examined the capital structure; somewhere in this investigation, he made use of return on assets and the return on sales as the performance benchmarks. They concluded that there is a negative and harmonious relationship between the financial performance and leverage and the short-term debt ration; thus Chinese companies utilize the short-term debts lesser than other ones [10].

Noravesh et al, (2004) studied the relationship between operating cash flows, operating income, and EVA with created wealth of shareholders. The results of research indicated that EVA is a better index for predicting the created shareholders value and represents the management's capability in increasing the company's value (shareholders' wealth) [17].

In an investigation carried out in 85 companies among the companies registered in TSE during the period 2006-2009, Abdoli et al, (2011) showed that three is a significant relationship between both economic value added and residual income with the CSV. However, residual income standard in relation to the created shareholder value is more significant than that of economic value added [1].

Namazi et al, (2005) demonstrated in their investigation during the period 1996-2006 that there is generally a positive relationship between the capital structure and profitability, but it is statistically weak. The relationship between the capital structure and the capital itself depends on the industry; thus an optimal structure should be sought in different industries[15].

Nikbakht et al, (2009) studied relationship between capital structure ratios and performance evaluation accounting measure in the companies accepted in Tehran stock exchange. In this research, it was found that there is significant relationship and multiple correlation between four ratios of capital structure, equity ratio and return on asset but this correlation is stronger about ROA [16].

RESEARCH QUESTIONS AND HYPOTHESES

In this study, we are seeking to answer the following question:

Do the capital structure affect the Company's Performance?

In order to conduct this investigation and to answer the proposed question and considering the results achieved by the previous studies, the following hypotheses are formulated:

- H_1: hypothesis: the capital structure of the companies is significantly effective on the EVA.
- H_2: hypothesis: the capital structure of the companies is significantly effective on the ROE.
- H_3: hypothesis: the capital structure of the companies is significantly effective on the ROA.

RESEARCH METHOD

The research method is deductive and inductive and the correlation is cross-sectional in terms of test statistical method.

In order to study hypotheses, simple regression method has been used. Equations used in this research are as follows:

$EVA_t = \beta 0 + \beta_1 CS_t + \euro_t$

$ROE_t = \beta 0 + \beta_1 CS_t + \euro_t$

$ROA_t = \beta 0 + \beta_1 CS_t + \euro_t$

CS:Capital Structure

EVA: Economic Value Added

ROA: Return On Assets

ROE: Return On Equity

$\euro$: Residual error

POPULATION AND SAMPLE

The sample of this study includes 100 companies among all the companies registered in Tehran Stock Exchange which have been randomly selected with respect to the following conditions:

1.   They should be registered in TSE within the period of research.
2.   Its fiscal year shall be finished before 20th March (end of Esfand in Georgian Calendar).
3.   It shall not be of the investment and dealer companies.

VARIABLES

In this research, there are three dependent variables of economic value added (EVA), return on assets (ROA) and return on equity (ROE) and one independent variable i.e. total debt to total asset ratio as measure of capital structure.

INDEPENDENT VARIABLE

Capital Structure: One of the most important goals which financial managers should consider for maximizing wealth of the stockholders is to determine the best optimal composition of the company or capital structure. Puzzle of capital structure is regarded as one of the most important issues of financial management and even is more complex than puzzle of dividend [14]. Capital structure is a composition of debt and equity with which companies finance their assets [3].

Companies use both sources of debt and equity in composition of capital structure. Based on theoretical fundamentals and financial research, there is capital structure based on financial ratios of total debt to total assets , total debt to total equity , total debt to total capital and total long-term debts to total assets [16]. According to Rajan et al, it is very important to define debt or leverage ratio as a dependent variable in capital structure research and selection of suitable measure depends on goal of the research. The most common definition of leverage is total debts to total assets ratio [5]. In this research, capital structure measure has been calculated as follows:

$$\text{Capital Structure} = \frac{\text{Total Debt}}{\text{Total Assets}} \qquad \text{(Model 1)}$$

DEPENDENT VARIABLES

Profitability: One of the evident characteristics of companies in financing markets is their profitability. Relationship between profitability and financial leverage is asymmetrical despite many researches on theory of information. It means that companies prefers financing out of local sources due to more information clarity at time of profitability due to unwillingness of managers to distribute profit due to arrival of new investor and integration of corporate ownership [14]. To calculate and evaluate profitability variable, measures of ROA ‚ROE ‚EVA have been used which we elaborate.

Economic Value Added (EVA): One of the newest value-based measures is Economic Value Added. Based on this measure, value of the company depends on return and cost of capital. Therefore, difference between EVA and traditional measures is that attempt is made to pay attention to all financing costs [11]. Measurement method of economic value of an enterprise is performed after considering total capital cost (including debt and cost of equity). Bearer share cost is also included in calculation of EVA in addition to debt cost. Key principle of EVA is that value is created when rate of return on investment is higher than total capital cost and this capital cost reflects investment risk. EVA is an instrument of measuring local performance of the annual company's operation. Then, EVA is regarded as an additional income. A positive EVA means that rate of return on investment is higher than capital cost. At the end, EVA of larger than 0 means creation (increase) of value for stockholders [18]. EVA which was first introduced by Stern Stewart was calculated as follows [22]:

$$\text{EVA} = (\text{ROIC} - \text{WACC}) \times (\text{IC}) \qquad \text{(Model 2)}$$

Where: EVA = Economic value added;
ROIC = Return on invested capital(total capital return)
WACC = Weighted average cost of capital
IC = Investment capital

Return on Invested Capital (ROIC): To calculate this, the operating profit after tax is divided to the invested capital. The operating profit after tax is obtained as follows:The expenses of R&D, advertising, marketing, training as well as rental fees which are extracted from the financial statements, are added to the operating profit after tax [operating profit $\times$ (1-22.5%)] as accounting adjustments.

Investment capital (IC): Also, increase in supplies, bad debt receivables, decline of inventory value, and pensions extracted from notes of financial statements are added to the operating profit after tax.

Weighted average cost of capital (WACC): In order to determine and measure the weighted average cost of capital, the following equation is used[8]:

WACC = We*Ke+Ws*Ks+Wd*Kd

In order to determine the company's cost of capital, it is essential to independently calculate the cost of each component of capital, and based on their ratio in the total structure, the average company's cost of capital can be obtained.

Where: We = weight of equity; Ws = weight of retains and reserves earnings; Wd = weight of debt; Ke = cost of equity; Ks = retains and reserves cost of income; Kd = rate of debt.

Any of the above mentioned rates are calculated as follows:

Rate of debt = (interest expense / interest debt)$\times$ (1-tax rate)

Cost of equity = dividend per share / market value of each share.

In calculating the cost of retains and reserves earnings, the dividend approach or the Gordon model was used [4]:

g = (interest per share / market value of each share) + (undivided earning percentage)

Undivided earning percentage = 1 – (profit paid per share / profit per share)

Return on assets (ROA): This measure calculated profit rate for each monetary unit (Rial) of the company's asset and shows management efficiency in use of the company's assets to create net profit and is calculated as follows[2]:

$$\text{ROE} = \frac{\text{Net Income}}{\text{Total Assets}} \qquad \text{(Model 3)}$$

Return on equity (ROE): One of the definitions of profitability means the acquired return on investment of the stockholders through efforts of management. Stockholder considers effect of company's operations results on their investment market value as important. The analysts use the measures which analyze corporate performance regarding equity and one of the most important measures is ROE. This ratio represents income obtained from application of a monetary unit of financial equity and is calculated as follows [20]:

$$\text{ROA} = \frac{\text{Net Income}}{\text{Stockholder'S Equity}} \qquad \text{(Model 4)}$$

RESULTS

Considering picture 1 which shows descriptive statistics of the study, it is found that skewness coefficients of variables of EVA,ROE,ROA, CS which are -8.865, 1.137, 0.378 and -0.138respectively show that because all variables except EVA is close to 0.5(symmetry proportion) , their skewness is low. Skewness coefficients of these four variables are 176.100, 2.692, 7.343 and -.454 respectively and show that because variables of ROE,ROA,CS are close to 0.5 (skewness proportion), they show lower dispersion and are closer to normal and EVA variable is longer than normal distribution.

TABLE 1: DATA DESCRIPTIVE STATISTICS

Variables	Maximum	Minimum	Median	Variance	Skewness	Kurtosis
EVA	5.E12	-1.E13	1.89E10	4.816E23	-8.865	176.100
ROA	1.45270	-.19766	.1101019	.014	1.137	2.692
ROE	8.52870	-1.71673	.2756410	.076	.378	7.343
CS	1.0618	.1803	.644735	.024	-.138	-.454

Statistical Results of Hypotheses: In order to test hypotheses, Pearson correlation coefficient and simple linear regression have been used. In order to ensure reliability of the results, presupposition tests of using regression model have been used.

Residuals Normalization Test: Statistic of this test is calculated in picture 2 and its value is equal to 2.192 while statistic of this test between 1.5 and 2.5 is suitable. It can be concluded that errors are independent of each other and regression model can be used for testing hypotheses.

TABLE 2: RESIDUALS NORMALIZATION TEST

Normality test data	Standardized Residual - Sig	Results
Durbin-Watson	2.192	Normal
One-Sample Kolmogorov-Smirnov Test	0.791	Test distribution is Normal

Kolmogorov-Smirnov Test: It is a nonparametric test which is formulated through the following hypotheses.

H_0: Data are normal.

H_1: Data are not normal.

In case statistic value is Sig> 5%, statistical hypothesis of normal distribution of the studied variable is accepted with confidence of 95%. Statistic of this test is calculated in picture 2 because Sig> 5%, and is equal to 0.791. Therefore, null hypothesis is accepted and as a result, data follow normal distribution.

The Statistical Results of First Hypothesis: Companies' capital structure is effective on the EVA.

Considering the relationships so resulted, it was demonstrated that the correlation between the capital structure and the EVA. Correlation coefficient of this variable is -0.425 and its coefficient of determination is 0.181; it means that about 18.1% of the EVA changes are explained by the capital structure.

TABLE 3:STATISTICAL RESULTS SUMMARYOFHYPOTHESES

Dependence Variable		Dependence Variable		
Model		1	2	3
Capital Structure		EVA	ROA	ROE
Correlations	Sig	0.000	0.000	0.005
	Pearson	-0.425	-0.735	-0.254
Model Summary	R	0.425	0.735	0.254
	R Squared	0.181	0.54	0.064
	Adjusted R Squared	0.168	0.535	0.055
ANOVA	F	13.923	113.663	6.883
	Sig	0.000	0.000	0.010
Coefficients	Beta	-0.425	-0.735	-0.254
	t	-3.731	-10.661	-2.623
	sig	0.000	0.000	0.010
Hypothesis Rejection or Confirmation		Confirmation	Confirmation	Confirmation

Significance Test of Coefficients: This test, in addition to determining the significance of coefficients, specifies their impact direction of those coefficients on dependent variable. The statistic related to the significance of coefficients is the t statistic, instead of which the Sig column can be used. After confirmation of coefficients significance, both direction and amount of each independent variable effect on the dependent variable can be determined using the calculated coefficients in Beta column*.*

H0: β = 0   EVA has no effect on CS.

H1: β ≠ 0   EVA has effect on CS.

The Sig column of the table 3 shows that Sig statistic rate for EVA variable is equal to 0.000 Since the error level for this study has been considered as 5%, then the Sig<0.05 and t>2; thus this variable is significant and the first research hypothesis is confirmed and it may be said that the EVA variable has been inversely and significantly effective on the CS.

Statistical Results of Second Hypothesis: Companies' capital structure is effective on the ROA.

Considering the relationships so resulted, it was demonstrated that the correlation between the capital structure and the ROA. Correlation coefficient of this variable is -0.735 and its coefficient of determination is 0.54; it means that about 54% of the ROA changes are explained by the capital structure.

SIGNIFICANCE TEST OF COEFFICIENTS

H0: β = 0   ROA has no effect on CS.

H1: β ≠ 0   ROA has effect on CS.

The Sig column of the table 3 shows that Sig statistic rate for ROA variable is equal to 0.005 Since the error level for this study has been considered as 5%, then the Sig<0.05 and t>2; thus this variable is significant and the first research hypothesis is confirmed and it may be said that the ROA variable has been inversely and significantly effective on the CS.

Statistical Results of Third Hypothesis: Companies' capital structure is effective on the ROE.

Considering the relationships so resulted, it was demonstrated that the correlation between the capital structure and the ROE. Correlation coefficient of this variable is -0.254 and its coefficient of determination is 0.064; it means that about 6.4% of the ROE changes are explained by the capital structure.

SIGNIFICANCE TEST OF COEFFICIENTS

H0: β = 0   ROE has no effect on CS.

H1: β ≠ 0   ROE has effect on CS.

The Sig column of the table 3 shows that Sig statistic rate for ROA variable is equal to 0.000 Since the error level for this study has been considered as 5%, then the Sig<0.05 and t>2; thus this variable is significant and the first research hypothesis is confirmed and it may be said that the ROE variable has been inversely and significantly effective on the CS.

ANALYSIS AND INTERPRETATION OF THE RESULTS

In this research, it was discussed that if management decisions in financing policies and their decision to use resources can be effective on corporate performance and profitability. Regarding the first hypothesis of the research that total debts to total assets ratio was applied as measure of effect of capital structure on EVA, results showed that this ratio had reverse and significant relationship with EVA. The presence of reverse relationship indicates that financing through borrowing (debt) causes decrease of economic value added.

Regarding the second and third hypothesis of the research in which effects of capital structure on ROA and ROE were studied as representatives of traditional measure of performance evaluation, results showed that capital structure was able to predict ROA and ROE but it is more able to predict ROA and considering reverse relationship between structure and two variables of ROA and ROE, it can be said that increase in debts and borrowing has negative effect on ROA and ROE. Considering the results obtained from hypotheses test, it can be inferred that capital structure of the companied has reverse and significant relationship with their profitability and performance. In other words, capital budgeting and financing decisions and optimal composition of financing resources are effective in creation of value for stockholders. Therefore, it can be mentioned that excessive increase of corporate debts decreases the wealth created for stockholders. On the contrary, decrease of debts or increase of equity leads to reverse results. Therefore, increase in debts of companies can be useful considering its effect on corporate profitability until optimal capital structure is achieved. It means that excessive increase of debts leads to increase of bankruptcy risk and causes decrease of share value. On the other hand, excessive use of equity will lead to increase of the expected return of the stockholders and finally increase of financing costs.

FURTHER SUGGESTIONS TO THE RESULTS OF THE STUDY

Considering result and achievements of research, one can specify the following cases regarding the applied fields:

1.   Considering that rate of capital cost is one of the factors affecting EVA changes , the company's managers are suggested to accurately measure cost of each one of the financing sources and their optimal composition in order to minimize financing cost and reach optimal capital structure in order to maximize value for the stockholders.

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2. The investors who seek to acquire higher value of their investment should pay attention to ROA and ROE which can be easily calculated and analyzed unlike EVA at time of selecting their investment and make their investment in shares of the companies with proper proportion.

3. Investors in stock exchange and financial analysts are suggested to include debt ratios of the company as measure for testing and predicting corporate profitability and performance in their analyses.

FURTHER SUGGESTIONS FOR FUTURE STUDIES

1. One can study effect of capital structure on other performance evaluation models such as residual earnings , gross profit rate , operating profit ratio and working capital return which was used in other researches and compare the research results with the present research.

2. Regarding capital structure variable , one can also use total long –term debts to total assets , total debt to total equity and total debt to total capital used in other researches to calculate this variable with other models and compare research results with the present research.

3. Since validity and reliability of a research are higher when a research time interval is longer and its results are generalized more reliably, it is advisable to perform the research again for longer time interval which can provide more accurate results for the research.

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INDICATION OF MOBILE TESTING ON CLOUD INTERPRETATIONS

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ABSTRACT

In today's world, it's not hard to mess a person using a mobile application. Just almost everywhere you go from coffee shops to office buildings, from family rooms to city parks people are accessing mobile applications on smartphones, tablets, and other handheld devices. The astonishing growth of mobile devices has opened up ways for organizations to integrate them into the normal computing environment. Mobile applications for the creativity are permitting their people to work smoother on the move, manage costs and even drive profits, both for the initiative and its customers. As aoutcome, Cloud-adoption for mobile applications has enlargedhugeimpetus. Officialdoms stand to gain straightaway, as through cloud-based mobile apps, they get aequipped to go market clarification with very short improvement time, because of increased skill utilization, reduced propagation, better serviceability and higher awareness. But unlike the PC-based setting, the mobile settingcontainsaexcess of devices with various hardware and software configurations and communication details. This multiplicity in mobile computing settings presents singleexperiments in application growth, quality declaration, and organization, lacking unique testing plans. In the current paper, we shall discuss the overallpolicy and method to experiment next group cloud based mobile applications. It attentionsexplicitly on selection testing expertsknow the hintsof testing cloud-based mobile applications through a relative view between web-based software testing and cloud-based application testing.

KEYWORDS
Challenges, Retreat, Testing Tools.

I. ERRANDS
SCHEMERANGE

The development of cloud computing beside with the consumerization of the IT is substantial kind, in which customers are becoming gradually able to access requests and services using a kind of handheld mobile devices. Traditional cloud applications are retrievedover a browser, furthermost of the application programimplements within the cloud. But end-user devices varybroadly in their qualities and abilities. Some handsets are made around novel platforms, a wide change of CPUs, running at several speeds with broadly varying quantities of memory, as well as displays of different sizes working at different resolutions and in different locations. Thiskindsof challenging a mobile application on cloud somewhat different from challenging an application in traditional on-premise location.

MOBILE TOOLS WITH THE INHERITANCESCHEME

For enterprise requests to be existing on mobile devices, they need to be joined with the larger systems e.g. ERP, CRM and some other sub systems of the databank for contact, safety, utility services and confirmation and so on. Organizations can fail to bring if they are not satisfactorilyverified, or can energy up prices if they are not organized with a pipeavailablestrategy that includes the difficulty and change of mobile users' needs. But by scheme cloud platform, executes certain limits on services organized on it. Thus challenging a mobile application held on cloud becomes difficult as compared to traditional on-premise foils.

II. COMPLICATIONS THAT CLOUD TAKES TO BUREAU
Lack of mechanism– The entire IT structure itself is outsourced to an external third party. This certainly is disturbing and a big query of how does the business maintain control over their data, which lies outside their limitations

Evacuation- Securing cloud computing environments will be a major focus of vendor efforts over the next year, says Jonathan Penn, an analyst at Forrester Research. In the short period, he sees users having to do a lot of the investigation, but over period, "cloud providers themselves will see the chance to distinguish themselves by mixingevacuation." But organizations such as the Cloud Security Alliance (CSA) are working to put some shape around the evacuation issues and the ways to address them.

Secrecyfears– How businesses ensure that the secrecy of their customers and information is preserved when using the cloud?

Data Reliability– When using third party explanations for Cloud Computing what guarantees do businesses have for their valued data remains complete?

Availability – Cloud computing keystrust deeply on the accessibility of their arrangement and the essential business requests for their customers to be able to driveefficiently. Visualize a situation where a tradeuncertain Cloud Solution be unapproachable for some time, what will beits control on business.

Tolerability–How definite can a business be that their third party clarification is happen for its upcoming use?

III. PROPOSED ELUCIDATION
Mobile Application Challenging On a Cloud

This kind of challengingeventstypicallyis completed to form online application schemes on a cloud by using with cloud-based circulation and user admissions. This is a shared usage of cloud expertise to help present online usesellers to conduct system resolution testing and actassessment on a cloud by attractive the benefit of cloud setting so that varied and accessible computing properties in a cloud can be recycled without consuming any in-house test laboratory. When applications are related with bequest systems, the quality of the connectivity amongst the bequest systems and the under-test requestorganized on a cloud must be authenticated.

FIGURE I : MOBILE APPLICATION ON CLOUD

Usability: The goal of usability testing, simply put, is to make sure that a user can complete the tasks they are estimated to complete. More highly, they need be able to do so simply and without becoming irritated. A worthy user knowledge can be dissatisfied by a number these issues.

Functionality: A mobile application needcurrentcustomer with the proper functionality. If the functionality of anrequest is observed as imperfect or insufficient, clients may be gone.

*Outline&Scheme:*Virtuousoutline and schemepermit a user to simplywholejobs. If a control is located in the apparent 'wrong' place, customerswill get discouraged and forceto look for andifferentinvention.

Collaboration: The stream of anrequestneed be normal and permit the customer to basicallythink on entire tasks. If a customertrusts they have been directed to the erroneoussheet and have to physicallybackpedal in order to find the sheet they were looking for, they can become unfulfilled and wildness the request.

Performance and Reliability

Most initiativerequests are data concentrated. While mobile platforms have been rapidly emerging and now proposalstages of presentation that are closely on a balance with desktops, challenges in relations of recollection and actpersevere while treatment large connections. These can be damaging to general system act. To lecture this, samples should make uses internal and marketableoutfits and values to assessmentrequestact and consistency for classic user situations over lengthy periods of time to safeguardact and dependability of the application

Retreat

Retreatchallenging is essential. Hackers occur just waiting to attempt to latch a good retreatdump in a mobile request. As we move near the cloud, it is more significant than ever to typecertain our interpretations and the ways we admission them are protected. Methodicalchallenging is made to aidguarantee data guard by encryption on the scheme and in movement. Critical functionalities such as distantsmear, legalstudy and application retreat are checked through expert review of safetybasiscipher on the mobile platform. Renovations will be involuntary so that there is no disturbance in steering to site, transferring and then informing the versions.

FIGURE II :MOBILE RETREAT ON CLOUD

To reach the ideasshown:
- Identify the network setting and device setting before testing to findblockages
- Directing testing in unrestrained real-world test situationsis required, particularly for a multi-tier mobile application.
- Check the end-to-end practical flow in all possible stages at minimum once.
- Behavioract testing, GUI testing, and compatibility testing using real devices. Even though these tests can be done using emulators, testing with real devices is suggested.
- Measure performance only in truthful conditions of wireless circulation and user load.

IV. TESTING VIA UTENSILS

Major technology dealers such as HP, Intel and Yahoo are currentlycooperating to makevast cloud 'test beds' containing of numerous thousands of CPUs working together as centres of   brilliance in Cloud Computing. These testbeds will agree users to test their cloud arrangements at internet gauge and also comprehendhow their schemes and software reallyactwithin the cloud. With such enormousasset bysome of the main technology and Internet ServiceProviders internationally today, pointers are clearly pointing at cloud computing to be a major concentrationfact for the business in the coming years. Present test instrumentgifts by the likes of HP andIBM are model for non functional and mechanicaltesting in a cloud environment [6]. Already wellwell-known software such as HP's Quick Test Proor IBM's Balanced Robot can be used to full outcomewithin a cloud environment to perform automatedtesting errands such as lapse tests. Taking into account the quickly developing nature of Cloud Computing in today's technology sector it is critical that any tester who is predictable to test cloudsolutions has a good understanding of what types a Cloud Computing request and distributedbuilding, as well as a good accepting of theutensilsaccessible and their assets and weakness fortesting dissimilar types of cloud applications.

V. BENEFITS

The cloud built mobile application offers the following benefits

Testing Background Set Up Made Easy

Expending cloud platform, one can easily set up the kind of backgroundessential to test an application. It removesdirectorial overhead of handlingvarious test backgrounds

Generalization of Organization

As compared to traditional on-premise applications where setting up test location would mean obtaining server class hardware and connecting software certificates, cloud platform mobile applications allow customers directly access applications. Since obtaining test and production locations is easy and "time to market" of the applications is knowingly faster.

Vibrant Scalability

While emerging and testing an application if a user wants to gauge the application, it requires setting up of new waiters along with possible alterations in the application. On cloud based mobile applications, mounting up is just a substance of adapting number of useoccurrences

Ease

End-to-end testing can be set-up in the cloud moderately simply, provided the essential servers and descriptions can be retrieved to make an end-to-end location;

The cloud also proposals a new level of plainness in terms of preparation or bug-fixing locations, which can be hurled as rapidly as the pictures and shape can be put in abode.

Wide-ranging and revealing testing

Even end-to-end tests for extrageneralcommercialdevelopments can be carried out in the cloud. All the essentialmechanisms can be available in the cloud to make the entire chain of schemes. In this way, the whole commercialdevelopments can also be verified;

In the cloud, a more "truthful" weight can be made than the simulated load made by other utensils. Cloud-enabled act test utensils generate the requiredcapacity and pressure to test anrequest more exactly.

BudgetSaving

There is a compactessential for exclusivelocations, which essential to be castoff only when tests have to be performed;

Archaeologically, in-house testing and approvallocations have been alwaysaccessible for testing schemes within a business, makingaeverlastingweight on growthresources and setupproperties. Cloud environments though can be allowed and deactivated at determination, dropping the budget of locationcontrolling.

Tractability

Dissimilarstages or evaluations of tests can be implemented on distinctsurroundings at an establishment'ssuitability;

Testers no sloweressential to intervalcheckout the finale of the testing level to transfer to a "production-like" location for their act, load and hassle tests. In its place a production-like location can be fetched into stroke at determination.

VI. CONCLUSION

Mobile Application Testing on Cloud is much easier to track Commercial, Maintain high sales act, easy to use and dependable but Cloud Testing applications traveled to the cloud needs a careful valuation of the testing thoughts in terms of security, performance, dependability and of course usability on Mobile devices. This also helps present online application dealers to behaviour system purpose testing and presentationassessment on a cloud by taking the benefit of cloud environment so that varied and scalable calculating resources in a cloud can be used without consuming any in-house test workroom.

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THE ANALYSIS OF THE EFFECT OF NON-OIL EXPORT (NOX) ON NIGERIAN ECONOMY

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ABSTRACT

The study empirically examines the effect of Non-oil export (NOX) on Nigeria economy, in line with the objectives of this study, secondary data were obtained from central bank of Nigeria statistical bulletin covering the period of 1980 to 2010. In concluding the analysis, multiple regressions were employed to analyze data on such variables Non- oil export, Gross Domestic Product (GDP), interest rate, inflation, and exchange rate were all found to have significant effects on the Economics Growth with the Adjusted R^2 of 85 %. Following the outcome of this study, it is therefore concluded that Non- oil exports are likely to lessen foreign exchange constraint and can thereby provide greater access to international markets. The export oriented policies lead to a better growth performance than import substitution policies. Therefore, Non-oil export has a positive significance on economic growth and development in Nigeria. It is recommended that in order to derive a substantial share in the world non-oil market, Nigeria's export products must be attained and maintained high product standard with adequate placed on quality control by Nigerian Government.

KEYWORDS

Non-Oil Export (NOX); Exchange rate;Nigerian Export-Import Bank; Nigerian Economy.

BACKGROUND TO THE STUDY

Nigeria is very popular in the area of production and export of top quality produce like cocoa, groundnut, cotton, gum Arabic, sesame seed, rubber, ginger, mangoes, pineapples, coffee and host of others. Export markets for these products exist in USA, European Union, Gulf states, Japan, Singapore, China etc. Nigeria also has an added advantage over major Agricultural producers and exporters in the Eastern and Southern Africa in terms of fertile land, proximity to traditional and terminal markets in Europe by Air or by Sea. Nigeria is endowed with various kinds of resources needed to place her amongst the top emerging economies of the world. Unfortunately, the nation has not adequately benefitted from the economic prosperity expected of a nation so richly blessed. Ironically, global economic indices from reputable international organization have consistently categorized Nigeria as an economically backward state (Ezike and Ogege 2012). For instance, in 1995, the UNDP human development Index ranked Nigeria as 164th and 141st amongst 197 nations with low per capital income and "low quality of life" respectively (World Bank Development Report, 1997). Through export promotion for instance, Nigeria can manage her resources to create enough wealth and improve the quality of the economy *vis-a-vis* standard of living and also enhance her global economic rating. The major problem militating against success in this non - oil sector has been traced to infrastructural inadequacy and lack of required capital. Due to low levels of income, savings and declining capital formation, the banking systems financing programs/support is seen as fundamental in the creation of the required productive capacity for non - oil export, trade and wealth, hence the various governments export credit expansion programmes and incentive schemes for development and sustainability of the non - oil sector (Benedict and Emmanuel 2013**)**. The discovery of oil and the realisation that foreign exchange could comparatively be easily derived there from relegated attention to the non oil sector to the background. As at 1996, crude oil constituted about 97.4% of total export earnings while non-oil exports accounted for only 2.6% (Yesufu, 1996). Recent developments in the Nigerian economy had led to the recognition of the ultimate significance of development and marketing of quality agricultural produce as a means of enhancing the foreign exchange earnings capacity of Nigeria. Simultaneous with this awareness is the growing concernof adherence to standards in order to maintain a reputation in the export market. It is therefore imperative that quality and standards are necessary conditions that must be given adequate attention in order to ensure the sustenance of Nigeria's competitiveness in the global market

The Nigerian economy is highly dependent on proceeds from oil, which constitutes over 90% of total foreign exchange earnings required from financing several national development projects. Invariably, whenever oil prices rise or fall, the fortune of "creased/reduced revenue will automatically manifest itself on economy of Nigeria. Also, the Nigeria Agricultural sector has always been expected to perform the roles of providing employment for the labour force, staple foods and raw materials for domestic and export needs. Until the 1970s, Nigeria depended mainly on agriculture for its export revenues. In 1960, the contribution of agriculture to foreign earnings was about 83% from 1960-1970, the export crop sub-sector contributed on the average 58.4% annually to the total foreign exchange revenue. Nigeria experienced substantial capital inflow largely in the form of oil sector earnings. The large oil revenue coupled with the accumulation of reserves in major foreign currencies became enabling factor in the decision to revalue the naira.

STATEMENT OF PROBLEM

Nigeria as a major oil exporter has been adopting a plan that aims to provide the country with a sustainable base for after-oil economy. This was expected to take place through exchanging its natural resources with human and physical capital in the form of complete infrastructure, better education, better housing, and an increase in average life expectancy. However, many of the projects that were carried-out during the boom period of high oil revenues were selected without applying appropriate cost-benefit analysis. What was worse is that the government based its ambitious spending plans on the assumption that income generated from oil exports will continue to flow. This was not the case, however, and the government became a net debtor with significant public debt. Available data suggest that non-oil exports performances during certain periods remained less than satisfactory, as evidenced with high sensitivity of prevailing levels/ transparency or lack of it. The reason for the uninspiring performance is to be looked into and it includes; the problem associated with export production low world price, existence of burdensome levies and charges, and poor market knowledge as a result of poor communication networks. With these problems, notwithstanding, the enhancement of value added non-oil export needs to gain ground to properly supplement the rise and fall of crude oil.

OBJECTIVES OF THE STUDY

The main objective of this study is to examine the effect of non-oil export in the Nigerian economy. Other specific objectives include;
i. to evaluate the contributions of non-oil export on the economy.
ii. to examine the problems of non-oil export sector in Nigeria.
iii. to indentify the effect of non – oil export on exchange rate.

LITERATURE REVIEW

NON-OIL EXPORTS IN NIGERIA

According to Okoh (2006), Agricultural products constitute the bulk of Nigeria's non oil exports. The shares of these products both processed and unprocessed in total value of non oil exports is as high as 70 percent. Other components of the non-oil exports include manufactured products and solid minerals, the agricultural include cocoa, groundnut, palm produce, rubber (natural"), cotton and yam, fish and shrimps, while the manufactured products and solids minerals include processed agricultural products, textiles, tin metal, beer, cocoa butter, plastic products, processed timber, tyres, natural spring water, soap, detergent

and fabricated iron rods. The non-oil commodities market experienced an export boom between 1960 and 1970. Their fortunes declined in the early 1980 when the international primary commodity markets collapsed with the associated deterioration in the terms of trade. Resulting mainly from the policies adopted during the structural adjustment programme, non oil exports increased owing mainly to increase in the Naira price of the export commodities. The value of non-oil exports has been on the decline ever since. For instance, the share of agricultural products in total exports declined from 84% in 1960 to 1 .80% in 1995 (Ogunkola and Oyejide 2001). Thus, contrary to the expectation of increase in non-oil exports, there was an overall decline in the export of these commodities. Manufactures decreased from 13.10% in I960 (CBN, 2000) to 0.66% in 1995 and remain the same, in 2002 (WTO, 2003). The values of exports in as well as the percentage shares of the major export commodity groups in total merchandise exports. Agricultural export commodities are known to be characterized by a low price elasticity of demand while mineral export commodities usually have high price elasticity of demand. Agricultural exports are therefore likely to generate less income than mineral exports during an export boom (Ogun, 1995). The implication of this is that policies such as exchange rate devaluation may reduce the price of Nigeria's exports but may not significantly raise the volume of agricultural exports. Meanwhile, it is these agricultural products that dominate Nigeria's non-oil exports (Okoh 2006).

The export of primary products, particularly agricultural produce, accounts for a large proportion of Nigeria's non-oil export earnings. The range of traded non-oil merchandise is not only narrow but is made up of goods that are highly uncompetitive in the world market. Hence, Nigeria's share of the non-oil merchandise in the world market, particularly manufactures, is relatively small (Uniamikogbo, 1996). According to Thirlwall (1978), the demand for developing countries' traditional export is inelastic relative to the demand for industrial goods. The domination of the export trade of Nigeria and other developing countries by primary products and the associated retardation of growth of traditional exports has been attributed to three distinct factors at work in the developed countries. They are:

❖ the global shift of the pattern of demand to goods with relatively low import content of primary commodities;
❖ technological change which has led to the development of synthetic substitutes of raw materials; and
❖ the pursuance of protectionist policies by the developed countries retarding the growth of imports of primary commodities and industrial goods.

According to Benedict and Emmanuel (2013), Nigeria's non-oil exports can broadly be classified into three, namely: agricultural produce, manufactured exports and solid minerals has great potentials. It is only of recent that the export potential of solid minerals was brought to the fore. The interest to promote non-oil exports was borne out of not just its huge potentials for foreign exchange earnings, but also for its employment generation and poverty reduction capability through the extensive backward linkages it offers as well as the desire to diversify the country's production base. In spite of the structural adjustment programme (SAP) introduced in 1986, the well-publicized attempts to diversify the economy have not been successful (Iyoha and Oriakhi 2002).

According to Idowu (2005), export-led-growth (ELG) hypothesis stipulates the expansion and promotion of exports as an important factor in nurturing long run economic growth. This hypothesis has been put forward as the rationale for an efficient alternative to import substitution, which is an inward orientation strategy of development. Previously, developing countries had adapted inward oriented development strategies for enhancing industrial development that would translate into growth and development, which is designed to replace imported manufactures and merchandise with domestically produced merchandise in order to conserve foreign exchange and promote employment(Usman 2011).

This precarious nature of oil was identified by the Federal government way back in 1976, when she established the Nigerian export promotion Council, as an apex agency charged with the responsibility of ensuring the development, promotion and diversification of the nation's non-oil exports. The council was also charged with the following responsibilities, amongst others:
- To assist in promoting the development of export oriented industries in Nigeria;
- To spearhead the creation of appropriate export incentives in Nigeria;
- To organize and plan the participation of Nigerian companies in international trade fairs and exhibitions in other countries;
- To actively articulate and promote the implementation of export policies and programmes of the federal government;
- To collect, collate, analyze and disseminate trade information on available export products and foreign markets to exporters and potential exporters; To effectively carry out these objectives and ensure that her services gets to the grass-root, the council established twelve functional zonal offices in the six geo-political zones of the country. There are two (2) zonal offices per zone, for the south eastern states we have zonal offices at Enugu and owerri. These offices are to assist exporters and potential exporters nearest to their zones in all their export business endeavors

NIGERIAN EXPORT-IMPORT BANK

According to Usman and Salami (2008), the introduction of the Nigerian export-import bank (NEXIM) became importance when it was obvious that export promotion programmes instituted by such agencies as the Nigerian export promotion council, export processing zone, tax subsidy programme, concessionary financing programme and export credit guarantee scheme, lacked the credit to finance agricultural development and local investment. As part of government drive at diversification the Export Credit Guaratee and Insuarance Corporation was established by Decree 15 of 1988. It was later to metamorphose to the Nigeria Export-Import Bank (NEXIM). It provides three (3) main services: credit, riskbearing, trade and information and exporter advisory services. Aside all these it provided export credit guarantee and insurance to its clientele in respect of external trade, transit trade and entrepot trade, the purchase and sale of foreign currency and transmission of funds to all countries.

NEXIM started its operation with a shared capital of 500million in 1991 and their statutory functions were as follows:
• Provide export credit guarantee and   export insurance facilities to non-oil exporters.
• Provide credit in local currency to support exports.
• Maintain a foreign exchange revolving fund for lending to exporters who need to import foreign inputs to facilitate export production.
• Provide domestic trade with insurance to assist exports.
• Establish and manage funds connected with exports.

NIGERIAN NON-OIL EXPORT SECTORS

According to Usman and Salami (2008), the Nigeria's non exports sector is structured into four broad constituents which are the agricultural exports, manufactured exports, and solid mineral exports and services exports. Each constituent will be adequately profiled.
a.   **Agriculture Export**
Nigeria's non-oil exports are mostly agricultural/farm produce which are normally referred to as her traditional export commodities. These are cocoa, rubber, oil-palm, coffee, cotton, wood products, cassava, ginger, fish and shrimps etc. However, it is important to mention that cocoa exports had preeminence as Nigeria's most exportable non-oil agricultural commodity (CBN and NEXIM, 1999).

In the 1960s to the 1970s, even the years preceding independence, agricultural produce exports played a dominant role in attracting foreign exchange, aside the solid mineral exports of cocoa, groundnut, rubber, palm kernels and palm oil accounted for 69.4 percent of total export earnings, out of the total 97.3 percent for which all non-oil exports accounted for. But overtime the Nigerian economy became mono-cultural, having been transformed from one dependent on fairly diversified portfolio of agricultural exports is consequence of several causative factors, which were:

➤ Excising structures of incentives given to farmers in most African countries as one the reasons for the reasons for the continent's poor performance in agricultural output.
➤ A consistent bias in prices, tax and exchange rate policies against agriculture.
➤ Low producers prices and relative prices of competing crops constrained output.
➤ The 1971-1973 drought, which caused significant fall in crop harvest as Nigerian agriculture is primarily rain-fed.
➤ The rosette virus epidemic and pest of 1975
➤ Little or no application of fertilizers to soils farmed continuously;

➢ Shortages and high costs of farm labour (relative rural/urban wages); interest rates on loans
➢ Dependence on wild and low yielding plant species, and outdated technology; and
➢ Civil disturbance that dislocate farmers and the population

These factors caused the share of agricultural export produce to fall from 63.0 percent in the in 1960s to 28.92 percent and 20.15 percent in 1973/74 and 1979 respectively. It not only decline in relative terms in 1973/74 and 1981, but in absolute terms. Its earning from export also fell. Aside the above factors, greater quantities of agricultural output were processed or consumed locally than hitherto. Another major structural change was the disappearance of a number of export products from the export list. Notable exports like groundnuts, groundnut oil, raw cotton and palm oil decline in their contributions to export earnings but also in real terms while others like timber, plywood, palm kernel and groundnut cake, became mere shadow of their past importance (CBN and NEXIM, 1999). All these were what characterized the agricultural industry in the pre-Structural Adjustment Programme (SAP).

However, the fortunes of agricultural goods improved stemming from the policies of the structural adjustment programme (SAP). The trend in years from 1986 to 1996 showed favourable growth for agricultural products. The deregulation of the commodity marketing boards as well as the devaluation of the naira, coupled with the incentive of 100 percent foreign currency retention scheme for repatriated export earnings significantly aided export expansion. The pre-eminence of export of agricultural products notwithstanding, its share in non-oil exports fluctuated significantly. Cocoa accounted for most of the export volume of non-oil exports products. Its export volume rose dramatically in 1986 and 1988, from then on it continued to fluctuate till in crashed in 1994 and 1995. The same is true of other commodities such as rubber and palm produce.

This due to economic conditions in the importing countries and continuous exportation of these commodities largely unprocessed or in semi processed form contributed substantially to the observed fluctuations their volume and value (CBN and NEXIM,1999). The year succeeding the SAP years, which is termed post-SAP was characterized by increased openness of the economy and further depreciation of the naira. It should be noted that agricultural products export had increased. This post-SAP reform feature mixed trade policy stance-export promotion continued and control measures were exercised on imports, which were in force until 2003, when it was changed.

b.   **Manufactured Export**
The manufactured exports to the international export market comprises of agro-allied and manufactured exports. The agro-allied export products are cocoa butter, cocoa powder, cocoa cake, cocoa paste, groundnut cake and wood products including furniture and fixtures etc. while main manufactures are textiles, chemical products, beer and beverages, urea-ammonia, insecticides, soap and detergents, plastics and non-metallic mineral products and processed skin etc. In the period succeeding independence and pre-structural adjustment programme, the non-oil exports was characterized by the predominance of the agricultural exports, which is reflected in its share of contribution to total export and non-oil export, which are 4.0 percent and 67.0 percent respectively.

However, the manufactured exports were about 1.0 percent and 13.0 percent respectively in the same period (Adewuyi, 2005). However, with the adoption of the Structural Adjustment Programme (SAP), the degree of openness of the economy increased while the naira depreciated. Although there were fluctuation in the value of exports of processed or manufactured products between 1986 and 1991, the export value increased continuously from US$ 11.0 million in 1992 to US$ 24.0 million in 1996. All this was as a result of the measures put in place since 1986 to diversity the nation's non-oil exports. But in terms of volumes, it was an opposite trend entirely; the quantum fell continuously from 38.6 thousand tons in 1993 through to 2.4 thousand tons in 1996. The structure in the post SAP showed that the share of semi-manufactured increased immensely from an annual average of 4.6 percent for the period of 1986 to 1990, to 23.0 percent in 1991 and 1995 (CBN and NEXIM, 1999). However, this performance as highlighted in a World Bank study (1989) cited in the CBN and NEXIM study (1999) which showed that manufactured export accounted for 30 percent of exports from developing countries.

c.   **Solid Minerals Export**
Solid minerals exports from Nigeria are cassiterite, coal, columbite, charcoal, asbestos, processed iron ore and marble. Exports of solid minerals to the international market have from the time of independence had minimal in terms of their volume and share of the exports earnings. Prior to independence, the solid minerals export were to satisfy the demand from industrial base of the British imperialism. But after independence, the Nigerian government avoided direct participation in the mining of solid minerals due to large capital outlay involved, reoccurring flooding of mines, high risks intricate technology and huge financial outlay involved, instead mining was left to private firms. However, government still provided support as highlighted in the CBN and NEXIM (1999).

In the period of 1985 to 1996 accounted for an average 0.8 percent of total non-oil exports and about 0.1 percent of total exports. And in value terms, the export of solid minerals during the period was not substantial (CBN and NEXIM, 1999). This clearly shows the infinitesimal contribution sold minerals made so far within the period. So far, in recent times government has instituted reforms to exploit the optimal potentials inherent and derivable from the solid minerals, and as ways of diversifying the economy from its oil exports addition.

d.   **Services Export**
Exporting does not only involve the delivery of physical goods to another country. Exporting can also include the export of services such as education, consultancies, nursing and tourism. These are known as service export. There are unique benefits to service exports that do not apply to goods, such as no or low freight costs. But service exports also carry risks and challenges, such as limited options for secure payment and the protection of your intellectual property rights (Business Victoria, 2007).

This is an export area in which there has been no significant activity or event occurring. It remains still a veritable means of generating foreign exchange for the country and facilitating economic development, which is largely untapped. Services such as transportation, tourism, communication, construction, insurance, financial professional, and technical activities are what countries in the developing countries, like Nigeria except for a few such as Egypt have not been able to export to the international market. However, Nigeria has been making progress in an area like tourism in current times. Places like Obudu Cattle Ranch, Tinapa Business Resort, and other arrears of tourist attraction are spring up to offer leisure services.

Also in terms of financial and professional services, Nigeria has no services to provide here, although Nigerian experts work in other countries and remit money, in foreign currency back home, it is more of brain drain phenomenon. And some Nigerians serve in overseas countries under the Technical Aids Corps ((TAC), it is a foreign aid and cooperation to other developing countries. This does in no way bring foreign exchange to the country, Nigeria.

According to CBN and NEXIM (1999), the sector contributed an average of 30 percent to GDP between 1973 and 1981, 57 percent of it been made by the wholesale and retail trade sector. But its contribution to balance of payments was negative. The reason for this is because of Nigeria's low level participation in the provision of international services.

CONTRIBUTION OF NON-OIL EXPORT TO NIGERIA ECONOMY

The significance of non-oil export to Nigerian economy can firstly be appreciated from the perspective of export and economic development. Export has also been described as the bedrock of any economic development which is meaningfully centered on non-oil export in most countries of the world. Therefore the current deliberate efforts to enhance Nigeria's non-oil export is derived from the failure of oil export (oil boom), which has not been meaningfully managed to positively reflect on the socio-economic well-being of the people. From the Nigeria economic perspective, promoting non-oil export products bring about reduction on the nation's level of dependence on the dominance of crude oil. Other strategic contributions of non-oil export to the Nigerian economy are:

i.   The export of non-oil products increase the foreign exchange earning of the country, through the export of Nigerian products to other countries, Nigeria earns foreign exchange which assist in the financing of other economic sector of the nation.
ii.   The earned foreign exchange enables the country to fulfill its international financial obligations.
iii.   Export of non-oil products create employment and reduce un-employment problem in the country. The exporting company can at least keep the present employees, without the fear of creating further unemployment pressure in the country.
iv.   The living standard of the people in the exporting country will improve, or be better when compared to countries that do not export (all things being equal).

v.   The export of non-oil products brings about increase in sales and profits to firms that export market their products. However, it does not always follow that export marketing bring about increase in profit, because increase in sale is relative to selling price, cost of production and other costs.

vi.   Foreign trade may also improve product quality, and reduction in production cost, which may be brought about by mass production for export.

vii.   Business expansion is another benefit that results from export marketing. Firms may consider the expansion of its production line, and other business activities as a result of the company's involvement in foreign trade.

viii.   Recognition and Reputation of firms may also be enhanced when quality, quantity, and reliability of the firm are considerably improved as the firm successfully engages in export marketing.

Ogunkola and Oyejide (2001) confirmed that positive relationship exists between export and economic growth. Fosu (1991) ascertained a highly significant and positive relationship between export and output growth rate. Usman (2011) opined in his study that non- oil export success contributes to the economic growth in Nigeria. By and large, it has been largely held by a good number of development economists that trade is an engine of growth. In other words, trade (export) enhances growth of an economy in Nigeria.

PROBLEMS OF THE NON-OIL EXPORT SECTOR IN NIGERIA

An evaluation of the trend in the non-oil sector of Nigeria exposes that despite the various policies, strategies and reforms programmes, the contributions of these sub-sectors of this sector has been dismal. For instance agriculture is still characterized by low productivity this stems from parcel of land with crude and outdated farm implements. Farmers lack access to credit facilities, production machinery and inputs because of inadequacies of their provision. Moreover, farming in Nigeria is well-nigh-rain-fed, lacking power water irrigation (usman 2011).

The manufacturing and industry segment seriously groans under high taxes and multiple taxes. It has to contend with the abysmal nature of public infrastructure and non conducive policy frame work instituted by government in the business environment.

The solid minerals or mining sector has no concrete policy except until 2005, which is coming at a late period. It still is being hampered by a comprehensive database of necessary information pertaining to Nigeria's solid mineral wealth. Business engaged in mining need concessions and incentives because mining involves huge capital outlay and investment. Now access to these is not well encouraging, some mining firms still use outdated mining technology and obsolete equipment. And there also lies the problem of illegal mining to be curtailed (Usman 2011). He brought out the following as some of the problems the sector is facing:

* Inadequate and Decaying Infrastructure

Since the entire non-oil exports are domestic commodities from industries within Nigeria, they affected by shortage of public infrastructure which is aged old, decaying and lacking maintenance. Most industries have to, themselves provide for basic infrastructure to enable them operate.

* Funding/financing Constraints

The banking services industry is not adequately supporting business in non-oil export due to high risk of export business and unavailable of their commodities, export merchandise can access modern equipment and spares that will aid the competitiveness of their commodities..

* Ineffective Implementation of Export Incentives and Support Programme

Export schemes and incentives initiated by the government are not being administered by agencies statutory empowered to implement them. There are observed rigidities in trade procedures, delays in completion of export documentation and excessive use of discretionary powers by desk officers of various agencies facilitating posing constraints on export activity.

* Near total reliance of banks of NEXIM for export finance resource

The banking industry has so far only shown preference to financing import activities rather than providing sufficient financial support to export. Rather banks have continually relied of the NEXIM for funds in order to financially support business in export trade of non-oil merchandise.

* Over regulation of the non-oil export

An environment where exporting firms have to be subjected to enormous paper work and drilling inspection not only constitute an unnecessary stress but a disincentive to exports themselves.

METHODOLOGY

This chapter describes the methodology employed in this study. Methodology consists of the procedures to be used for collecting data, summarizing and analyzing the data gathered in other to answer the research questions. It is intended to applying the chosen methods in the research to minimize the costs of obtaining the data and analyzing them while maximizing the expected values of resultant information as well as association level of accuracy. For the purpose, issues addressed include; research design, study populationsample and sampling technique, data collection and research instrument validation. Economic growth is one of the substantial problems in the developing countries. There are many models to analyze the effects of non – oil export on economic growth.

METHOD OF DATA COLLECTION

Method employed in Carrying out this research work was by secondary data. Secondary data is the name given to data that has been used for some purpose other than that for which they were originally collected. Secondary data generally used when the term manpower resources necessary for survey are not available and of course the relevant information required. Secondary data were gotten from different sources e.g. CBN Statistical Bulletin.

SAMPLE SIZE

The duration of my research was basically from 1980-2010 which is in the range of 31yrs. This duration was used because it is detailed enough to give a good result and analysis. This study employs annual data on the rate of non export, inflation, exchange rate and economic growth (proxy by Gross domestic products) for Nigeria over the period 1980 to 2010. Data were obtained from the CBN Statistical Bulletin.

DATA ANALYSIS TECHNIQUES

The results presented below are based on the data collected from CBN Statistical bulletin. The data collected is used to establish theeffects of non–oil export on economic growth of Nigeria. The analysis was done using the stata 10 to enhance the accuracy and robustness of the regression results.

Regression models in the following variables:

The unknown parameters denoted as μ: this may be a scalar or a vector.

The independent variable Y

The dependent variable R

In various fields of application, different terminologies are used in place of dependent and independent variables

A regression model relates R to a function of Y and μ

$R = \boldsymbol{p}(Y1, \ Y2, \ Y3, \ μ)$

Where $Y1 - \quad Y3$ are the independent variables.

$NOX = \boldsymbol{f}(GDP, \ INFL, \ EXCH, INTR \ μ)$

Where GDP is gross domestic products, NOX is Non-Oil Exports. Data on these variables from 1980 to 2010 are sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin.

MODEL SPECIFICATION

$NOX = a_0 + a_1 GDP + a_2 \, INFL + a_3 EXCH + a_4 INTR + μ$ 1

$logNOX = a_0 + a_1 \, logGDP + a_2 \, logINFL + a_3 logEXCH + a_4 \, logINTR + μ$ 2

$log \ GDP \qquad - \qquad log \ of \ Gross \ Domestic \ Product$

$logNOX \qquad - \qquad log \ of \ Non - Oil \ Export$

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loginfl   –   *log of Inflation*
logexch   –   *log of Exchange rate*
logINTR   –   *log of Interest rate*

PRESENTATION AND ANALYSIS OF DATA

This chapter will be used in analyzing and presentation of data collected from different reliable source like CBN Statistics Bulletin 2010. This was done so as to determine the effect of non-oil export (NOX) on Nigeria economy from the period of 1980 to 2010.

According to the research question, to what extent does the NOX affects the economic growth in Nigeria? The following tables below are actually gotten from different sources but they are answers to these research questions.

TABLE 1: THE EFFECTS OF NON – OIL EXPORT ON ECONOMIC GROWTH

Dependent Variable	Independent Variables	Coefficient.	Standard Error	T	P>|t|	[95%Conf. interval]	
NOX	**gdp**	.0021043	.0009259	2.27	0.032	.000201	.0040076
	exch	5.205289	109.9186	4.74	0.000	294.5881	746.4698
	infl	1.007707	212.7614	0.47	0.640	-336.5666	538.1079
	intr	-705.0585	704.04	-1.00	0.326	-2152.233	742.1164
	constant	8259.105	10622.06	0.78	0.444	-13574.86	30093.07
R-squared=0 .8720	Adj R-squared = 0.8523		Root MSE = 16673		**Prob > F = 0.0000**	F(4, 26) = 44.26	

The above table is represented by regression plots below:
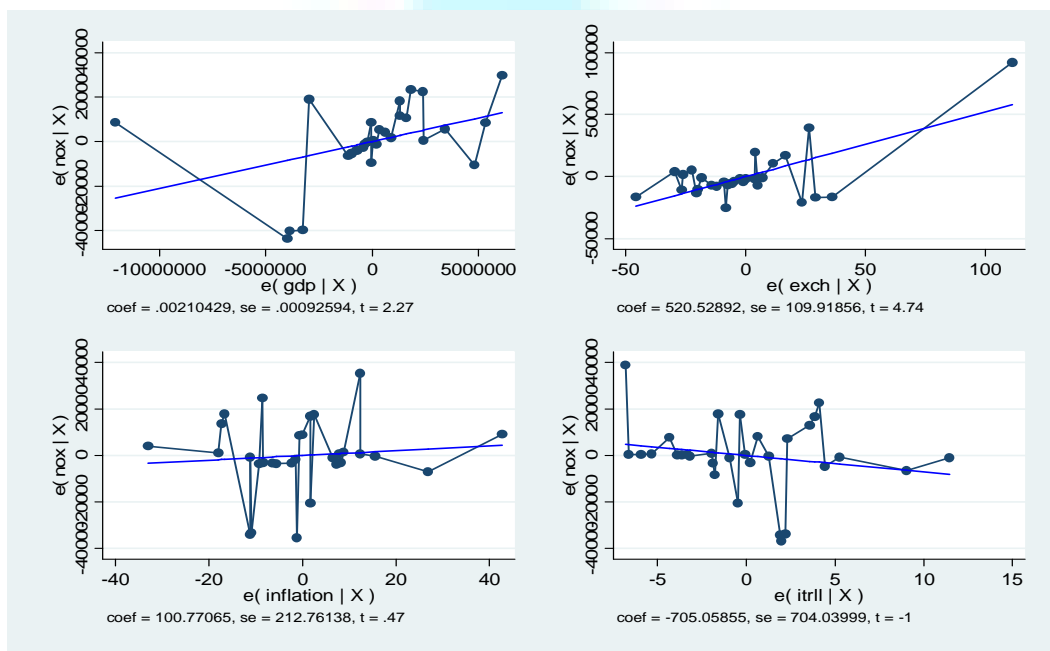
FIG. 1

Table 1 shows the result of the output effects of NOX on Nigerian economy in the short run. A 1% increase in the non oil export (NOX) increases economic growth (GDP) by 0.02 percent. This suggests a positive relationship between the rate of NOX and the GDP in Nigeria. The result is also significant. 1% increase in the non oil export (NOX) also increases exchange rate (EXCH) by 5.0 %.This means that the relationship between NOX and EXCH is positive suggesting that if NOX increases EXCH increases. The relationship between NOX and inflation (INFL) is positive suggesting that if NOX in Nigeria increases, the inflation increases that is 1% increases in NOX increases INFL by 1.0%. Contrary to these, 1% increase in non oil export (NOX) reduces the interest rate by 7%.this indicate that there is negative relationship between non oil export (NOX) and interest rate.

The results indicate R^2 of 87 percent for model 1. This implies that 87 percent of Non oil- export is influenced by the variables in the model only 13 percent is for factors outside the model. This shows the appropriateness of fitting of the model of the study. The results also indicate that an increase in non oil export of a country will lead to increase in economic growth. Nigerian economic growth (GDP) is statistically influence by the level non oil- export (NOX). Given the adjusted R^2 being significant at 85%, it signifies the independent variables incorporated into this model have been able to determine variation of non oil export (NOX) to 85%.The F and probability statistics also confirmed the significance of this model.

TABLE 2: THE EFFECTS OF NON – OIL EXPORT ON ECONOMIC GROWTH IN THE LONG RUN

DEPENDENT VARIABLE	INDEPENDENT VARIABLES	COEFFICIENT.	STANDARD ERROR	T	P>|T|	[95%CONF. INTERVAL]	
logNOX	**loggdp**	.4389629	.1800325	2.44	0.022	.0689007	.8090251
	logexch	.6715937	.2195815	3.06	0.005	.2202374	1.12295
	LOGinfl	.0260533	.1501067	0.17	0.864	-.2824955	.334602
	logintr	-.5637777	.5043427	-1.12	0.274	-1.600469	.4729135
	constant	2.58876	2.601137	1.00	0.329	-2.757954	7.935474
R-SQUARED= 0.9526	ADJ R-SQUARED = 0.9453		ROOT MSE = 0.50685		PROB > F = 0.0000	F(4, 26) = 130.72	

The above table is represented by regression plots given on the next page:
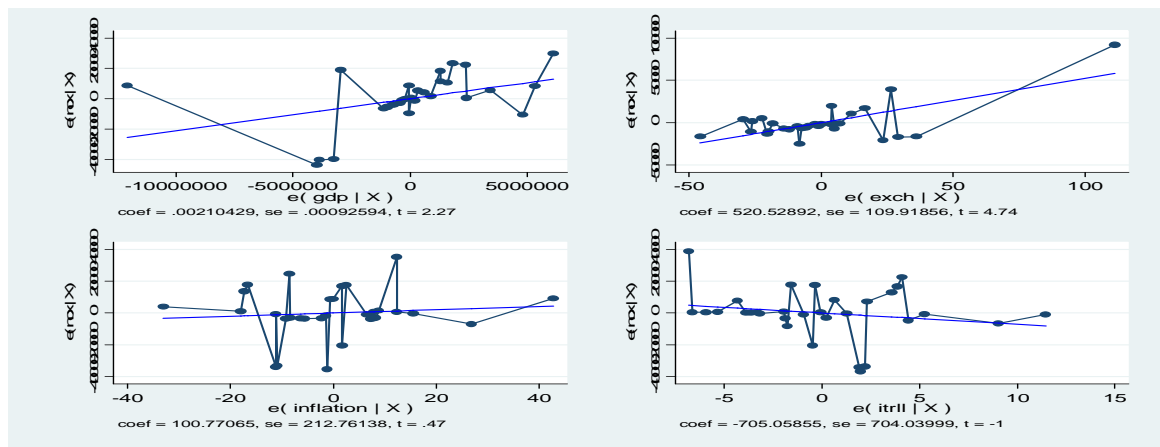
FIG. 2

Table 2 also shows the resultant effects of non-oil export, on inflation, exchange rate, interest rate and gross domestic product (GDP) on Nigeria economy in the long run by finding the log of NOX compared with logarithms of the independent variables.1% increase in NOX brings about 0.43 % increase in GDP. An increase in the NOX has a positive impact on output. This also suggests a positive relationship between NOX and economic growth in Nigeria in the long run decision planning. The result is also significant. The relationship between log of NOX and log of exchange rate is also positive. This indicates that 1% increase in NOX increases exchange rate by 0.67% in the long run. Also, there is a positive relationship between NOX and inflation, that is, 1% increase in NOX increases inflation by 0.02%. Conversely, 1% increase in NOX in the long run reduces log of interest rate by 0.56%, suggesting that there is inverse relationship between NOX and interest rate in the long run.

Given the coefficient of determination (R^2) to tune of 95.3% and Adj R-squared to be 0.94.5 (95%), it connotes the independence variables incorporated into this model have been able to determine variation of NOX to 95%.The F and probability statistics also confirmed the significance of this model. The results indicate that the coefficient of NOX is statistically significant and the constant is statistically significant.

SUMMARY AND CONCLUSIONS

This study has reviewed the effects of NOX on Nigerian economy. The links between NOX and economy growth has assessed. NOX has a positive impact on growth after a considerable lag. All the variables are statistically significant. The performance of the Nigerian non-oil export sector, as pointed out earlier, has however been relatively impressive in recent times. Non- oil exports are likely to lessen foreign exchange constraint and can thereby provide greater access to international markets, and export oriented policies lead to a better growth performance than import substitution policies. Based on estimation outputs, it is concluded that non-oil export both in the long run and short-run has statistically significant impact on effective exchange rate, inflation, interest rate and GDP.

POLICY RECOMMENDATIONS

Based on the findings made in the course of this study, the following recommendations are hereby suggested:

1) Consistent, regularized and effective monitoring of policies and performance of agencies charged with the responsibility of aiding the growth of the non-oil sectors of the economy should be done by government. Instituted policies and planning should be reconciled with implementation and performance, coupled with regular analysis of each sector of the economy.

2) To derive a substantial share in the world non-oil market, Nigeria's export products must be attained and maintained high product standard with adequate placed on quality control.

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DOCUMENT CLUSTERING BASED ON CORRELATION PRESERVING INDEXING IN SIMILARITY MEASURE SPACE

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ABSTRACT

Document Clustering Based on Correlation Preserving Indexing is a new spectral clustering method, which is performed in the correlation similarity measure space. In this framework, latent semantic indexing is an indexing and retrieval method that uses a mathematical technique called singular value decomposition (SVD) to identify patterns in the relationships between the terms and concepts contained in an unstructured collection of text. The documents are projected into a low-dimensional semantic space that can be solved by generalized eigenvalve problem. Consequently, the proposed CPI method can effectively discover the intrinsic structures embedded in high-dimensional document space.

KEYWORDS

Document clustering, correlation measure, correlation latent semantic indexing, dimensionality reduction, singular value decomposition.

1 INTRODUCTION

Document clustering aims to automatically group related documents into clusters. The k-means method is one of the methods that use the euclidean distance,

$$dist = \sqrt{\sum_{k=1}^{n} (p_k - q_k)^2}$$

Where n is the number of dimensions (attributes) and p_k and q_k are, respectively, the kth attributes (components) or data objects p and q. Which minimizes the sum of the squared euclidean distance between the data points and their corresponding cluster centres. Since the document space is always of high dimensionality, it is preferable to find a low-dimensional representation of the documents to reduce computation complexity.

Low computation cost is achieved in spectral clustering methods, in which the documents are first projected into a low-dimensional semantic space and then a traditional clustering algorithm is applied to finding document clusters. An effective document clustering method must be able to find a low-dimensional representation of the documents that can best preserve the similarities between the data points. Locality preserving indexing (LPI) method is a different spectral clustering method based on graph partitioning theory.

In this paper, we propose a new document clustering method based on correlation preserving indexing (CPI), which explicitly considers the manifold structure embedded in the similarities between the documents. It aims to find an optimal semantic subspace by simultaneously maximizing the correlations between the documents in the local patches and minimizing the correlations between the documents outside these patches.

1.1 SPECTRAL CLUSTERING

A special case of graph-based clustering, that has enjoyed much recent interest, constructs a bipartite graph of the rows and columns of the input data. The underlying assumption behind co clustering is that words which occur together are associated with similar concepts, and so it not just groups of similar documents that are important, but also groups of similar words.

Cuts in this bipartite graph produce co clusters of words (rows) and documents (columns). It has been shown that optimizing these cuts is an equivalent problem to computing the singular value decomposition of the original matrix.

1.2 VECTOR SPACE MODEL

The vector model was originally developed for automatic indexing. Under the vector model, a collection of *n* documents with *m* unique terms is represented as an *mxn* term-document matrix where each document is a vector of m dimensions. Several terms weighing schemes have been used, including binary term frequency and simple term frequency (how many times the words occur in the document). The document vectors are composed of weights reacting the frequency of the terms in the document multiplied by the inverse of their frequency in the entire collection (tf x idf). The assumption is that words which occur frequently in a document but rarely in the entire collection are of highly discriminative power. Under all these schemes, it is typical to normalize document vectors to unit length.

Two important properties should be stressed. First, in a collection of heterogeneous, the number of unique terms will be quite large. This results in document vectors of high dimensionality.

2 DOCUMENT CLUSTERING BASED ON CORRELATION PRESERVING INDEXING

Correlation as a similarity measure is suitable for capturing the manifold structure embedded in the high-dimensional document space. Mathematically, the correlation between two vectors (column vectors) u and v is defined as
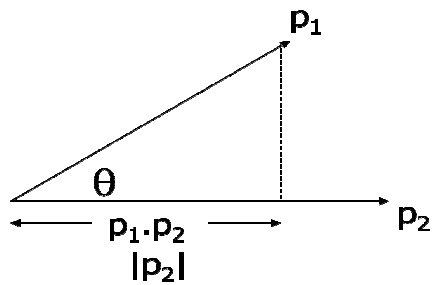
$$Corr(u,v) = \frac{u^T v}{\sqrt{u^T u}\sqrt{v^T v}} = \left\langle \frac{u}{\|u\|}, \frac{v}{\|v\|} \right\rangle.$$

$$cos\theta = Corr(u,v).$$

Correlation corresponds to an angle Θ such that *cos Θ = Corr(u,v)*, the stronger the association between the two vectors *u* and *v*.
x = (−2.8, −1.8, −0.8, 1.2, 4.2) and y = (−0.028, −0.018, −0.008, 0.012, 0.042), from which

$$cos\theta = \frac{x \cdot y}{\|x\| \|y\|} = \frac{0.308}{\sqrt{30.8}\sqrt{0.00308}} = 1 = \rho_{xy}.$$

COSINE MEASURE DIAGRAM

$$dist(p_1, p_2) = \theta = arccos(p_1.p_2/|p_2||p_1|)$$

2.1 CLASSIFICATION OF DOCUMENTS INTO CLUSTERS

A1. If two documents are close to each other in the original document space, then they tend to be grouped into the same cluster.

A2. If two documents are far away from each other in the original document space, they tend to be grouped into different clusters.

Based on these assumptions, we can propose a spectral clustering in the correlation similarity measure space through the nearest neighbours graph learning.

**2.2 EXTERNAL EVALUATION OF CLUSTER QUALITY**

Typical objective functions in clustering formalize the goal of attaining high intra-cluster similarity (documents within a cluster are similar) and low inter-cluster similarity (documents from different clusters are dissimilar).

■ Simple measure: <u>purity</u>, the ratio between the dominant class in the cluster π_i and the size of cluster ω_i

$$Purity(\omega_i) = \frac{1}{n_i} \max_j (n_{ij}) \quad j \in C$$

■ Biased because having *n* clusters maximizes purity

Others are entropy of classes in clusters (or mutual information between classes and clusters)

CLUSTER PURITY
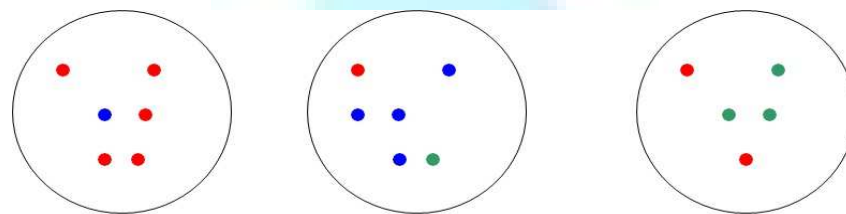
Cluster I Purity = 1/6(max(5,1,0))=5/6
Cluster II Purity = 1/6(max(1,4,1))=4/6
Cluster III Purity = 1/5(max(2,0,3))=3/5

The Rand index penalizes both false positive and false negative decisions during clustering. The F measure in addition supports differential weighting of these two types of errors.We can use the F measures to penalize false negatives more strongly than false positives by selecting a value $\beta > 1$.

$$P = \frac{TP}{TP+FP} \qquad R = \frac{TP}{TP+FN} \qquad F_\beta = \frac{(\beta^2+1)PR}{\beta^2 P + R}$$

$$RI = \frac{TP+TN}{TP+FP+FN+TN}$$

Where, TP as True Positive, FP as False Positive, TN as True Negative and FN as false negative.

**2.3 CLUSTERING ALGORITHM BASED ON CPI**

The algorithm for document clustering based on CPI can be summarized as follows:

1. Construct the local neighbour patch, and compute the matrices MS and MT .

2. Project the document vectors into the singular value decomposition SVD subspace by throwing away the zero singular values. To establish a mapping from the term space to the topic space using latent semantic analysis, we use the SVD of the document-term index. The SVD is of the form:

$$X = U\Sigma V^T$$

Where X is our document by term matrix with elements representing the frequency of each term in each document, U and V are the set of left and right singular vectors respectively. The SVD has the properties that if we keep the greatest s singular values and remove the rest. This is a direct consequence of the Eckart-Young theorem.

FIGURE 1: SINGULAR VALUE DECOMPOSITION- Y IS THE APPROXIMATED X
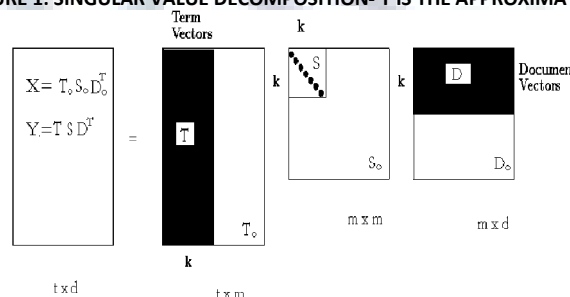
3. Compute CPI Projection. Compute CPI Projection. Based on the multipliers $\lambda_0, \lambda_1, \ldots \lambda_n$ the eigenvalue equation for D is Differential equation $Df = \lambda f$. Let W_{CPI} be the solution of the generalized eigenvalue problem $M_S W = \lambda MW$. Then the low dimensional representation of the document can be computed by $Y = W^T X$.

4. Cluster the documents in the CPI semantic subspace. Since the documents were projected on the unit hyper sphere, the inner product is a natural measure of similarity.

3. DOCUMENT REPRESENTATION

Step 1: Stemming - The process of reducing words to their base form, or stem. Porter's algorithm is the standard stemming algorithm.

Step 2: Stop word removal - A stop word which is not thought to convey any meaning as a dimension in the vector space.

Step 3: Pruning - Removes words that appear with very low frequency throughout the corpus. The underlying assumption is that these words, even if they had any discriminating power, would form too small clusters to be useful. Some words which occur too frequently are also removed.

Step 4: Technique – compute the term frequency Vector. Well known tf x idf (term frequency times inverted document frequency) weighting system defined as:

$$\text{tf}(t, d) = \frac{\text{f}(t, d)}{\max\{\text{f}(w, d) : w \in d\}}$$

$$\text{idf}(t, D) = \log \frac{|D|}{|\{d \in D : t \in d\}|}$$

$$\text{tfidf}(t, d, D) = \text{tf}(t, d) \times \text{idf}(t, D)$$

Where D is the total number of documents in the corpus, $|\{d \in D : t \in d\}|$ is total number of documents where the term *t* appears.

TABLE 1: EXAMPLE OF IDF VALUES. HERE WE GIVE IDF'S OF TERM WITH VARIOUS FREQUENCIES IN THE REUTERS COLLECTION OF 806,791 DOCUMENTS

Term	df_t	idf_t
Car	18,165	1.65
Auto	6,723	2.08
Insurance	19,241	1.64
Best	25,235	1.5

```
//Calculates TF-IDF weight for each term t in //document d
private static float FindTFIDF(string document, string term)
{
float tf = FindTermFrequency(document, term);
float idf = FindInverseDocumentFrequency(term);
return tf * idf;
}
private static float FindTermFrequency(string document, string term)
{
int count = r.Split(document).Where(s => s.ToUpper() == term.ToUpper()).Count();
//ratio of no of occurance of term t in document d //to the total no of terms in the document
return (float)((float)count / (float)(r.Split(document).Count()));
}
private static float FindInverseDocumentFrequency(string term)
{
//find the  no. of document that contains the term //in whole document collection
int count = documentCollection.ToArray().Where(s => r.Split(
s.ToUpper()).ToArray().Contains(term.ToUpper())).Count();
/*
* log of the ratio of  total no of document in the collection to the no. of document containing the term
* we can also use Math.Log(count/(1+documentCollection.Count)) to deal with divide by zero case;
*/
return (float)Math.Log((float)documentCollection.Count() / (float)count);
}
}
```

4. CONCLUSION

In this paper, we present a new document clustering method based on correlation preserving indexing. It simultaneously maximizes the correlation between the documents in the local patches and minimizes the correlation between the documents outside these patches. Consequently, a low dimensional semantic subspace is derived where the documents corresponding to the same semantics are close to each other.

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EXPORT POTENTIAL FOR HANDLOOM AND HANDICRAFT: A STUDY ON ODISHA

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ABSTRACT

Export development is an important tool to the developing firm and economy as a whole. Govt. measures aim normally at the general improvement of export performance of the nation for general benefit of the economy. Govt. policies which limit the scope of the business in the home country may also provoke companies to move the other country such as USA, UK, Australia, Japan, China, Germany etc. and opportunity to achieve these gains, developing countries would aim to transcend asymmetric in capacity, economy size, scale of production, capital stock, technology, sophistication, infrastructure, global outreach or their procedure enterprises. The paper aims at finding the potential for export of handloom and handicraft products of Odisha, and the government's role in coordination of export of handloom and handicraft products from Odisha. Export is one of the most active business in India, specially has a very nice and diversified product base and such product at very low price. In agricultural sector can obtain improved market access for their agricultural export, through reduction or high taffies and peak. They should seek the removal of domestic export market and export subsidies with credible time frame, other sector like steel, cotton, jewellers, spice ,sugar, rice, onion ,lather ,food sector has comprehensive development of export safe measures. They are the positive support domestic export as well as investigating foreign market.

KEYWORDS
Export, Handloom, Handicraft, Government, Procedure.

INTRODUCTION

n the purposed study an attempt is made to study export procedure and potential of handloom and handicraft product from Odisha. An investigation is made to find out the detailed procedure adopted for the export. The study is very significant from the point that the finding will be immensely useful to the management to take very effective step for export promotion activities and to study the determination of export pricing and the export and import policy of 2002-2012 has been studied in the overall preparation in project. With the increase in the size of the organization, it becomes very difficult to manage and also to know the real position of the firm. It is only through proper analysis of the true position of export of handicrafts and handloom products that the future potential can be known or predicted with high degree of accuracy. Export is a special branch of management science. It is in fact the part of total management and follows all principals and philosophies of business management. It refers to the activities which are directly or indirectly associated with export and includes the activities before the shipment and after the shipment of export cargo. It also refers to the systematic and scientific approach to manage overseas orders manufacturing or assembling goods as per the specifications of importer sales and export promotion activities and techniques, price quotation financing, foreign exchange procedure and formalities prescribed by government are some of the activities covered under the management of exports. Export management, in fact is more difficult and complicated. It needs special treatment because of its special and unique nature. Planning, organizing, co-ordinating, controlling as required in other management are also required in export management. Therefore, it is difficult to define export management in specific terms.

In brief" Export management means what a export manager does"."Export management refers to efficient management of all activities involved in export transaction, commencing from manufacture or assembly of goods through shipment until receipt of payment". "Export management can also be defined as managing marketing activity abroad and dealing with related activities".

FRAMEWORK OF STUDY

The purposed study is an attempt to study export procedure and importance of handloom and handicraft export from Odisha. An investigation is made to find out the detailed procedure adopted for the export.
The objective is:
- To study potential for export of handloom and handicraft products of Odisha.
- To study the government's role in coordination of export of handloom and handicraft products from Odisha.
- To study the export procedure followed by export organization.

Rao (1990) in his book "Marketing of Handicrafts" observed that "Handicrafts offer Solution to India, which is characterized by unemployment and foreign exchange crunch". Pathy, (1990) in his book entitled "Traditional panting of Orissa" beautifully explains the origin of the famous painting art of Orissa especially of Puri district. He says that it is most natural to think that these are the painters who are the descendants of people who once painted for the Buddhists, Jains and Sikhs and who also now paint for Vaishnavas or the Devotees of Jagannath .Mitra's (1980) book "The Antiquities of Orissa" has been the earliest reference about thecraft. Among other aspect of Orissa antiquities he has briefly dealt with the patta painting. Hehas said that the painters are a hereditary sub caste of Chitrakaras and that most of thePictures painted on cloth are produced in Puri itself. Chattopadhyaya, (1963) in her book "The glory of Indian Handicrafts" has vividly described about handicraft of different states of India. National Institute for Social Development and Applied Research, Bhubaneswar has done a research work on technology, firm size and performance of three popular crafts of Orissa. Kannungo, (1964) in "Utkalana Chitrakara" (the art and craft of Orissa) has briefly describes the patta painting as one of the old paintings is typical in its style where the theme basically depicts the religious tradition of India. Mohapatra, (1987) in his book has given a clear picture about Orissa and focuses on the Orissa handicrafts elaborately. Samal, (1994) has done her research work in "Applique craft tradition of Orissa and change". She has describes about position of appliqué in Orissa and its development according to time. Upadhyaya in the book "Economics of handicraft industry" feels that without design, development, technology, advancement and quality improvement, we cannot think of healthy growth of such industry. Bharati, (1973) in an article "Eastern India Handicrafts : A Preliminary Survey" published in Floklone a journal of anthropology states I just from lines that the tailor artists of pipili have become specialized in giving gorgeous look to their appliqué works. Ahmed, (1980) in his book entitled "Problem and Management of Small Scale and Cottage Industries" expresses that the satisfactory performance in marketing of handicrafts could be possible due to the special interest taken by central as well as state governments to boost up the export of handicraft articles. Panda, (1984) in "Textiles" of Arts and Crafts of

Ganjam Districts, Orissa says that the appliqué craft is of 500 years old. The history of appliqué is commensurable with operas, festivals and processions. Sinha, (1970) in his book entitled "Rural Industry and Rural Industrialization" says that rural industry cannot be used as a synonym of traditional household or cottage industry situated in a rural area. Rural industry is a much wider term on which rural industrialization depends.

The research clearly defines the target population. The technique followed here is based on logic and judgment. The population is defined in with keeping in mind the objectives of the study. The method used for sample technique was non probability convenience sampling method. Convenient sampling is used because only those people will be asked to fill the questionnaires that were easily accessible and available to the researcher.

The study is based on the data collected from the primary and secondary sources. The primary data is collected using standard questionnaire as a tool and by interviewing the authorities of FIEO and regarding the information provided by them. Some of the primary data regarding the operation, functions and service provided and customers were gather from their offices. Though the analysis is based basically on primary data then also secondary sources got used to generate the assumption to prepare the questionnaire and to have the supporting interpretation. The collection of data from primary source involved several steps and is done in phrases. Different sources used are personal interviews, approaching people personally, Questionnaires, Internet, articles, books, newspapers, magazines, companies newsletter and companies report. The study is mainly based on secondary data. In this case the relevant data is collected from official web site of FIEO, FIEO news and Telephone directory.

DATA ANALYSIS AND INTERPRETATION

In order to accomplish my research objective I approached about 50 exporters and collected the required information from them. For this the Survey was conducted with a set of questionnaire containing the items which helped in obtaining the desired information from the exporters. Exporters were approached especially in Bhubaneswar. The Information was obtained through questionnaire as well as by the interview method. The copy of questionnaire is being attached with this report. The method of personnel interview was also adopted for those who were unwilling to give any information in writing. At present around 50 of such interviews have been conducted keeping in mind the requirements of the survey being conducted.

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TABLE1: RESPONSE CHART

Parameters		Frequency	Percentage
Get in/ Expand the business	Strongly Disagree	7	14
	Disagree	9	18
	Neutral	11	24
	Agree	15	30
	Strongly Agree	8	14
Business Growth Potential	Strongly Disagree	12	24
	Disagree	3	6
	Neutral	4	8
	Agree	20	40
	Strongly Agree	11	22
Procedure is Stringent	Strongly Disagree	10	20
	Disagree	15	30
	Neutral	5	10
	Agree	10	20
	Strongly Agree	10	20
Govt. Regulations are Acceptable	Strongly Disagree	10	20
	Disagree	11	22
	Neutral	6	12
	Agree	17	34
	Strongly Agree	6	12
Acceptance of Tariff	Strongly Disagree	7	14
	Disagree	10	20
	Neutral	8	16
	Agree	18	36
	Strongly Agree	7	14
Export Licensing	Strongly Disagree	10	20
	Disagree	10	20
	Neutral	5	10
	Agree	10	20
	Strongly Agree	15	30
Trade Restriction	Strongly Disagree	8	16
	Disagree	9	18
	Neutral	16	32
	Agree	10	20
	Strongly Agree	7	14
Trade Regulation	Strongly Disagree	7	14
	Disagree	6	12
	Neutral	3	6
	Agree	18	36
	Strongly Agree	16	32
Stringent Documentation	Strongly Disagree	10	20
	Disagree	8	16
	Neutral	8	16
	Agree	13	26
	Strongly Agree	11	22
Custom Procedures	Strongly Disagree	5	10
	Disagree	5	10
	Neutral	8	16
	Agree	14	28
	Strongly Agree	18	36
Govt. Coordination	Strongly Disagree	9	18
	Disagree	7	14
	Neutral	12	24
	Agree	12	24
	Strongly Agree	9	18
Govt. Support	Strongly Disagree	5	10
	Disagree	8	16
	Neutral	5	10
	Agree	15	30
	Strongly Agree	17	34
Foreign Demand for Handloom & Handicraft	Strongly Disagree	5	10
	Disagree	8	16
	Neutral	7	14
	Agree	17	34
	Strongly Agree	13	26
Availability of Handloom & Handicraft	Strongly Disagree	7	14
	Disagree	6	12
	Neutral	5	10
	Agree	14	28
	Strongly Agree	18	36
Sustainability of Export	Strongly Disagree	5	10
	Disagree	4	8
	Neutral	6	12
	Agree	15	30
	Strongly Agree	20	40
Firm Type	Turnover up to 50 lakh per anum	21	42
	Turnover 50 lakh to 100 lakh per anum	19	38
	Turnover 100 lakh to 500 lakh per anum	10	20
Total		50	100

Table 1 highlights the response statistics got from the primary survey. This table depicts the frequency and percentage of different levels of responses with respect to different parameters of export potential felt by exporters of Odisha.

An attempt has also been made to identify if there exist a difference in the opinions of respondents about the factors of supply chain in steel industry on the basis of different types of companies comprising of different volume of business. One Way ANOVA has been carried out to compare the mean responses among different respondents of different export executing companies. From the analysis below it has been observed that Get in /Expand the business,Business Growth Potential, Govt. Regulations are Acceptable, Acceptance of Tariff, Export Licensing, Trade Restriction, Trade Regulation, Stringent Documentation, Custom Procedures, Govt. Coordination, Govt. Support, Foreign Demand for Seafood, Availability of Seafood, Sustainability of Export have no role in discriminating the export of different companies of seafood export from Odisha. However, there exist significant differences among the opinions related to Procedure is Stringent (Table 2). This may be explained by the fact that in general, the entire seafood export from Odisha is being affected by Procedure and stringent procedure is responsible here for export.

TABLE2: ONE WAY ANOVA SHOWING THE SIGNIFICANT IMPACT OF TYPE OF COMPANIES ON FACTORS OF EXPORT POTENTIAL

ANOVA						
Parameters		Sum of Squares	df	Mean Square	F	Sig.
Get in /Expand the business	Between Groups	2.659	2	1.330	.598	.554
	Within Groups	104.461	47	2.223		
	Total	107.120	49			
Business Growth Potential	Between Groups	2.144	2	1.072	.465	.631
	Within Groups	108.356	47	2.305		
	Total	110.500	49			
Procedure is Stringent	Between Groups	4.657	2	2.328	1.096	.343
	Within Groups	99.843	47	2.124		
	Total	104.500	49			
Govt. Regulations are Acceptable	Between Groups	1.484	2	.742	.386	.682
	Within Groups	90.436	47	1.924		
	Total	91.920	49			
Acceptance of Tariff	Between Groups	1.478	2	.739	.428	.655
	Within Groups	81.242	47	1.729		
	Total	82.720	49			
Export Licensing	Between Groups	2.121	2	1.061	.430	.653
	Within Groups	115.879	47	2.466		
	Total	118.000	49			
Trade Restriction	Between Groups	3.723	2	1.862	1.163	.322
	Within Groups	75.257	47	1.601		
	Total	78.980	49			
Trade Regulation	Between Groups	3.228	2	1.614	.800	.455
	Within Groups	94.772	47	2.016		
	Total	98.000	49			
Stringent Documentation	Between Groups	4.020	2	2.010	.945	.396
	Within Groups	100.000	47	2.128		
	Total	104.020	49			
Custom Procedures	Between Groups	3.241	2	1.620	.915	.408
	Within Groups	83.259	47	1.771		
	Total	86.500	49			
Govt. Coordination	Between Groups	38.823	2	19.412	.540	.587
	Within Groups	1690.857	47	35.976		
	Total	1729.680	49			
Govt. Support	Between Groups	2.216	2	1.108	.581	.563
	Within Groups	89.564	47	1.906		
	Total	91.780	49			
Foreign Demand for Seafood	Between Groups	2.196	2	1.098	.627	.539
	Within Groups	82.304	47	1.751		
	Total	84.500	49			
Availability of Seafood	Between Groups	2.226	2	1.113	.524	.595
	Within Groups	99.774	47	2.123		
	Total	102.000	49			
Sustainability of Export	Between Groups	2.929	2	1.465	.835	.440
	Within Groups	82.451	47	1.754		
	Total	85.380	49			

MANAGERIAL IMPLICATION

Each firm should participate in trade fair. They should do innovation in wooden handicraft product like, rotating dining table, decorative coffee grinder and wooden hanger. Regarding skill labour problem they should give them wage according to their work. All the demand are extremely logical since handicraft and handloom alone account for 1.5 per cent of India total export, but this highly labour-intensive, decentralized industry, concentrate in mainly in rural and semi urban areas, is yet get the desire boost . Moreover, the sector is still reading under the pressure of recession and is yet heavy a sigh of relief. So it is the to see how the Government react to these demands, and how far it succeed to meet the expectation of the handicraft and handloom industry player in India.

CONCLUSION

A close scrutiny of this study reveals that the state of growing of export procedure. The transaction of export procedure can be achieved the more and more facility of export of different procedure, which has been greatly impact of international transaction. The rules and regulations of these export procedure and documentation to different countries which has fully depending the economy growth of all the country. Realizing the countries potential for achieving a rising levels of export and recognizing the need for the adoption of appropriate policies and necessaries designed to promote investment in handloom hand handicraft product. To formulate the different policies this has increased the export goal and promotes the incentive growth of export trade. Supply of handloom and

handcraft product is in excess. Currently, domestic production comfortably meets domestic requirements. Demand for handloom and handicraft is estimated to grow at 6%-8% per annum in view of the low per capita consumption in India. Also, demand for the metal is expected to pick up as the scenario improves for the industry, which closely tracks economic growth. Inflexible government regulation, stringent documentation, risk associated with international market, difficult to find foreign buyer. Being a commodity, customer enjoys relatively high bargaining power, as prices are determined on demand and supply. Being a commodity, customers enjoy relatively high bargaining power, as prices are determined on demand and supply. Competition: competition is primarily on quality and price, as being a commodity, differentiation is difficult. The main observation of our study is some issue like: Labour problem, Unwillingness toward investment in machineries And inability to participate in foreign trade fare. Study identified a number of problems of this industry and these problems have decreased the potential. Still the industry is not investing in machineries even after knowing that the main concept behind success in the industry is bulk supply and this is the point where the other countries exceed.

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A NOVEL SURVEY ON IMAGE EDGE DETECTOR

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ABSTRACT

Edge detection is a terminology in image processing and computer vision, particularly in the areas of feature detection and feature extraction, to refer to algorithms which aim at identifying points in a digital image at which the image brightness changes sharply or more formally has discontinuities. The extraction of edges or contours from a two dimensional array of pixels (a gray-scale image) is a critical step in many image processing techniques. A variety of computations are available which determine the magnitude of contrast changes and their orientation. In this paper we discuss the comparison and analysis edge detection method in digital image processing.

KEYWORDS

Canny, LOG, Prewitt, Roberts, Sobel.

I.   INTRODUCTION

There are two goals for image processing: one is to obtain the image that more suitable for human Observing and understanding, the other one is to recognize the image automatically by computer. The key step is to decompose a large and complex image into small image with independent feature. The edge is the basic characteristic of image. It is a collection of pixels whose surrounding pixels havea grayscale step-like changes or changes in the roof. The edge widely exists between objects and background, objects and primitives. It contains rich information, step property, shape etc, which is able to describe the target object. There are two types of edge detection: one is step change edge whose pixels grayscale of two side's have significantly difference; the other one is roof edge that is the turning point from increase to decrease of gray value.

Edge is basically the symbol and reflection of discreteness of partial image [1]. It symbolizes the end of one area and the beginning of the other area. The detected edge may become wide or discrete with the existence of noisy and ambiguity. So what we have to do for edge obtaining is to detect the discreteness of partial image and then eliminate breaking points of edges. Complete edge is combined by these edge pixels.

The organization of this papers as follows. In section II we have discussed Principles of EDGE Detection with some expressions. In section III we have described EDGE detection algorithms. In section IV we give some Advantages and Disadvantages of EDGE Detector. In section V compare the results of different EDGE detection algorithm. Finally in section VI conclude and future work.

II.   PRINCIPLE F EDGE DETECTION

Edge detection operator is a mutation in the nature of the image edge to test the edge. There are two main types[2]: one is the first derivative-based edge detection operator to detect image edges by computing the image gradient values, such as Roberts operator, Sobel operator, Prewitt operator; the other one is the second derivative-based edge detection operator, by seeking in the second derivative zero-crossing to edge detection, such as LOG operator, Canny operator.

A.   Based on the First Order Derivative of Edge Detection

Gradient is a measure of the function changes. And it is also the first order derivative of the image corresponds to two-dimensional function. An image can be seen as a continuous derivative of image intensity of sampling points group. Gradient [3] is a type of two-dimensional equivalent of the first derivative. So it can be defined as a vector.

$$G(x, y) = \begin{bmatrix} Gx \\ Gy \end{bmatrix} = \begin{bmatrix} \partial f/ \partial x \\ \partial f/ \partial y \end{bmatrix} \qquad (1)$$

There are two important properties. First, the vector G (x, y) direction is same as the direction of the maximum rate of change of increasing function f(x, y) (eg. formula (2)); Second, the gradient amplitude (eg.formula (3));

$$|G(x, y)| = \sqrt{Gx^2 + Gy^2} \qquad (2)$$

$$\propto(x, y) = \arctan(G_x/G_y) \qquad (3)$$

For digital images, partial derivative of the edge is almost same as differences. So the edge often lies on the differential value of the maximum, minimum, or zero.

$$Gx = f [x+1, y] - f [x, y]$$
$$Gy = f [x, y+1] - f [x, y] \qquad (4)$$

When we calculate the gradient, the same location (x, y) of real partial derivatives is essential in computing space. Gradient approximation is not in the same location using the above formula.

So the 2x2 first order differential template is used to calculate partial derivatives in x and y direction of the interpolation points[x +1 / 2, y +1 / 2], then G_x and G_y can be expressed as:

$$Gx = \begin{bmatrix} -1 & 1 \\ -1 & 1 \end{bmatrix}$$
$$Gy = \begin{bmatrix} 1 & 1 \\ -1 & -1 \end{bmatrix} \qquad (5)$$

The first order derivative method described above uses a boundary point. This method may lead to the edge points to detect excessive data storage. Theoretically more effective way is to determine the point with maximum value in ladder and these points are to be considered as edge point.

III.   ALGORITHMS OF EDGE DETECTION

A.   *Sobel Operator*

The operator consists of a pair of 3×3 convolution kernels as shown in Figure 1. One kernel is simply the other rotated by 90°.

These kernels are designed to respond maximally to edges running vertically and horizontally relative to the pixel grid, one kernel for each of the two perpendicular orientations. The kernels can be applied separately to the input image, to produce separate measurements of the gradient component in each orientation (called *Gx* and *Gy*). These can then be combined together to find the absolute magnitude of the gradient at each point and the orientation of that gradient. The gradient magnitude is given by:

$$|G| = \sqrt{Gx^2 + Gy^2}$$

Typically, an approximate magnitude is computed using:

$$|G| = |G_x| + |G_x|$$

This is much faster to compute. The angle of orientation of the edge (relative to the pixel grid) giving rise to the spatial gradient is given by:

$\theta=\arctan(G_y/G_x)$

B.   Robert's Cross Operator

The Roberts Cross operator performs a simple, quick to compute, 2-D spatial gradient measurement on an image. Pixel values at each point in the output represent the estimated absolute magnitude of the spatial gradient of the input image at that point.

FIG. 1: CONVOLUTION KERNEL FOR SOBEL OPERATOR

Gx   Gy

The operator consists of a pair of 2×2 convolution kernels as shown in Figure 2. One kernel is simply the other rotated by 90°.

These kernels are designed to respond maximally to edges running at 45° to the pixel grid, one kernel for each of the two perpendicular orientations. The kernels can be applied separately to the input image, to produce separate measurements of the gradient component in each orientation (called *Gx* and *Gy*). These can then be combined together to find the absolute magnitude of the gradient at each point and the orientation of that gradient. The gradient magnitude is given by:

$|G| =\sqrt{Gx^2 + Gy^2}$

Although typically, an approximate magnitude is computed using:

$|G|=| G_x |+| G_x|$

This is also much faster to compute. The angle of orientation of the edge giving rise to the spatial gradient (relative to the pixel grid orientation) is given by:

$\theta=\arctan(G_y/G_x) -3\pi/4$

C.   Prewitt's operator:

Prewitt operator is similar to the Sobel operator and is used for detecting vertical and horizontal edges in images. The operator uses two 3×3 kernels which are convolved with the original image to calculate approximations of the derivatives - one for horizontal changes, and one for vertical

FIG. 2: CONVOLUTION KERNEL FOR ROBERT'S CROSS OPERATOR

Gx   Gy

D.   Canny's Edge Detection Algorithm

The Canny edge detection algorithm is known to many as the optimal edge detector. Canny's intentions were to enhance the many edge detectors already out at the time he started his work. He was very successful in achieving his goal and his ideas and methods can be found in his paper, "A Computational Approach to Edge Detection".

In his paper, he followed a list of criteria to improve current methods of edge detection. The first and most obvious is low error rate. It is important that edges occurring in images should not be missed and that there be NO responses to non-edges. The second criterion is that the edge points be well localized. In other words, the distance between the edge pixels as found by the detector and the actual edge is to be at a minimum. A third criterion is to have only one response to a single edge. This was implemented because the first 2 were not substantial enough to completely eliminate the possibility of multiple responses to an edge. Based on these criteria, the canny edge detector first smoothes the image to eliminate and noise. It then finds the image gradient to highlight regions with high spatial derivatives. The algorithm then tracks along these regions and suppresses any pixel that is not at the maximum (non maximum suppression). The gradient array is now further reduced by hysteresis. Hysteresis is used to track along the remaining pixels that have not been suppressed. Hysteresis uses two thresholds and if the magnitude is below the first threshold, it is set to zero (made a non edge). If the magnitude is above the high threshold, it is made an edge. And if the magnitude is between the 2 thresholds, then it is set to zero unless there is a path from this pixel to a pixel with a gradient above T2.

E.   The Marrs-Hildreth edge detector

The Marr–Hildreth algorithm is a method of detecting edges in digital images, i.e. continuous curves where there are strong and rapid variations in image brightness. The Marr–Hildreth edge detection method is simple and operates by convolving the image with the Laplacian of the Gaussian function, or, as a fast approximation by Difference of Gaussians. Then, zero crossings are detected in the filtered result to obtain the edges.

The Laplacian-of-Gaussian image operator is sometimes also referred to as the Mexican hat wavelet due to its visual shape when turned upside-down. The Marr–Hildreth operator, however, suffers from two main limitations. It generates responses that do not correspond to edges, so-called "false edges", and the localization error may be severe at curved edges. Today, there are much better edge detection methods, such as the Canny edge detector based on the search for local directional maxima in the gradient magnitude, or the differential approach based on the search for zero crossings of the differential expression that corresponds to the second-order derivative in the gradient direction.

IV.   ADVANTAGES AND DISADVANTAGES OF EDGE DETECTOR

TABLE 1: ADVANTAGES AND DISADVANTAGES OF EDGE DETECTOR

Operator	Advantages	Disadvantages
Classical (Sobel, prewitt, Kirsch…)	Simplicity, Detection of edges and their orientations	Sensitivity tonoise, Inaccurate
ZeroCrossing(Laplacian, Second directionalderivative)	Detection of edges and their orientations. Having fixedcharacteristics inall directions	Responding tosome of theexisting edges, Sensitivity tonoise
Laplacian ofGaussian(LoG)(Marr-Hildreth)	Finding the correct places of edges, Testing wider areaaround the pixel	Malfunctioningat the corners,curves andwhere the graylevel intensity function varies. Not finding theorientation ofedge because ofusing theLaplacian filter
Gaussian(Canny,Shen-Castan)	Using probability for finding error rate, Localization and response. Improving signalto noise ratio, Better detectionspecially in noise conditions	ComplexComputations,False zerocrossing, Timeconsuming

V.   COMPARISON RESULT OF EDGE DETECTION ALGORITHMS

FIG.3: COMPARISON RESULTS OF EDGE DETECTION ALGORITHMS

(a) Original   (b) Sobel

(c) Prewitt   (d) Robert

(e) Laplacian of Gaussian
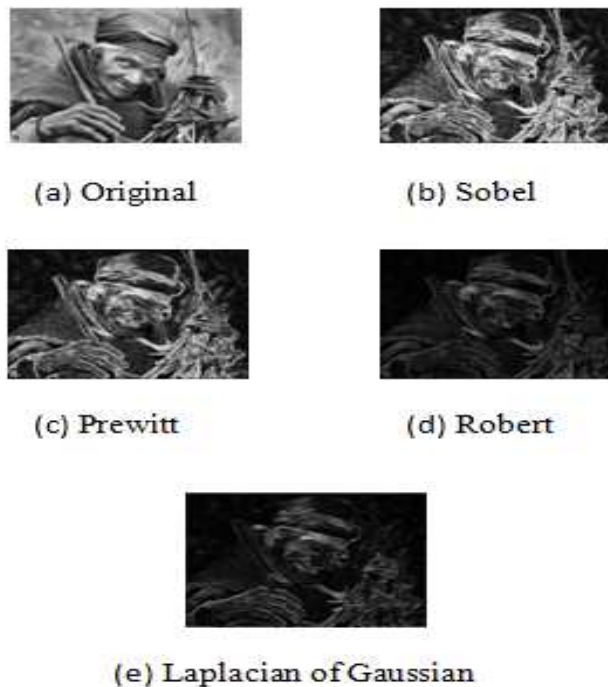
VI.   CONCLUSION AND FUTURE

Since edge detection is the initial step in object boundary extraction and object recognition, it is important to know the differences between different edge detection operators. In this paper an attempt is made to review the edge detection techniques which are based on discontinuity intensity levels. The relative performance of various edge detection techniques is carried out with two images by using MATLAB software. It have been observed that that the Canny edge detector produces higher accuracy in detection of object edges with higher entropy and execution time compared with Sobel, Roberts, Prewitt, Zero crossing and LOG.

VII.   ACKNOWLEDGMENT

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