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CORPORATE SOCIAL RESPONSIBILITY FOR SUSTAINABLE GROWTH IN INDIA: EMERGING TRENDS, ISSUES, CHALLENGES, STRATEGIES AND OPPORTUNITIES

Dr. M. M. Gandhi[1]

ABSTRACT

This paper explores the various definitions and descriptions of Corporate Social Responsibility (CSR). This paper sets out the theoretical concepts expounded by various researchers and studies. This paper examines how India's corporate sector views, and conducts their CSR. This paper analyses the sustainability initiatives of India's select top companies across multiple variables related to sustainability. This paper is based upon various empirical studies and secondary data collection. This paper highlights that the CSR has now become a comprehensive business strategy, arising mainly from the stakeholders' perceptions, expectations, performance considerations and pressures on one hand and the obligations cast upon them by the recent provisions of the India Companies Law pertaining to the mandatory compliances of the CSR on the other hand. This paper argues that the CSR policies vary with turnover and profit, besides every company either defines CSR in their own ways, voluntarily or as obligations, and as per their policies, needs and the emerging trends and pressures. This paper attempts to identify key CSR practices, maps these against Global Reporting Initiative standards, and further elaborates upon development and deployment of current CSR practices in India. This paper points out that the perceptions of 'business for profit' and 'compliance of obligations of CSR' are complimentary and its strategy appears to be on a convergent path. The paper further points out that there is significant variance in choosing the options of 'compliance of obligations of CSR' as well as it is reporting across sectors. The paper further points out that most initiatives of CSR of the corporate sector are in the areas of education, healthcare, community livelihood, infrastructure development, operations-related measures such as resource conservation (energy, water, paper) and waste management (emissions, solid waste, water), either by way of creating them by self-establishments and/or the offering voluntary donations to such Non-Government Organisations. This paper analyses the emerging trends, issues, challenges, strategies and opportunities in the CSR.

KEYWORDS

Corporate Social Responsibilities, Sustainability, Governance, CSR Initiatives and Practices, Indian Companies, Community etc.

CONCEPTUAL FRAMEWORK

Meaning, Evolution of the Concept

Corporate social responsibility (CSR), also called corporate conscience, corporate citizenship or sustainable responsible business/ Responsible Business), (Wood, 1991), is a form of corporate self-regulation integrated into a business model, (Wikipedia, 2014a). CSR policy functions as a self-regulatory mechanism whereby a business monitors and ensures its active compliance with the spirit of the law, ethical standards and international norms. In some models, a firm's implementation of CSR goes beyond compliance and engages in "actions that appear to further some social good, beyond the interests of the firm and that which is required by law", (McWilliams, et al, 2001), (McWilliams, et al, 2006). CSR aims to embrace responsibility for corporate actions and to encourage a positive impact on the environment and stakeholders including consumers, employees, investors, communities, and others, (Wikipedia, 2014a).

The term "corporate social responsibility" became popular in the 1960s and has remained a term used indiscriminately by many to cover legal and moral responsibility more narrowly construed, (De George, Richard T., 2011).

The idea of CSR first came up in 1953 when it became an academic topic in HR Bowen's "Social Responsibilities of the Business". Since then, there has been continuous debate on the concept and its implementation. Although the idea has been around for more than half a century, there is still no clear consensus over its definition (Chandrasekar, 2014).

Proponents argue that corporations increase long-term profits by operating with a CSR perspective, while critics argue that CSR distracts from business' economic role. A 2000 study compared existing econometric studies of the relationship between social and financial performance, concluding that the contradictory results of previous studies reporting positive, negative, and neutral financial impact, were due to flawed empirical analysis and claimed when the study is properly specified, CSR has a neutral impact on financial outcomes", (McWilliams, et al, 2000).

[1]Principal, Professor and Head P.G., Department of Commerce and Management, Jaysingpur College of Arts, Commerce, Science and Computer Science (U.G. & P.G.), Maharashtra, India, dr.manojkumargandhi@gmail.com

Critics, (Samuelson, Susan S., 2009), (Rosenberg, Matthew J., 2002), questioned the "lofty" and sometimes "unrealistic expectations" in CSR, (Henderson, David, 2001), or that CSR is merely window-dressing, or an attempt to pre-empt the role of governments as a watchdog over powerful multinational corporations.

Political sociologists became interested in CSR in the context of theories of globalization, neoliberalism and late capitalism. Some sociologists viewed CSR as a form of capitalist legitimacy and in particular point out that what began as a social movement against uninhibited corporate power was transformed by corporations into a 'business model' and a 'risk management' device, often with questionable results, (Shamir, R., 2011). CSR is titled to aid an organization's mission as well as a guide to what the company stands for to its consumers. Business ethics is the part of applied ethics that examines ethical principles and moral or ethical problems that can arise in a business environment. ISO 26000 is the recognized international standard for CSR. Public sector organizations (the United Nations for example) adhere to the triple bottom line (TBL). It is widely accepted that CSR adheres to similar principles, but with no formal act of legislation.

The notion is now extended beyond purely commercial corporations, e.g. to Educational Institutes of Higher Learning, Universities, (Ramsden, J.J., 2012).

Corporate Social Responsibility is a management concept whereby companies integrate social and environmental concerns in their business operations and interactions with their stakeholders. CSR is generally understood as being the way through which a company achieves a balance of economic, environmental and social imperatives ("Triple-Bottom-Line- Approach"), while at the same time addressing the expectations of shareholders and stakeholders. In this sense, it is important to draw a distinction between CSR, which can be a strategic business management concept, and charity, sponsorships or philanthropy. Even though the latter can also make a valuable contribution to poverty reduction, will directly enhance the reputation of a company and strengthen its brand, the concept of CSR clearly goes beyond that, (UNIDO, 2013).

Promoting the uptake of CSR amongst SMEs requires approaches that fit the respective needs and capacities of these businesses, and do not adversely affect their economic viability. UNIDO based its CSR programme on the Triple Bottom Line (TBL) Approach, which has proven to be a successful tool for SMEs in the developing countries to assist them in meeting social and environmental standards without compromising their competitiveness. The TBL approach is used as a framework for measuring and reporting corporate performance against economic, social and environmental performance. It is an attempt to align private enterprises to the goal of sustainable global development by providing them with a more comprehensive set of working objectives than just profit alone. The perspective taken is that for an organization to be sustainable, it must be financially secure, minimize (or ideally eliminate) its negative environmental impacts and act in conformity with societal expectations, (UNIDO, 2013).

Key CSR issues: environmental management, eco-efficiency, responsible sourcing, stakeholder engagement, labour standards and working conditions, employee and community relations, social equity, gender balance, human rights, good governance, and anti-corruption measures, (UNIDO, 2013).

A properly implemented CSR concept can bring along a variety of competitive advantages, such as enhanced access to capital and markets, increased sales and profits, operational cost savings, improved productivity and quality, efficient human resource base, improved brand image and reputation, enhanced customer loyalty, better decision making and risk management processes, (UNIDO, 2013).

Definitions

Business dictionary defines CSR as "A company's sense of responsibility towards the community and environment (both ecological and social) in which it operates. Companies express this citizenship (1) through their waste and pollution reduction processes, (2) by contributing educational and social programs and (3) by earning adequate returns on the employed resources", (Wikipedia, (2014b).

World Bank Group defines CSR as "Corporate Social Responsibility is the commitment of businesses to contribute to sustainable economic development by working with employees, their families, the local community and society at large, to improve their lives in ways that are good for business and for development" , (Chandrasekar, 2014).

A broader definition expands from "a focus on stakeholders to inclusion of philanthropy and volunteering", (Wikipedia, (2014c).

Evolution of CSR: A Global Perspective

Corporate social responsibility (CSR) has a long and varied history as the, at times more and at other times less, central concept in the business and society field (Carroll, 1999; Windsor, 2001, Frank & Stoelhorst, 2009). The mission of the business and society field has been described as finding and developing a constructive business relationship with society (Swanson, 1999). In light of

this mission, CSR can be construed as any concept that speaks to how managers should handle public policy and social issues (Windsor, 2006). Frederick (1987) identified three historical stages in the development of the CSR literature, broadly construed. The first phase called attention to the need for corporate responsibility, the second elaborated on managerial tools for responsiveness, and the third and current phase is primarily concerned with ethics and values. In the course of these three phases, there has been a changing emphasis on developing new perspectives on the business and society relationship, on the one hand, and consolidation of research topics, on the other hand.

Evolution of CSR in India

The evolution of corporate social responsibility in India refers to changes over time in India of the cultural norms of corporations' engagement of corporate social responsibility (CSR), with CSR referring to way that businesses are managed to bring about an overall positive impact on the communities, cultures, societies and environments in which they operate, (Angela Heijden, et al, 2010, Andromache, 2010, Wikipedia, 2014a). The fundamentals of CSR rest on the fact that not only public policy but also even corporates should be responsible enough to address social issues. Thus, companies should deal with the challenges and issues looked after to a certain extent by the states, (Chahoud, et al, 2007).

Among other countries, India has one of the oldest traditions of CSR. However, CSR practices are regularly not practiced or done only in namesake especially by MNCs with no cultural and emotional attachments to India. Much has been done in recent years to make Indian Entrepreneurs aware of social responsibility as an important segment of their business activity but CSR in India has yet to receive widespread recognition. If this goal has to be realized then the CSR approach of corporates has to be in line with their attitudes towards mainstream business- companies setting clear objectives, undertaking potential investments, measuring and reporting performance publicly, (Wikipedia, 2014a).

Four Phases of CSR Development in India

The history of CSR in India has its four phases, which run parallel to India's historical development, and has resulted in different approaches towards CSR. However, the phases are not static and the features of each phase may overlap other phases, (Wikipedia, 2014a).

First Phase

In the first phase, charity and philanthropy were the main drivers of CSR. Culture, religion, family values, tradition and industrialization had an influential effect on CSR. In the pre-industrialization period, which lasted until 1850, wealthy merchants shared a part of their wealth with the wider society by way of setting up temples for a religious cause. Moreover, these merchants helped the society in getting over phases of famine and epidemics by providing food from their godowns and money and thus securing an integral position in the society. With the arrival of colonial rule in India from the 1850s onwards, the approach towards CSR changed. The industrial families of the 19th century such as Tata, Godrej, Bajaj, Modi, Birla, Singhania were strongly inclined towards economic as well as social considerations. However it has been observed that their efforts towards social as well as industrial development were not only driven by selfless and religious motives but also influenced by caste groups and political objectives, (Chahoud, et al, 2007).

Second Phase

In the second phase, during the independence movement, there was increased stress on Indian Industrialists to demonstrate their dedication towards the progress of the society. This was when Mahatma Gandhi introduced the notion of "trusteeship", according to which the industry leaders had to manage their wealth to benefit the common man. Mahatma Gandhi while advocating his argument towards his concept of "*Trusteeship*", expressed that "*I desire to end capitalism almost, if not quite, as much as the most advanced socialist. However, our methods differ. My theory of trusteeship is no makeshift, certainly no camouflage. I am confident that it will survive all other theories.*". Gandhi's influence put pressure on various Industrialists to act towards building the nation and its socio-economic development, (CSR, 2001). According to Gandhi, Indian companies were supposed to be the "Temples of Modern India". Under his influence, businesses established trusts for schools and colleges and helped in setting up training and scientific institutions. The operations of the trusts were largely in line with Gandhi's reforms, which sought to abolish untouchability, encourage empowerment of women and rural development.

Third Phase

The third phase of CSR (1960–80) had its relation to the element of "mixed economy", emergence of Public Sector Undertakings (PSUs) and laws relating labour and environmental standards. During this period, the private sector was forced to take a backseat. The public sector was seen as the prime mover of development. Because of the stringent legal rules and regulations surrounding the activities of the private sector, the period was described as an "era of command and control". The policy of industrial

licensing, high taxes and restrictions on the private sector led to corporate malpractices. This led to enactment of legislation regarding corporate governance, labour and environmental issues. PSUs were set up by the state to ensure suitable distribution of resources (wealth, food etc.) to the needy. However, the public sector was effective only to a certain limited extent. This led to shift of expectation from the public to the private sector and their active involvement in the socio-economic development of the country became necessary. In 1965 Indian academicians, politicians and businesspersons set up a national workshop on CSR aimed at reconciliation. They emphasized upon transparency, social accountability and regular stakeholder dialogues. In spite of such attempts, the CSR failed to catch steam.

Fourth Phase

In the fourth phase, (1980 until the present) Indian companies started abandoning their traditional engagement with CSR and integrated it into a sustainable business strategy. In the 1990s, the first initiation towards globalization and economic liberalization were undertaken. Controls and licensing system were partly done away with which gave a boost to the economy the signs of which are very evident today. Increased growth momentum of the economy helped Indian companies grow rapidly and this made them more willing, (Gajare, 2014), and able to contribute towards social cause. Globalization has transformed India into an important destination in terms of production and manufacturing bases of TNCs are concerned. As Western markets are becoming more and more concerned about labour and environmental standards in the developing countries, Indian companies, which export and produce goods for the developed world, need to pay a close attention to compliance with the international standards, (Chahoud, et al, 2007).

Principles of CSR

ISO 26000 lays down following seven Principles of Social Responsibility:

- Accountability: being answerable for decisions, activities, and their impacts on society, the economy and the environment.
- Transparency: openness about decisions and activities that affect society and the environment.
- Ethical behavior: in accordance with accepted principles of right or good conduct
- Respect for stakeholder interest: respect, consider and respond to the interests of its stakeholders.
- Respect for rule of law: mandatory.
- Respect for international norms of behavior.
- Respect for human rights, (Rheinland, 2012).

The Ethical Foundations for CSR

The review of literature on empirical researches on CSR practices in most of the countries in general and in India in particular suggests that the ethical foundations of CSR consist of three major parts, (Wikipedia, 2014a).

- First, there are three different approaches to CSR, namely: (a) an instrumental approach, (b) an ethical approach and (c) a hybrid approach, attempting to combine the instrumental and the ethical approach. The literature review suggests that the ethical approach to CSR is the most reasonable of the three alternatives.
- Second, there are three most influential ethical theories and their key principles, which are: (i) the utilitarian principle of maximizing well-being, (ii) theories of rights, and (iii) social contract principles concerning fairness, which might relate to CSR in general.
- Third, literature review suggests that there is some specific ethical challenges characteristic for CSR including whether companies should focus solely on avoiding harmful actions or whether they also have obligations to actively do good.

Core Subjects of CSR

During the process of evolution of the CSR, there has been a continuous expansion in the core subjects thereof. The list of core subjects depends upon the perceptions, policies, conventions, practices, provisions of relevant law and rules, governments' directions, political pressures, aspirations of local community and society, etc. All such CSR activities could be grouped and enlisted under a specific core subject. Following are broad groups and significant core subjects of CSR, (Rheinland, 2012, MCA-GoI, 2014, ACC, 2014).

- Labour Practices,
- Human Rights,
- Organizational Governance,
- The Environment,

- Fair Operating Practices,
- Consumer Issues,
- Literacy & Education for the community,
- Employability & Skill Development,
- Livelihood & Income generation,
- Health and Sanitation Programmes,
- Empowerment and Gender Equality,
- Development of Community and Society,
- Building Community Infrastructure,
- Public Transportation,
- Public Communication,
- Other Development Areas.

Corporate Social Responsibility: An Indian Perspective

In the era of frequent corporate frauds and failures, the emphasis on corporate social responsibility has increased multifold. There has been a massive expansion in the concept of corporate citizenship and the proposition that corporations should take into account the interests of all stakeholders. In this backdrop, the definition of corporate social responsibility and the objective of its functions are debated by Corporations, Governments, NGOs and academicians. In a way, it becomes very important to know the international provisions in terms of its implementation, legal issues, ethical perspectives, criticism to mandatory corporate social responsibility and best practices. We aim to present a comprehensive analysis of corporate social responsibility practices and issues arising from the Indian domain, tempered with an international perspective. We seek to analyze the various implications of the wide-ranging definitions of the term 'CSR' and determine what it takes to become a 'socially responsible' company. We begin with the objectives of corporate social responsibility, followed by the different perspectives on corporate social responsibility activities, in addition to the various models of CSR. We further discuss the drivers of such practices in India's business environment, with special emphasis on its sustainability and responsibility arguments. We analyses the Indian practices within a developing economy framework based on past corporate sector experiences of Indian companies with corporate social responsibility, highlighting the role of labor issues, sustainability and environmental issues. We examine the evolution of corporate social responsibility activities in India, and broadly divide the history in this regard into four phases based on the prevalent thoughts and activities undertaken. Finally, we deliberate on the future scenario for CSR in India and its key drivers based on case studies of corporate social responsibility activities undertaken by Indian companies.

Current State of CSR in India

As discussed above, CSR is not a new concept in India. Ever since their inception, corporates like the Tata Group, the Aditya Birla Group, and Indian Oil Corporation, to name a few, have been involved in serving the community. Through donations and charity events, many other organizations have been doing their part for the society. The basic objective of CSR in these days is to maximize the company's overall impact on the society and stakeholders. CSR policies, practices and programs are being comprehensively integrated by an increasing number of companies throughout their business operations and processes. A growing number of corporates feel that CSR is not just another form of indirect expense but is important for protecting the goodwill and reputation, defending attacks and increasing business competitiveness, (CSR, 2014).

Companies have specialized CSR teams that formulate policies, strategies and goals for their CSR programs and set aside budgets to fund them. These programs are often determined by social philosophy, which have clear objectives, are well defined, and are aligned with the mainstream business. The employees who are crucial to this process put the programs into practice. CSR programs ranges from community development to development in education, environment and healthcare etc., (Khanna and Gupta 2011).

For example, a more comprehensive method of development is adopted by some corporations such as Bharat Petroleum Corporation Limited, Maruti Suzuki India Limited. Provision of improved medical and sanitation facilities, building schools and houses, and empowering the villagers and in process making them more self-reliant by providing vocational training and a knowledge of business operations are the facilities that these corporations focus on. Many of the companies are helping other peoples by providing them good standard of living. In addition, corporates increasingly join hands with non-governmental organizations (NGOs) and use their expertise in devising programs, which address wider social problems.

CSR has gone through many phases in India. The ability to make a significant difference in the society and improve the overall quality of life has clearly been proven by the corporates. Not one but all corporates should try to bring about a change in the current social situation in India in order to have an effective and lasting solution to the social woes. Partnerships between companies, NGOs and the government should be facilitated so that a combination of their skills such as expertise, strategic

thinking, manpower and money to initiate extensive social change will put the socio-economic development of India on a fast track, (Sathish, Ramya, 2014).

CSR: Mandatory by Law

Under the Indian Companies Act, 2013, any company having a net worth of rupees 500 crore or more or a turnover of rupees 1,000 crore or more or a net profit of rupees 5 crore or more should mandatorily spend 2% of their net profits per fiscal on CSR activities, (Grant Thornton 2014). The rules came into effect from 1 April 2014, (Forbes, 2014).

Corporate Social Responsibility (CSR) became part of Indian legislation through Section 135, Companies Act 2013. The objective is to get the best of corporate India to catalyze socio-economic development in the country and facilitate India Inc. to partner the government in getting the maximum impact out of public spending in these areas Over the last two-three years the Indian Institute of Corporate Affairs (IICA) under the MCA has been in the vanguard of the Corporate Social Responsibility movement in the country. The apex institution played a fundamental, enabling role by helping to shape Indian CSR as part of this legislation. To do this it provided a seamless connect between corporate India, the implementation agencies and the government in order to embed the needs of our development sector as part of Section 135. The objective was to get the best of corporate India to catalyze socio-economic development in the country, and to facilitate India Inc. to collaborate the government in getting the maximum impact out of public spending in these areas. Thus, in a way, India is today defining strategic CSR in its own way. Indian business is actively collaborating with the development sector to give the optimum return on investment in these areas. Corporate India stands to benefit hugely in this endeavour as quality education, employable skill development, women's' empowerment, health-care for all, etc., will only add to better brand building for companies supporting these activities as also would provide trained human resources to drive their business plans. With India rapidly becoming a young nation, its greatest asset is its youth, if this gets the right skills; the entire nation stands to gain immensely, (The Economic times, 2014).

For CSR to have real and tangible impact there are many challenges that would need to be surpassed. Just because about 15000 plus companies have somewhere between Rs. 15 to 20 Thousand Crores that would be available for spending each year for CSR does not mean there would be visible changes on the ground. An army of trained CSR professionals is needed by companies and implementation agencies to manage the monies. Capable Implementation Agencies are needed that can map the ground needs, build them into deliverable projects and implement these to bring about genuine impact. Only then will mandatory CSR reporting be representative of actual change. As a nation, every Indian awaits to see this happen. Thus, due to the mandatory obligations under the Indian Companies Act, 2013, it is anticipated by the Government of India that there would be a focus on development, which can be the golden era for India. However, this would be materialized provided if the depth of the CSR opportunity given by this legislation is properly construed and realized in proper perspective by the corporate sector in India.

Reference Material and Acknowledgement

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RELATION BETWEEN SMARTPHONE USERS AND INTERNET BANKING APPLICATION USERS ON SMARTPHONES: AN INDEPTH STUDY

Dr. S. K. Baral[2]

ABSTRACT

This study attempts to explore the relationship between smartphone users as the number of smartphone users has increased drastically and that of the users of internet banking applications on these smartphones. As we are all aware that smartphones with android, windows and apple operating systems have dominated the Indian mobile industry due to which there is a radical increase in the number of internet users. This study assesses the increase in the use of smart phones and the relative increase in the number of users of internet banking application on the smartphones. An analysis demonstrates that although there is a radical increase in smartphone users there is only a marginal increase in the use of internet banking applications on these smartphones.

KEYWORDS

Smartphones, Internet Banking, Banking Application etc.

INTRODUCTION

Banks have become a part of the daily lives of every individual and banks are taking every initiative to strengthen its technology aspects to reach to every customer in the best possible way. Banks are investing a lot of time and money to adopt newer and better technologies. The latest of these newly adopted technologies is the internet banking application available on smartphones with Android, Windows and Apple operating systems.

NEED OF STUDY

The use of E-Technology introduced by the banking industry has enormously profited both the banks as well as the customers in various ways such as productivity, speedier transfers, real time balances, anytime and anywhere banking. The need of studying the above given topic arises:

- There has been a radical increase in the number of users of smartphones in the Indian mobile banking industry.
- With the increase in the smartphone users, there has been a relative increase in the number of internet user's in-order to support the smartphones.
- Since customers have learnt to adopt the smartphones it is necessary to understand the customers perception about the internet banking applications available on these smartphones.
- To analyze the relative increase of internet banking application users to that compared to the increase of smartphone users.

OBJECTIVES OF STUDY

The banking industry has invested huge amount of capital in developing internet-banking applications on smartphones like State Bank Anywhere (State Bank of India), iMobile (ICICI Bank), Axis Mobile (Axis Bank) and Baroda M-Connect (Bank of Baroda) are some of the many Mobile Banking applications available on smartphones of Android, Microsoft or Apple operating system. Hence, this study is undertaken with the following objectives:

- To assess the use of applications like WhatsApp and Facebook being used by those bank customers using smartphones.
- To assess the use of E-Banking applications being used by those bank customers using smartphones.
- To suggest measures to the Banking Industry so as to improve their internet banking applications.

Services Offered by E-Banking Applications on the Smartphones

- View and transact from all your accounts including Loans, PPF, Insurance, Cards and Deposits,
- Check your bank balance, view & email detailed statement and view passbook on your mobile,
- Transfer funds to an account or to contact no or email id,
- Send cash through Cardless facility,

[2]Director, Kushagra Institute of Information & Management Science (KIIMS), Odisha, India, drskbaral@yahoo.in

- Open FD–Open FDs, RDs or any other deposits,
- Get personalized offers on your mobile,
- Block and Replace your cards,
- Temporarily switch your debit card on and off,
- Safely add payees right from the app,
- Pay bills to established payees,
- Find nearby branches and ATMs.

BENIFITS OF THE USE OF E-BANKING APPLICATIONS ON THE SAMRTPHONES

Accessibility
The facilities provide by banks through their E-Banking applications available to the bank customers is accessible 24×7. This facility can be availed by the bank customer at his home or office place.

Movability
The E-Banking applications have risen from many odds, which aim at providing not only service but also quality service to its customer to every customer anywhere across the globe.

Safe and Secure
The Banks providing these applications of E-Banking take security very seriously and do whatever is possible from their end to keep every transaction safe. There are even minimum requirement safety standards instructed by RBI to banks using these kinds of technologies.

Promptness in Transactions
Banking transactions are carried out at very high speeds and promptly as there is no human intervention and it is controlled by very efficient bank servers equipped to carry out such large volume of transactions efficiently

LIMITATIONS OF THE USE OF E-BANKING TECHNOLOGY

Smartphone and Internet is a Basic Requirement
Although there is a very rapid increase of sale of smartphones in the mobile phones industry, yet a few have still not adopted the latest smartphones technology, as they are comfortable with the older phones. Secondly, along with the smartphones the basic requirement is internet, which is required to run this application. Which especially the range of internet is weak in the rural and semi-urban areas.

Not Feasible to Customer not Computer Savvy
E-Banking applications are used by customer who is computer savvy and would like to get adapted to the latest technology being introduced. Even though sometimes a customer may own a smartphones it is not necessary he may know all the features and know to use is effectively.

Lack of Personal Intervention
Now days customer seek not only that their work may be done quickly, but also they appreciate efficient customer service. E Banking lacks the touch of personal intervention.

SCOPE OF STUDY

This study has been undertaken to assess the number of customers using smartphones. This study looks to compare the number of customers using applications like WhatsApp or Facebook on their smartphones in comparison to the number of customers using internet-banking applications on their smartphones.

All the respondents covered are businessperson; service sector employees and college going students from the area of Navelim between the age group of 24 years to 30 years were interviewed. Firstly, the respondents were questioned about the use of smartphones and only those respondents who used smartphones were questions further. The study has been conducted from the banks customers' view, which is restricted to retail banking.

METHODOLOGY OF STUDY

Primary Data: Survey method has been used for collecting primary data. A survey was carried out through a self-developed structured questionnaire.

Sample Size: A sample size of 156 respondents was considered for the purpose of study. The sampling was done through stratified random sampling.

Statistical Tools: Relevant statistical tools such as Mean, Median, Mode and especially statistical correlation i.e. Coefficient of correlation was used with the help of the SPSS software.

Statistical Correlation is a statistical technique, which tells us if two variables are related. In this study, this tool is used to check what the relation is between:

a. The number of bank customers using smartphones and its relation to that of those using applications like WhatsApp or Facebook on their smartphones.

b. The number of bank customers using smartphones and its relation to that of those using E-Banking applications on their smartphones.

Statistical correlation is measured by what something called as Coefficient of Correlation (r). Its numerical value ranges from +1.0 to -1.0. It gives us an indication of the strength of relationship.

As a rule of thumb, the following chart is always useful as a guideline on the strength of relationship.

Table-1

Value of r	Strength of relationship
-1.0 to -0.5 or 1.0 to 0.5	Strong
-0.5 to -0.3 or 0.3 to 0.5	Moderate
-0.3 to -0.1 or 0.1 to 0.3	Weak
-0.1 to 0.1	None or very weak

Sources: Authors Compilation

FINDINGS AND ANALYSIS

Table-2: Frequency of the Respondents Using Smartphones

Particulars	Number	Percentage %
Number of Customers **using** Smartphones	148	94.90
Number of Customers **NOT using** Smartphones	8	5.10
Total No. of Customers	156	100

Sources: Primary Data

The table shows that 94.90% of the 156 respondent's i.e. 148 bank customers are using smartphones where as 5.10% of 156 respondents i.e. 8 bank customers are not using smartphones.

Table-3: Frequency of the respondents using WhatsApp or Facebook on their Smartphones

Particulars (Only Smartphone Users)	Number	Percentage %
Number of Customer using WhatsApp or Facebook	147	99.3
Number of Customer **NOT using** WhatsApp or Facebook	1	0.7
Total Number of ONLY Smartphone users	148	100

Sources: Primary Data

The table indicates that just one Customer having a smartphone did not use the application of WhatsApp or Facebook, which is that too less than 1%. The customer who did not use said he had just bought a new phone and he would install those applications in the next couple of days. Whereas 99% i.e. 147 number of customers said they use WhatsApp and Facebook on their smartphones which shows the enormous rise in the usage of online applications on their smartphones.

The following steps were used to work out the correlation coefficient.

ΣX= Number of Customers using Smartphones,
ΣY= Number of Customers using WhatsApp or Facebook application,

Step 1 Find the sum of every column to get:

$$\sum X = 148\,,\ \sum Y = 147\,,\ \sum X \cdot Y = 1454\,,\ \sum X^2 = 1464\,,\ \sum Y^2 = 1445$$

Step 2 Use the following formula to work out the correlation coefficient.

$$r = \frac{n \cdot \sum XY - \sum X \cdot \sum Y}{\sqrt{\left[n \sum X^2 - (\sum X)^2\right] \cdot \left[n \sum Y^2 - (\sum Y)^2\right]}}$$

$$r = \frac{15 \cdot 1454 - 148 \cdot 147}{\sqrt{\left[15 \cdot 1464 - 148^2\right] \cdot \left[15 \cdot 1445 - 147^2\right]}} \approx 0.8882$$

$$r = 0.8882$$

Since **r >0** it indicates a positive relationship. Since **r=0.8882** it indicates that the number of customers using smartphone has a very strong relationship with the same customers using applications like WhatsApp and Facebook on their respective smartphones.

Table-4: Frequency of the Respondents Using E-Banking Applications on Their Smartphones

Particulars	Number	Percentage %
Number of Customer using E-Banking application	9	6.1
Number of Customer NOT using E-Banking application	139	93.9
Total Number of ONLY Smartphone users	148	100

Sources: Primary Data

The table indicates that only 6.1% of the total number of customer using smartphones i.e. Just 9 Customers having used E-Banking applications. Majority of the he customer that is 93.9% although they used a smartphone and installed applications like WhatsApp or Facebook but they did not use any E-Banking applications.

The following steps were used to work out the correlation coefficient.

ΣX= Number of Customers using Smartphones
ΣY= Number of Customers using E-Banking applications

Step 1 Find the sum of every column to get:

$$\sum X = 148\,,\ \sum Y = 9\,,\ \sum X \cdot Y = 214\,,\ \sum X^2 = 4224\,,\ \sum Y^2 = 17$$

Step 2 Use the following formula to work out the correlation coefficient.

$$r = \frac{n \cdot \sum XY - \sum X \cdot \sum Y}{\sqrt{\left[n \sum X^2 - (\sum X)^2\right] \cdot \left[n \sum Y^2 - (\sum Y)^2\right]}}$$

$$r = \frac{6 \cdot 214 - 148 \cdot 9}{\sqrt{\left[6 \cdot 4224 - 148^2\right] \cdot \left[6 \cdot 17 - 9^2\right]}} \approx -0.1786$$

$$r = -0.1786$$

Since **r < 0,** it indicates a negative relationship. Since **r= -0.1786** it indicates that relationship between the number of customers using smartphones and the number of the same customers using any E-Banking application is very weak or there is no relationship.

SUGGESTIONS

From the above analysis it is clear that bank customers although have started adopting the new technology in the mobile industry and have even started using applications and accustomed themselves to social networking applications like WhatsApp or Facebook enormously. There is still a long way before these customers start using the E-Banking applications. Some of the measures the banks should take to increase the usage of E-Banking applications are as follows:

- Make these applications more user friendly and eye catching.
- Advertise not concentrating upon the new application but instead upon the benefits, in this way a Bank will advertise for the product as well as highlight its benefits.
- The various security measures and bugs reported should be updated most frequently.
- Introduction of various promotional benefits for installing these applications and referring them to a friend.

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MANAGEMENT INFORMATION SYSTEM IN LIFE INSURANCE CORPORATION: AN EMPIRICAL STUDY ON KHAMMAM BRANCH

Dr. Devulapalli Raghava[3] Danda Udaya Shekhar[4]

ABSTRACT

This study is taken up to examine the way how the sample LIC branch, Khammam is utilizing MIS, process of MIS, the quality of customer services it is providing and to study the opinion of employees on MIS. The study is based on both primary and secondary sources of data.

KEYWORDS

Information, **Global Economy**, **MIS, LIC, Process, Utilization, Decision Making etc.**

INTRODUCTION

Information is now treated as resource in the light of powerful worldwide changes like the emergence and strengthening of a global economy, the transformation of the industrial economies and societies into knowledge and information based service economies, the transformation of the structure of business enterprises, these changes in the business environment, now, pose a number of new challenges to business firms and their management.

Thus, men, machine, materials, money and information are all resources necessary for the functioning of a business organization. Thought the first four are physical resources, information is an abstract resource: both managers and non-managers need to use it. It has to be managed effectively just as any other resource. As the size and complexity of the business increases, the manager relies more and more on facts and information. Though it is easy to visualize the importance of managing physical resources, it is more difficult to envisage the utility of an abstract resource; i.e., information. For this one needs to understand when and what information to acquire, how to use it and when to discard it.

Many organizations are presently using Management Information Systems (MIS) to reduce their manual work and to ensure quick decision-making. Life Insurance Corporation (LIC) is one of the largest public sector organizations in India having a large number of branches at several places in the country. It is utilizing the management information system for keeping data files, staff-information, letter - typing and to produce better customer services. The concept of MIS may be viewed as a substantial extension of the concepts of managerial accounting, operations research, and organizational theories related to management and decision-making.

MANAGEMENT INFORMATION SYSTEM (MIS)

A Management Information System is a network of communication channels and information processing centers collecting information from its sources of origin: storing, updating, collecting and processing it; and supplying the processed information to the various users managing the organization. The design of a management information system starts with the identification of information needs of the users. The users need information for operational, strategic, and perspective planning and control for their own functional or geographical area or organization as a whole depending on their role in the organization. Each manager has to take various decisions from time to time, which are, in the best interest of the objectives of the organization as a whole. For performing this role, he needs specific elements of information pertaining to the parameters that influences his decisions and the decision methodology used by him in arriving at the optimal decisions. The elements of information may relate to the internal functioning in the organization or parameters in the external environment around the organization. The organized flow of relevant information and the decision methodology needed for a specific decision has to be built into the management information system.

The MIS has been described as a pyramid structure in which the bottom layer consists of information for transaction processing, status inquiries etc. The next level consists of information resources in support of day-to-day operations and control; the third level consists of information system resources to aid in tactical planning and decision making for management control, and the top level consists of information resources to support strategic planning and policymaking by higher levels of management as described in the following figure. And the reports generated by MIS such as Scheduled reports, Exceptional reports and Demand reports will be useful for the management for a better decision making of the organisations.

[3] Professor, Department of MBA, Swarna Bharathi Institute of Science & Technology (SBIT), Telangana, India, devrag2007@gmail.com
[4]Assistant Professor, Department of Management, Madawalabu University, Ethiopia, uday12348@gmail.com

A beginning in the development of computer based information system in the Indian organization was made in 1960's when second generation computers came into wide commercial use. Some used these computers for accounting purposes, others developed mechanized reporting systems. Second-generation computer technology allowed for centralized information processing in the batch mode on the periodical basis. Organizations designed and implemented functional information sub systems in the functional areas of finance, inventory, production, marketing, personnel etc. Integration of these functional information sub systems into a management information system was not possible with the second – generation computers.

Computerized information systems are developed and utilized by two categories of organizations. Firms who have the in-house and service bureaus who develop them for use by the outside clients. In both cases, the basic investments are of a high order in terms of not merely the computer system, but the site preparation, air conditioning, the civil and electrical works, followed by recruitment of manpower (computer – centre manager, system analysts, programmers and operators, besides input/output, quality control, data preparation and other support staff) and their one-time training. There can be only one objective behind making such sizeable investments; to provide satisfaction to the end-user, in house or outside.

LIFE INSURANCE CORPORATION (LIC)

The story of insurance is probably as old as the story of humankind. The same instinct that prompts modern businesspersons today to secure themselves against loss and disaster existed in primitive men also. They too sought to avert the evil consequences of fire and flood and loss of life and were willing to make some sort of sacrifice in order to achieve security. Though the concept of insurance is largely a development of the recent past, particularly after the industrial era–past few centuries – yet its beginning date back almost 6000 years. Life insurance in its modern form came to India from England in the year 1818. Oriental life insurance Company started by Europeans in Calcutta was the first life insurance company on Indian soil. All the insurance companies established during that period were brought up with the purpose of looking after the needs of European community and these companies were not insuring Indian natives. However, later with the efforts of eminent people like Babu Muttylal Seal, the foreign life insurance companies started insuring Indian lives. However, Indian lives were being treated as sub-standard lives and heavy extra premiums were being charged on them. Bombay Mutual Life Assurance Society heralded the birth of first Indian life insurance company in year 1870, and covered Indian lives at normal rates. Starting as Indian enterprise with highly patriotic motives, insurance companies come into existence to carry the message of insurance and social security through insurance to various sectors of society. Many other companies such as Bharat insurance Company, The united India in Madras…etc., has also been established at that time with the inspiration of nationalism. Prior to 1912, India had no legislation to regulate insurance business. In the year 1912, the Life Insurance Companies Act, and the Provident Fund Act were passed. The Life Insurance Companies Act, 1912 made it necessary that the premium rate tables and periodical valuations of companies should be certified by an actuary.

The first two decades of the twentieth century saw lot of growth in insurance business. From 44 companies with total business-in-force as Rs.22.44 crore, it rose to 176 companies with total business-in-force as Rs.298 crore in 1938. During the mushrooming of insurance companies, many financially unsound concerns were also floated which failed miserably. The Insurance Act 1938 was the first legislation governing not only life insurance but also non-life insurance to provide strict state control over insurance business. The demand for nationalization of life insurance industry was made repeatedly in the past but it gathered momentum in 1944 when a bill to amend the life insurance Act 1938 was introduced in the Legislative Assembly. However, it was much later on the 19th January 1956 that life insurance in India was nationalized. About 154 Indian insurance companies, 16 non-Indian companies and 75 provident were operating in India at the time of nationalization. Nationalization was accomplished in two stages; initially the management of the companies was taken over by means of an ordinance, and later, the ownership too by means of a comprehensive bill. The Parliament of India passed the Life Insurance Corporation Act on the 19th of June 1956, and the Life Insurance Corporation of India was created on 1st September, 1956, with the objective of spreading life insurance much more widely and in particular to the rural areas with a view to reach all insurable persons in the country, providing them adequate financial cover at a reasonable cost.

LIC had 5 Zonal offices, 33 divisional offices and 212 branch offices, apart from its corporate office in the year 1956. Since life insurance contracts are long-term contracts and during the currency of the policy it requires a variety of services need was felt in the later years to expand the operations and place a branch office at each district headquarter. Re-organization of LIC took place and large numbers of new branch offices were opened. Because of re-organization, servicing functions were transferred to the branches, and branches were made accounting units. It worked wonders with the performance of the corporation. It may be seen that from about 200.00 crores of New Business in 1957 the corporation crossed 1000.00 crores only in the year 1969-70, and it took another 10 years for LIC to cross 2000.00 crore mark of new business. However, with re-organization happening in the early eighties, by 1985-86 LIC had already crossed 7000.00 crore Sum Assured on new policies.

Today LIC functions with 2048 fully computerized branch offices, 109 divisional offices, 8 zonal offices, 992 satellite offices and the corporate office. LIC's Wide Area Network covers 109 divisional offices and connects all the branches through a Metro Area Network. LIC has tied up with some Banks and Service providers to offer on-line premium collection facility in selected cities.

LIC's ECS and ATM premium payment facility is an addition to customer convenience. Apart from on-line Kiosks and IVRS, info centers have been commissioned at Mumbai, Ahmedabad, Bangalore, Chennai, Hyderabad, Kolkata, New Delhi, Pune and many other cities. With a vision of providing easy access to its policyholders, LIC has launched its SATELLITE SAMPARK office. The satellite offices are smaller, leaner and closer to the customer. The digitalized records of the satellite offices will facilitate anywhere servicing and many other conveniences in the future. The corporation has already put up a WORLD WIDE WEB page (www.licindia.com) on the INTERNET containing information about LIC and its subsidiaries – LIC (international), E.g.: LIC mutual fund, LIC housing finance and their products. Efforts are on to upgrade LIC's web site to make it dynamic and interactive. LIC has also given internet connections to its Zonal Offices and overseas branches to improve the speed of inter – office communications.

A comprehensive plan of information technology to be implemented in LIC in the next few years is engaging the corporation attention and will be implemented in phases and will enable further enhance customer service standards.

LIC continues to be dominant life insurer even in the liberalized scenario of Indian insurance and is moving fast on a new growth trajectory surpassing its own past records. LIC has issued over one crore policies during the current year. It has crossed the milestone of issuing 1,01,32,955 new policies by 15th Oct 2005, posting a healthy growth rate of 16.67% over the corresponding period of the previous year. From then to now, LIC has crossed many milestones and has set unprecedented performance records in various aspects of life insurance business. The same motives, which inspired our ancestors to bring insurance into existence in this country, inspire us at LIC to take this message of protection to light the lamps of security in as many homes as possible and to help the people in providing security to their families.

ABOUT KHAMMAM BRANCH

The main objective of LIC is "to spread life insurance much more widely and in particular to the rural areas and to the socially and economically backward classes with a view to reaching all insurable persons in the country and providing them adequate financial cover against death at a reasonable cost". With this objective LIC established its branch in Khammam in January 1958. Sri V. Nagabushanam was the first manager of this branch from 1958-1963. At the beginning, Mahabubabad, Kodad, Suryapet, Kothagudem, Madhira and Sathupally branches encircled Khammam branch. At present total 84 number of employees are working at this Khammam branch. All these are divided into four categories as illustrated in the following table:

Table-1

S. No.	Category	People Included
1	Class I	Branch Manager (BM), Administrative officer (AO), Assistant Branch Manager (ABM) and Assistant Administrative Officers (AAOs)
2	Class II	Development Officers(Dos)
3	Class III	Employees related to clerical cadre including Higher Grade Assistants (HGAs), Programmer Grade II, Assistants (Assets), Cashiers, Typists, Micro Processer Operators (MPOs) and Record Clerks (RCs).
4	Class IV	Sub- staff (SS)

Sources: Authors Compilation

This branch consists of seven departments, which are as follows:

- New Business (NB) Department,
- Policy Savings (PS) Department,
- Accounts Department,
- Office Services (OS) Department,
- Sales Department,
- Claims Department,
- Data Processing (DP) Department.

The policy saving department again comprises of two sections. They are General and Maturity Policy Savings (GMPS) and Salary Savings Scheme (SSS) section.

INFORMATION TECHONOLOGY (IT) – A MEANS OF MIS

LIC has been one of the pioneering organizations in India who introduced the advantage of Information Technology in servicing and in their business. Data pertaining to almost 10 crore policies is being held on computers in LIC. They have gone in for relevant and appropriate technology over the year 1964 saw the introduction of computers in LIC. Unit Record Machines

introduced in late 1950 has were phased out in 1980's and replaced by microprocessors based computers in Branch and Divisional offices for Bank office Computerization. Standardization of hardware and software commenced in 1980's Standard Computer Packages were developed and implemented for Ordinary and Salary Savings Scheme (SSS) Polices.

Today, when computing and communication technologies are undergoing revolutionary changes, it has become crucial for organizations to realize that Information Technology (IT) is transforming the way business is conducted ever where. In this process LIC branch at Khammam too has decided to computerize the various functional areas in order to ensure better customer services.

The Khammam branch office was computerized on 1St March 1987. In the beginning, it has only a data entry machine with microprocessor. The initial investment was Rs.707000/-. In the beginning, the Back End (B.E) operations only had been attended, because the branch was not fully computerized at that time.

INTITIAL INVESTMENT FOR MIS AT THE BRANCH

Table-2

Year	Investment (Rs.)	Machines
1987	7,07,000	Data Entry Machine, Microprocessor
1991	39,000	Data Entry Machine
1992	6,00,000	Unix Machine
1996	5,80,000	Terminals for F.E. Operations

Sources: Authors Compilation

The branch was fully computerized in September 1996. From this month onwards, the front-end operations were carried out in this branch. Before this only the back end operations were done. As on today, branch got 64 systems and 64 printers. Every system is connected within LAN (Local Area Network). Further, these systems are also connected with the main server through WAN (Wide Area Network) to provide better customer services to all customers without wasting their valuable time as per the policies and procedures of its organisations. At present, the organization is utilizing very good software of LINEX based package developed by its own development centre at corporate office.

APPLICATIONS OF MIS AT BRANCH

The following table illustrates the application of MIS at the Khammam Branch.

Table-3

S. No.	Department	Application of MIS
1	Accounts Department	Premium Collection, Proposal Deposits, Policy deposits, Loan repayment, Miscellaneous receipts…etc.
2	Policy Savings	Making proposal for loans, granting loans, checking whether loans are repaying or not, other functions relating to loans.
3	New Business Department	Entering the data of the proposals, underwriting the proposals, corrections in the data entered, checking medical standards…etc.
4	Data Processing Department	Granting permissions, Deleting permissions for security purpose…etc.

Sources: Authors Compilation

CONCLUSION

For an organization to exist in today's dynamic market, speed, accuracy and effectiveness are of prime importance, which can be achieved only through technology up gradation. Realizing the paramount importance of technology, LIC as adopted technology up gradation as a major area. The corporation has been continuously engaged in modernizing its systems, procedures and practices and the development of front – end packages was initiated as an extension of these efforts. Khammam has a huge population of 27, 97, 370 people in which 21, 41, 459 of Rural and 6,55,911 of Urban people in the district. As per the objectives of LIC, it has having a wider untapped market both in rural and urban areas. The present MIS has been fulfilling the requirements of both policyholders and employees. The organization has to maintain the same level of competency in view of private insurance players in the market.

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A RELATIONSHIP BETWEEN JOB SATISFACTION AND TURNOVER INTENTION IN INFORMATION TECHNOLOGY SECTOR

Dr. Simranjeet Kaur Sandhar[5] Dr. Simple Verma[6]

ABSTRACT

The Information Technology Industry is the fastest growing industry in India during the past few decades. It has been one of the strongest driving forces of the Indian economy. It also generates a lot of employment opportunity for the youth of our country. There are millions of people employed in this industry and the demand for professionals is ever increasing .The human resource management has assumed a lot of importance in this industry due to very high competition and lack of trained professionals whose job satisfaction and low turnover intention is very important for their retention and efficient functioning which is directly related to productivity and profits. The paper aims to find out the relationship between Job Satisfaction and turnover intention in Information Technology Sector.

KEYWORDS

Job Satisfaction, Information Technology Industry, Turnover Intention etc.

"A relationship between Job Satisfaction and Turnover Intention in Information Technology Sector"

INTRODUCTION

The information technology industry in India has been one of the most promising industries in the last couple of decades. The huge job opportunity as well as the lucrative pay it has offered to the youth of the country has made it one of the most sought after career option in the country. The large numbers of engineering colleges, which have opened in the last decade, add greatly to the talented pool of information technology professionals in the country. The talented Indian professionals are in great demand even in the on –shore sites majorly in the USA, Europe and other parts of the world largely due to their technical capabilities which are available at comparatively cheaper rates.

According to Nasscom, the number of professionals who join the information technology industry in the year 2015 are 2, 30,000. This is one major industry in India in which the human resource trends have been followed coordinated with the western world because of duality of nations involved sometimes in the career of professionals. The human resource field is now slowly getting popular in India largely due to the legal norms. The key human resource terms such as job satisfaction, retention, turnover and turnover intention are key indicators of the professional lives of the information technology professionals.

LITERATURE REVIEW

Employee job satisfaction was found to be a good predictor of retention of a highly skilled and experienced labor force in an organization (Alexander, Litchtenstein, & Hellman, 1998; Hellman, 1997). A certain study revealed that the job satisfaction variable is negatively related to voluntary turnover intentions (Carmeli, 1991). Moreover, it was found that it is one of the variables determining voluntary turnover (Borda & Norman, 1997).

Ahmad, Bashir et al., (2012) concluded that job satisfaction is significantly and negatively correlated with turnover intention. In addition, job stress has significant negative relationship to turnover intention. It has been evidenced that, employees experienced more job stress has more intention to quit.

Dua'a Abdul Rahim Mohammad Issa et al.,(2013) in their study showed that there is significant low negative relationship between pay, supervision and promotion satisfaction and turnover intentions and significant very low relationship between co-workers and satisfaction with the work itself and turnover intentions. It was also found that pay satisfaction was the dominant dimension.

Galetta, Maura (2011) found that having the opportunity of responsibility and freedom to develop own work activities, could encourage the sense of identification and attachment to work environment that in turn can reduce the turnover intention. The research also showed the importance of intrinsic motivation to promote affective commitment. This means that employees

[5]Associate Professor, Indore Institute of Science and Technology, Madhya Pradesh, India, sandhar_simranjeet@yahoo.co.in
[6]Assistant Manager, Industry Interaction Cell, Amity Global Business School, Madhya Pradesh, India, sverma@idr.amity.edu

intrinsically motivated towards their own work, develop a sense of identification and attachment to their organization that in turn is negatively related to turnover intention.

Khadija Al Arkoubi et al., (2011) explored some determinants of turnover intention. They proposed a model hypothesizing the existence of relationships between fairness and recognition and job satisfaction. The latter along with commitment are perceived in this model as negatively related to the intent to quit. Not only these two factors lead to turnover intentions however there are many other factors that can lead to turnover intentions.

Mohammed J Almalki et al., (2012) in their study revealed significant associations between turnover intention and demographic variables of gender, age, marital status, dependent children, education level, nursing tenure, organizational tenure, positional tenure, and payment per month.

Prodromos D. Chatzoglou et al., (2011) suggested that job satisfaction can be enhanced not only by providing a satisfactory salary, promotion opportunities or having good relations with one's co-workers, which constitute some of the constructs facets, but, also, through strengthening the variables that are related to it. Job satisfaction leads to improvement in the commitment level of employees thus reducing the turnover intentions.

Randhawa, Gurpreet (2007) concluded that there are significant correlations between turnover intention and demographic variables such as age, qualification, designation and it was found that age, designation and experience are negatively and significantly correlated with turnover intentions. This shows that the intentions of an individual to leave the organization are greatly influenced by age, designation and experience of the individual. The negative correlations reveal that with increases in age, experiences and status in the organization the intentions to quit decreases significantly.

Samuel Emeka Mbah et al.,(2012) in their study found that greater the job satisfaction less likely is the turnover intention, thus confirming previous literature that a person with a high level of job satisfaction holds positive attitude toward the job and conversely the person who is dissatisfied with the job holds negative attitude about the job. It means that employees who are satisfied on their job will retain their jobs and not quit. So it was found that specifically job satisfaction reduces employees' turnover intention and adoption of standard pay structure, conducive nature of work and efficient supervision not only acts as strategies to reduce employees' turnover but also as the company retention strategy.

According to Loquercio (2006), it is relatively rare for people to leave jobs in which they are happy, even when offered higher pay elsewhere. Most staff prefers stability. However, some time employees are 'pushed' due to dissatisfaction in their present jobs to seek alternative employment.

Organizational commitment is recognized as a key factor in the employment relationship and it is widely accepted that strengthening employment commitment, reduce turnover (Mohammad, 2006). Johns (1996) defines organizational commitment as "an attitude that reflects the strength of the linkage between an employee and an organization." Ugboro (2006) identified three types of organizational commitment: affective, continuance and normative.

According to Ongori (2007), organizational commitment is an effective response to the whole organization and the degree of attachment or loyalty employees feel towards the organization.

Mobley (1977) first proposed a model explaining the relationship between job satisfaction and thoughts of quitting which, ultimately led to actual turnover.

Mowday, Porter and Steers (1982) also found that job satisfaction is consistently and negatively related to turnover. Studies by Arnold and Feldman, (1982); Cotton and Tuttle, (1986); Hom and Knicki (2001) suggest that job satisfaction is negatively related with turnover intentions. McCormick and Ilgen (1985), there are many previous researchers the support the relationship between job satisfaction and turnover.

Tett & Meyer (1993) mentioned job satisfaction would cause the turnover cognition and the intention of employee to escape from work environment. Moreover, two-meta analysis found that job satisfaction and turnover are negatively related. From the above discussion we can say the relationship among human resource practices job satisfaction, turnover should be examined more fully, and improved job satisfaction reduces the cost of staff turnover. Turnover intention is one's behavioral intention to quit.

Moynihan, Boswell and Boudreau (1998) several studies found that negative work attitudes play an important role in model of turnover.

OBJECTIVES OF STUDY

- To study the factors affecting the job satisfaction of employees in IT Companies.
- To classify the employees based on the employees perception of job satisfaction in IT companies.
- To study the impact of job satisfaction on employee turnover intention.

RESEARCH METHODOLOGY

The study is exploratory in nature with survey method being used to collect the data. The study mainly depends on primary data collected through a well- framed and structured questionnaire to elicit the opinions of the respondents. The questions were on the Likert scale. The secondary data were obtained from scholarly articles published in journals, websites, etc.

The study was conducted among employees across sectors from Indore city in order to have varied opinion about job satisfaction in IT sector during the period from 2013-2014.

Non-probability convenience sampling technique is adopted to select the sample for the study. As per this method, each member of the population does not have a known chance of being included.

200 questionnaires were distributed, out of which 102 usable questionnaires were used for the present study. The remaining questionnaires were either unreturned or contained incomplete responses. The sample element was the managerial level employees of IT Companies.

Tools for Data Analysis

Following tools were applied for analyzing the data:

- **Item to total correlation:** It was applied to find out the internal consistency of the all the items in the questionnaire of Job Satisfaction and Turnover Intention.
- **Reliability Analysis**: It was applied to find out the reliability of the questionnaires
- **Factor Analysis**: It was applied to find out the significant factors affecting job satisfaction
- **Cluster Analysis**: It was applied to classify the employees of IT sector based on the factors influencing job satisfaction.
- **T test:** It was applied to find out the significant contribution of different factors on Job Satisfaction and Turnover Intention.
- **Regression:** It was applied to analyze the significant impact of Job Satisfaction on Employee Turnover.

Hypothesis Formulation

Based on significant literature review the following hypothesis was formulated.

- **Ho1:** There is no significant contribution of Work Life Policy towards Job Satisfaction.
- **Ho2:** There is no significant contribution of Pay and Promotion towards Job Satisfaction.
- **Ho3:** There is no significant contribution of Supervisory Support towards Job Satisfaction.
- **Ho4:** There is no significant impact of Job Satisfaction on Employee Turnover Intention.

RESULTS & DISCUSSIONS

Demographic Profile: The study was conducted among employees from IT sector from Indore city only, thereby forming a heterogeneous population in terms of various demographic factors. The respondents were specific to IT sector only and it is essential to classify the respondents based on the various demographic factors, the details of which are presented in the Table-1:

Table-1: Frequency Distribution of Socio- demographic Variables (n=102)

Variables	Sub – Variables	Frequency	Percentage
Gender	**Male**	72	70.59%
	Female	30	29.41%
	Total	102	100%
Age	**21-30 years**	90	88.23%
	31-40 years	9	8.82%
	41-50 years	1	.99%
	>50 years	2	1.96%
	Total	102	100%
Marital Status	**Single**	68	66.67%
	Married	34	33.33%
	Total	102	100%
Annual Income (Rs.)	**<5 lakhs p.a.**	58	56.87%
	5-10 lakhs p.a.	35	34.31%
	>10 lakhs p.a.	9	8.82%
	Total	102	100%
Designation	**Upper Level**	11	10.79%
	Middle Level	75	73.52%
	Lower Level	16	15.69%
	Total	102	100%
Total Experience	**<5years**	80	78.43%
	5-10 years	20	19.61%
	>10-20 years	--------	--------
	>20 years	2	1.96%
	Total	102	100%

Sources: Authors Compilation

Item to Total Correlation Analysis: Firstly, the consistency of all the factors in the questionnaire of Job Satisfaction was computed by applying item to total correlation analysis. Under this correlation of every item with total is measured and computed value is compared with the standard value (i.e. 0.192) if the computed value is found less than the standard value then the statement is dropped & will be termed as inconsistent and if the computed value is more than standard value the statement will termed as consistent.

Table-2: Item to total Correlation Analysis for Job Satisfaction

Items	Coefficient of Correlation Value	Consistency	Accepted / Dropped
I am satisfied with the appreciation or reward system provided by my management	0.733438889	Consistent	Accepted
I am satisfied with the bonus and incentive given.	0.694901026	Consistent	Accepted
I am satisfied with the overall compensation package.	0.720896185	Consistent	Accepted
My pay is enough for fulfilling the necessary requirement of my life.	0.730806646	Consistent	Accepted
The pay scale of my organization is adequate considering the industry trends and employee experience.	0.597901245	Consistent	Accepted
I have been getting promotion as per my qualification and experience.	0.741214997	Consistent	Accepted
I have full confidence in the management of the organization.	0.856532373	Consistent	Accepted
Promotion is made based on merit in this organization.	0.713250539	Consistent	Accepted
My manager/supervisor provides me with continuous feedback to help me achieve.	0.778357908	Consistent	Accepted
My manager/ supervisor behave properly with me.	0.787599825	Consistent	Accepted
I am satisfied with the general supervision in my department.	0.797165675	Consistent	Accepted
My Supervisor (s) keeps me informed about all the policies/ happenings of organization.	0.72328683	Consistent	Accepted

There is high team spirit in the work group.	0.742217663	Consistent	Accepted
The communication and information flow in the organization is free and open.	0.705452136	Consistent	Accepted
I am satisfied with the welfare schemes of my organization.	0.690414806	Consistent	Accepted
I feel good about the working environment.	0.746542218	Consistent	Accepted
I feel secured in my job.	0.672598449	Consistent	Accepted
I feel proud working in this organization.	0.772463745	Consistent	Accepted
I feel I have good prospects for advancing in my job.	0.795142144	Consistent	Accepted
Working condition in this organization is satisfactory.	0.734990356	Consistent	Accepted
My job has helped me to acquire more skills.	0.790451343	Consistent	Accepted
I feel that my job is reasonably secure as long as I do good work.	0.753132174	Consistent	Accepted
I usually feel fresh at the end of a day's work.	0.676586321	Consistent	Accepted

Sources: Authors Compilation

Table-3: Item to total Correlation Analysis for Turnover Intention

Items	Coefficient of Correlation Value	Consistency	Accepted / Dropped
Continuation with my present employer will Fulfill my life expectation.	0.592344	Consistent	Accepted
As soon as I can find a better job, I will quit this organization.	0.851249	Consistent	Accepted
I often think about quitting this job.	0.823798	Consistent	Accepted
It is very unlikely that I would ever consider leaving this organization.	0.353647	Consistent	Accepted
I will likely actively look for a new job in the next year.	0.821543	Consistent	Accepted

Sources: Authors Compilation

The item to total Correlation was above standard value for all the factors affecting the Job Satisfaction and Turnover Intention, so all factors are found consistent in the correlation (Table 2 & 3).

Reliability Measures

Reliability test has been applied on Job Satisfaction and Turnover intention using SPSS software and the reliability test measures are given below:

Job Satisfaction: A new scale is developed containing 23 statements of Job satisfaction and a 5 statements scale of Turnover intention, which were used for this study. It was measured on a 5-point Likert scale ranging from strongly agree, agree, neutral, disagree, and strongly disagree with a Cronbach's alpha coefficient reliability score of 0.963 and 0.743 for job satisfaction and turnover intention respectively. The various Reliability measures applied for the questionnaire are depicted in table 4.

Table-4 & 5: Reliability Statistics of Job Satisfaction and Turnover Intention

Table-4

Reliability Measure of JS	Score
Cronbach's Alpha	.963
Split half	.881
Guttman	.982
Parallel: Estimated	.963
Unbiased	.963
Strict Parallel: Estimated	.957
Unbiased	.958

Table-5

Reliability Measure of TI	Score
Cronbach's Alpha	.743
Split half	.615
Guttman	.763
Parallel: Estimated (Unbiased)	.743 .748
Strict Parallel: Estimated (Unbiased)	.687 .697

Sources: Authors Compilation

Validity: The face validity of questionnaires was tested and it was found to be very high for both the questionnaires.

Factor Analysis

Factor Analysis was carried out using SPSS Software and 3 factors of Job satisfaction were found (Table 6).

Table-6: Factors with Various Items Analyzed for Customer Perception

Factors	Convergence of Variance	Loading
Pay and Promotion	I am satisfied with the appreciation or reward system provided by my management.	.772
	I am satisfied with the bonus and incentive given.	.757
	I am satisfied with the overall compensation package.	.751
	My pay is enough for fulfilling the necessary requirement of my life.	.747
	The pay scale of my organization is adequate considering the industry trends and employee experience.	.723
	I have been getting promotion as per my qualification and experience.	.720
	I have full confidence in the management of the organization.	.684
	Promotion is made based on merit in this organization.	.651
Supervisory Support	My manager/supervisor provides me with continuous feedback to help me achieve.	.647
	My manager/ supervisor behave properly with me.	.521
	I am satisfied with the general supervision in my department.	.512
	My Supervisor (s) keeps me informed about all the policies/ happenings of organization.	.861
	There is high team spirit in the work group.	.748
Work-Life Policy	There is high team spirit in the work group.	.669
	The communication and information flow in the organization is free and open.	.662
	I am satisfied with the welfare schemes of my organization.	.617
	I feel good about the working environment.	.609
	I feel secured in my job.	.755
	I feel proud working in this organization.	.729
	I feel I have good prospects for advancing in my job.	.705
	Working condition in this organization is satisfactory.	.682
	I feel that my job is reasonably secure as long as I do good work.	.626
	I usually feel fresh at the end of a day's work.	.512

Sources: Authors Compilation

Cluster Analysis

K-Means cluster analysis was exploited to classify the employees of IT sector. The employees were classified into three clusters based on high, medium, and low level of satisfaction experienced by them in their work environment (Table 7).

Table-7: Employees Classification based on Job Satisfaction in the Work Environment

S. No.	Classification of Employees	Cluster wise contribution
Cluster 1	Annoyed Employees	51.000
Cluster 2	Fulfilled Employees	7.000
Cluster 3	Impulsive Employees	41.000
	Missing	3.000
	Total	**102.000**

Sources: Authors Compilation

Employees were classified into three clusters based on their satisfaction at their workplace. The study identified that 51 percent of the employees were moderately dissatisfied with the work environment, and were named as "Annoyed Employees" and hence, this group needs to be concentrated upon with respect to each leading to their satisfaction. Only 7 percent of the employees were fully satisfied with work environment, and were named as "Fulfilled employees". Remaining 41 percent of the employees, who were satisfied with the prevailing work environment, were named as "Impulsive Employees".

T Test

We saw the need to conduct an item wise satisfaction study of the employees so that it would enable the least satisfied employees and us to concentrate on the moderate. For this purpose, we conducted the T-test and obtained the results as discussed in the Table 8.

Table-8: Mean Wise Contribution of the Factors That Led to Satisfaction among the Employees

S. No.	Items	Mean	SD	T-Test	SIG (2- tailed)
1.	Pay and Promotion	3.06	1.119	77.863	.000
2.	Supervisory support	3.55	1.111	71.914	.000
3.	Work life policy	3.54	1.153	97.760	.000

Note: The t-values are statistically significant at the 5% level of significance.
Sources: Authors Compilation

The p value < 0.05, which means that all the three null hypothesis, are rejected that means there is significant contribution of Pay and Promotion, Supervisory Support and Work Life Policy on job satisfaction.

From the table 8, through the mean values it can be ascertained that supervisory support contributed the most towards the satisfaction levels of the employees in an organization. The employees from IT sector felt that the behaviors of their superiors as well as that of their co-workers is the most important factor whereas the factors under the work life policy comes as the next important factors influencing the employees' satisfaction at the workplace, although pay and promotion are very significant aspects for any person.

As the employees felt that the supervisory support aspects were the most important factors determining their satisfaction, the supervisors' treatment of the employees, a healthy working relationship among the workers increased the team spirit and hence, contributed to an increase in job satisfaction of the employees of IT sector. Fair pay and merit based promotions, right designation as per qualification and experience increased the job security of the employees and, therefore, increased the belongingness and loyalty felt by them towards their respective IT company.

Turnover intention was studied in the IT sector employees using the five-item scale (t-test), the details of which are presented in the table 9.

Table-9: Examining the Turnover Intention of Employees from IT Sector

S. No.	Items	Mean	SD	T-Test	SIG (2- tailed)
1	Continuation with my present employer will Fulfill my life expectation.	2.92	1.264	23.343	.000
2	**As soon as I can find a better job, I will quit this organization.**	3.48	1.249	28.152	.000
3	**I often think about quitting this job.**	3.46	1.208	28.938	.000
4	It is very unlikely that I would ever consider leaving this organization.	2.36	1.064	22.261	.000
5	**I will likely actively look for a new job in the next year.**	3.09	1.342	23.127	.000

Sources: Authors Compilation

The main item highlighting the turnover intent could be primarily ascertained by the quitting intention of the employees. It was observed that these employees appeared to be working with their organizations in a half-hearted manner, with an intention to quit anytime. Some people were also searching for jobs with other organizations. Some employees did not put the required effort and hard work, and were always procrastinate their work.

From the table 9, it can be inferred that the mean values ranged from 3.46 to 2.92, and the respective standard deviations show the values of the opinion. The t-values are statistically significant at the 5% level of significance. The significant t-test values and the respective mean values for question 2, 3 and 5 indicate the employees' intention for quitting or not staying with the organization for a long time. They also put in less effort than was required, and procrastinated their duties for an unlimited period.

By analyzing the mean values (refer table 9) it can be inferred that there is a high level of quitting intention amongst the employees of IT companies.

Regression

The results are given in the following tables 11, 12, and 13. The model summary is explained in table 11. The F-Ratio (ANOVA) is explained in table 12 and the coefficients and their significance are explained in table 13.

Table-10: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.338[a]	.115	.106	5.903	1.670
a. Predictors: (Constant), Total Job Satisfaction					
b. Dependent Variable: Total Turnover Intention					

Sources: Authors Compilation

The results depicts that the R square is .115 (Table 10). This indicates that the determination power of the regression equation is about 11.5 percent. Hence, 11.5 percent variation in the Turnover Intention is explained by the independent variable (Job Satisfaction). The rest of 88.5 percent of employees' turnover intention is unexplained in the model, which states that there are other factors apart from job satisfaction affecting the turnover intention of employees of IT companies. The standard error of the estimates is 5.903.

Table-11: ANOVA

Model		Sum of Squares	d.f.	Mean Square	F	Sig.
1	Regression	450.637	1	450.637	12.931	.001[a]
	Residual	3484.941	100	34.849		
	Total	3935.578	101			
a. Predictors: (Constant), Total Job Satisfaction						
b. Dependent Variable: Total Turnover Intention						

Sources: Authors Compilation

The F ratio (ANOVA) is 12.931 (Table 11), which is statistically significant at 5 percent level of significance. Therefore, the model is acceptable. Hence the null hypothesis is rejected which means that there is a significant impact of job satisfaction on turnover intention of employees of IT companies. The regression model is estimated by enter method.

Table-12: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	25.161	2.441		10.306	.000
	Total Job Satisfaction	-.110	.031	-.338	-3.596	.001
a. Dependent Variable: Total Turnover Intention						

Sources: Authors Compilation

It can be inferred from table 13 that job satisfaction (-.338) is correlated negatively with turnover intention of the employees from IT sectors in Indore city.

Major studies have already demonstrated a negative relationship between job satisfaction and turnover intention in the workplace. The study done by Cotton and Tuttle (1986) tested the relationship between job satisfaction and turnover, and found a negative relationship between the two variables. Similarly, studies carried out by Arnold and Feldman (1982), Bluedorn ((1982), Mobley (1982), and Price (1977) consistently found a negative relationship between job satisfaction and turnover intention in the work setup. Studies conducted by researchers exclusively from Singapore like Lam, Foong and Moo (1995), Koh and Goh (1995), and Aryee (1991) also showed a negative relationship between job satisfaction and turnover intention. However, most of the studies primarily focused on the main aspects like pay and promotion, co-worker behavior, supervisor behavior.

CONCLUSION

To conclude, the present study found a significant negative relationship between job satisfaction and turnover intentions suggesting thereby that higher the job satisfaction, lower is the individual's intention to quit the job. This shows that job satisfaction or dissatisfaction plays a significant role in influencing the turnover intentions of employees. People satisfied from

their jobs, do their work with full interest and loyalty and have low intent to quit the organization and vice versa. In today's changing contours of work and employment where one organization career is becoming rarer, employers should keep their employees satisfied so that they rarely think to leave.

Job Satisfaction and its relationship with turnover intention is a topic of prime importance in human resource management literature. Several studies have been conducted on job satisfaction and its influence on turnover intention, and studies have found that there is no positive relationship between the two.

Findings from this study implicate the need for IT companies and human resource personnel to design interventions programmes that can help increase their employee's level of job satisfaction, increase or maintain high job autonomy, and good social support that would monitor job demands and detects early warning signs of occupational stress.

In the present study, efforts have been made to identify the factors influencing job satisfaction of employees from IT sector in Indore city, and then clustered the employees based on their perceived job satisfaction. There were certain groups of people who perceived very less and moderate job satisfaction in their organization respectively. A valid attempt has been made to test the relationship between job satisfaction and turnover intention, and found that there was a negative relationship between these two variables. Mobley (1982) was also of the same opinion regarding the various factors that affect job satisfaction, thereby leading to turnover.

MANAGERIAL IMPLICATIONS

The present study has shown that job satisfaction is a consistent worry for organization , irrespective of IT sector based on demographic aspects, and other influencing factors like pay and promotion, work life policy, supervisory support etc. the factors are perceived differently by different individuals. Hence, whatever steps the organization takes in order to improve with respect to these aspects. It rests with the employees to perceive it rightly and get satisfied. Therefore, it is clear that the employees' intent to leave their present organizations need not occur only if the employees are not satisfied. The employee may intend to leave an organization even if he/she is satisfied. The organizations, therefore, need to be on the same level with the employees with respect to the factors that deal with their satisfaction, and if turnover intent is visible, such issues need to be addressed independently.

All measures reported were self-reports and social desirability desired by the respondents. Due to time constraints and difficulty in the availability of respondents, a sample of 102 has been used, and was only confined to Indore city. However, the study could be replicated with a larger sample to study if the results differ. Undertaking research at one period in time can only reflect that period in time. A greater focus on longitudinal research designs may give a better understanding of turnover intentions and may highlight stronger associations. The set of independent variables, although derived from extensive literature review may not have been comprehensive.

Although several studies have been done on turnover and job satisfaction, no universal solution could be arrived at in this context because a negative relationship was found between the two variables. Overall, it can be concluded that all major studies undertaken in this area have showed that several similar factors influence the turnover intent and because of less satisfaction, employees do not leave the organizations where they are currently employed.

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MARKET ANALYSIS OF E-TAILERS IN INDIA

Dr. Amulya[7]

ABSTRACT

With the introduction of Smartphone, E-tailing has new avenue to explore. According to study conducted, there are more than 27 million Smartphone users in urban India, which constitutes 9 percent of all mobile users in urban India. The numbers are higher in the large metros of the four million plus population with one Smartphone user among ten mobile users. Interestingly, even in smaller cities with a population of one lakh to ten lakh, the figure stands at an impressive 6 percent. The changes in the demography like more working class, Dual income, commutation time, huge rush at the organized retail shops and malls, queue in the billing counters on weekends and holidays, traffic at road, parking facilities, have made consumers to opt for the online buying. E-tailing has come a long way but the growth story is not indigent of challenges common to the industry, both globally and locally. The word E-tailing is derived from Internet retailing or electronic retailing. Consumers, for very long period, have been accustomed to going to a store and shopping for their apparel and jewellery. Online shopping is a drastic shift for traditional shoppers as they cannot "touch and feel" the products. There are currently 35 million people buying online and this will increase to 100 million in the next two years, quoted by Gaurav Kapur, head of industry for retail and automotive, Google India at the Retailers Association of India's Retail Leadership Summit 2015 in Mumbai. The paper gives the picture of market analysis Indian online retail market.

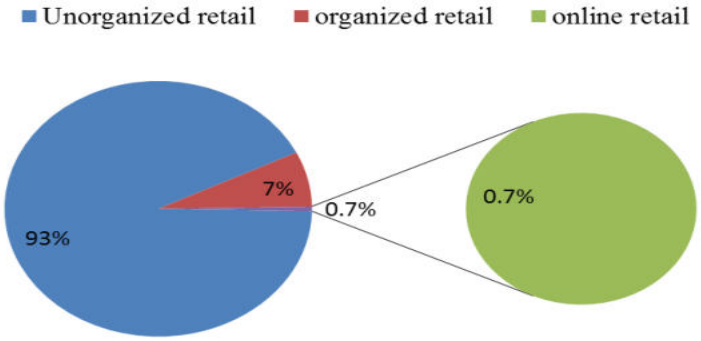
KEYWORDS

E-Tailing, Online, Organized, Buying, Internet etc.

INTRODUCTION

Indian retail market is one of the most vibrant markets in the country. Indian retail market is growing faster than ever before opening gates to the foreign players. Still 93% of Indian retail market is unorganized and only 7% is organized market. In addition, out of the organized retailing only 0.7% is E tailing. This gives the clear picture of the potential for E-tailing in the coming years. However, during the past decade, Indian market place is turning into e-market at an exponential speed. With the increase in number of household computers and fast spreading internet connections, especially broadband connections and Wi-Fi facilities, India have been experiencing rapid growth in number of internet users. Healthy competitions among computer vendors and internet service providers brought down the prices and costs of computers and internet connections encouraged more Indians to become online users. Though the internet penetration is low in India, e-tailers are booming and trying to reach to the corners of the country. The mobile network and affordability of the smart phones in India, majority of the urban people can afford to have the internet access in their mobiles. The major players in the e-market started their business by selling the books now they have spread their wings to all the categories of products. There are some general stores, which sell A-Z products, and some are specialized in only few products. The major players like Flipkart, Amazon India, and Snapdeal are diversified into all type of products whereas the Jobong, Myntra, Paytm, Bigbasket, Pepperfry, Housefull, Craftsvilla are focusing on the niche markets.

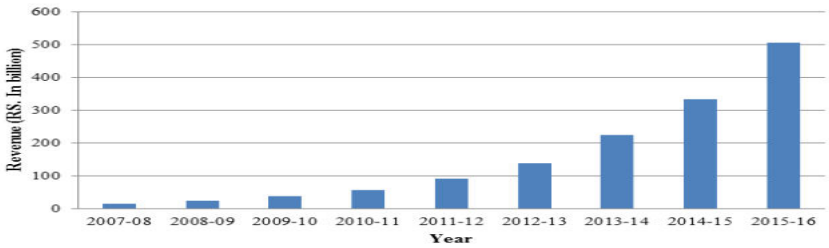
Graph-1: The Comparative Picture (2012-13)



Sources: Authors Compilation

[7]Assistant Professor, B.I.M.S., University of Mysore, Karnataka, India, amulyabims@gmail.com

Graph-2: Online Retail Market Size and Growth



Sources: Authors Compilation

From Global players like Amazon to Alibaba to Local Players like Flipkart and Snapdeal, India is on the top destination list for the completely e-tailing fraternity. Since mid-2014, we have seen the ecommerce companies stepped up their activities in the subcontinent through different promotional events and sale offers. These new developments in the ecommerce arena have set the ground clear for a more aggressive 2015. Currently, online shoppers spend around $95 a year on average, said the Assocham-PwC study. The average annual spending of Indians on online purchases is expected to rise 67% to $158 next year, according to a study. The year 2014 has been a remarkable year for ecommerce when online shopping in India surged to a hit formula from a limbo concept just a couple of years ago. About 40 million consumers went through online shopping mode this year and the number is expected to see an upward movement to 65 million by 2015 with better infrastructure in terms of logistics, broadband and Internet-ready devices.

According to the sectorial analysis in 2014, the ecommerce sector has been able to successfully attract the attention of investors, including top global firms and leading Indian industry leaders like Azim Premji and Ratan Tata, with indigenous names like Flipkart and Snapdeal enjoying the home turf benefit compared to the global leader Amazon. The lion share of the Indian ecommerce industry is held by apparel sales, which has shot a number of ecommerce start-ups to fame overnight and has fuelled a number of mergers as well like the Flipkart-Myntra deal. Apparel sales are closely followed by consumer electronic sales like laptops, smartphones, tablets and their accessories. Indian travel and tourism is the second-fastest growing travel and tourism industry in the world. Nearly 75% of the total-travel related business has been bagged by ecommerce sites like Yatra.com and Makemytrip**.** With nearly one-third of netizens already going the online shopping route, the ecommerce growth will rely more on increased spending from existing buyers than first-time online buyers. The other factors that would majorly drive ecommerce growth in the subcontinent would be aggressive merchandising and discounting from flash sales and daily deals, more online loyalty programs and increasing popularity of Smartphone and tablet computers among consumers. According to a 2014 report by Morgan Stanley, three players have pulled ahead in the horizontal marketplace race. Flipkart leads with a 44 per cent share of the $6.3 billion Indian e-commerce market, by Gross Merchandise Value (GMV). Snap deal is No.2 with 32 per cent share, while Amazon India, a late starter in India - it launched in June 2013 - has 15 per cent.

PROFILES OF TOP THREE PLAYERS IN INDIAN E-TAILING

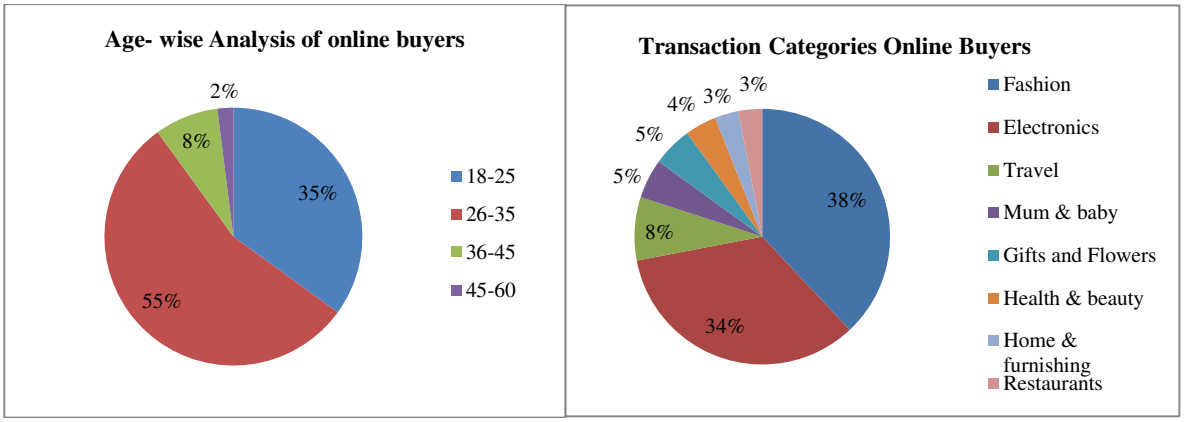
Table-1

	Flipkart	**Snapdeal**	**Amazon India**
Founded on	15-Oct-07	04-Feb-10	05-Jun-13
Founded by	Sachin Bansal Binny Bansal	Kunal Bahl Rohit Bansal	Amit Agarwal (Indian operations)
Investment	Rs. 4 Lakhs	Rs. 40 Lakhs	Branch of Global Company
Head quartered	Bangalore	Delhi	Bangalore
Market Share	44%	32%	15%
Net Revenue (Rs. in Cr) 2013 -2014	179	168.8	154.11
Loss (Rs. in Cr) 2013 -2014	400	321.3	264.6
Most Sales	Books	Mobiles	Music
Number of Employees (Beginning of 2014)	13,000	1,300	Not revealed
Logistics	Blue Dart, DHL, e-Kart	Gojavas Safeship	Amazon Transportation Services Private Limited, Blue Dart, DHL and Gati
Number of Categories	70+	500+	28+
Number of products sold	Over 15 million	Over 4 million	Over 15 million
Slogan	Ab Har Wish Hogi Poori	Bachate Raho	Aur Dikhao

Sources: Authors Compilation

DEMOGRAPHIC DETAILS OF THE ONLINE CONSUMERS

Graph-3: Age-Wise Analysis of Online Buyers and Transaction Categories Online Buyers



Sources: Authors Compilation

The majority of the online shoppers belong to the age group of 26-35 years followed by 18-25years, 36-45 years and 45-60years. The majority of the shoppers buy fashion apparels online followed by electronics and travel which constitutes 34% and 8%, where as the rest buy baby , gifts , health and beauty, home furnishing etc.

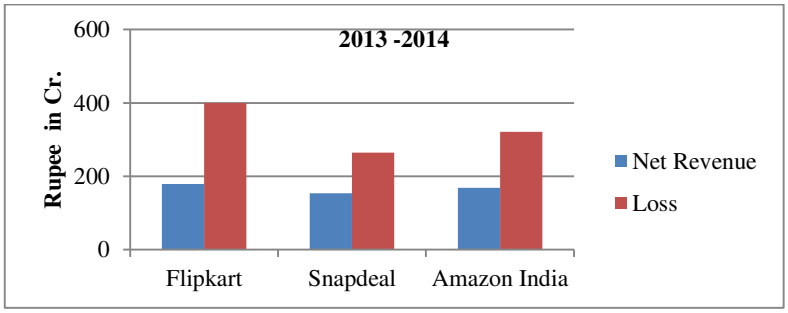
MAJOR ACQUISITIONS IN E-TAILING

Table-2

Flipkart Acquisitions	Snapdeal Acquisitions
2010: WeRead, a social book discovery tool. 2011: Mime360, a digital content platform company. 2011: Chakpak.com, a Bollywood news site. 2012: Letsbuy.com, an Indian e-retailer in electronics, which was bought for an estimated US$25 million. 2014: Acquired Myntra.com in an estimated ₹ 20 billion (2,000 crore, about US$319 million) deal. 2015: Flipkart acquires a Bangalore-based global mobile network AdiQuity for an undisclosed amount. 2015: Flipkart acquires a mobile marketing start-up Appiterate as to strengthen its mobile platform.	2011: Bangalore-based group buying site, Grabbon.com. 2012: Esportsbuy.com, an online sports goods retailer based out of Delhi. 2013: Shopo.in, an online marketplace for Indian handicraft products. 2014: fashion products discovery site, Doozton.com. 2014: Gifting recommendation site, Wishpicker.com. 2015: Stake in product comparison website Smartprix.com. 2015: Exclusively.in luxury fashion products discovery site. 2015: 20% Stake in Gojavas.com. 2015: Unicommerce.com ecommerce management software and fulfillment solution provider. 2015: majority stake of Rupee Power which provides a digital platform for financial products to customers 2015: Snapdeal acquired mobile-payments company FreeCharge.com, mart mobi and letsgomo labs, Reduce data.

Sources: Authors Compilation

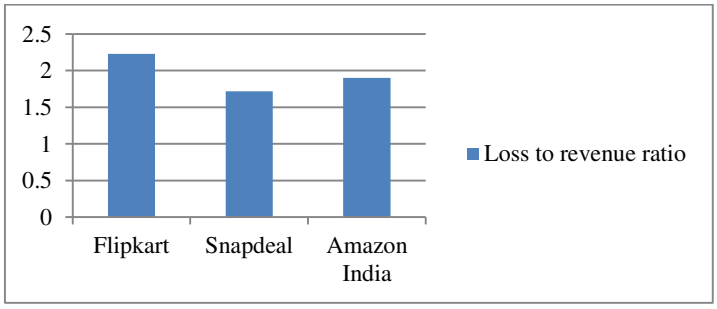
Graph-4: Net revenue and Loss of Flipkart, Snapdeal and Amazon India



Sources: Authors Compilation

Flipkart leads the race with net revenue of 179 crore followed by Amazon at 168.9 crore and Snapdeal at 154.11 crore. As e-tailing is new in India, to reach to BEP it may take another 2-3 years, as of now, the quantum of loss these e-commerce players have incurred is huge. However, when it comes to losses, Flipkart leads by a much bigger margin and their loss for 2013-14 stands at Rs. 400 Crore. Comparatively, Amazon losses are pegged at Rs. 321.3 crore and Snapdeal had least losses of 3 with 264.6 crore. Flipkart leads the race here to losing 2.23 rupees for every 1 rupee of revenue. Amazon loses 1.90 and Snapdeal has least amount of losses at Rs. 1.72. Recently, Flipkart also charged fine of 1000 crores by government of India for unethical practices on the promotion named big billion days.

Graph-5: Loss Incurred for Every Rupee Spent



Sources: Authors Compilation

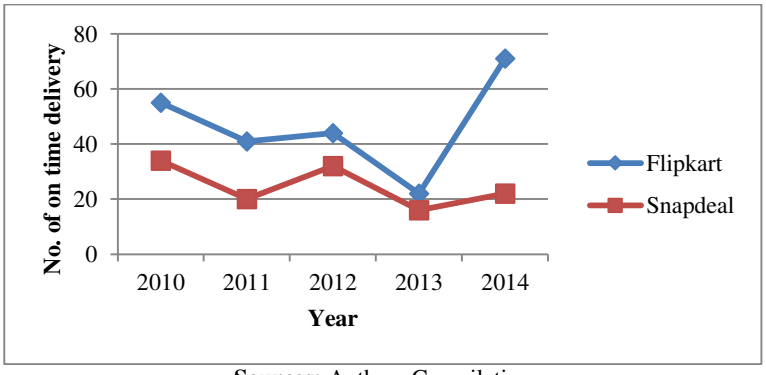
COMPARISON OF FLIPKART AND SNAPDEAL ON THE DELIVERY PROMISES

Table-3: Number of Keeping up on Time Delivery Promises

Year	Flipkart %	Snapdeal %
2010	55	34
2011	41	20
2012	44	32
2013	22	16
2014	71	22
	46.16	**24.8**

Sources: Authors Compilation

Graph-6: Number of Keeping up On Time Delivery Promises



Sources: Authors Compilation

CONCLUSION

The more money you have, the longer you will last. Flipkart and Amazon will survive this. Flipkart will go for an IPO in either US or Singapore (in preference order). With Alibaba investing in PayTM, things will become interesting now. It can now be Flipkart, Amazon, PayTM and Snapdeal. Snapdeal will be acquired by Amazon or Flipkart (in preference order). Once the consolidation is at the peak, focus will shift on increasing the efficiency of the entire process. The larger players will acquire small start-ups who will develop the technology for the same.

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Editor-In-Chief
Pezzottaite Journals,
64/2, Trikuta Nagar, K. K. Gupta Lane, Jammu Tawi,
Jammu & Kashmir - 180012, India.
(Mobile): +91-09419216270 – 71
editorinchief@pezzottaitejournals.net
contactus@pezzottaitejournals.net

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MOBILE ONLINE TECHNOLOGIES IN INDIA

B. Jaheeda[8]

ABSTRACT

Technology will become a very important role in every sector especially in this way we can go for banking, financial institutions institution it will play vital role in the economy, banking is the lifeline of an economy. The objective can be achieved with the traditional banking but at slow rate. It is the age of technology and development can be geared up by grappling operations with technology. Even though these changes were expected after the nationalization of banks in 1969. Indian banking industry is in the midst of an information technology revolution. The competition among the banks has led in increasing internet banks telephone banking. The main concept and scope of E-banking is still evolving. The main aim of this is the technology how will be increasing in the banking sector.

KEYWORDS

Information Technology, Banking Sector etc.

INTRODUCTION

Mobility is one of the key factors, which help business thrive; businesses that embrace the idea of Mobile Information Society will reinvent themselves as real-time organizations. Where access and interaction can be instant. New brands, partnerships and customer loyalties are on the raise, thanks to the growing numbers of mobile terminals. Three major segments that can substantially benefit from any where and have anytime access to information and services from the use of mobile phones are, financial services providers, health care industry and corporations with a mobile workforce in 2012onwards, bank technology budgets should continue to increase, if ever so slightly. However, with the economic recovery still on shaky legs, and with regulatory scrutiny more intense than ever, banks' IT investments are likely to be focused largely on driving efficiencies and complying with new requirements. *Bank Systems & Technology* identifies the IT trends and hot technologies that will change the game in the year ahead. Mobile banking started as a novelty, something only techies and first adopters felt comfortable using. However, as smart phones have skyrocketed in popularity over the past few years, mobile banking adoption has increased along with it. Initially, many banks' mobile offerings consisted of their online banking model ported to an iPhone or Android device. As mobile has grown into a maturing channel, however, banks and their vendor partners have produced richer mobile offerings that take advantage of its unique capabilities. In addition, the rise of the tablet gives financial institutions another unique interface through which to interact with consumers.

A BRIEF INTRODUCTION TO THE INTERNET

The Internet is a global network that connects billions of computers all over the world. It is a network of networks. The Internet links different organizations, academic institutions, government offices and home users to share information among a large group of users. Today, the Internet is best described as a network of computers spread across the world, making use of fiber optic cables, telephone lines and satellites to communicate with other computers in the network. The Internet makes use of vacant bandwidth in the telecommunications network to send messages from computer to computer, rather than relying on an entirely new infrastructure.

A standardized addressing system identifies specific computers, making it easy for other computers to hold information about what information other computers are storing and where they are. When we make use of the World Wide Web we are using this addressing system to go to a specific computer, either in Melbourne or possibly on the other side of the world, to read files stored on that computer. While any computer is connected to the network it is described as a "node" on the Internet, and with appropriate software, we can use even a desktop computer to "serve" files to the rest of the world. It is the simplicity of this networking, which has caused it to seize the imagination of users and to grow exponentially.

The Internet, and particularly the World Wide Web, has revolutionized the way we communicate. It is likely that fax machines will go the way of the telegraph and the telex, and while the Internet in ten years will probably look quite different from that which we see now, it is certain to have become even more pervasive.
The most commonly used parts of the Internet today include email, newsgroups, File Transfer Protocol, Internet Relay Chat, and of course the World Wide Web. Other areas, which are rapidly growing, include Internet telephony and video conferencing.

[8]Associate Professor, P.V.K.K. PG College, Andhra Pradesh, India, jaheeda14mca@gmail.com

MAJOR APPLICATIONS

The advantages accruing from computerization are three-directional - to the customer, to the bank and to the employee.

For the Customer: Banks are aware of customer's need for new services and plan to make them available. IT has increased the level of competition and forced them to integrate the new technologies in order to satisfy their customers. They have already developed and implemented a certain number of solutions among them:

- **Self-inquiry Facility***:* Facility for logging into specified self-inquiry terminals at the branch to inquire and view the transactions in the account.
- **Remote Banking***:* Remote terminals at the customer site connected to the respective branch through a modem, enabling the customer to make inquiries regarding his accounts, on-line, without having to move from his office.
- **Anytime banking- Anywhere Banking***:* Installation of ATMs, which offer non-stop cash withdrawal, remittances and inquiry facilities. Networking of computerized branches inter-city andintra-city will permit customers of these branches, when interconnected, to transact from any of these branches.
- **Tele banking***:* A 24-hour service through which inquiries regarding balances and transactions in the account can be made over the phone.
- **Electronic Banking***:* This enables the bank to provide corporate or high value customers with Graphical User Interface (GUI) software on a PC, to inquire about their financial transactions and accounts, cash transfers, chequebook issue and inquiry on rates without visiting the bank. Moreover, LC text and details on bills can be sent by the customer, and the bank can download the same. The technology used to provide this service is called electronic data interchange (EDI). It is used to transmit business transactions in computer-readable form between organizations and individuals in a standard format. As information is centralized and updates are available simultaneously at all places, single-window service becomes possible, leading to effective reduction in waiting time.

For the Bank: During the last decade, banks applied IT to a wide range of back and front office tasks in addition to a great number of new products. The major advantages for the bank to implement IT are:

- Availability of a wide range of inquiry facilities, assisting the bank in business development and follow-up.
- Immediate replies to customer queries without reference to ledger-keeper as terminals are provided to Managers and Chief Managers.
- Automatic and prompt carrying out of standing instructions on due date and generation of reports.
- Generation of various MIS reports and periodical returns on due dates.
- Fast and up-to-date information transfer enabling speedier decisions, by interconnecting computerized branches and controlling offices.

For the Employees: IT has increased their productivity through the followings:

- Accurate computing of cumbersome and time-consuming jobs such as balancing and interest calculations on due dates.
- Automatic printing of covering schedules, deposit receipts, pass book / pass sheet, freeing the staff from performing these time-consuming jobs, and enabling them to give more attention to the needs of the customer.
- Signature retrieval facility, assisting in verification of transactions, sitting at their own terminal.
- Avoidance of duplication of entries due to existence of single-point data entry.
- A search of the banking literature reveals that banks are moving rapidly to take advantage of recent and new customer service and cost reduction opportunities that new technologies offer. A sampling is in the table below:

Table-1

Technology	Current Use	Use in Next 3 Years
Infrastructure		
PC Networks: Tellers	48%	80%
Sales Tracking Software	44%	80%
Relational Data Base	36%	76%
Automate Credit Scoring	8%	48%
E-mail	60%	95%
Equipment Management Software	33%	57%

Imaging Checks / Statements	12%	72%
Imaging Documents	7%	45%
Delivery Systems		
Internet Banking Home Page	3%	25%
Internet Electronic Office	1%	15%
Tele banking	56%	88%
Smart Cards Debit Cards	35%	70%
Electronic Banking	12%	76%

Sources: Authors Compilation

Internet: Riding the Tiger: The Internet is rapidly becoming the information superhighway of a global electronic marketplace. The rising commercial interests in the Internet are especially evident in "frontend" applications such as electronic catalogs, yellow pages, storefronts, malls, and customer support centers. All these applications are based on the World Wide Web (WWW) - the fastest growing segment of the Internet. Although "back-end" applications such as electronic data interchange (EDI) are equally important, their adoption has not been as rapid. One major concern is security: the Internet is generally perceived as not secure enough for transmitting sensitive data such as payments. Upon a closer look, however, this view is not warranted, since technologies such as public key encryption and firewalls address essential security concerns. Moreover, such technologies are already available. The only remaining barrier is the lack of real world users of those technologies.

Investing in Technology: According to a survey conducted by the American Bankers Association, US banks expenditure on information technology grew from $16.3 billion in 1994 to $18.7 billion in 1995-an increase of 14.7%, and $1 billion more than the same bankers forecasted they would spend in last year's survey. By 1998, the banks expect to spend $21.2 billion (an increase of 7.1%).

***How to Survive*:** The key to survival is customer service. Customer loyalty will be determined by convenient and innovative delivery of products and personalized services. In the '70's and '80's, banks were marketing to a generation raised on old style banking: personal interaction at a banking office. That generation was disdainful of "impersonal" service and afraid of computers. Convenience was having a "branch" in one's neighborhood. Today, personal service and convenience are still the critical factors in the banking relationship, but they are defined differently. Consumers still want to bank with a financial institution they "know," and one who "knows" them, but they do not necessarily want to go to the bank. They are not afraid of computers and technology; they embrace them. Convenience is doing their banking when they want, and where they want. They are now comfortable with personal computers and other electronic devices. They expect fast, efficient, and accurate service And the only way to cost effectively provide the instant, quality service that customers demand, and that the competition provides, is through intensive use of the most advanced information technologies and through good people trained in the use of these technologies. For all these reasons, the banks delivery systems are completely changing.

The New Delivery Systems: The increasing cost of building brick-and-mortar branches, decreasing cost of computers, high delivery costs and slow revenue growth force a relook at the conventional delivery systems. Moreover, growing comfort of technology usage by the customer is rapidly fostering usage of non-branch channels for routine transactions. New strategy changes the focus of the branch from being a high cost transaction center to a provider of a wide range of services like telebanking, customer service kiosks, ATMs, and remote electronic banking.

New Marketing Opportunities: As the new technology is, so expensive banks need to use the new systems to do more than deliver information and basic services. Banks need the ability to also sell insurance and investment products to get a better return on this investment. Telephone banking can bring financial services to the home or office, especially if they are affordable screen phones. By noticing how much interest the customer expresses, the bank can market stock quotes and insurance quotes. Interactive videos are new technology that banks can make available to the customer to maintain personal contact while still lowering the expense of delivery service. With an interactive video, an expert employee is not needed in each branch. Complex life insurance products, open brokerage accounts, customized product illustrations can be widely available where needed. The interactive videos will be cost effective expertise. The internet is a medium to allow banks to offer products to customers outside the normal customer base of a branch. Banks are aware of the customer's need for these services and plan to make them available before other sources do. Vendors are one-step in the right direction. This does not diminish the need for more specialized systems, for instance to allow micro transactions, the exchange of very small amounts of money (a few cents) in exchange for information or services. These new payment mechanisms will in turn enable new business models such as pay-per-article newspapers.
Any mail addressed to me is sent to the computer called batchelors.net, which in turn places it in my mailbox. The next time I ask that computer for my email messages, it will send any stored messages to the computer on my desk. Mail servers connected to the Internet have access to a list of other mail servers, allowing email to be easily and quickly sent to any email address. Email can

also be sent to large numbers of people at once. There are two easy ways to do this. The first is to collect the email addresses you wish to send messages to and then send one email to all the addresses in your list. This will send an email off to each person on the list, directly from your computer. Another way to send email to large numbers of people, which is in many ways much simpler, is to subscribe to mailing lists. When you wish to send a message to everyone who has subscribed to a list, you simply send an email to the list server and the email is automatically sent to everyone contained in the mailing list held by the list server. As these lists are generally quite specific it is a good way of sending material to a tightly targeted group of recipients, without having to collect an email list yourself. The drawback of sending this sort of broadcast email is that there is no guarantee that all the people you wish to receive your message will have subscribed to the mailing list your message is sent too. Should you wish to create your own email list, which contains the addresses of people on a listserv mailing list you can often obtain the list of the people subscribed to a particular mailing list by sending a message to the server asking for this information?

Some of the Different Applications: Internet banking (or E-banking) means any user with a personal computer and a browser can be connected to his bank -s website to perform any of the virtual banking functions. In internet banking system the bank has a centralized database that is web-enabled. All the services that the bank has permitted on the internet are displayed in menu. Any service can be selected and further interaction is dictated by the nature of service. The traditional branch model of bank is now giving place to an alternative delivery channels with ATM network. Once the branch offices of bank are interconnected through terrestrial or satellite links, there would be no physical identity for any branch. It would a borderless entity permitting anytime, anywhere and anyhow banking bank payment gateway and legal infrastructure.

Internet banking in India: The Reserve Bank of India constituted a working group on Internet Banking. The group divided the internet banking products in India into 3 types based on the levels of access granted. They are:

- **Information Only System**: General-purpose information like interest rates, branch location, bank products and their features, loan and deposit calculations are provided in the banks website. There exist facilities for downloading various types of application forms. The communication is normally done through e-mail. There is no interaction between the customer and bank's application system. No identification of the customer is done. In this system, there is no possibility of any unauthorized person getting into production systems of the bank through internet.

- **Electronic Information Transfer System**: The system provides customer- specific information in the form of account balances, transaction details, and statement of accounts. The information is still largely of the 'read only' format. Identification and authentication of the customer is through password. The information is fetched from the bank's application system either in batch mode or off-line. The application systems cannot directly access through the internet.

- **Electronic Transactional System:** This system allows bi-directional capabilities. The customer for online update can submit transactions. This system requires high degree of security and control. In this environment, web server and application systems are linked over secure infrastructure. It comprises technology covering computerization, networking and security, inter-bank.

Automated Teller Machine (ATM): ATM is designed to perform the most important function of bank. It is operated by plastic card with its special features. The plastic card is replacing cheque, personal attendance of the customer, banking hours restrictions and paper based verification. There are debit cards. ATMs used as springboard for Electronic Fund Transfer. ATM itself can provide information about customers account and receive instructions from customers - ATM cardholders. An ATM is an Electronic Fund Transfer terminal capable of handling cash deposits, transfer between accounts, balance enquiries, cash withdrawals and pay bills. It may be on-line or 0ff-line. The on-line ATN enables the customer to avail banking facilities from anywhere. In off-line the facilities are confined to that particular ATM assigned. Any customer possessing ATM card issued by the Shared Payment Network System can go to any ATM linked to shared payment networks and perform his transactions.

Credit Cards/Debit Cards: The Credit Card holder is empowered to spend wherever and whenever he wants with his Credit Card within the limits fixed by his bank. Credit Card is a post-paid card. Debit Card, on the other hand, is a prepaid card with some stored value. Every time a person uses this card, the Internet Banking house gets money transferred to its account from the bank of the buyer. The buyers account is debited with the exact amount of purchases. An individual has to open an account with the issuing bank, which gives debit card with a Personal Identification Number (PIN). When he makes a purchase, he enters his PIN on shops PIN pad. When the card is slurped through the electronic terminal, it dials the acquiring bank system - either Master Card or VISA that validates the PIN and finds out from the issuing bank whether to accept or decline the transactions. The customer can never overspend because the system rejects any transaction, which exceeds the balance in his account. The bank never faces a default because the amount spent is debited immediately from the customer's account.

Smart Card: Banks are adding chips to their current magnetic stripe cards to enhance security and offer new service, called Smart Cards. Smart Cards allow thousands of times of information storable on magnetic stripe cards. In addition, these cards are highly secure, more reliable and perform multiple functions. They hold a large amount of personal information, from medical and health history to personal banking and personal preferences.

You can avail the following services through E-Banking:

- **Bill Payment Service**: You can facilitate payment of electricity and telephone bills, mobile phone, credit card and insurance premium bills as each bank has tie-ups with various utility companies, service providers and insurance companies, across the country. To pay your bills, all you need to do is complete a simple one-time registration for each biller. You can also set up standing instructions online to pay your recurring bills, automatically. Generally, the bank does not charge customers for online bill payment.

- **Fund Transfer**: We can transfer any amount from one account to another of the same or any another bank. Customers can send money anywhere in India. Once you login to your account, you need to mention the payees' account number, his bank and the branch. The transfer will take place in a day or so, whereas in a traditional method, it takes about three working days. ICICI Bank says that online bill payment service and fund transfer facility have been their most popular online services.

- **Credit Card Customer**: With Internet banking, customers can not only pay their credit card bills online but also get a loan on their cards. If you lose your credit card, you can report lost card online.

- **Railway Pass:** This is something that would interest all the adamant. Indian Railways has tied up with ICICI bank and you can now make your railway pass for local Trans online. The pass will be delivered to you at your doorstep. But the facility is limited to Mumbai, Thane, Nasik, Surat and Pune.

Investing through Internet banking

You can now open an FD online through funds transfer. Now investors with interlinked demat account and bank account can easily trade in the stock market and the amount will be automatically debited from their respective bank accounts and the shares will be credited in their demat account. Moreover, some banks even give you the facility to purchase mutual funds directly from the online banking system. Nowadays, most leading banks offer both online banking and demat account. However if you have your demat account with independent share brokers and you need to sign a special form, which will link your two accounts.

Recharging your prepaid phone: Now just top-up your prepaid mobile cards by logging in to Internet banking. By just selecting your operator's name, entering your mobile number and the amount for recharge, your phone is again bank in action within few minutes.

Shopping: With a range of all kind of products, you can shop online and the payment is made conveniently through your account. You can also buy railway and air tickets banking.

Newsgroups: Newsgroups are much like the bulletin boards we still sometimes see in supermarkets where anyone can pin up a message and hope that someone will respond. This could have been an ad for selling what an old bike or bed or perhaps a note from a tradesman advertising his services. Newsgroups do much the same thing except the audience is much, much larger. There are thousands of newsgroups available for users of the Internet. These groups generally are based on a topic of common interest and can be on topics as diverse as kite flying, photographic astronomy, teaching in Canada, or CD-Rom creating in Australia. Anyone can post an email to a newsgroup, which will then be visible to anyone else visiting the newsgroup. Your message might be a general comment or a question on a specific topic. If someone else reads the message and can answer your question or takes offence at your comments they can either reply directly to you using your email address or they can post a response to the newsgroup so that everyone else reading the newsgroup will see the response. Such sequences of conversation are called threads. Usually a newsgroup will contain several threads of conversation about different topics, all running at the same time. The important thing to note about using newsgroups is that they allow conversations to progress over several days or weeks. This is usually referred to as asynchronous conversation. You do not have to be online at the same time as anyone else to be part of the conversation - the messages will be read by people the next time they visit the newsgroup. Both Internet Explorer and Netspace Communicator give you easy ways to connect to lists of available newsgroups and to subscribe to groups in such lists.

FTP: The file transfer protocol is used when you wish to download files from a computer connected to the Internet or when you wish to upload files to such a computer. This is commonly used when you upload web pages to a Web Server, or you download programs for your computer from Internet sites. Common programs used include WS-FTP for PCs and Fetch for Macs. Some HTML programs, such as Microsoft Front Page or Claris Home Page, have an FTP application built into the software, making the publication of a website a "one click" operation.

IRC: Internet Relay Chat is a way of communicating with relatively small numbers of people in real time. This sort of communication is often described as synchronous communication. It normally takes the form of typing messages, which appear, in a window on the computer of every person connected to the same area of the chat server. Messages are generally sent to

everyone in the group though you can whisper to individuals if you choose to. Because IRC is done in real time, the conversations are more ephemeral and conversation can often be somewhat stilted or abbreviated, given the poor typing ability of most people.

WWW: The World Wide Web is perhaps the most rapidly growing part of the Internet. When using a simple browser interface (such as Microsoft Internet Explorer or Netscape Navigator) users can view web page and follow links on these pages to other sites around the world. Pages written for the web appear as hypertext. This is a concept first described by Vanevar Bush in the 1950s, and implemented by Tim Berners-Lee in 1990 for CERN, the European Particle Physics Laboratory in Switzerland. The language used to create web pages is known as Hypertext Markup Language, often abbreviated to HTML. It is a language, which is still being developed, and the World Wide Web Consortium, headed by Tim Berners Lee, is overseeing its evolution. The consortium is made up of key groups and companies involved in the Internet, including businesses such as Microsoft, IBM and Arthur Anderson, and universities such as RMIT, Keio and MIT. There is a misconception that the World Wide Web is just another name for the Internet. This is not the case, and the WWW is simply one facet of the Internet, albeit one that has grown dramatically in popularity since it was first developed. The amount of information available on the World Wide Web has increased remarkably in the past few years. The main reason that the World Wide Web has become so popular is that it is a rich, graphic environment, easily used by most people who are now using computers. It can contain pictures and sound as well as. By highlighting certain words or images and adding simple commands, the creator of a web page can develop a simple means for users to travel from page to page, and there are now tools available which make learning HTML almost unnecessary. It is important to note that although the World Wide Web has grown considerably recently it is still a technology in development. While we can no longer say that it is in its infancy, the WWW still has a great deal of evolving to do before it can be regarded as mature. Of concern to parents, teachers, and legislators is the nature of some of the material available, with obscene, racist, or dangerous material with being high on the list of material, which many were groups, would choose to control. Newspapers today often contain stories about pornographic websites, sites, which teach children how to make bombs, and sites which promote racism. There are ways to prevent access to such material if so desired. Programmes such as Net Nanny can be installed on computers at home and used to prevent access to sites, which contain particular words, would probably be excluded also. This is perhaps not the best way to filter access to the web.

Another way to screen websites is to filter the material before it actually gets to your computer. All school computers connected to the Vic one network are protected in such a manner. The list of sites which students and staff are prevented from exercising is kept on a computer between the VicOne network and the Internet. This proxy server will not let material from excluded sites through to the VicOne Network. Teachers and other responsible users of the system can recommend sites, which should the added to this list. The intent of the filter is simply there to block out the nastier bits of the WWW, but it does raise the question of who decides what we see in this new electronic medium.

A major problem for legislators is that material on the World Wide Web is available across a multiplicity of national borders. A point of view that is commonly held in one region may present no problem to the legislators in that country but could prove to be a problem for another country. How do legislators in another country prevent people from accessing this material in a country where such material is illegal, or where censorship prevents this material being distributed in other forms? How does a government prevent it's citizens accessing pro-democracy websites created by expatriates now living on the other side of the world? The quote below is from the Digital Freedom Network's website.

CONCLUSION

As the new technology is so expensive banks need to use the new systems to do more than deliver information and basic services. Banks need the ability to also sell insurance and investment products to get a better return on this investment. Telephone banking can bring financial services to the home or office, especially if they are affordable screen phones. By noticing how much interest the customer expresses, the bank can market stock quotes and insurance quotes. Interactive videos are new technology that banks can make available to the customer to maintain personal contact while still lowering the expense of delivery service. With an interactive video an expert employee is not needed in each branch. Complex life insurance products, open brokerage accounts, customized product illustrations can be widely available where needed. The interactive videos will be cost effective expertise. The internet is a medium to allow banks to offer products to customers outside the normal customer base of a branch. Banks are aware of the customer's need for these services and plan to make them available before other sources do.

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CUSTOMER RELATIONSHIP MANAGEMENT (CRM) IN BANKS IN THE ICT ERA: AN EMPIRICAL STUDY OF CUSTOMER ACCEPTANCE

Dr. Manoj P. K.[9]

ABSTRACT

In the ongoing era of financial sector reforms in India because of intense competition commercial banks Customer Relationship Management (CRM) is fast becoming an imperative for survival and growth of banks in India in the ongoing reforms era. With the fast advances in Information and Communication Technology (ICT), CRM is gradually giving way to electronic-CRM or E-CRM. In the above context, this paper makes an empirical study of the acceptance of E-CRM and accordingly makes suggestions for more effective implementation of CRM in banks, particularly in its new form viz. the E-CRM.

KEYWORDS

Globalization, Competition, ICT, CRM, E-CRM, Customer Acceptance etc.

INTRODUCTION

In the ongoing era of globalization, the battle for banks to gain a greater slice of the market share has been on the rise the world over and India is no exception. It has become quite difficult for banks to meet the ever-increasing customer expectations. In order to improve their profits banks are growingly looking at ways of achieving organic growth through acquisition of new customers and retaining existing customers. In this 21St century, one of the approaches that is fast gaining significance is Customer Relationship Management (CRM), an effective tool to withstand competition. With the fast advances in ICT (Information and Communication Technology), banks are growing adopting such advanced technologies, for providing better customer service and for savings in operating costs. The growing need for services that offer the benefit of 'any time, anywhere, and through any communication medium' has witnessed the banks fast migrating from CRM to E-CRM or Electronic Customer Relationship Management.

LITERATURE REVIEW

Peter Drucker asserts, "A business exists to create a customer". In reality, however, companies are yet to find a fit between business activities and customer needs. Often, businesses use one off promotion to attract customers but nothing is done strategically to retain these customers. One approach adopted is to jump into the CRM bandwagon to get a better slice of customer data. CRM epitomizes a marriage of relationship marketing with the emerging ICT practices and it adds value to the customers by creating the right experience (Peppers, 2002). According to Harvard Business Review 2000, CRM is an approach, which companies can implement to boost profits by almost 100 percent by retaining just five percent more of customers. CRM is a management approach that enables organizations to identify, attract, and increase retention of profitable customers through improved relationship management (Hobby, 1999) CRM is the utilization of customer related information or knowledge to deliver relevant products or services to customers (Levine, 2000).

The customer is at the heart as the approach aims at putting customer first by shifting the role of marketing from manipulating the customer to genuine customer involvement communicating and sharing the knowledge (Parvatiyar and Jagdish, 2001). Financial services are in a structural change whereby competition and customer demands are increasing. As such, financial companies need to focus shift from product provider to relationship one on core competencies in order to deliver to the value of the customers (Lehman, 2000). Banks are slipping on every measure of relationship quality (Mishkin, 2001) and the need for CRM is justified because of the following: (i) The longer a relationship the better a bank can understand customer needs greater opportunity to cross-sell products and services; (ii) Customers in long-term relationships are more comfortable with the service; (iii) Long-term customers are more likely to become a referral source; and (iv) Determining which products and services should be sold to profitable client. It has been observed that retail banks are facing greater need to manage customer relationships to remain competitive in the market (Ryals and Payne, 2001).

Codatte (1987) argued that customer develops norms for product performance based on general product experience and these, rather than expectation from a brand's performance, determine the confirmation/disconfirmation process. Westbrook (1991) argued that in addition to the cognitive components satisfaction judgments are also dependent upon effective components as both

[9] Assistant Professor, Department of Applied Economics, Cochin University of Science and Technology, Kerala, India, manoj_p_k2004@yahoo.co.in

coexist and make independent contribution to the satisfactory judgments. Levesque (1996) [6] conducted a study to confirm and reinforced the idea that unsatisfactory customer service leads to a drop in customer's satisfaction and willingness to recommend the service to a friend. This would, in turn, lead to an increase in the rate of switching by customers. East (1997) suggested that customer's satisfaction is a major outcome of marketing activities whereby it serves as a link between the various stages of customer is buying behaviour, if customers are satisfied with a particular service offering after its use, then they are likely to engage in repeat purchase and try time extensions. Researchers like Ahmad (2002), Anderson (2004), Campbell (2006), and Rajkamal (2008) have evaluated services of the banks in term of customer's satisfaction parameters and, therefore, have made good contribution in the field of research in the area. However, a human customer is a complex organism, always changing with changing times, the preferences and priorities also do not remain static which change his/her perception about the satisfaction or dissatisfaction regarding the services he/she gets from the banks. Reichheld and Sasser have observed that 5 per cent increase in customer retention can increase profitability by 35 per cent in banking business, 50 per cent in insurance and brokerage, and 125 per cent in the consumer credit card market. Therefore, banks are now stressing on retaining customers and increasing market share. (Harvard Business Review, 2007).

Manoj P K (2006) [12] in his paper, 'Success Strategies for Marketing of Bank Products' studied the need for aggressive marketing of bank products for the survival and growth of banks in India in the reforms era and suggested broad strategies for bank marketing relevant for Indian banks. In another study by Neeraja James and Manoj P K (2014) [16] on relevance of E-banking in rural areas, the relevance of E-banking for better reach of banking in rural areas was noted. Another study by William George A. J and Manoj P K (2013) [17], 'Customer Relationship Management in Banks: A Comparative Study of Public and Private Sector Banks in Kerala' has noted the utmost significance of CRM for Kerala-based banks in view of the ever growing competition and have pointed that private sector banks are ahead of their public sector counterparts in respect of CRM adoption. In another empirical study on E-CRM, Manoj P K, Jacob Joju and Vasantha (2014) [15] entitled 'Impact of E-CRM on Commercial Banking: An Empirical Investigation with Reference to Private Sector Banks in Kerala' have observed that majority of the customers of private sector are using CRM and various ICT-based services; and vast majority of the customers and bank staff preferred E-CRM and ICT-based services as well as marketing of bank products.

In spite of several studies, including a few in the Kerala context, studies focusing on the acceptance of E-CRM among various customer segments particularly those studying the linkage, if any, between E-CRM usage on the one hand and gender, educational background etc. on the other hand are very scare. This study seeks to bridge this gap.

SIGNIFICANCE OF STUDY

Today, satisfaction of customers and their sustained patronage is the key to maintain the competitiveness of any business including banking. As customer centricity forms the focus of all banking strategies, banks should learn as to whom their customers are, which customer group produces higher profits and what factors keep them happy and influence their loyalty. As banks and their branches increase exponentially and so also the variety of services that they offer, customers are easily switching banks whenever they find better services and products because switching costs are becoming virtually nil. Banks are finding it tough to get new customers, and more importantly, retain existing customers. The situation in India in the ongoing globalized regime is no exception. It is in the above context that CRM becomes all the more significant, particularly the Electronic CRM or E-CRM in short. As customers greatly influence the success of any bank, winners are those who can succeed in managing their relationship with customers in an effective manner and in quick time (Mylonakis, 2009) [13]. This in turn requires systematic assessment of their acceptance in respect of E-CRM services offered by banks. Accordingly, it is possible to formulate suitable business strategies for attracting and retaining customers.

OBJECTIVES OF STUDY

- To study the level of acceptance, and the nature of E-CRM use by customers;
- To assess the relationship between E-CRM use and attributes like gender and education;
- To suggest strategies for enhanced performance of banks based on the study findings.

HYPOTHESES (ALTERNATE) OF STUDY

- There is significant difference between men and women in respect of the use of E-CRM.
- The higher the educational level of customer higher is the E-CRM use, and vice-versa.

RESEARCH METHODOLOGY

Data are collected from the customers of both public sector and private sector banks. Private Sector Banks (PRBs) considered include all the four Kerala based Old Private Sector Banks [viz. (i) Federal Bank Ltd. (ii) South Indian Bank Ltd. (iii) Dhanalakshmi Bank Ltd. (iv) Catholic Syrian Bank Ltd.] are chosen. Four Public Sector Banks (PSBs), having large network in

Kerala viz. (i) State Bank of India, (ii) State Bank of Travancore, (iii) Canara Bank, and (iv) Corporation Bank are chosen. A sample of 150 respondents is selected using random sampling (lottery method); and so the sample has its members with diverse socio-economic and occupational status, educational profile and they fall under different age groups. Of these 150 respondents, 75 are customers of PSBs and the rest 75 are customers of KOPBs. Primary data are collected from a carefully designed and pre-tested questionnaire. The views of the customers regarding the nature and extent of their E-CRM use are collected, and using a 5-point scale, scores assigned to their feedback (Table I). Primary data are also collected from principal officers of the selected banks through interview method. Secondary data are collected from authentic sources like the publications of the Reserve Bank of India, Government of India, and Government of Kerala etc. Popular statistical techniques (like Standard deviation, t-test, F-test) are used for data analysis.

Table-I: Five-Point Scale (Likert's Scale) and the Respective Scores

Points of Scale	Score
Very Satisfied	5
Satisfied	4
Neutral (Not satisfied nor dissatisfied)	3
Dissatisfied	2
Very dissatisfied	1

Sources: Authors Compilation

DATA ANALYSIS AND INTERPRETATION

As per the feedback from the bankers, there are many factors that prompt the offering E-CRM. These include, ease of use, reduction in work time, security and privacy, reduction of risk, job losses, reduced interaction with the customers. Of these, all the bankers have agreement in respect four factors viz. (i) ease of use, (ii) reduction in work time, (iii) security and privacy, and (iv) reduced interaction with customers. They do not believe job-loss as a factor. Because in the technical fields there are many job opportunities. Banks encourage customers to use E-CRM and other e–banking services. They make these services cheap by reducing charges and fees, and providing incentives users of such services. They contact every customer personally to promote such services, and these measures include, employee education, gearing up grievances, simplification of rules, greater trust in staff, and reduction in complexity of software. In fact, t–test is used to compare the means of two groups within the sample viz. male (46 per cent) and female (54 per cent). Here, 't' is the standard deviation of the difference between the means. It is used to test the gender difference in E-CRM usage. It is noted that p–value is greater than the significance level 0.05 (Table II). Therefore, there is no significant relationship between gender and use of E-CRM services. Thus, the alternate hypothesis is rejected and null hypothesis is accepted; thus confirming that is is no relationship between gender and E-CRM services used.

Table-II: Gender and the use of E-CRM Services

Particulars [Relative Share (Percentage)]	Mean	SD	t-value	p-value
Male [69 out of 150 (46 per cent)]	2.33	1.492	1.287	0.200
Female [81 out of 150 (54 per cent)]	2.02	1.440		

Sources: Field Survey

F-test is used to test the relationship between level of education and the use of E–CRM services. The effort is to test whether higher education leads to greater use of E-CRM services or not. It is noted that p-value is greater than the significance level 0.05 (Table III). Therefore, there is no relation between education and the level of E-CRM services used. Alternatively, there is no significant difference in the use of E-CRM services among customers with diverse educational backgrounds.

Table-III: Education Level and the use of E-CRM Services

	Mean	**SD**	**F-value**	**p-value**
Below SSLC	1.29	0.756	1.006	0.416
SSLC	1.92	1.501		
Higher Secondary	2.06	1.029		
Graduate	2.35	1.602		
Post Graduate	2.05	1.322		
Professional	2.39	1.603		
Total	2.17	1.467		

Sources: Field Survey

There are a lot of issues and challenges relating to E-CRM services. Some of these include, (i) high cost, particularly the initial investment, (ii) traditional banking still remains as the best option for many customers, (iii) some services are very expensive, (iv) no difference in profit (vis-à-vis traditional banking), (v) technological illiteracy of many customers, (vi) fear of risk for many customers, (vii) lack of awareness of customers about E-CRM services, (viii) preference of customers for face to face banking, (ix) security concerns among customers, (x) lack of privacy as perceived by customers, (xi) non-availability of some services under E-CRM etc. Of these different problems, lack of customer awareness is the most chronic problem. However, the general opinion of bankers is positive; and according to them, there are good future prospects for E-CRM because in this busy world there is real need for E-CRM and other E–banking services.

SUMMARY OF MAJOR FINDINGS

- All the banks have fast switching over to E-CRM from the traditional CRM, because of the obvious benefits of the former in view of the advances in ICT and its adoption by all banks.
- Banks under study are offering almost all the E-CRM services, like ATM, credit card, debit card, mobile banking, internet banking, telephone banking etc.
- The most important factors contributing to the adoption of E-CRM services are ease of use, reduction in work time, reduced interaction with the customers and security and privacy.
- Banks adopted E–CRM services because of their own preference and willingness to offer such services, and also in the face of competition from other banks.
- All the banks provide employee education and staff training, simplification of rules, greater trust in staff and reduction in complexity of software; for promotion of E-CRM.
- Based on the feedback from the bankers, the major deterrents to the use of E-CRM services by the customers include security concern (most important), and then lack of awareness, special interest (preference) on traditional banking, higher fees on E-services etc.
- Gender is not a significant factor that influences the use of E-CRM; both male and female customers avail such services equally well.
- Education is not a significant factor that influences the use of E-CRM; customers with very diverse educational backgrounds are using such services.

SUGGESTIONS FOR MORE EFFICIENT USE OF E-CRM BY BANKS

- Customer education with a focus on, firstly, allaying their security concerns and then making them aware of the various products that are available for them to choose from.
- Special thrust on promotion of e-channels, including ensuring convenient accessibility to such channels, is essential for attracting today's customers in view of growing competition.
- As ATMs, credit cards, debit cards and internet banking are found to be the most preferred products by the customers because of time and cost savings, added thrust is required for these services vis-à-vis other services.
- Banks should ensure full information on various products and services to win the confidence of their customers. Complete details regarding the applicable charges etc are provided to the customers. There should not be any hidden charges or the like.
- Adequate training, particularly in effective communications and soft-skills, is provided to the bank staff in order to attract business and to retain the existing customers.
- Adequate physical infrastructure should also be provided along with high quality online-mode services.
- Special emphasis is given on voluntarily taking up broad societal issues, to boost the corporate image of the banks. Because, CSR has become all the more significant, and of late the Government has made CSR spending a mandatory requirement in selected cases.

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Pezzottaite Journals,
64/2, Trikuta Nagar, K. K. Gupta Lane, Jammu Tawi,
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(Mobile): +91-09419216270 – 71
editorinchief@pezzottaitejournals.net
contactus@pezzottaitejournals.net

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USABILITY ANALYSIS OF E-GOVERNANCE SERVICES IN INDIA: CURRENT SCENARIO & FUTURE DIRECTIONS

Kalpana Salunkhe[10] Dr. Sachin Kadam[11]

ABSTRACT

Some of the e-governance services are not effective, they need to be reconstructed. E-TENDERING system is having manual version also. For the bidding of tasks above 3 lakhs there is a facility of e-tendering but due to influence of the authorities there is direct by pass to this method. This method is skipped & it is given as per their influence. Therefore, Rules & Regulations should be strictly followed to avoid misuse of the e-governance services. Services are underutilized. Publicity Efforts should be made to create awareness that they are available. In current situation, this scenario is lacking. In this respect, projects of some cities in India are studied by making Literature Review.

KEYWORDS

Usability Analysis, e-Governance etc.

One project named as "Online information System for Citizen Empowerment (Choice)" Project of Chhattisgarh state of India.

Author has made survey of CHOICE system & e-governance services. In this state 45% population is living below poverty line. Therefore, they cannot access services, as they need to spend Rs. 70-100.

Author gives following suggestions:

- All government services should be covered under the e-governance umbrella at the earliest.
- Training should be given to the agents in presence of officers regarding filing of forms, submission of documents.
- To avail e-governance schemes, BPL families should be given subsidized options.
- Infrastructure should be created for rural, unreachable areas.

Another paper reviewed is "Results from a Study of Impact of E-government Projects in India" by Subhash C. Bhatnagar and Nupur Singh.

This paper presents the results from an assessment study of eight e-government projects from India. The assessment framework measured the total value delivered by a project to various stakeholders on three dimensions: (a) cost to clients for accessing services (b) perception of quality of service and governance and (c) agency cost and revenue**.**

Preference for the computerized system is analyzed for specific areas where concrete benefits have increased to them. In most cases, the cost of accessing service was reduced because the number of trips to be made to the concerned offices reduced and the waiting time came down by nearly fifty percent. Corruption was significantly reduced or eliminated in five projects. Quality of service delivery and quality of governance were also improved significantly.

Therefore, suggestions are:

It is necessary to evaluate cost & benefit of ICT investment at macro level. It is necessary to count the impact by considering various dimensions such as location of the project, successful implementation of the projects. Rural projects especially suffer from maintenance problem of infrastructure. It is necessary to implement the proper model for the same.

The study assessed direct economic impact in terms of cost of accessing the service. It does not measure the impact on the inherent value of efficient delivery of the service for the client. My research can also attempt to estimate the impact on indirect economic value.

In the paper titled as "The Research and Realization of the System of the Timeliness Assessment of E-government Web sites based on the Semantic Analysis" by authors Cong Yingnan, Yang Xiaoping, Xinyu Wang, the usability evaluation of Web pages

[10]Assistant Professor, Sinhgad Institute of Business Administration & Computer Application, Sinhgad Technical Education Society, Maharashtra, India, kalpana.salunkhe@sinhgad.edu
[11]Professor & Deputy Director (ICT), Institute of Management and Entrepreneurship Development, Bharati Vidyapeeth Deemed University, Maharashtra, India, sachin_a_kadam@rediffmail.com

and the timeliness assessment of web information are introduced, and the timeliness assessment methodology of web information is proposed. Moreover, the prototype of the method based on evaluation system is constructed. The method of timeliness assessment of web information is constructed on the rapid development of Chinese segmentation and search engine technology and an innovation of existing technology of semantic extraction. As technology advances, the semantic extraction algorithm will no doubt develop faster and better and the new technology will continually improve the precision and applicability of extraction of semantics, so that this evaluation method will be of applying value.

Two shortages of the semantic based assessment methods can be improved:

- The feedback of the search engine cannot be filtered in system.
- The assessment is applied only in the area of e-government due to limitations of existing technologies.

In the paper titled "Usability Analysis of e-Governance Services in Bangladesh - Survey and Future Directions" by Hasan Shahid Ferdous, farhana Choudhari.

In this research, researcher tried to identify the issues relevant to a successful implementation of e-governance in Bangladesh by considering its usability. They stated that it ranked as 123 worldwide & 5th in South Asia, as e-services indicator.

They made a survey. They found that tech savvy portion of population i.e. age 18-30 are using e-services but education related. General people are concerned about marriage/birth registration, income tax, license and permits etc. Other services utilized by populace are citizenship & immigration, local government related, election service sector, subsidies, contract related, government employment, income tax etc.

In addition, data shows that people are not aware of it. So many of these services remain less utilized so government should create public awareness on e-governance services & in many case make it as mandatory. They should be trained to utilize benefits of e-governance. By this paper, it is concluded that:

- Awareness of e-governance among the citizens should be properly increased so that the people will utilize maximum use of these services.
- In addition, people should get familiar to Internet access that should be fast, speedy.
- If this access is with GPRS can be used in future. High-speed 3G networks can play major role in reaching general people the benefits of e-governance. Therefore, it is possible to penetrate the m-governance. People, government, politicians need to work hand in hand.

In the paper titled "e-governance challenges and cloud benefits" by authors Aparna Tripathi, Bhavana Parihar describes that in order to sustain & survive for a long time in entire world cloud computing is only solution for today & tomorrow. It has capability to provide ICT services with shared infrastructure and collection of many systems. In cloud, computing every facility is provided as a service:

Cloud provides service through public & private clouds with required technologies like system approach, distributed system, service oriented architecture, grid computing & visualization. The domain of cloud application is very big. E-government system requires entities like software, hardware, service management, network, business, policy, security etc., to survive & function properly cloud computing treats all these entities as a service, so can be used in e-government system.

In India Unique Identification is providing UID applications, which will be architected for the cloud & sit on an "e-governance cloud platform" & can be assembled using open architecture & components.

So suggestion is that if in my research cloud architectures concept is used it can benefit government to reduce duplicate efforts and increase effective utilization of resources. Cloud computing provides infrastructure, software platform, network, data storage as a service. For individuals cloud computing means accessing web-based email, photo sharing & productivity s/w. Organization need not required to have hardware, software and support personnel to provide services, rather have a contract for computing services on demand. Cloud database could be scaled & can be used for distributed applications.

The UID application will be architected for the cloud for all e-governance application. By this way, e-services can be provided to rural populace at reasonable price.

In the paper "Interface Design Issues to Enhance Usability of E-commerce Websites and Systems" by author Safavi Roshan explains that in order to maximize use of websites, its User Interface must be user friendly, This is achieved by the websites which shows simplicity, naturalness & ease of use also contains features such as customization, security, trust, accuracy, textfont, image,

personalization, search capabilities etc. Website should meet business objectives of the organization also user needs. They suggested two schemes for designing web sites 1) To please the human visitor 2) To please the search engine crawler visitor.

These appear to be two opposing requirements. Because the website with flash or graphic images having colors, typefaces and movements will satisfy users but forgetting that these pages are not search engine friendly. Personalization helps the system to observe all the activities users have done previously in a glance. It is helpful for discovering buying patterns & other useful information.

SUGGESTIONS

Conclusion is that the use of e-governance heavily relies upon the information published on the website & quality of system. Designer should aware of what is important for the users then he can highlight that specific feature to satisfy user and guarantee users revisit. For interface design, elements such as word count, body text, and emphasized body text percentage, Text positioning count, link count, Text cluster count, and page size can be considered for e-governance user interface. Overuse of images, audio & video can increase the download time. That I can avoid in designing UI.

In paper "E-governance and standardization "Authors T.V. Prasad explains that government requires machinery or medium to reach everyone instantly & address their needs. There are 1500 huge bodies like ministries, department, commissions, boards, authorities, scientific & research, universities, public sector functioning directly indirectly under GOI catering to needs of billions of populace.

Author says that e-governance is a one-step solution but little standardization has to be made in status. NIC is giving a major contribution. However, it should not play as a project undertaker but should take centre-stage & play a lead role as a policy maker in government.

In addition, union government should plan to bring new provisions in law & justice ensures implementation of cyber laws. Again, these utility e-governance applications they should try to bring on mobile.

There are few issues like:

- Identification of areas and their extent: There are many areas where the union or the state government has to concentrate, invest and operate extensively.
- Organization should decide which data should be kept sharable & which should be kept confidential.
- A huge data is produced in organization but it should be brought under controlled environment. Manuals can be prepared to state procedures, roles & responsibilities, forms, instructions. For individual bodies some standardization like ISO 9000 should be introduced to enhance quality.

CONCLUSION

The governments should take full advantage of such organizations like ECIL, NIC, C-DAC to ensure that similar projects are implemented uniformly avoiding all interconnectivity problems. Just computerization of the activities of any organization would not necessarily lead to a total e-governance solution, but definitely fuels the efficiency and productivity of every organization involved. It should implement a completely new cyber world for the citizens to come closer to their elected representatives.

In paper "Building an Alternative E-Governance Model-Lesson from e-Gram in Gujarat" by authors Roshni Nuggehalli

In September 2006, the GOI approved a proposal for the establishment of CSCs under NeGP to spread government services to communities in rural areas Gujarat Government initiated e-Gram project under aegis of Department of science & Technology in 2003 to establish e-governance in the gram Panchayat system. The project is operated by an off-line software application developed by NIC, the, Gram Software, that has been deployed in 9000 gram Panchayats within states, as of late 2007. BSNL provided internet connectivity in phased manner in the e-Gram villages, which in turn enables linkage with the Gujarat State wide area network (G-SWAN). A village Computer Entrepreneur (VCE) gives certificate, take 80% income, operates each center & 20% will go to Gram Panchayat. All complaints requests are recorded into system.
Conclusion is that E-Gram is state government's initiative & it is fulfilling the requirements of rural populace, VCE & Gram Mitras are creating the awareness among people for increasing use of the e-services. If it is carried at taluka level VCE will tempt to charge more revenue on services, which ultimately may discourage the maximum use of these services by rural people.

Bhoomi, Gyan Ganga, e-governance and the right to information: ICTs and development in India. Thomas Author has described two projects Bhoomi & Gyan Ganga. The lesson from both suggests that both did not significantly include people participation at all stages of the project development. Therefore, RTI movement should be spread among the local people to bring the social

change. Result obtained from ICT tools will not be passive, it will be active as local people will involve in planning, Implementation and evaluation process. In addition, information should be directly relevant to their lives.

Author has compared "Grameen" project of Bangladesh with "Bhoomi". Author has compared "Grameen" project of Bangladesh with "Bhoomi" project of India. Grameen is proved successful as the Grameen project has demonstrated that the mobile phone not only has definite uses but that its use has fulfilled local needs, and in the process empowered women to become economically strong thereby strengthening 'futures' for rural families.

These conclusions can be proposed while implementing the changes in the e-governance.

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A STUDY OF DATA MINING TECHNOLOGY IN TELECOMMUNICATION SECTOR

Anita B. Desai[12] Dr. Ravindra Deshmukh[13]

ABSTRACT

Mobile telecommunication networks are highly complex systems and it is indirectly linked with fraud thus their need of planning, management and optimization of fraud. The average financial damage to companies subjected to the PWC2 survey, was US$ 1.7 million per company. Participants of the ACFE1 study estimate a loss of 5% of a company's annual revenues to fraud. There are many different types of telecom fraud. It could be to steal a phone and make calls or a retailer that reports an incorrect number of subscriptions sold in order to get better commission.

Data Mining can be used in various area telecommunication industries. Data Mining helps to identify telecommunications patterns; fraud activities and helps to better use of resources and improve the quality of services. Data mining tools helps greatly to study DNA analysis and to find various patterns and functions. Most commonly used data mining functionalities are clustering, neural network. All Steps followed in data processing are important for predicting new knowledge within the data.

KEYWORDS

ACEF, PWC, Neural Network etc.

INTRODUCTION

In response to human communication needs, telecommunications have developed into cellular radio networks, which enable subscribers to connect and communicate regardless of their location and even movement. The first generation networks were analogue, but the benefits of digital transmission, such as fewer transmission errors and more efficient use of radio frequencies, have paved the way for second-generation networks (2G) digital mobile telecommunication networks, whose most widely spread realizations are based on the Global System for Mobile communications standard (GSM). The next generation, the 3G networks are being built, and the GSM successor is based on the Universal Mobile Telecommunications System (UMTS) standard. The UMTS network extends user connectivity on a global scale and provides more bandwidth for the user, enabling even multimedia transmissions. Mobile telecommunication networks are highly complex systems and it is indirectly linked with fraud thus their need of planning, management and optimization of fraud.

Two elaborate surveys, one in the United States, ACFE[1] and one worldwide PWC[2], yield the following information: 45% of companies worldwide have fallen victim to economic crime in the years 2004 and 2005. No industry seems to be safe and bigger companies seem to be more vulnerable to fraud than smaller ones. Small businesses however suffer disproportionate fraud losses. The average financial damage to companies subjected to the PWC[2] survey, was US$ 1.7 million per company Participants of the ACFE[1] study estimate a loss of 5% of a company's annual revenues to fraud. Applied to the estimated 2006 United States Gross Domestic Product, this would translate to approximately US$ 652 billion in fraud losses for the United States only.

Regarding to the types of fraud, asset misappropriation was number one in both studies. In the PWC[2] survey, this was followed by financial misrepresentation and corruption, false pretenses, insider trading, counterfeiting and money laundering. The ACFE[1] report handles a different classification, where asset misappropriation takes 91% of the reported cases for its account, corruption 31% and fraudulent statements 11%. About the way fraud is detected, both studies stress the importance of tips and chance in detecting fraud. According to the ACFE[1] report, an anonymous fraud hotline anticipates a lot of fraud damage. In the cases reviewed, organizations that had such hotlines, suffered a median loss of US$ 100.000, whereas organizations without hotlines had a median loss of US$ 200.000. At the PWC[2] study, no less than 34% of the fraud cases were detected by means of tip-offs and other 'chance' means.

Introduction to Telecomm Fraud

There are many different types of telecom fraud. It could be to steal a phone and make calls or a retailer that reports an incorrect number of subscriptions sold in order to get better commission. Probably every company in telecom business has their own definition of what telecom fraud is. In general, fraud can be defined as every attempt to use the operator's network with no intention of paying for it.

[12]Assistant Professor, Sinhgad Institute of Management & Computer Application, Maharashtra, India, anitadesai@sinhgad.edu
[13]Associate Professor, Ahmednagar College, Maharashtra, India, rpdeshmukh1966@gmail.com

There are an important difference between **bad debt** and **fraud**. Bad debt concerns people with occasional difficulties in paying for their invoices. If the subscriber really cannot pay, he or she will most probably be suspended and denied to open a new subscription in the future.

A fraudster, however never has the intention to pay. A fraudster is also more likely to repeat a committed crime. If a subscription is disconnected, the fraudster will probably find ways to obtain a new subscription and continue the fraudulent activities.

DATA MINING CONCEPT

Introduction

Data mining is predicted to be "one of the most revolutionary developments of the next decade" according to the online technology magazine ZDNET[4] News (February 8, 2001). In fact, the MIT Technology Review chose data mining as one of ten emerging technologies that will change the world. According to the Gartner Group[5], "Data mining is the process of discovering meaningful new correlations, patterns and trends by sifting through large amounts of data stored in repositories, using pattern recognition technologies as well as statistical and mathematical techniques."

Databases today can range in size into the terabytes. Within these masses of data lies hidden information of strategic importance. However, when there are so many trees, how do you draw meaningful conclusions about the forest?

The newest answer is data mining, which is being used both to increase revenues and to reduce costs. The potential returns are enormous. Innovative organizations worldwide are already using data mining to locate and appeal to higher value customers, to reconfigure their product offering to increase sales, and to minimize losses due to errors or fraud. Data mining is a process that users a variety of data analysis tools to discover patterns and relationships in data that may be used to make valid prediction.

Data Mining Functionality[6]

The data mining functionalities and the variety of knowledge they discover are briefly presented in the following list:

Characterization: Data characterization is a summarization of general features of objects in a target class, and produces what is called *characteristic rules*. The data relevant to a user-specified class are normally retrieved by a database query and run through a summarization module to extract the essence of the data at different levels of abstractions.

Discrimination: Data discrimination produces what are called *discriminant rules* and is basically the comparison of the general features of objects between two classes referred to as the *target class* and the *contrasting class*... The techniques used for data discrimination are very similar to the techniques used for data characterization with the exception that data discrimination results include comparative measures.

Association Analysis: Association analysis is the discovery of what are commonly called *association rules*. It studies the frequency of items occurring together in transactional databases, and based on a threshold called *support*, identifies the frequent item sets. Another threshold, *confidence*, which is the conditional probability than an item appears in a transaction when another item appears, is used to pinpoint association rules. Association analysis is commonly used for market basket analysis.

Classification: Classification analysis is the organization of data in given classes. Also known as *supervised classification*, the classification uses given class labels to order the objects in the data collection. Classification approaches normally use a *training set* where all objects are already associated with known class labels. The classification algorithm learns from the training set and builds a model. The model is used to classify new objects. The classification analysis would generate a model that could be used to either accept or reject credit requests in the future.

Prediction: Prediction has attracted considerable attention given the potential implications of successful forecasting in a business context. There are two major types of predictions: one can try to either predict some unavailable data values or pending trends, or predict a class label for some data. The latter is tied to classification. Once a classification model is built based on a training set, the class label of an object can be foreseen based on the attribute values of the object and the attribute values of the classes. Prediction is however more often referred to the forecast of missing numerical values, or increase / decrease trends in time related data. The major idea is to use a large number of past values to consider probable future values.

Clustering: Similar to classification, clustering is the organization of data in classes. However, unlike classification, in clustering, class labels are unknown and it is up to the clustering algorithm to discover acceptable classes. Clustering is also called *unsupervised classification*, because the classification is not dictated by given class labels. There are many clustering approaches

all based on the principle of maximizing the similarity between objects in a same class (*intra-class similarity*) and minimizing the similarity between objects of different classes (*inter-class similarity*).

Outlier Analysis: Outliers are data elements that cannot be grouped in a given class or cluster. Also known as *exceptions* or *surprises*, they are often very important to identify. While outliers can be considered noise and discarded in some applications, they can reveal important knowledge in other domains, and thus can be very significant and their analysis valuable.

Evolution and Deviation Analysis: Evolution and deviation analysis pertain to the study of time related data that changes in time. Evolution analysis models evolutionary trends in data, which consent to characterizing, comparing, classifying or clustering of time related data. Deviation analysis, on the other hand, considers differences between measured values and expected values, and attempts to find the cause of the deviations from the anticipated values.

OBJECTIVES OF STUDY

- To study the functionality of data mining technology for data analysis.
- To ascertain steps used model building using data mining algorithm.
- To find out data presentation parameters used for data analysis purpose.

METHODOLOGY USED

The present research is descriptive and data is collected using convenience sampling method. The questionnaire is prepared for telecommunication companies' employees and information technology employees who involved in data analysis using data mining technology for telecom companies. Data is collected from telecom companies' employees and IT company employees of sample size 41.

RESULT AND DISCUSSION

To Study the Functionality of Data Mining Technology for Data Analysis

Data mining tool supports with many functionalities. Each functionality employed for specific purpose. Some time, more functionality employed for specific tasks. During survey of the research, researcher observed that clustering used for segmentation while decision tree used for prediction and other functionalities like neural network and regression are used for prediction purpose. The following table shows various functionalities used during data analysis of fraud.

Table-1: Selection of Data Mining Functionality

	Use of algorithm	(%)age	Not use of Algorithm	(%) age	Total
Clustering	21	51	20	49	41
Decision Tree	16	39	25	61	41
Neural Network	27	66	14	34	41
Regression	9	22	32	78	41

Sources: Authors Compilation

From the above table it is cleared that Neural Network and clustering are most commonly used algorithm.

To Ascertain Steps Used Model Building Using Data Mining Algorithm

In order to derive result, model building is one of important aspects of data mining process. Similarly, different modules to be built for arriving conclusion. While building model various parameters to be used to measure the performance. Based on literature review and survey, the researcher have come conclusion that there are three parameters are used while model building viz. identifying new relationships, identifying new trends and eliminating unwanted attributes. These parameters and corresponding responses from various respondents are depicted in the following table.

Table-2: Featured Used While Model Building

	Yes	(%age)	No	(%age)	total
Identify New Relationship	38	93	3	7	41
Identify New Trends	34	83	7	17	41
Eliminate Unwanted attributes	33	80	8	20	41

Sources: Authors Compilation

From the above table and chart it is observed that majority of respondents are clarified that three parameters like *identifying new relationships*, *identifying new trends* and *eliminating unwanted attributes* are used during module building process.

To Find Out Data Presentation Parameters Used For Data Analysis Purpose

Data presentation is crucial task that helps top management to understand the data analysis result. The data presentation can be done in various formats that include summary report, dashboards, through web services. Some data mining tools supports to provide rollup facility, drill down facility, slice, and dice facility. From the pilot study and literature study, researcher understood that data mining tools supports summary report, dashboards, graphs and drill down and roll facility and slice and dice facility is required for data analysis for fraud. Hence, the researcher considered all above features of data mining tool for survey. The below table shows that all features provided by tool and their corresponding responses from the respondents.

Table-3: Data Presentation Featured Used

	Yes	(%)age	No	(%)age	Total
Generate Summary Report to Top Management	38	93	3	7	41
Provides Dashboards	40	98	1	2	41
Reports in Different format	32	78	9	22	41
Generate Data in graph and table formats	36	88	5	12	41
Provides Rollup Facility	35	85	6	15	41
Provides Drilldown Facility	35	85	6	15	41
Provides Slice and Dice Facility	36	88	5	12	41

Sources: Authors Compilation

From the above table it shows that providing summary report and dashboard is very important to take an effective and quick decision. In some cased customization should be supported based on requirement. Hence, any data mining tools should provide presentation features like dashboard, summary report and customization.

CONCLUSION

Data Mining can be used in various area telecommunication industries. Data Mining also helps to identify telecommunications patterns, fraud activities and also helps to better use of resources and improves the quality of services. Data mining tools helps greatly to study DNA analysis and to find various patterns and functions. Most commonly used data mining functionalities are clustering, neural network. All Steps followed in data processing are important for predicting new knowledge within the data. At the same time, data presentation should have provided the entire feature which help management for taking decision.

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Jammu & Kashmir - 180012, India.
(Mobile): +91-09419216270 – 71
editorinchief@pezzottaitejournals.net
contactus@pezzottaitejournals.net

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USABILITY ANALYSIS OF E-GOVERNANCE INITIATIVES IN INDIA

Kalpana Salunkhe[14] Dr. Sachin Kadam[15]

ABSTRACT

India is under development country, It includes majority of population from rural, which is poor. Corruption creates especially severe impacts on the poor, as it undermines economic growths. Therefore, e-governance can be applied as an anti-corruption & transparency tool. E-Panchayat - flagship project aims to automate Zilla Parishads, Panchayat Samitis and Gram Panchayats across the state. Website Usability and effectiveness should be considered. These websites are following usability to some extent but it should follow usability according to HCI (Human Computer Interface) principles. People should be able to access these services with least efforts. This can be done by ICT.

Before launching any ICT initiative, assess the information needs of a community, content and software applications should be developed with continuous involvement and feedback from the community, special emphasis should be placed on women and poor people's access and operators & agents should spread awareness of ICTs & e-governance services among communities.

KEYWORDS

e-Governance, Usability, Information Needs, ICT, Human Computer Interface etc.

INTRODUCTION

In 2006, the Government of India approved the National e-Governance Plan (NeGP) with the purpose to reduce the gap between the citizen and the Government. Vision of this project is "Make available all government services accessible to Common Man in his locality through Common Services Delivery Outlets and ensure efficiency, transparency and reliability of such services at affordable costs to realize the basic needs of the Common Man."

The NeGP entrusted ministry of Panchayat Raj Institutions (MoPR) and the Department of Electronics and Information Technology (DeitY) with the responsibility of implementing MMP in its fullness.

NeGP comprises of 31 Mission Mode Projects (MMPs) including 11 central level MMPs, 13 state level MMPs and 7 local government level or integrated MMPs, where each MMP leads towards transforming a high priority citizen service from existing manual system to electronic system for delivering e-services. Common citizen has key role in e-governance.

Panchayat Raj is a self-governing system in India. It was built for the empowerment of rural people. Gram Panchayat is the unit of this government system, which governs the village level administration in India. Most of the population of India lives in villages so the development of these Gram Panchayats is nothing but the development of the India.

E-Panchayat is the flagship project of rural development department, which aims to automate 33 Zilla Parishads, 351 Panchayat Samitis and 27896 Gram Panchayats across the state. The Ministry of Panchayati Raj is a branch of the Government of India looking after the ongoing process of decentralization and local governance in the States. Ministry of Panchayati Raj looks into all matters relating of Panchayati Raj and Panchayati Raj Institutions. It was created in May 2004.

Researcher has tried to review the website's user Interface. She visited National panchayat portal.gov.in, sangli.nic.in. User interface is poor. Various links are available. For online 7/12 link is provided but not responding. Therefore, user loses patience & avoids using it. Therefore, arrangement of contents & content labeling should be proper. Color, font size should be proper. Website should be more self-Explanatory.

So website Usability and effectiveness should be considered. Meaning of Usability is people have to be able to grasp the functioning of the site immediately after scanning the home page [Jacob Nielsen (Usability Consultant)].

[14]Assistant Professor, Sinhgad Institute of Business Administration & Computer Application, Sinhgad Technical Education Society, Maharashtra, India, kalpana.salunkhe@sinhgad.edu
[15]Professor & Deputy Director (ICT), Institute of Management and Entrepreneurship Development, Bharati Vidyapeeth Deemed University, Maharashtra, India, sachin_a_kadam@rediffmail.com

When website of 7/12 extract is reviewed, its user interface is not satisfactory. It is asking to select Khatedar Name & not allowing entering name. Actually, it has to allow typing some initials of the name then it should populate the matching entries & then allow selecting one among that list. Rather name is also not navigating, it flashes & disappears. As per the Jacob Nielson's study, the list box used for khatedar's name, Servey Number is wide, but it should allow to type in some characters into the box.

ISO defines usability as "The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use".

When evaluating user interfaces for usability, the definition can be "the perception of a target users of the effectiveness (fit for purpose) and efficiency (work or time required to use) of the Interface" Ben Shneiderman.

These website are following usability to some extent but it should follow usability according to HCI (Human Computer Interface) principles:

- Quality of design should be user friendly i.e. font size. Placement of the labels, data entry fields as per user's satisfaction.
- A website is judged by its design. Elements such as layout, consistency, typography, color and field's style all affect how users perceive your website and what kind of image you project. Your website should project not only a good image but also the right one for your users. Other factors that influence credibility are: the quality of the website's content, amount of errors, rate of updates, ease of use and trustworthiness of authors.
- Visitors view the content above the fold so that website designer should make the best use of that area,

They suggested two schemes for designing web sites 1) To please the human visitor 2) To please the search engine crawler visitor.

These appear to be two opposing requirements. Because the website with flash or graphic images having colors, typefaces and movements will satisfy users but forgetting that these pages are not search engine friendly. Personalization helps the system to observe all the activities users have done previously in a glance. It is helpful for discovering buying patterns & other useful information.

We can say that the use of e-governance heavily relies upon the information published on the website & quality of system. Designer should aware of what is important for the users, then he can highlight that specific feature to satisfy user and guarantee users revisit. For interface design elements such as word count, body text, emphasized body text %, text positioning count, link count, text cluster count, page size can be considered for e-governance user interface. Overuse of images, audio & video can increase the download time. That I can avoid in designing UI.

It is also stated that if e-readiness is more, e-governance is more successful.

To increase e-readiness it is necessary to increase the awareness of computer & internet among the people.

In addition, people should be able to access these services with least efforts. This can be done by ICT.

Effectiveness of the ICT will ensure participation of common citizen's in e-governance. Before launching any ICT initiative, first the information needs of a community should be thoroughly assessed; second content and software applications should be developed with continuous involvement and feedback from the community; third, special emphasis should be placed on women and poor people's access; and fourth, operators from the grassroots are probably the best agents to bring ICT to rural communities. Particular efforts should be made to improve women and poor people's access to information.

Still it is required that need based services to be added. They should try to add following need based services into existing portals:

1) Gram Panchayat Administration:

- Schedules of Gram Sabhas,
- Gram Panchayat Cleanliness Monitoring,
- Self-help groups and other villager's welfare schemes,
- Assets management,
- Property tax assessment and management,
- Property lost/found reporting system,
- Gram Mart (Online Shopping) where rural populace will make bulk purchasing of seeds, fertilizers and other products related to their daily life.

2) Agriculture: In online 7/12 facility. Provide following utility based facility such as: Manage the farmers' grievances. Rendering educational services on the best agricultural practices to enhance the yield, reduce expenditure, and enhance the quality of product for the farmers.

In addition, it facilitates its agriculture and related departments to provide season-specific, region-specific, information services to the farmers, apart from offering of counseling services to the farmers by agriculture experts.

Irrigation and Water Conservation: The module will report problems on pipelines, canals, etc. and subsequent review of problems by Sarpanch. Besides these, the module facilitates the appraisal of the status of water, cess payments and reporting on the dues.

3) Dairy and Animal Husbandry: This module may facilitates provision of the following information services, Veterinary counseling services, Information on animal diseases, Information on milk procurement and quality management, Veterinary hospitals directory, Reporting on breed improvement programmes, livestock, data collection and reporting.

4) Elections: This module provides the information services as registration of voters, Objection to voters list. Elected representative information, publication of electoral role, dissemination of electoral roles.

Some of the e-governance services are not effective, they need to be reconstructed. E-tendering system is having manual version also. For the bidding of tasks above 3 lakhs there is a facility of e-tendering but due to influence of the authorities there is direct by pass to this method. This method is skipped & it is given as per their bias influence. Therefore, Rules & Regulations should be strictly followed to avoid misuse of the e-governance services. Some Services are underutilized. Awareness of how to use them should be created some visio specification like boldness, blinking should be available on website. Populace they are unaware of these things.

In legacy system, corruption is indulged maximum. E-governance has improved delivery of services in terms of transparency, efficiency, consumption of time, corruption, distance travelled to avail these services. Multiple services are available at single point. People are also having communication facilities like mobile/landline phones in maximum, so m-governance may be more helpful. There is no doubt that government is eager to provide services through e-governance but some deficiencies remained in the system during implementation due to which public has to face harassment i.e. rough behavior of employees, multiple visits for a small work, corruption etc.

Major population is living below poverty line. Therefore, they cannot access services, as they need to spend some money. Following suggestions can be applicable:

- All government services should be covered under the e-governance umbrella at the earliest.
- Training should be given to the agents in presence of officers regarding filing of forms, submission of documents.
- To avail e-governance schemes, BPL families should be given subsidized options.
- Infrastructure should be created for rural, unreachable areas.

In some areas, most successful factors are in place. However, work & efforts has to be taken to remove gap that exists as a policy gaps mostly that relate to the interface between the Government and the private sector or between the Government agencies. The implementation gaps also exist in the softer factors like human challenges, capacity building, legal framework, awareness, common standards and specifications, security concerns, process re-engineering and reforms, completeness, depth and spread of service coordination within the Government for execution etc. We need to look at tackling and removing these gaps quickly to get the full advantage of ICT for good governance.

CONCLUSION

Current e-governance should consider needs of the local populace. Socio-economic impact of e-governance should be studied in advance and citizen's access to the e-services should be more and faster. Delivering online information is not enough, services and information should be accessible easily and fast. It should be available timely and readily. Effectiveness should be increased by considering key elements like ease of navigation, usability, accessibility and functionality.

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Editor-In-Chief
Pezzottaite Journals,
64/2, Trikuta Nagar, K. K. Gupta Lane, Jammu Tawi,
Jammu & Kashmir - 180012, India.
(Mobile): +91-09419216270 – 71
editorinchief@pezzottaitejournals.net
contactus@pezzottaitejournals.net

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ROLE OF INFORMATION TECHNOLOGY IN BANKING SECTOR: RECENT TRENDS AND CHALLENGES

Manmohan Tiwari[16] Dr. Devulapalli Raghava[17]

ABSTRACT

The Indian banking sector has been evolving since the year 1770 when the Bank of Hindustan was established in Calcutta and subsequently in its various avatars-when the General Bank of India, which came into existence in 1886 again in Calcutta; and then Bank of Calcutta (later Bank of Bengal - 1806), Bank of Bombay and Bank of Madras merging in 1921 to become the Imperial Bank of India which became the State Bank of India (SBI) in 1955. The third phase, which actually started changing the face of the Indian banking, was the post-1991 economic liberalization, which opened up the banking sector to increased competition and transformation offering better fare to customers.

The government and the regulator have taken several measures including mandatory opening of at least 25 per cent of new bank branches in unbanked rural areas, giving impetus to opening of new branches in tier III-VI cities. The mandatory and simplified Know Your Customer (KYC) detailing for opening small accounts have made things easier. These days there is lot of discussion going on about "settled science".

In banking, as in science, sometimes trends that appeared murky or uncertain suddenly become clear. There are at least four that took place in banking over the past 12 months. As 2015 gets under way, it is time to take stock of some of the biggest challenges facing the banking industry this year – including cyber-crime, cultural change, more stress testing, ever-increasing regulatory scrutiny and a troubled economic outlook in Asia, Europe and the Middle East, a large number of foreign players and big Indian corporates are awaiting government clearances for setting up new generation banks. Once there is clarity on this issue, things would change drastically.

KEYWORDS

KYC, Settled Science, Cyber Crime, Culture Change, Stress Testing, Regulatory Scrutiny, New Generation Banks etc.

INTRODUCTION

The Indian banking sector has been evolving since the year 1770 when the Bank of Hindustan was established in Calcutta and subsequently in its various avatars-when the General Bank of India, which came into existence in 1886 again in Calcutta; and then Bank of Calcutta (later Bank of Bengal - 1806), Bank of Bombay and Bank of Madras merging in 1921 to become the Imperial Bank of India which became the State Bank of India (SBI) in 1955.

The Indian banking system saw another phase of metamorphosis in 1969 when the then prime minister and finance minister, Indira Gandhi, nationalized all the leading commercial banks. The third phase, which actually started changing the face of the Indian banking, was the post-1991 economic liberalization, which opened up the banking sector to increased competition and transformation offering better fare to customers.

Banks have changed in their operations and moved towards universal banking along with the increased usage of technology and technology-based services offering alternate channels such as smart cards, Automatic Teller Machines (ATMs), usage of the internet, mobile and social banking. Banks have started deploying core banking, human resource management and enterprise risk management and process re-engineering etc., to improve on their performance and productivity. Majority of banks are insisting on cashless and paperless payment modes.

According to the largest professional organisations in the world, Klynveld Peat Marwick Goerdeler (KPMG) study, the research analysts says, as of Financial Year (FY) 2012, non-cash payments constituted 91 per cent in value terms as compared to 88 per cent in FY in 2010 and 48 per cent in terms of value from 35 per cent in FY 2010. A bank analyst says the payments made through cheques in total non-cash transaction too has come down to 52 per cent from 83 per cent in volume terms, and to nine per cent from 85 per cent in value terms during between FY 2006 and FY 2012.

[16]Assistant Professor, Department of MBA, Swarna Bharathi Institute of Science and Technology, (SBIT), Telangana, India, manus.tiwari@gmail.com
[17] Professor, Department of MBA, Swarna Bharathi Institute of Science & Technology (SBIT), Telangana, India, devrag2007@gmail.com

INDIAN BANKS GET TOP BILLING GLOBALLY

This has resulted in putting 20 Indian banks in their standing globally. In 2010, the UK-based Brand Finance's annual ranking put these banks in the top 500 banks by their brand value.

To see further growth in the banking sector regulators and policy makers have been emphasizing on financial inclusion to cover all sections of the society. Half of India's population does not bank. The regulators and policy makers have started taking a serious view of this. As a result, the top regulator the Reserve Bank of India (RBI) is now encouraging various entities including non-banking finance companies (NBFCs), co-operative banks, regional rural banks (RRBs), self-help entities, business correspondents in rural areas and microfinance companies that have now given exposure to non-banked rural areas. This shows that at some point of time banking services would reach rural areas as much as they do in urban and semi-urban areas.

The government and the regulator have taken several measures including mandatory opening of at least 25 per cent of new bank branches in unbanked rural areas, giving impetus to opening of new branches in tier III-VI cities. The mandatory and simplified Know Your Customer (KYC) detailing for opening small accounts have made things easier for banks to extend their reach.

Banks have also become finance providers for community services development. Post-liberalization India has also been attracting banks from various foreign lands. These now number 40 - from 28 in FY in 2008 and have a 7 per cent share of the total assets management. Over 20 Indian banks have now opened over 240 offices overseas.

THE TOP CHALLENGES FACING BANKING IT IN 2013

2012 was a year of growth, however minimal, for bank IT departments. After years of flat or declining budgets due to the fallout of the recession of 2008-09, banks by-and-large saw their IT budgets grow this past year.
As we enter 2013, IT faces a kind of transition in the banking industry. No longer off on its own, IT is playing a greater role in helping banks carry out marketing, sales and channel integration initiatives in financial services. Bank Systems & Technology asked a sampling of industry veterans and watchers what they thought will be IT's biggest challenge in 2013.

4 BANKING TRENDS THAT BECAME CLEAR IN 2014

You hear a lot about "settled science" these days. In banking, as in science, sometimes trends that appeared murky or uncertain suddenly become clear. There are at least four that took place in banking over the past 12 months.

Granular Security: Banking has long been making strides in the most visible security challenge: how to protect their information and transactions from unauthorized access. Now they are aggressively tackling the second: how to make sure that security measures do not prevent the right users from getting swift access to the right data. One-size-fits-all securities measures can drive up costs, frustrate employees and customers by slowing down their access, and prevent users from choosing their own risk variables. They are solving this challenge with granular security - ideally at the data-level - that enables full control over what data is available to which users.

Cloud Inevitability: Not to gainsay most bankers' mistrust of public cloud (a recent survey says 52% use no cloud at all because of security concerns), but there is a difference between this year and last. The debate is not *if* but *how* they will eventually embrace cloud – if not public cloud, then private cloud or hybrid cloud -- and which version for which function. In addition, there is a powerful side benefit of the debate: crystal clarity about what really qualifies as an asset that requires top-level protection and what does not and is therefore a cloud candidate. "No cloud" is being replaced by nuanced cloud strategies that address security, speed, and savings in incremental ways.

Payments Revolution*:* Thanks to well-publicized retail security breaches, faster payments, and Apple Pay, we seem to have reached the tipping point that will finally revolutionize US payments. Apply Pay is evidently delivering that most elusive of mobile payment requirements - a delightful customer experience. The progress of faster payment schemes in other countries (combined with Federal Reserve pressure) is fueling US efforts for near-instant payments. In addition, hacking headlines have pushed retailers into long-awaited chip and PIN, NFC, and wireless POS device rollouts. This is the kind of high-pressure environment in which exciting innovation - long awaited in US payments - often flourishes.

Guilt-Free Outsourcing: Just a decade or so ago, the public face of many bank outsourcing initiatives often wore an apologetic look, as though a decision to hire specialists in this or that function represented a bank management failure. Today banking, like most industries, forthrightly engages in almost constant assessment of potential outsourcing of non-core activities - business processes, IT, technology support, maintenance, and more. As outsourcing, providers improve the quality of their services and reporting; this trend will continue and serve its intended purposes: lowering bank costs, improving the functions involved, and permitting bank management to concentrate on banking.

As we prepare to move into a new year, it will be interesting to see not only how these trends continue to evolve, but also how they are further refined, defined, and ultimately embraced by the industry.

FIVE CHALLENGES FOR THE BANKING INDUSTRY IN 2015

As 2015 gets under way, it is time to take stock of some of the biggest challenges facing the banking industry this year – including cyber-crime, cultural change, more stress testing, ever-increasing regulatory scrutiny and a troubled economic outlook in Asia, Europe and the Middle East, *writes Aamir Khan***.**

Cyber-Crime: Facing the 'New Wave' of Criminal

It is now exceptional to read about a bank robbery where criminals have entered into a bank branch and physically taken money out of the building. The introduction of more effective security systems, such as bulletproof windows and barriers and closed-circuit television, means that only the foolhardy would risk trying to steal from a branch. Unfortunately, that does not mean that the banking sector is safe. On the contrary, the banking sector is facing a more serious threat where the perpetrators do not even need to physically enter the branch. The IT systems of the banks are now the focus of determined criminals who can transfer millions of pounds (or indeed any currency) within seconds to different accounts and move money across jurisdictions and borders with a few strokes of a keyboard. The full extent of the threat of cyber-crime is only emerging and is almost certainly going to hit the headlines in 2015. With IT systems of the larger banks under scrutiny for failures and inadequate controls, it is open to question whether the level of security and infrastructure will be sufficiently robust to withstand the challenge of cyber-crime.

Effecting Cultural Change

Tracey McDermott, head of enforcement at the Financial Conduct Authority, put it most succinctly: "The cultural change we are looking for is perhaps analogous to the shift in attitudes to drink-driving between my parents' generation and my own. For my parents and their peers, reluctance to have a drink and get behind the wheel was mainly because they were scared of being caught… For my generation, however, drinking and driving was presented as a moral issue. We were made to think about whether it was right or wrong by forcing us to focus on the impact it could have on others' lives." Whilst every chief executive of every bank has spoken of their desire to put customers first and change the culture within their organization, no one has explained how they intend to do this in practical terms. Will next year be the one where that change begins? It has to be if the banking sector is going to regain the trust of the public and their customers. My prediction is that technology will be the driver for this cultural change – with every sale and every trade checked for the misdemeanors of the recent past.

More Stress Testing

One of the conclusions reached after the banking crisis of 2008 is the notion that banks need to have greater capital reserves to avoid being too big to fail. Therefore, banks have undergone stress tests and required to hold ever-greater amounts of capital. This avoids dealing with the more thorny issue of the inter-relationships within the global banking community and how one bank can be intrinsically linked to a host of others. The weakest link may yet still be capable of threatening the stability of the world's banks. However, for the time being the major banks will need to comply with the current and future requirements of capital reserves. The full knock on effect of these requirements will become known in 2015 particularly if the predicted growth rates for the major economies of the world slow further.

Dealing with heightened regulatory scrutiny

With 2014 seeing record fines for LIBOR and FX rigging, the banking community would like to think it has seen the last of the scandals. Unfortunately, the one thing we can safely predict is that there will be more regulatory investigations and issues to surface in the next year as regulators across the globe continue to scrutinize the current and past behaviour of banks. It is likely that 2015 will see a number of individuals facing prosecutions for their part in the major scandals of 2014. Banks will have to continue to invest heavily in compliance and risk monitoring to ensure that they can deal with this increasing regulatory scrutiny.

Facing another Economic Downturn

As China faces more unrest in Hong Kong while its economy has been slowing down coupled with Russia's own economic woes, the outlook does not look promising. The Western economies are struggling to meet predicted growth rates and instability in the Middle East continues cause concern. Nor is it clear how long the historically low interest rates and fiscal engineering across the globe can be maintained. How will the banks fare with a new downturn in the global economy? Stress testing and capital requirements will complicate matters, as banks have to step up and play their part in helping individuals and companies. We can only hope that they are able and willing to do so.

FUTURE OUTLOOK

The banking system has to implement Basel III guidelines as per the directive of the RBI to make it a stronger sector. Some of the key measures of this include creating firm measures to make it foolproof of systemic risks, stringent timelines, ongoing improvement of quality and quantity of capital, liquidity risk management, value-based practices, solid mechanism, disclosures for total transparency and reduction of systemic risk in derivative and other money-related markets The RBI has stipulated a time frame of five years to implement Basel III norms. However, there are economy related hurdles as the government, which holds majority stake in the public sector banks (PSBs) copes with the high fiscal deficit. Once the government decides to dilute its shares in the PSBs and brings it down to around 51 per cent, the Indian banking sector would see a sea change. In addition, a large number of foreign players and big Indian corporates are awaiting government clearances for setting up new generation banks. Once there is clarity on this issue, things would change drastically.

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Pezzottaite Journals,
64/2, Trikuta Nagar, K. K. Gupta Lane, Jammu Tawi,
Jammu & Kashmir - 180012, India.
(Mobile): +91-09419216270 – 71

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WORK LIFE BALANCE OF WOMEN IN THE IT SECTOR: AN EMPIRICAL STUDY

Mahnoor Sahrash[18]

ABSTRACT

The concept of Work Life Balance has undergone a sea change over the years since its discovery. Organization structures are evolving at a rapid pace to keep up with the more than rapid change in environment. This change in environment has seen organizations becoming flatter, less complex and more challenging. Job descriptions have become more cryptic making employees more accountable. The IT sector in India is perhaps that one sector where this change is the most visible. Usually working as back end offices for Multinational Companies abroad, this sector works round the clock with some of the brightest software engineers. It is in this rigmarole of software development that the role of women has also undergone immense change and the female workforce today is more careers oriented than ever before. This research paper seeks to analyze the work- life balance of women employees in the IT sector. A sample size of 50 has been sought that answers questions pertaining to their work- life balance, in order to understand how this portion of employees is able to be productive both at work and at home. The respondents have been divided based on their marital status. A further demarcation has been made on whether they have children or not. The paper will further throw light on emerging concepts such as, the psychology of the worker and its effect on the female workforce. Key concepts have been dealt with in detail to understand their implications on HR policies, which in turn affect the workforce. Stress related issues have been addressed since they form an intrinsic part of Work Life Balance. Current issues related to stress have been touched upon to understand their relevance on female workforce productivity.

KEYWORDS

Work Life Balance, IT Sector, Quality of Work Life etc.

INTRODUCTION

As more and more women join the workforce, workplace policies have become even more complex to cater to a gender that hitherto was understood as having limited abilities.

Not only has the large influx of well- educated women created a far more competitive labour market, it has also given rise to a newer, fresher understanding of the concept of Work Life Balance.

WLB can be defined as, "A state of equilibrium in which the demands of both a person's job and personal life are equal."

Today's executives are continually challenged by the demands of full – timework and when the day is done at office; they carry most of their responsibilities and commitments home. The majority of women are working 40-45 hours per week and 53% are struggling to achieve work/life balance. Women reported that the lives where juggling act that included multiple responsibilities at work, heavy meeting schedules, business trips of the top of managing daily routine responsibilities of life and home. "Successfully achieving work life balance while ultimately creates a more satisfied workforce that contributes to productivity and success in the workplace. Employees can facilitate WLB with many schemes that can attract women employees and satisfy their needs. (**Sources** – Business Mandate: 13 Mar – Apr 2011)

REVIEW OF LITERATURE

The Super Woman Syndrome

This heavy- duty juggling has given rise to a mindset known as "Superwoman". What was earlier a term reserved for comic books, today finds itself a psychological reality.

The term derived a number of expressions, such as **superwoman syndrome**, **superwoman squeeze** (a pressure on a superwoman to perform well in her multiple roles), and **superwoman complex** (an expectation of a superwoman that she can and should do everything). It was first coined by Marjorie Hansen Shaevitz.

[18] Assistant Professor, Department of Management Studies, St. Francis College for Women, Telangana, India, mahnoor.ameen@gmail.com

The notion of "superwoman" differs from that of "career woman" in that the latter one commonly includes sacrifice of the family life in favour of career, while a superwoman strives to excel in both.

Because of the multiple roles that a woman is expected to play, she finds herself dealing with a lot more stress than her male colleagues. It is in this context and cultural set up that the IT industry in India needs to understand the cares and concerns of their women employees.

Various studies have shown that organisations do recognize the presence of stress in their employees and do take measures to manage it effectively. The big question however remains is, how effective these measures actually are.

QUALITY OF WORK LIFE- THE PRECURSOR TO WORK LIFE BALANCE

Various authors and researchers have proposed models of quality of working life, which include a wide range of factors. Selected models are reviewed below:

Hackman and Oldham (1976) drew attention to what they described as psychological growth needs as relevant to the consideration of Quality of working life. Several such needs were identified: a) Skill variety, b) Task Identity, c) Task significance, d) Autonomy, and e) Feedback.

They suggested that such needs have to be addressed if employees are to experience high quality of working life.

In contrast to such theory based models, Taylor (1979) more pragmatically identified the essential components of quality of working life as basic extrinsic job factors of wages, hours and working conditions, and the intrinsic job notions of the nature of the work itself. He suggested that a number of other aspects could be added, including: a) Individual power, b) Employee participation in the management, c) Fairness and equity, d) Social support, e) Use of one's present skills, f) Self-development, g) A meaningful future at work, h) Social relevance of the work or product, and i) Effect on extra work activities.

Taylor suggested that relevant quality of working life concepts might vary according to organisations and employee group.

Warr and colleagues (1979), in an investigation of quality of working life, considered a range of apparently relevant factors, including: a) Work involvement, b) Intrinsic job motivation, c) Higher order need strength, d) Perceived intrinsic job characteristics, e) Job satisfaction, f) Life satisfaction, g) Happiness, and h) Anxiety.

They discussed a range of correlations derived from their work, such as those between work involvement and job satisfaction, intrinsic job motivation and job satisfaction, and perceived intrinsic job characteristics and job satisfaction. In particular, Warr et al. found evidence for a moderate association between total job satisfaction and total life satisfaction and happiness, with a less strong, but significant association with self-rated anxiety.

Thus, whilst some authors have emphasized the workplace aspects in quality of working life, others have identified the relevance of personality factors, psychological wellbeing, and broader concepts of happiness and life satisfaction.

Factors more obviously and directly affecting work has, however, served as the focus of attention, as researchers have tried to tease out the important influences on quality of working life in the workplace.

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: a) Safe work environment, b) Equitable wages, c) Equal employment opportunities, and d) Opportunities for advancement.

Baba and Jamal (1991) listed what they described as typical indicators of quality of working life, including: a) Job satisfaction, b) Job involvement, c) Work role ambiguity, d) Work role conflict, e) Work role overload, f) Job stress, g) Organizational commitment, and h) Turn-over intentions.

Baba and Jamal also explored reutilization of job content, suggesting that this facet should be investigated as part of the concept of quality of working life.

Some have argued that quality of working life might vary between groups of workers. For example, Ellis and Pompli (2002) identified a number of factors contributing to job dissatisfaction and quality of working life in nurses, including: a) Poor working environments, b) Resident aggression, c) Workload, inability to deliver quality of care preferred, d) Balance of work and family, e) Shiftwork, f) Lack of involvement in decision making, g) Professional isolation, h) Lack of recognition, i) Poor relationships with supervisor/peers, j) Role conflict, and k) Lack of opportunity to learn new skills.

Sirgy et al. (2001) suggested that the key factors in quality of working life are: a) Need satisfaction based on job requirements, b) Need satisfaction based on work environment, c) Need satisfaction based on supervisory behaviour, d) Need satisfaction based on ancillary programmes, and e) Organizational commitment.

They defined quality of working life as satisfaction of these key needs through resources, activities, and outcomes stemming from participation in the workplace. Needs as defined by the psychologist, Abraham Maslow, were seen as relevant in underpinning this model, covering health & safety, economic and family, social, esteem, actualization, knowledge and aesthetics, although the relevance of non-work aspects is play down as attention is focused on quality of work life rather than the broader concept of quality of life. These attempts at defining quality of working life have included theoretical approaches, lists of identified factors, correlational analyses, with opinions varying as to whether such definitions and explanations can be both global, or need to be specific to each work setting.

Bearfield, (2003) used 16 questions to examine quality of working life, and distinguished between causes of dissatisfaction in professionals, intermediate clerical, sales and service workers, indicating that different concerns might have to be addressed for different groups.

The distinction made between job satisfaction and dissatisfaction in quality of working life reflects the influence of job satisfaction theories. Herzberg at al., (1959) used "Hygiene factors" and "Motivator factors" to distinguish between the separate causes of job satisfaction and job dissatisfaction. It has been suggested that Motivator factors are intrinsic to the job, that is; job content, the work itself, responsibility and advancement. The Hygiene factors or dissatisfaction-avoidance factors include aspects of the job environment such as interpersonal relationships, salary, working conditions and security. Of these latter, the most common cause of job dissatisfaction can be company policy and administration, whilst achievement can be the greatest source of extreme satisfaction.

An individual's experience of satisfaction or dissatisfaction can be substantially rooted in their perception, rather than simply reflecting their "real world". Further, an individual's perception can be affected by relative comparison – am I paid as much as that person - and comparisons of internalized ideals, aspirations, and expectations, for example, with the individual's current state (Lawler and Porter, 1966).

In summary, where it has been considered, authors differ in their views on the core constituents of Quality of Working Life (e.g. Sirgy, Efraty, Siegel & Lee, 2001)and Warr, Cook & Wall, 1979).

It has generally been agreed however that Quality of Working Life is conceptually similar to well-being of employees but differs from job satisfaction, which solely represents the workplace domain (Lawler, 1982).

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 domains (Loscocco & Roschelle, 1991) have also been identified as factors that should conceptually be included in Quality of Working Life.

WORK LIFE INTERFACE- THE LATEST DIMENSION

Work-life interface is the intersection of work and private life. Edwards and Rothbard (2001) describe in their paper six mechanisms, which link both work and family domain. The perspective on the work-family interface was mainly determined by work- family conflict (Greenhaus & Beutell, 1985), until recently, also processes of **work- family enrichment** drew attention of many scholars. Public interest with respect to the work-life interface focused on work- life balance. Greenhaus and Allen (2011) proposed a new definition of work-life balance as they equate work-life balance with the harmonious arrangement of work and family so that "effectiveness and satisfaction in these roles are consistent with life values" (p. 175).

Linking Mechanisms at the Work-Life Interface: Several mechanisms link the work and private domain. Most of the studies focused on six approaches to explain the interplay between work role and family role: spillover, compensation, segmentation, resource drain, congruence, and work-family conflict (Edwards & Rothbard, 2000).

Spillover: This approach focuses on the transfer of affects, values, skills, and overt behaviors from one domain have on the other domain. Furthermore, also experiences as fatigue can spill over. Positive spillover refers to situations in which, for example, energy derived from one-domain transfers to another. On the contrary, in the process of negative spillover negative effects are carried from one domain to another. For example, dissatisfaction in the work domain leads to increased satisfaction dissatisfaction with life.

***Compensation*:** It is a bidirectional mechanism stating that the relationship between work and non-work domain is one in which one domain may compensate for what is missing in the other. Thus, domains are likely to be interrelated in a counterbalancing manner. For example, individuals unsatisfied with family life may try to enhance performance at work.

***Segmentation*:** Domains might also be separated due to segmentation. Accordingly, each domain operates independently. Therefore, segmentation is the antithesis of spillover theory in which it is assumed that one can actively compartmentalize competing role demands.

***Resource Drain*:** Resource drain describes the process of finite resources such as time and energy being taken away in one domain to be spent in another.

Congruence: Congruence is a theory that states although a positive or negative relationship may be found between work and family, the relationship is spurious because it is caused by a third common factor, like personality.

***Work-Family Conflict*:** WFC is also understood as a linking mechanism between work and family. As more and more women juggle work and family life, there is bound to be a conflict of interests as far as dividing time is concerned.

WORK LIFE INTEGRATION- THE NEXT BIG CHALLENGE

An emerging concept in academic circles is "Work Life Integration", an employee- driven approach to designing jobs in order to bring about greater flexibility to job design from the employee's point of view.

WORKPLACE STRESS

Researches identify 5 categories of workplace stress:

Categories of Workplace Stress

There are a total of 5 categories associated with occupational stress:

- Factors unique to the job
- Role in the organization
- Career development
- Interpersonal work relationships
- Organizational Structure/climate

Steven L. Sauter, chief of the Applied Psychology and Ergonomics Branch of the National Institute for Occupational Safety and Health in Cincinnati, Ohio, states that recent studies show that "the workplace has become the single greatest source of stress". Michael Feuerstein, professor of clinical psychology at the Uniformed Services University of the Health Sciences at Bethesda Naval Hospital states, "We're seeing a greater increase in work-related neuroskeletal disorders from a combination of stress and ergonomic stressors".

STRESS MANAGEMENT- THE TRIED AND THE TESTED

A few techniques identified by organisations to manage stress and to bring about work life balance are: a) Part time working, b) Flexitime, c) Compressed work week, d) Annual hours, e) Term time working, f) Job sharing, g) Self rostering, h) Shift swapping, i) Unpaid leave, j) Sabbaticals, and k) Working from home. (Thornthwaite and Sheldon, 2004, Torrinton, et al, 2005), (Strachan and Burgess, 1998).

EMPIRICAL ANALYSIS

Choice of Statistical Tool- Chi Square Test

A questionnaire was administered to a sample of 50 women, identified using the stratified random sampling method. The Chi Square technique was used to analyze the data thus collected. The following hypotheses have been formulated:

H_0: There is no significant difference between the Work Life balance of married and unmarried women in the IT Sector.
H_1: There is significant difference between the Work Life balance of married and unmarried women in the IT Sector.

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Table-1: Contingency Table

Categories	Married-With Children	Married-Without Children	Unmarried
Number of Women (f0)	7	10	33
Fe	16.7	16.7	16.7
(f0-fe)	9.7	6.7	16.3
(f0-fe)2	94.1	44.9	265.7
(f0-fe)2/ fe	5.635	2.689	15.910

Sources: Authors Compilation

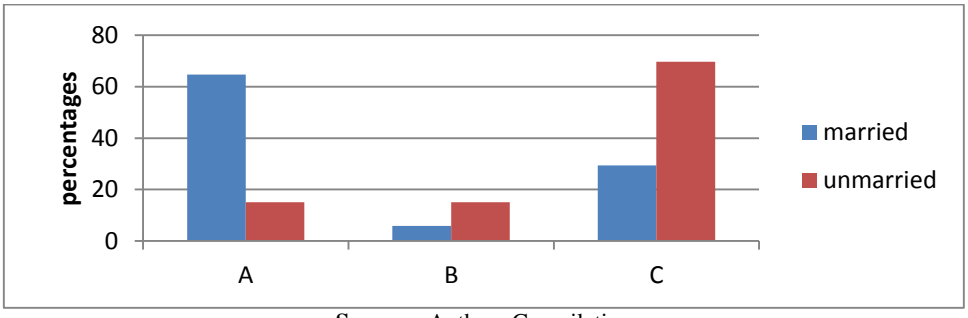
Degrees of Freedom- (3-1) (2-1); X^2= 24.234; X^2 at 0.05 significance= 9.210

The contingency table shows that at 2 degrees of freedom, from the table of the Chi Square distribution, at 5% level of significance, the critical value of Chi Square= 5.991. In addition, at 1% level of significance, the critical value of Chi Square= 9.210. However, the computed Chi Square value is 24.234, which are greater than the critical values, hence the null hypothesis is rejected and the alternative hypothesis is accepted. The empirical analysis suggests that there is a significant difference between the work life of balance of married and unmarried women in the IT sector.

The following questionnaire was administered to 50 women working in the IT Sector. The demarcation has been made on marital status. The reason for such a demarcation is because, in India, marriage for most workers tends to be a game changer of sorts as far as their work and personal commitments are concerned.

Number of Working Hours (Between 4- 8 hours, 8 hours, and above 8 hours)

Graph-1

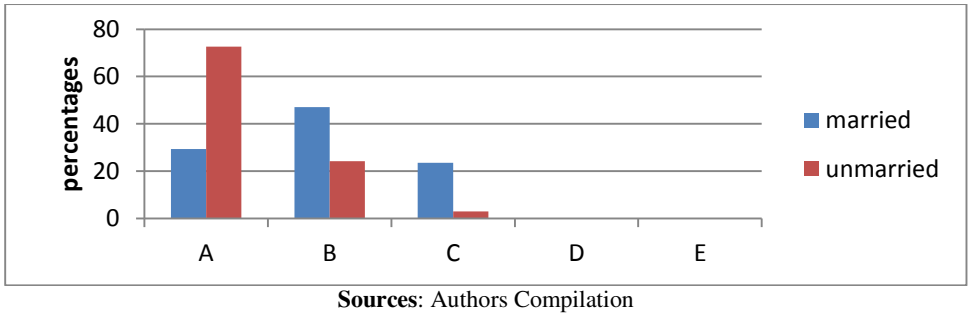


Sources: Authors Compilation

Most unmarried women find themselves working more than the stipulated 8 hours in a day. The probable reason could be that they find themselves dedicating more time at the work place since they are assumed as not having any pressing requirements at home. On the other hand, it is seen that married women tend to be working in the stipulated 4- 8 hours bracket.

Income Bracket (15,000-30,000 per month; 31,000-50,000 per month; 51,000 100,000 per month; 1,00,000-2,00,000 per month; Above 2,00,000).

Graph-2



Sources: Authors Compilation

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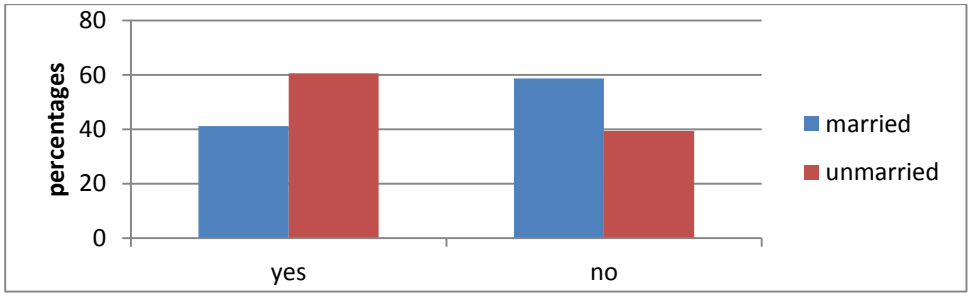
The respondents' profile includes mostly the employees in the Rs. 15,000- Rs. 20,000 income bracket.

Do you think your salary is commensurate with the work you do? (Yes, No)

Graph-3

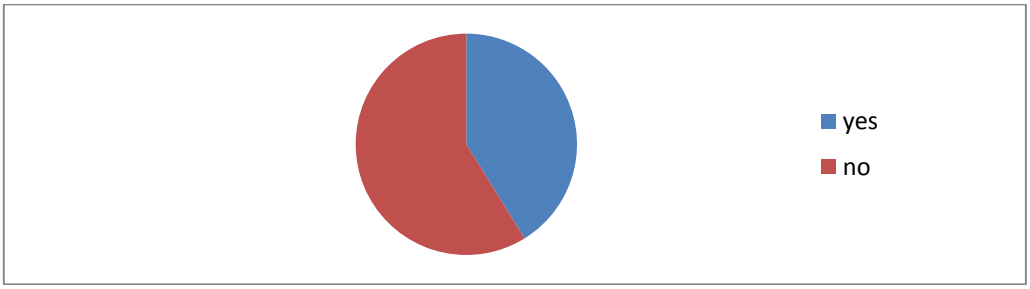


Sources: Authors Compilation

The opinion regarding salary tends to be evenly divided over whether it is commensurate with the job they do, making it a little difficult to assess how the current respondent profile is disposed as far as this issue is concerned. Later questions have tried to bring out the issue of balance on more qualitative aspects.

Do you have children? (Yes, No)

Graph-4

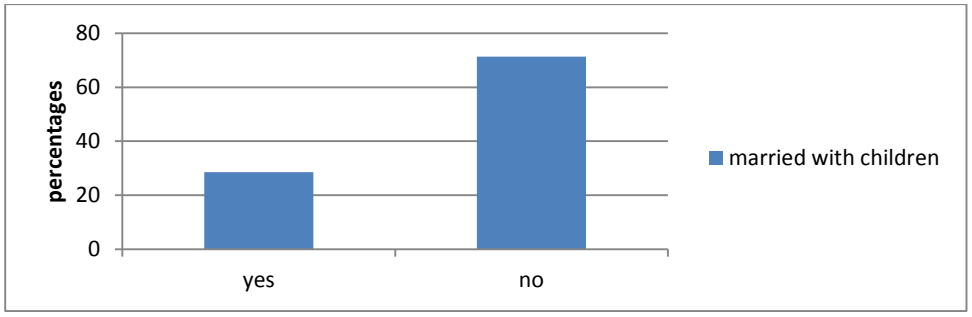


Sources: Authors Compilation

If 'No,' please skip to question 11. If 'Yes', please answer the following questions;

Does your company provide child-care facilities? (Yes, No)

Graph-5



Sources: Authors Compilation

In case of married women with children, it is seen that most IT companies do not provide childcare facilities, thus forcing women to make alternative arrangements.

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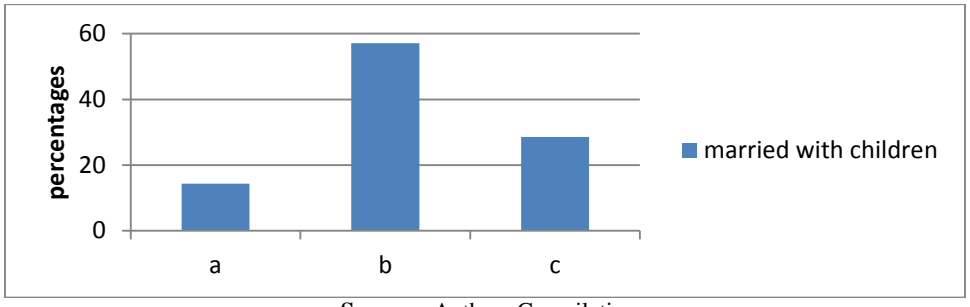
If 'No,' how are your child / children taken care of? (Day Care Centre, Elders at Home, Domestic Help at Home)

Graph-6

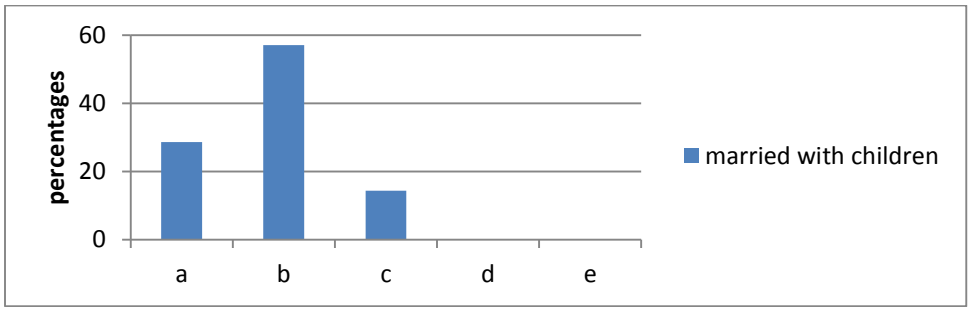


Sources: Authors Compilation

Because of a thriving traditional family system, most women are blessed with help at home in the form of elders. The other modern version of help at home is available in the form domestic help. A few respondents however have taken to day care centers.

Are you able to help your child/children in his/ her school related activities at home? (Always, Almost Always, Sometimes, Rarely, Never)

Graph-7

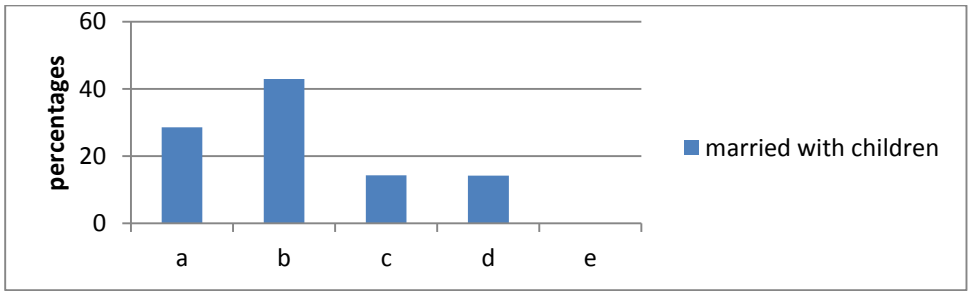


Sources: Authors Compilation

It is a bit of a wonder that working women are able to help their child with activities of his/ her interest. This might be possible because of the limited time that they put in at the office.

How regular are you in interacting with your child's teacher / principal? (Once in 15 days, once a month, only when required, once a year, Never)

Graph-8



Sources: Authors Compilation

Interaction with the teacher of the child is an important part of parental duties and here it was found that most women were able to strike that balance between work responsibility and parental responsibility.

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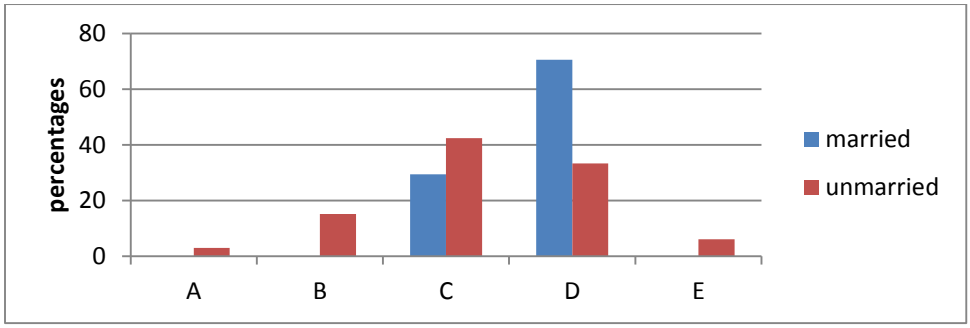
Are you able to pursue activities of your interest after work hours? (Always, Almost Always, Sometimes, Rarely, Never)

Graph-9

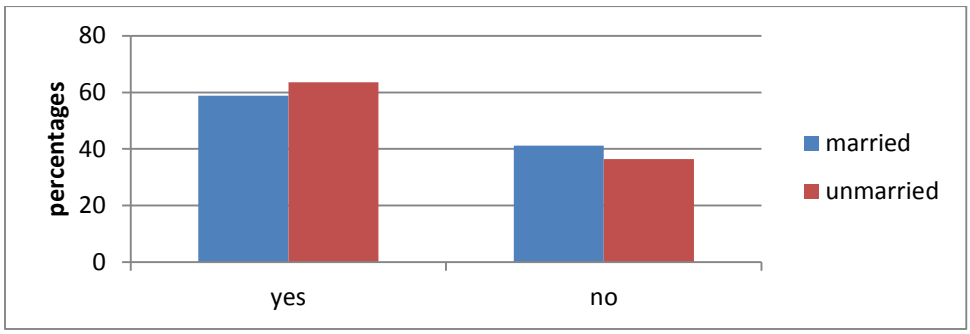


Sources: Authors Compilation

The response to this question falls in the neutral category with respondents finding it easy to pursue interests outside work. However, a small portion of respondents finds themselves not being able to do anything other than work.

Does your company offer flexible work hours? (Yes, No)

Graph-10

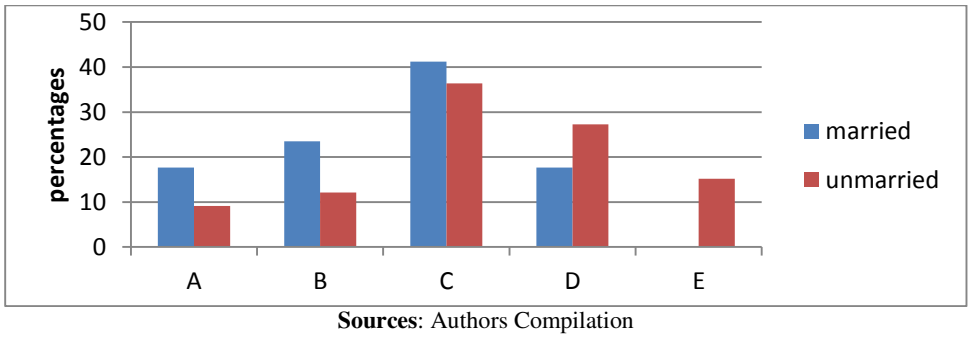


Sources: Authors Compilation

The possibility of being able to pursue interests outside work can be attribute to the fact that most IT companies are able to provide their women workforce with flexible work hours, because of which a balance between work and life can be brought about.

Are you technologically connected to the office even after work hours? (Always, Almost Always, Sometimes, Rarely, Never)

Graph-11



Sources: Authors Compilation

Very interestingly, although the response can be averaged out, it is seen that only unmarried women tend to take the extreme of never being connected to work after office hours. This may be due to more numbers of hours they work that their married counterparts.

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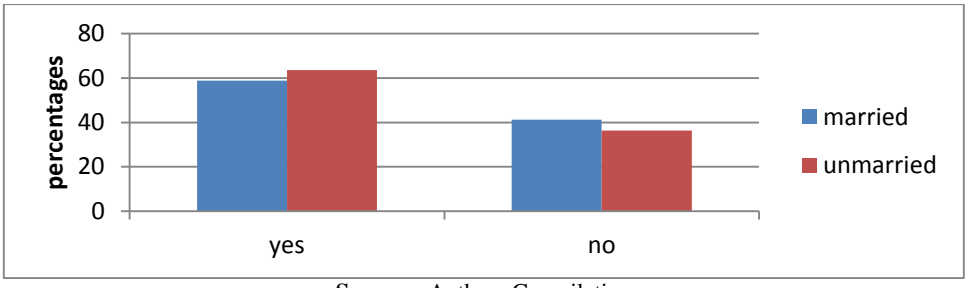
Do you think the leave facilities offered by your company are adequate? (Yes, No)

Graph-12

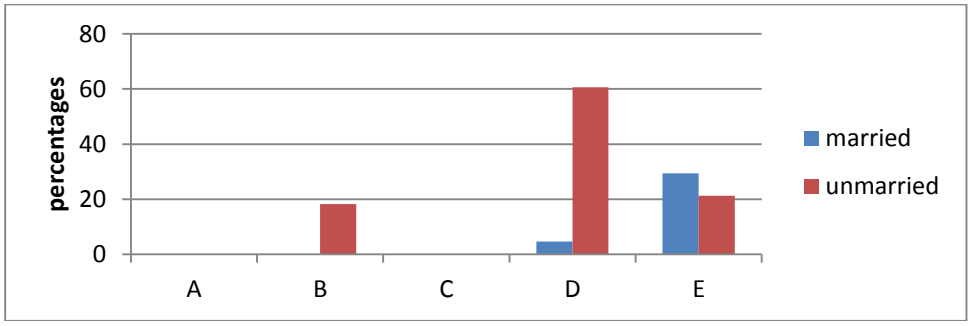


Sources: Authors Compilation

Not only does the IT sector provide flexible work hours, it seems to have won the favour of the female workforce as far leave facilities are concerned.

Do you find yourself working on holidays? (Always, Almost Always, Sometimes, Rarely, Never)

Graph-13

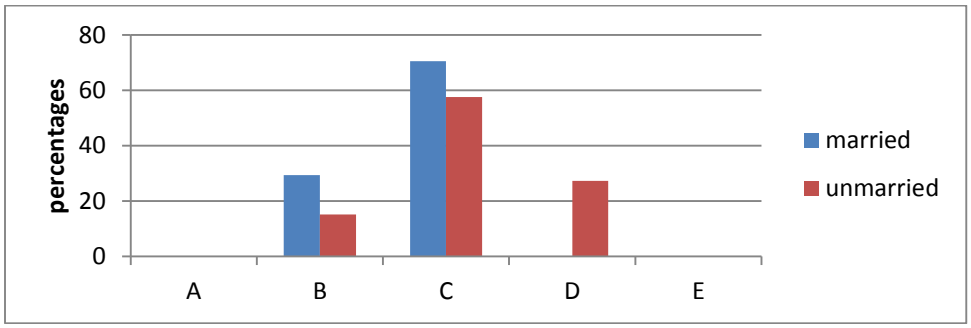


Sources: Authors Compilation

In keeping with a favourable leave system, it is found that the female workforce is able to successfully disconnect from work while on a holiday, thus making it easy for them to bring about a balance in work and family life.

How often do you find yourself irritated? (Always, Almost Always, Sometimes, Rarely, Never)

Graph-14



Sources: Authors Compilation

Irritability arising out of the stress that the IT sector is famous for, is an indicator of how well the balance between work and life is being maintained. However, the respondents have taken an average view of their irritability, because of which the following factors need close consideration.

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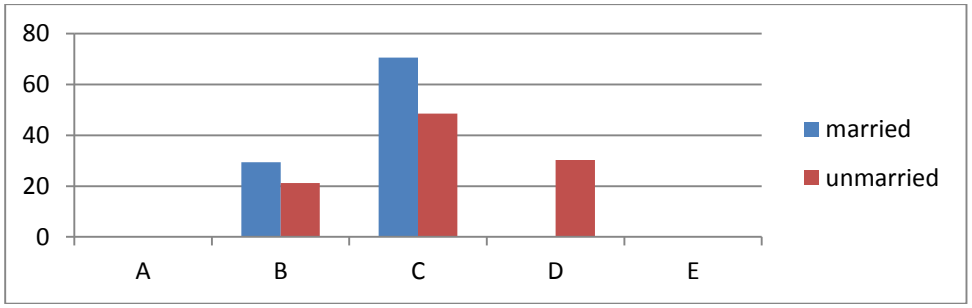
How often do you find yourself losing your temper? (Always, Almost Always, Sometimes, Rarely, Never)

Graph-15



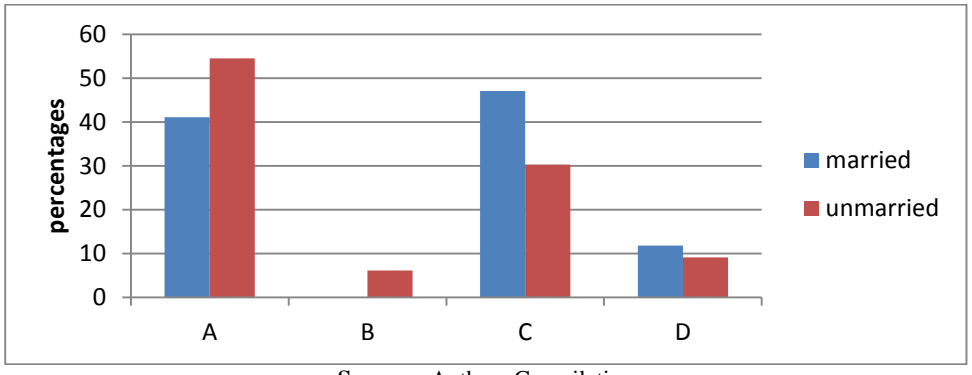
Sources: Authors Compilation

Stress is also a major cause of frequent angry outbursts and is an indicator of how well the respondent has been able to balance her priorities. Interestingly, where the respondents have taken an average view of their frequency of anger outbursts, only unmarried respondents seem to be more relaxed even when they are found to be putting in more hours of work.

One primary reason could be that the married woman finds herself with far more responsibilities that await her once she is done with work, whereas on the other hand, an unmarried working woman will find that she can be much more dedicated to her work, in terms of hours that she puts in. In addition, since the unmarried working woman has no pressing responsibilities that await her, she finds that she is able to relax better and balance out her work life and personal life better.

If there were one thing you could change about your work life, what would it be? (Work Hours, Number of Breaks, Number of Leaves, Other (Please specify)

Graph-16



Sources: Authors Compilation

Respondents have mostly suggested changes in work hours and number of leaves at their work place, with a few specifying that number of breaks should be altered. The use of Chi Square as tool to draw an analysis led me to the conclusion that there is definitely a significant difference in the way married and unmarried women look to balance their work life and their family life, with the presence of children also acting as a game changer. Though there are companies such as Google that have tried to make the workplace more female- friendly, the fact remains that, in the Indian context, the working woman still has a long way to go to perfect her balancing act.

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REVIEW OF LITERATURE OF IMAGE PROCESSING FILTERS & FUNDAMENTAL STEPS

Nitin Pandey[19] Dr. M. K. Pandey[20]

ABSTRACT

Within seconds of entering the world, those who are blessed with the gift of sight start acquiring images. Human beings are primarily visual creatures who depend solely on sense of vision. Therefore, vision allows humans to perceive and understand the world surrounding them in a better manner. Hence, processing visual information by computer has been drawing a very significant attention of the researchers over the last few decades. In this paper, we will have the review of various filters of image processing and fundamental steps of image processing which have been developed.

KEYWORDS

Image Intensity, Illumination, Color Image, Filter, Image Resolution, Image Enhancement etc.

INTRODUCTION

Image Processing has been developed in response to solve three major problems concerned with pictures. First, one is Picture digitization and coding to facilitate transmission, printing and storage of pictures. Next one is Picture enhancement and restoration in order for example, to interpret more easily pictures of the surface of other planets taken by various probes. Last one is Picture segmentation and description as an early stage in machine vision.

LITERATURE REVIEW OF IMAGE PROCESSING FILTERS

The field of Image Processing or Filtering continues, as it has since the early 1970s, on a path of dynamic growth in terms of popular and scientific interest and number of commercial applications. In 1994, Yiu-Fai Wong told Image enhancement is useful when the details in an image are lost due to various reasons. It is common to subtract a mask from a given image to enhance the details. The trick is how to obtain a good mask. They described how an edge-preserving filter could be used to generate a mask, which is smooth over areas with fine details, yet preserving most of the edges [10]. The classic bilateral filter by Tomasi and Manduchi in 1998 is a weighted Gaussian filter that makes use of an intensity component in addition to the spatial component to reweight the Gaussian filter. The joint bilateral filter extends this idea by computing the filter weights based on additional input images and not on the color image itself. Therefore, it directly correlates to the previously mentioned global illumination filtering methods, where this buffer consists usually of combinations of the normal, depth and/or noisy color image. Even though various methods for accelerating the original bilateral filter exist, it does not seem to be feasible to directly speedup the joint bilateral filtering [9].

In 1999 Bakker, van Vliet, Verbeek describe a new strategy for combining orientation adaptive filtering and edge preserving filtering. The filter adapts to the local orientation and avoids filtering across borders. The local orientation for steering the filter will be estimated in a fixed sized window, which never contains two orientation fields. This can be achieved using generalized Kuwahara filtering. This filter selects from a set of fixed sized windows that contain the current pixel, the orientation of the window with the highest anisotropy. They compare out filter strategy with a multi-scale approach [8].

Michael Elad in 2002 proposed such a bridge, and showed that the bilateral filter also emerges from the Bayesian approach, as a single iteration of some well-known iterative algorithm. Based on this observation, he also showed how the bilateral filter could be improved and extended to treat more general reconstruction problems [6].

Segovia in 2006 performed a Gaussian blur on the incident illumination by detected discontinuities in the geometry for deferred shading. Their idea was to detect interleaved sample patterns and computer them using non-interleaved deferred shading process [17]. In 2007 Agaian suggested that the common no transform-based enhancement technique is global histogram equalization, which attempts to alter the spatial histogram of an image to closely match a uniform distribution. He proposed three methods of image enhancement first one is logarithmic transform histogram matching, second one is logarithmic transform histogram shifting, and logarithmic transform histogram shaping using Gaussian distributions. They are based on the properties of the logarithmic transform domain histogram and histogram equalization. The have also shown that the relationship between stimulus and perception is logarithmic and afford a marriage between enhancement qualities and computational efficiency [22].

[19]Assistant Professor, Faculty of Computer Science and Application, Amrapali Institute, Uttarakhand, India, pnnitin@gmail.com
[20]Director, Faculty of Computer Science and Application, Amrpali Institute, Uttarakhand, India, mkpbsb@yahoo.com

Laine in 2007 use a geometry-aware box filter for n × m pixel regions. Q. Yang, K.-H. Tan and N. Ahuja (2009) proposed a new bilateral filtering algorithm with computational complexity invariant to filter kernel size, called O (1) or constant time in the literature. In the paper, it has been shown that bilateral filter can be decomposed into a number of constant time spatial filters; they also propose a new class of constant time bilateral filters that can have arbitrary spatial and arbitrary range kernels.

Durand (2009) proposed a new signal-processing analysis of the bilateral filter, which complements the recent studies that analyzed it as a PDE or as a robust statistical estimator. It expresses the filter in a higher-dimensional space where the signal intensity is added to the original domain dimensions. They develop a novel bilateral filtering acceleration using down sampling in space and intensity. This affords a principled expression of accuracy in terms of bandwidth and sampling. The bilateral filter can be expressed as linear convolutions in this augmented space followed by two simple nonlinearities.

Xing-Fang Huang; Jiang-She Zhang (2009) proposed a novel local adaptive noise reduction operator based on a location shifting procedure. The proposed method aims at removing noise from images while preserving features. Performance of the method is illustrated by simulation and real images, which show an encouraging improvement compared with other methods. The other advantages of the proposed method are its non- iterative feature, explicit formulation, and, consequently, its numerical simplicity [3].

Dammertz (2010) proposed to approximate the cross bilateral filter by an edge-avoiding À-Trous wavelet transform. While being very fast, the approximation of the cross bilateral filter can result in visually disturbing ringing artifacts. As we will show all approaches based on the idea of the cross-bilateral filter may suffer from small outliers for which not enough samples are available for sufficient filtering results [2].

Mithun Das Gupta, Jing Xiao (2010) proposed a new filter called Bi-affinity filter for color images. This filter is similar in structure to the bilateral filter. The proposed filter is based on the color line model, which does not require the explicit conversion of the RGB values to perception based spaces such as CIELAB. The bi-affinity filter measures the affinity of a pixel to a small neighborhood around it and weighs the filter term accordingly. We show that this method can perform at par with standard bilateral filters for color images. The small edges of the image are usually enhanced leading to a very easy image enhancement filter [21].

Arun R, Madhu S. Nair, R. Vrinthavani and Rao Tatavarti (2011) told that the Adaptive histogram equalization produced a good result in terms of neighborhood pixels clarity which ensures control over the contrast of the image using complementing the transform domain technique with appropriate spatial domain techniques to eliminate the limitations of the conventional transform domain technique, thus improving the image enhancement process [20].

Pablo Bauszat, Martin Eisemann, Marcus Magnor (2011) present a novel path tracing pipeline based on edge aware filtering method for the indirect illumination which produces visually more pleasing results without noticeable outliers. There idea is not to only filter the noisy path traced images but also to use it as a guidance to filter a second image composed from characteristic scene attributes that do not contain noise by default. They show that our approach better approximates the Monte Carlo integral compared to previous methods [13].

D. Prasanthi proposed a novel explicit image filter, which is derived from a local linear model, this filter compute the filtering output by considering the content of guidance image, which can be the input image or another different image. This guided filter can be used as an edge preserving smoothening operator like the popular bilateral filter but it has better behavior near edges. This guided filter can transfer the structures of the guidance image to the filtering output, enabling new filtering applications like de-hazing and guided feathering. In addition, here experiment shows that the guided filter is effective and efficient in a great variety of computer vision, computer graphics applications, including edge aware smoothing, detail enhancement, HDR compression, image matting, de-hazing, and join up sampling. It is a work which accelerating the bilateral filter [12].

Yuxiang Yang, Zengfu Weng (2012) proposed a novel method for solving range image super resolution problem. Given a low resolution as an input, it recovers a high-resolution range image using a high-resolution camera image of the same scene. It solves range image super resolution problem by combining the advantages of guided image filter and reconstruction constrain. Here guided image filter are applied to integrate the high-resolution image into the range data and generate an initial high-resolution range image. In addition, experiment demonstrates that our approach can get excellent high-resolution range image in terms of spatial resolution and depth precision [11].

Jiahao Pang, Oscar C. Au and Zheng Guo propose a scheme, which de-haze single image, and it is based on haze removal on dark channel. The main benefit of using this filter to refine the transmission lies in its low computational cost; it also generates comparable dehazed result [14].

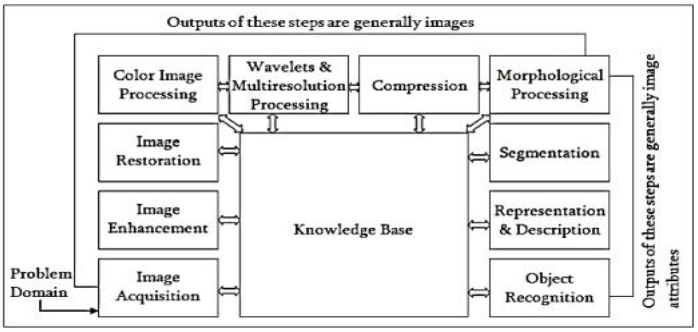
Zhi-Feng Xie, Rynson W.H. Lau, Yan Gui (2012) propose a new sharpness characteristic effectively with affinity-based gradient transformation, and gradient-domain image reconstruction. They also propose and evaluation method based on sharpness distribution for analyzing all sharpness enhancement approaches in respect of sharpness characteristics. They develop a new pipeline with three committed steps: Sharpness saliency representation, affinity-based gradient transformation and gradient domain image reconstruction [15].

Kaiming He, Jain Sun, Xiaoou Tang (2013) propose an image filter called guided filter that computes the filtering output by considering the content of a guidance image, it can be used as an edge-preserving smoothing operator like the bilateral filter, it has been also shown that its behavior is good near edges and It can transfer the structures of the guidance image to the filtering output, enabling new filtering applications like de-hazing and guided eathering [16].

FUNDAMENTAL STAPS IN IMAGE PROCESSING

Image preprocessing is an early stage activity in image processing that is used to prepare an input image for analysis to increase its usefulness. There are some fundamental steps or image processing constructs but as they are fundamental, all these steps may have sub-steps. The fundamental steps are described below with a neat diagram.

Figure-1: Fundamental Steps in Image Processing

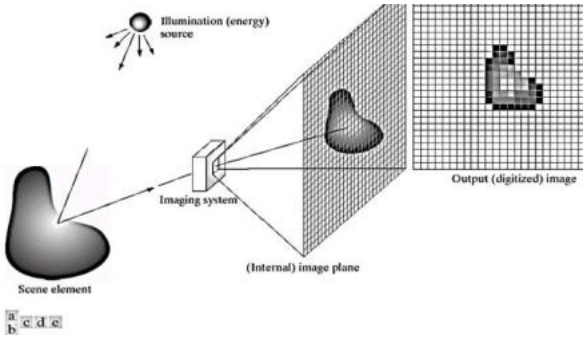


Sources: Chapter: 1, Figure: 1.23, Page: 26 of Digital Image Processing; Rafael C. Gonzalez, Richard E. Woods, Pearson, Third Edition.

Image Acquisition

In order to process any image the image must be acquired to perform the necessary processing. Images are generated by the combination of an illumination source and the reflection or absorption of energy from that source by the elements of the scene being imaged. The illumination may originate from a source of electromagnetic energy such as radar, infrared, or X-Ray image. Depending on the nature of the source, the illumination energy is either reflected or transmitted through the object of interest. Special sensors are available for scanning the images. It is illustrated using following figure.

Figure-2: An Example of Digital Image Acquisition Process



a b c d e

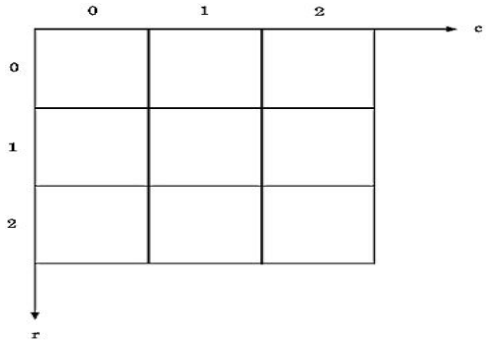
Note: (a). Energy ("illumination"), (b) An element of scene, (c) Imaging System, (d) Projection of the scene onto the image plane, (e) Digitized Image.
Sources: Chapter: 2, Figure: 2.15, Page: 51 of Digital Image Processing; Rafael C. Gonzalez, Richard E. Woods, Pearson, Third Edition.

The output of most sensors is a continuous voltage waveform whose amplitude and spatial behavior are relate to the physical phenomenon being sensed. To create digital image, we need to convert the continuous sensed data into digital form. This involves two processed: sampling and quantization [24].

Basics of Sampling and Quantization

An image consists of pixels that have a rectangular shape. Each pixel can be represented on a coordinate system as a function f (x, y) where x and y representing the column and the row of the pixels within the image [25].

Figure-3: Pixel Representation on Coordinates



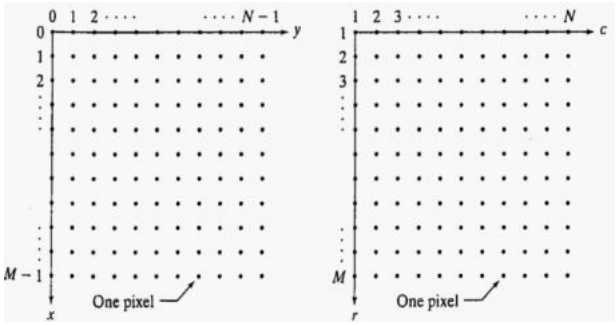
Sources: Taken from the Math Works, Inc. [online]. Pixel representation; 1984-2011
Url: http://www.mathworks.com/help/toolbox/images/brcu_al-1.html, Accessed January 2011.

In figure-3, the pixel coordinate shows the f (r, c) are similar to f(x, y) and they show the position of the coordinates. c and r represent the x and y-coordinates respectively. A continuous image can be represented as a function f (x, y) and amplitude. The digitization of the coordinates is called sampling, while the digitization of the amplitude values is called quantization [26].

Digital Image Representation

As discussed, a continuous image is sampled and quantized in order to be digitized. The sampling and quantization are represented in a form of matrix. The matrix representations can be M x N where M represents the x-coordinates while N the y-coordinates. [27]

Figure-4: Digital Image Representations



Sources: Rafael C. Gonzalez, Richard E. Woods, Steven L. Eddins Digital
Digital image processing using MATLAB: Coordinate Conventions

As it can be seen in figure 2 the f (x, y) = (0, 0) is taken as f (r, c) = (1, 1). The M and N representing the rows and columns respectively. Therefore, for matrix representation the following can be used:

$$\mathbf{F}=\begin{bmatrix} F(1,1) & F(1,2)\cdots & F(1,N) \\ \vdots & \ddots & \vdots \\ F(M,1) & F(M,2)\cdots & F(M,N) \end{bmatrix} \quad (1)$$

Where the f (1, 1) represents the f(x, y) = (0, 0) and so on [26]

Image representation means changing it from 3-dimension to 2-dimension image space. The space density and the number of pixels in the image [28] affect these representations.

Image Enhancement

Image enhancement is a process involving changing the pixels' intensity of the input image, so that the output image should subjectively looks better [26]. Enhancement as the name indicates is to enhance the image to bring the details of the parts of the image, which are obscured due to some distortion in the image. The principal objective behind image enhancement is to process the image so that it results in an image, which is more suitable for the particular application where that image is applied than the original image. Images are captured at low contrast in a number of different scenarios. The main reason for this problem is poor lighting conditions (e.g., pictures taken at night or against the sunrays). As a result, the image is too dark or too bright, and is inappropriate for visual inspection or simple observation. Image enhancement algorithms are used in a variety of image processing applications, primarily to improve or enhance the visual quality of an image by accentuating certain features. Image processing modifies pictures to improve them (enhancement, restoration) to prepare suitable images for various applications from raw unprocessed images. Images can be processed by optical, photographic, and electronic means, but image processing using digital computers is the most common method because digital methods are fast, flexible and precise. Image enhancement improves the quality (clarity) of images for human viewing. Increasing contrast, and revealing details are examples of enhancement operations whereas removing blurring and noise comes under the category Image restoration.

Enhancement techniques are used to enhance the degraded documents to enable retrieval of the written text from these documents. Printing technology also uses extensively the enhancement schemes to produce high quality photographic prints. Acquisition of information of an object or phenomenon, by the use of sensing devices that is not in physical or intimate contact with the object i.e. forest, vegetation, land utilization, sea changes etc. Various image-processing techniques are involved in analyzing the acquired data. Image enhancement is one of the important image processing functions primarily done to improve the appearance of the imagery to assist in visual interpretation and analysis. Image restoration and enhancement are used usually in synchronization rather than as an individual. The purpose of image enhancement is to improve the interpretability or perception of information contained in the image for human viewers, or to provide a "better" input for other automated image processing systems. There are many image enhancement methods have been proposed. A very popular technique for image enhancement is histogram equalization (HE) [29].

This class of image processing algorithms includes image sharpening, contrast and edge enhancement. Among the enhancement algorithms contrast enhancement is most important because it plays a fundamental role in the overall appearance of an image to human being. A human being's perception is sensitive to contrast rather than the absolute values themselves. Therefore, it is justified to increase the contrast of an image for better perception.

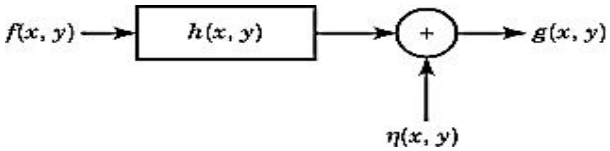
Contrast Enhancement

Image enhancement usually employs various contrast enhancement schemes to increase the amount of visual perception. Different enhancement schemes emphasize different properties or components of images. Contrast enhancement techniques can be broadly classified into two categories. For the first category, the gray value of each pixel is modified based on the statistical information of the image. Power law transform, log transform, histogram equalization belong to this category. In the second category, the contrast is enhanced by first separating the high and/or low frequency components of the image, manipulating them separately and then recombining them together with the different weights. Un-sharp Masking (UM) which emphasizes high frequency components of an image belongs to this category. Histogram Equalization technique is also commonly employed for image enhancement because of its simplicity and comparatively better performance on almost all types of images. The operation of HE is performed by remapping the gray levels of the image based on the probability distribution of the input gray levels. It flattens and stretches the dynamic range of the image's histogram and resulting in overall contrast enhancement [29].

IMAGE RESTORATION

Image restoration refers to a group of techniques that are oriented toward modeling the degradation and applying the inverse process in order to recover the original image. Each component in the imaging system contributes to the degrading of the image. Image restoration techniques try to model the degradation effect of each component and then perform operations to undo the model, to restore the original image [30]. There are two different modeling approaches for degradation: the a priori approach and the a posteriori approach. These two approaches differ in the manner in which information is gathered to describe the characteristics of the image degrading. The a priori approach is to try to model each source of noise in the imagery system by measuring the system's responses to arbitrary noises. In many cases, deterministic models cannot be extracted and stochastic models are used instead. The a posteriori approach is adopted when a great deal of information is known about the original image. We can develop a mathematical model for the original image and try to fit the model to the observed image. Figure 5 shows a simplified model for the image degradation and restoration processes. The original image signal f(x, y) is subjected to the linear degrading function h(x, y). An arbitrarily noise signal $\eta(x, y)$ is then added to create the degraded image signal $\eta(x, y)$.

Figure-5: Simplified Model for the Degradation Process



Note: The image signal f(x, y) is subjected to a linear degrading function h(x, y) and an arbitrary noise η(x, y) is added to produce the degraded signal g(x, y).
Sources: J. Webster (ed.), *Wiley Encyclopedia of Electrical and Electronics Engineering Online* Published by John Wiley & Sons, Inc.

Reconstruction approaches try to estimate the original image signal f(x, y) given the degradation signal g(x, y) and some statistical knowledge of the noise signal η(x, y). We can broadly classify reconstruction techniques into two classes: the filtering reconstruction techniques and the algebraic techniques [31].

COLOR IMAGE PROCESSING

To restore the natural characteristics of an image it is necessary to preserve the color information associated with an image. For this purpose, we go for color image processing. The use of color in image processing is primarily motivated by two major factors [24].

- Humans can perceive thousands of shades of color as opposed to only about two dozen shades of gray.
- Color is a powerful descriptor that greatly simplifies object segmentation and identification.

Color image processing is divided into two major areas:

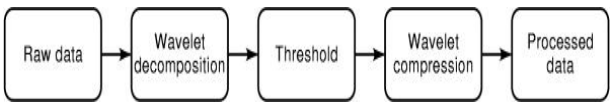
- Full-color processing: In Full color processing images are acquired and processed in full color.
- Pseudo-color processing: In Pseudo color processing images are by nature gray scale and are converted to color images for visualization purposes.

WAVELETS AND MULTIRESOLUTION PROCESSING

Wavelets are a relatively new area of signal processing and offer a potentially very useful approach to image analysis. Because of the fact that one has local control over resolution, many cue features of different size can be extracted from an image. Wavelets also show promise as an aid in understanding how early vision can be emulated and further understood [32].

It is well known that in signal processing, the more compact your method of representing information the better. In 1822, Jean Joseph Fourier devised a very efficient way to represent the information content of a signal. His idea was to represent a signal as the sum of its frequencies. Transmitted power spectra, carrier frequencies, brain activity, NMR signals - all these global descriptions provide a lot of information in a compact manner. However, most of the power of this kind of representation vanishes when one tries to represent information that changes its nature during the course of signal recording. A good example of this kind of a signal is a musical score. A global analysis of a recording of a musical selection with a Fourier transform (*FT*) will indicate the specific notes played within the piece of music, but there is no way to recover the timing of the notes. The musical score, on the other hand, indicates each note that was played and the time it was played. Wavelets represent a signal in a way such that local frequency information is available for each position within the signal. Wavelets are able to analyze a signal based on the position-varying spectra. The multi-resolution pyramidal decomposition that results is also well matched to fractals and shows great potential for the removal of background noise, such as static in recordings, and for pattern recognition and texture segmentation. In the following section, we discuss the conceptual understanding of how wavelets can be used in signal analysis. Figure 6 shows how wavelets are used to process data.

Figure-6: The use of Wavelets to Process Raw Data

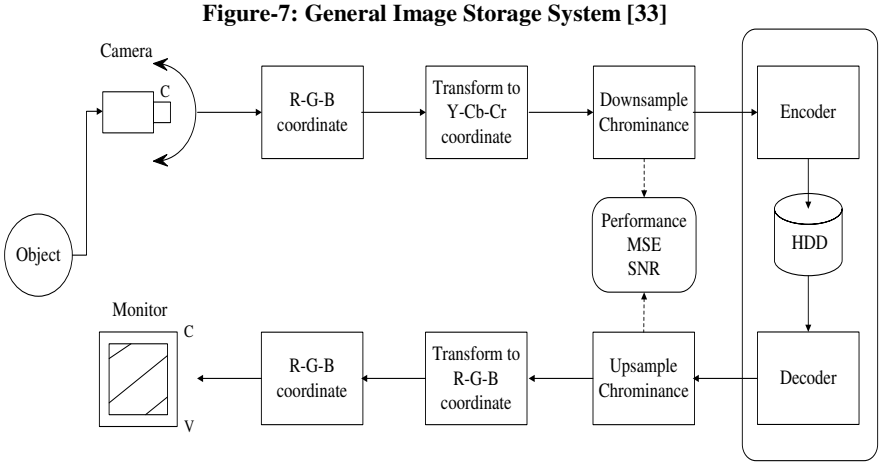


Sources: J. Webster (ed.), Wiley Encyclopedia of Electrical and Electronics Engineering Online Published by John Wiley & Sons, Inc.

IMAGE COMPRESSION

Image compression is an application of data compression that encodes the original image with few bits [33]. The objective of image compression is to reduce the redundancy of the image and to store or transmit data in an efficient form. Fig 2.7 shows the block diagram of the general image storage system. The main goal of such system is to reduce the storage quantity as much as possible, and the decoded image displayed in the monitor can be similar to the original image as much as can be.

Figure-7: General Image Storage System [33]



Sources: Taken from an Article by Wei-Yi Wei, An Introduction to Image Compression www.researchgate.net[33])

Compression can be lossy and lossless. A compression is *lossless* (or *information preserving*, or *reversible*) if the decompressed image is identical with the original. Respectively, a compression method is *lossy* (or *irreversible*) if the reconstructed image is only an approximation of the original one.

MORPHOLOGICAL PROCESSING

The identification of objects within an image can be a very difficult task. One way to simplify the problem is to change the gray scale image into a binary image, in which each pixel is restricted to a value of either 0 or 1. The techniques used on these binary images go by such names as blob analysis, connectivity analysis, and morphological image processing (from the Greek word morphē, meaning shape or form) [35]. The foundation of morphological processing is in the mathematically rigorous field of set theory.

IMAGE SEGMENTATION

Segmentation of the image is to subdivide an image into its constituent regions or objects. Segmentation can be categorized as follows [35]:

- **Threshold Based Segmentation:** Histogram thresholding and slicing techniques are used to segment the image. They may be applied directly to an image, but can also be combined with pre- and post-processing techniques.
- **Edge Based Segmentation:** With this technique, detected edges in an image are assumed to represent object boundaries, and used to identify these objects.
- **Region Based Segmentation:** Where an edge-based technique may attempt to find the object boundaries and then locate the object itself by filling them in, a region-based technique takes the opposite approach, by (*e.g.*) starting in the middle of an object and then "growing" outward until it meets the object boundaries.
- **Clustering Techniques:** Although clustering is sometimes used as a synonym for agglomerative segmentation techniques, we use it here to denote techniques that are primarily used in exploratory data analysis of high-dimensional measurement patterns. In this context, clustering methods attempt to group together patterns that are similar in some sense. This goal is very similar to what we are attempting to do when we segment an image, and indeed some clustering techniques can readily be applied for image segmentation.

- **Matching:** When we know what an object we wish to identify in an image (approximately) looks like, we can use this knowledge to locate the object in an image. This approach to segmentation is called matching.

REPRESENTATION AND DESCRIPTION

The segmentation techniques usually consider the pixel along a boundary and pixel contained in the region. In addition, an approach to obtain the descriptor that is compact the data into representation. There are several approaches below:

Chain Code: The chain code is used to represent a boundary by the length and the direction of straight-line segments. Typically, this representation is based on 4-or 8-connectivity of the segments.

Figure-8: (a) 4-Directional Chain Code

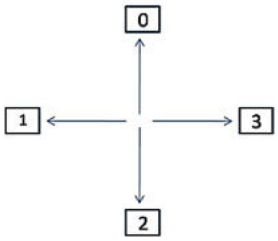
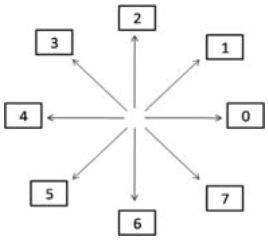
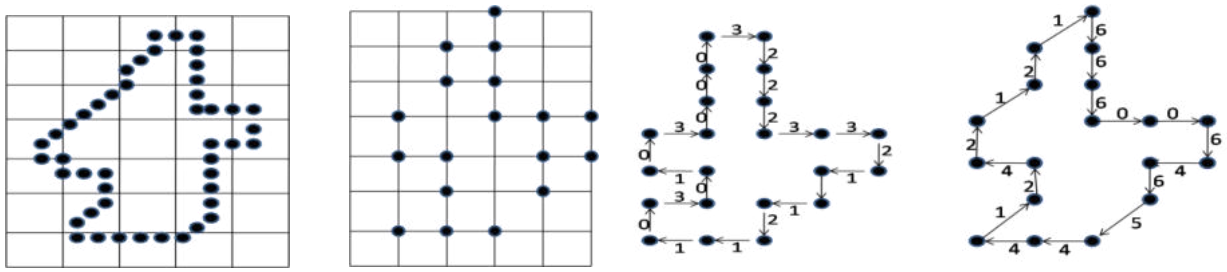


Figure-8: (b) 8-Directional Chain Code



Sources: Wei-De Chang, *Image Segmentation, Representation and Description;* Graduate Institute of Communication Engineering, National Taiwan University, Taipei Taiwan, ROC *disp.ee.ntu.edu.tw/(Article)* [36]

Figure-9: (a) Digital boundary with re-sampling grid sr-perimposed, (b) Result of resample, (c) 4-directional chain code, and (d) 8-directional chain code.



(a) **(b)** **(c)** **(d)**

Sources: Wei-De Chang, *Image Segmentation, Representation and Description;* Graduate Institute of Communication Engineering, National Taiwan University, Taipei Taiwan, ROC *disp.ee.ntu.edu.tw/(Article)* [36])

Digital images are usually processed in a grid format, but it may not match shape of the boundary if the chain of codes is quite long or the boundary is distributed by the noise. An approach frequently used to circumvent the problems just discussed is to resample the boundary by selecting larger grid spacing. It can be seen that the accuracy and samples is related to grid spacing. They can be described using boundary descriptor, shape numbers, Fourier descriptor, Regional descriptor, etc.

OBJECT RECOGNITION

Object recognition includes the process of determining the object's identity or location in space. The problem of object or target recognition starts with the sensing of data with the help of sensors, such as video cameras and thermal sensors, and then interpreting these data in order to recognize an object or objects. We can divide the object-recognition problem into two categories: the modeling problem and the recognition problem are as follows:

Object Modeling

Modeling is the process of representing a real system in an abstract manner, in order to study its different features. It is widely used in all fields of engineering. In control engineering, for example, a mathematical model of a physical system is extracted to facilitate the study of its performance under different circumstances. In object recognition, a model is created for the object under

investigation. This model is then compared to different models that are stored in a database. If this model matches one of the available models, say, the model of object *A*, then the investigated model is classified as object *A*. In an airplane recognition system, for example, the database contains models of different types of airplanes.

Pattern Recognition

Patterning is a process to extract features and recognize objects and patterns from a given image. Usually there are two approaches to solve the problem of pattern recognition: the RF processing approach and the image-processing approach. In the RF processing approach, electromagnetic waves are transmitted and then reflected from the target. The reflected waves are analyzed to recognize the target. The RF processing is usually used when the target is very far or out of range of sight. In the image processing approach, a picture or an image of the field is taken. The picture is then processed and analyzed to recognize the objects in the picture.

CONCLUSION

We studied the literature of filters and basic steps of image processing after having studied we came to the conclusion that image processing filters and techniques are being used in medicine, astronomical observation, bone pathology, medical diagnosis, industrial inspection, microscopy, biological imaging, remote sensing, law enforcement, to construct roads, building, vegetation, rivers inspection, atmospheric administration at last but not least in each and every field image processing is going to be a back bone.

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ROLE OF INFORMATION TECHNOLOGY IN ENABLING HUMAN RESOURCE TO BOOST STRATEGIC PARTNER IN BUSINESS

Lalbihari Barik[21]

ABSTRACT

Human Resource (HR) and Information Technology (IT) are two systems in an organization, which are shifting from a support function to a strategic function in dynamic business. Proper implemented information systems contribute as a valuable strategic resource for organizations in leveraging its competitive advantage. To meet the new demands for Strategic Human Resource Management (HRM), there is an increasing pressure on HRM to focus on value adding services. The use of IT in supporting the HR function is valuable in order to meet such requirements as Strategic Business Partner.

Author attempts to examine the application of IT in the field of HRM and finds the gap analysis of what theory states and what organizations experience when IT & HR are combined together for organizational purposes. In synchronization with the theme, an attempt is made to explore whether IT has been instrumental in easing and speeding up the procedure in business in conjunction with Human Resource Management.

KEYWORDS

Information Technology, Human Resource, Strategic Business Partner, Enabler etc.

INTRODUCTION

The importance of HRIS (Human Resource Information Systems) in today's changing business organizations cannot be undermined. Few illustrations given below can help us build the understanding:

Illustration-1: Many employees placed in the regional offices of a large construction organization have raised few crucial concerns to the Top management regarding their dissatisfaction with the HR department on the below given areas:

- They do not receive their Salary slips on time.
- The month of July 2014 saw some salary deduction, which they are unclear about since they do not have the salary slips with them.
- For the last 3-4 months, they have not even received any communication regarding the number of leaves available with them.

Illustration-2: Below given are few serious complaints raised by the other departments against the non-performance of HR in the various areas:

- The Vice President of Finance department has raised serious concern with the HR department that it is required to justify the costs associated with the functioning carried out. He says that the HR department needs to get into assessing things such as Human Capital Budgeting, Return on Investment (in various areas of functioning), Cost benefit ratio analysis etc.
- The Marketing, Production and Logistics departments seek justification from the HR department regarding the status of recruitment of vacant positions in their respective departments.
- The Senior Vice President has observed that the attrition rate of employees has increased by 4% in the past one year. She demands an explanation & in detail understanding of the causes leading to this increase.
- The CEO raises questions regarding the Performance measurement system and is not satisfied with the untimely availability of data and its accuracy to some extent.

Illustration-3: HR executives working in an organization write an email to their seniors in the corporate office indicating work overload in more routine areas. Few of them are salary, leave & benefits administration, Recruitment reports that the departmental heads keep demanding for repeatedly, a list of Training Needs of the employees etc. They say that these things could be dealt with if they get integrated software for the organization. This would not only help them focus on the other non-routine work of HR but also realize that the data generated through this would enable them to add value to the reason why HR exists.

[21]Faculty, Department of Information Systems, Faculty of Computing & Information Technology, King Abdulaziz University, Saudi Arabia, lalbihari@gmail.com

As an HR professional, one immediately realizes that the concern is searching for and communicating through heaps of manual data. All the beneficiaries of HR department are looking out for timely and accurate input of information. Theorists suggest that the answers to all these questions lie in automating the HR data available. In turn, this will be instrumental in taking key strategic decisions & enabling the HR department to add value to its role.

OBJECTIVES OF STUDY

With this premise in background, the research paper focuses on finding answers to the following questions:

- Role of IT in transforming HR into a Strategic Partner's role as per literature available.
- Role of IT in transforming HR into a Strategic Partner's role as per empirical studies conducted in organizations.
- To examine whether a gap exists in what theory proposes and what happens in practice.

RESEARCH METHODOLOGY

The study involves 2 phases:

Firstly, literature regarding the HR's role as a Strategic Business Partner, linkage of IT and HR are searched for and studied. The theorists' viewpoints are studied & put forward in an exploratory form. The theoretical literature summarizes the related theories collated from journals, research papers and books. Secondly, literature regarding the same role is collated and studied from research conducted in organizations. The empirical data is also collated from Research journals, books and recent surveys published by Survey based organizations.

Both these understandings are put together and analyzed with the perspective of gap analysis (if any) between Theory and Practice.

LITERATURE EXPLORATION & THEORETICAL OVERVIEW

Role of HR Department in an Organization

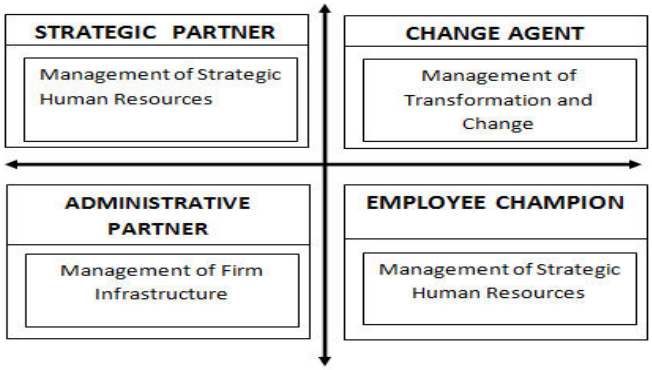
Human Resource function includes numerous functional areas, covering responsibilities from the time a candidate joins an organization and becomes a part of it (and is officially called an employee) till the time the employee resigns & decides to leave the organization. In this black box, one can see many areas that HR covers namely:

- HR Planning,
- Job Analysis and Design,
- Recruitment and Selection,
- Orientation and Placement,
- Training and Development,
- Performance Appraisal and Job Evaluation,
- Employee and Executive Remuneration,
- Motivation and Communication,
- Welfare, Safety and Health,
- Industrial relations.

The HR profession has evolved during the past 2 decades in the way it functions in an organization & the way it is viewed by organization leaders. The emphasis today is more on the value that the profession brings to organizations. As a department, its role has evolved from a mere record keeper, payroll processor, employee benefits administrator into an all encompassing the HR's role as a Change Agent (Dave Ulrich, 1997). Ulrich describes the four roles of HR, which would help transform itself with a focus on adding value as follows:

- **Strategic Partners**: With a focus on Strategy execution and meeting customer needs through aligning HR priorities;
- **Administrative Experts**: Ensuring efficiency in the infrastructure; supporting the business and improving organizational efficiency by re-engineering the HR function and other work processes;
- **Employee Champion**: Paying attention to increasing employee commitment and capability through listening and responding to their needs; and
- **Change Agents**: Deliver operational transformation and culture change.

Figure-1: The Ulrich Model



Sources: Dave Ulrich (1997) Human Resource Champions: The Next Agenda for adding value and Delivery Results, Harvard Business School Press, p. vii

This request for a more strategic orientation of the HR activities is not a new one, but was stated in many publications in the 1990s. (Wright & Snell 1991; Huselid 1995; Conner & Ulrich 1996).

Information Technology & HR Working Hand in Hand (e-HRM)

Information Technology as a structural factor and instrument that transforms business processes and communication, and is increasingly integrated into HRM.

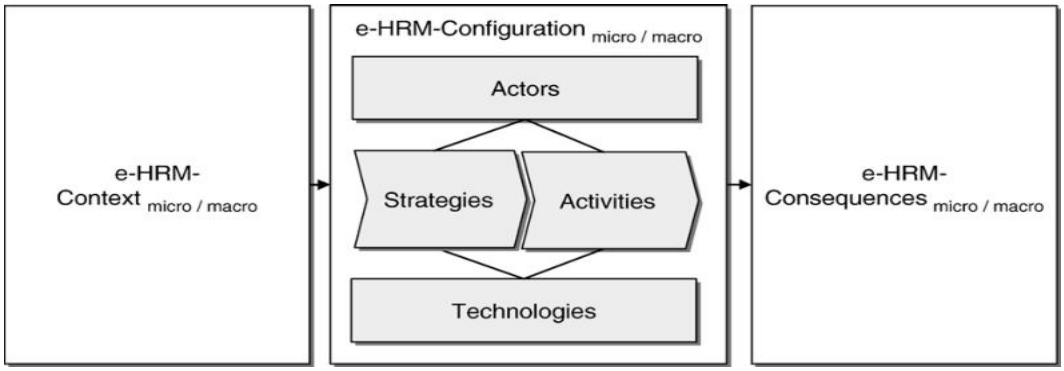
Mary Gowan defines e-HRM system as a web based solution that takes advantage of the latest web application technology to deliver an online real-time human resource management solution. It is comprehensive but easy to use, feature rich yet flexible enough to be tailored to your specific needs.

One of the research papers studied explains a theoretical framework of linkage between IT & HR and consequently its impact on other factors. Electronic-HRM (e-HRM) is the (planning, implementation and) application of information technology for both networking and supporting at least two individual or collective actors in their shared performing of HR activities. e-HRM utilizes information technology in a twofold manner:

- Technology is necessary to connect usually spatially segregated actors and enable interactions between them irrespective of their working in the same room or on different continents and
- Technology supports actors by partially – and sometimes even completely substituting for them in executing HR activities.

Hence, e-HRM is a multilevel phenomenon; besides individual actors, there are collective actors like groups, organizational units and even whole organizations that interact in order to perform HR activities.

Figure-2: The Multilevel Phenomenon



Sources: Stefan Strohmeier (2007), Research in e-HRM: Review and implications, Human Resource Management Review

As highlighted in this model, the impact of e-HRM can be assessed at Micro and Macro levels. At micro level, the impact can be linked to employee / user satisfaction or acceptance. At macro level, the impact can be divided into the below:

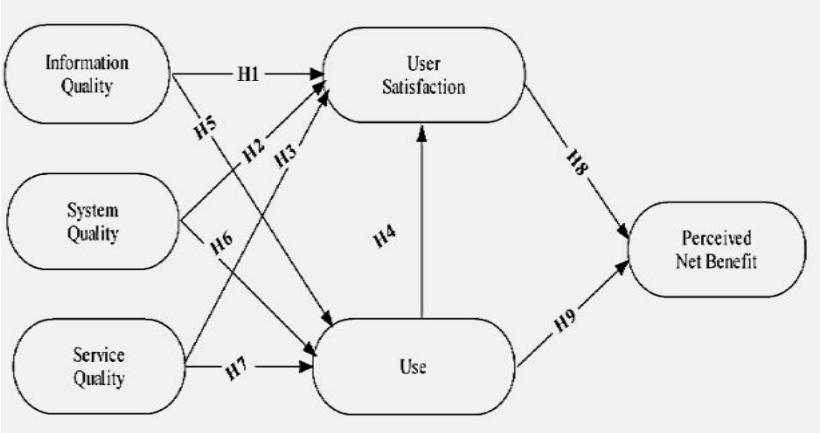
- **Operational Consequences**: Efficiency and Effectiveness outcomes of e-HRM by reducing costs and alleviating administrative burdens(Lengnick – Hall & Morits, 2003)
- **Relational Consequences**: Emphasizes the phenomena of interacting and networking of different actors.
- **Transformational Consequences**: Aim at fundamental transformations concerning the general scope and the function of HRM, comprising the ability to contribute to overall organizational performance.

Some literature in e-HRM also suggests that there are four objectives of implementing e-HRM in organizations in order to make HR become more Strategic, flexible, and cost-efficient and customer oriented (Marler and Fisher, 2003):

- Reducing administrative costs,
- Improving HR Services,
- Speeding response times,
- Improving decision-making.

DeLeone and McLean (2003) suggests different stakeholders may have different opinions as to what constitutes a benefit to them. Their study focuses on the perspective of the employee, and uses the six updated Information System success dimensions: Information quality, System quality, Service quality, System use, User satisfaction and Perceived net benefit.

Figure-3: The Research Model



Sources: DeLeone and McLean (2003)

Different researches suggest varied impact and relationship of HRM with IT. These also emphasize the capability of IT to enable HR to plan better, track the plans and operations and execute its plans.

Hence, the objectives of e-HRM appear to be:

- Improve the services provided by HRM towards all organizational beneficiaries.
- Improve the efficiency (by speeding response times, by attending to transactional goals) of HRM services offered,
- Improve the effectiveness (with special emphasis to cost effectiveness, by attending to operational consequences) of HRM function,
- To create standardization of processes and finally,
- To enable a green work environment.

Despite these benefits, researchers have also stated that their use may have some unpleasant consequences (Harris et. al, 2003, Kehoe et.al, 2005). For e.g. there are some concerns that these new systems primarily focus on the efficiency and cost containment and do not increase the effectiveness of the HR processes (e.g. Selection systems). There are also some concerns that e-HRM systems may have a negative effect on the members of some sponsored groups (e.g. Job applicants); (McManus and Ferguson, 2003) and they have the potential for invasion of privacy (Harris et.al, 2003).

Review of Empirical Studies

One of the researches conducted on 104 HR Managers and HR employees of a large Jordanian governmental ministry indicate that the total effects of information quality on use, user satisfaction, and perceived net benefits are substantially greater than those of system quality and service quality (the other comparative parameters under study). This implies that e-HRM system provides relevant and updated information at the right time.

A research conducted on 50 HR managers of the Hotel business in Phuket has applied the use of e-HRM in systems of HR namely Recruitment, Employee system, Organizational information system, Idea and creativity exchanges, Learning and Training system, Salary management system, Welfare system and Assessment system.

Table-1

System	Successfully Implemented	Not Applied
Recruitment System	15%	85%
Employee System	45%	55%
Organizational Information System	90%	10%
Salary Management System	0%	100%
Learning And Training System	0%	100%
Idea And Creativity Exchanges	38%	62%
Assessment System	6%	94%
Welfare System	0%	100%

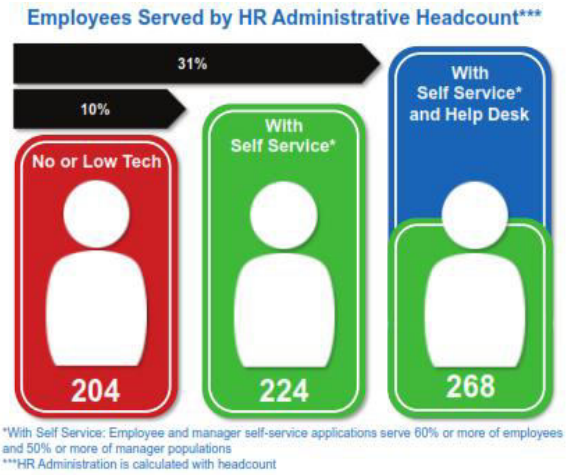
Sources: Authors Compilation

The above data shows low implementation in the areas of e-HRM in the organization. Salary management, Learning and Training, Welfare system, Recruitment and Assessment systems are the lowest in e-HRM application.

The Cranfield Network on International Human Resource Management (Cranet) has conducted an International executive report survey conducted of 32 countries on various areas of Human Resource Management. Their data on stages of web deployment of e-HRM in these countries revealed that in most countries examined, as opposed to previous rounds of the research, e-HRM allows "self-service" functions to be accomplished, either by the manager of employee. In previous research rounds, it was most common to have only one-way communication (mostly publishing of information and in some cases with restricted access from the end-user). This indicates the movement of e-HRM from a one end user to multiple end users. This engages the respective users in the process of information gathering, information processing and hence leads to information accuracy with the timely availability of data.

Florkowski and Olivas-Lujan (2006) mentions ESS (Employee Self Service) is software enabled set of HR transactions that can be initiated and completed without direct involvement of HR staff. A web-based application tool provides employees with access to their personal records and their payroll details. It enables employee self-service and provides access to a comprehensive employee database. This database acts as a centralized repository of vital employee related information available to HR, employees and managers. Its inherent employee self-service capabilities ensure that this data remains current without tedious data entry by HR. The ESS is the base on which all other functional modules can be added to create a comprehensive employee self-service based HR system. The ESS plays an important role in working time and schedule, personal information, training and performance management, life events, benefits, careers, time off from work. With ESS employees can view and access pay slips, summary of year's earnings and deductions, loan statements, PF statements, reimbursement statement, income tax statement, IT declaration and IT calculator, reimbursement claim workflow, ticketing, leave workflows etc.

Figure-4: Value of Service Delivery Technologies (n=160)

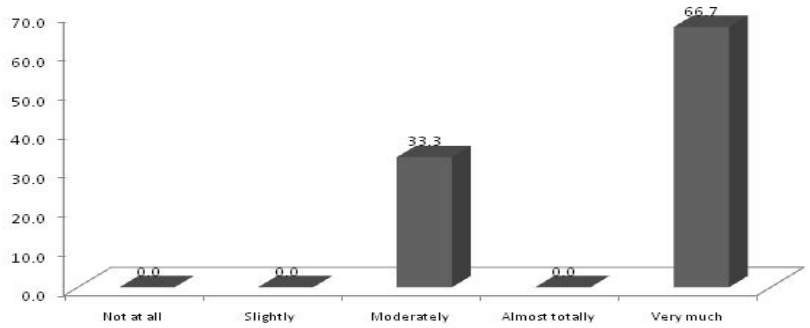


Sources: Sierra-Cedar 2014-2015 HR Systems Survey

As per Cedar Crestone (2014-2015) HR systems survey report, with Self Service applications, 10% more employees can be served and 41% more employees can be served with self-service and shared service when compared to HR service delivery instruments without these technologies. In addition, Employee and manager self-service applications serve 60% or more of employees and 50% or more of manager populations.

An empirical study was conducted within multinational manufacturing companies with over 500 employees with an aim of identifying the level of using the HR IT tools in companies, factors on which management should make stress during implementation of the IT tools and simultaneously find out which IT tools can be used in scope of HRM.

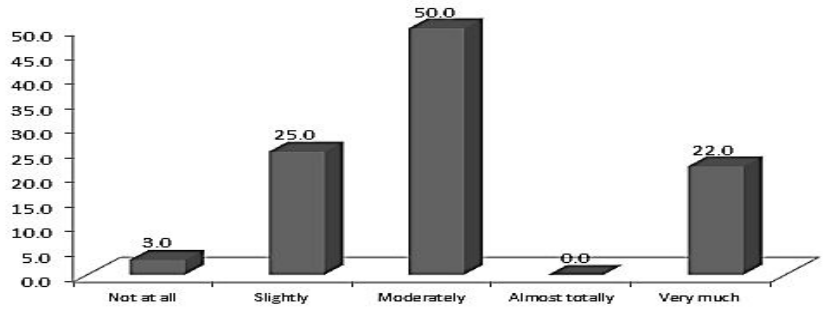
Figure-5: Efficiency of HT IT Tools Usage in %



Sources: Authors Compilation

Further the survey also shows that 22 % of respondents confirmed supporting the reaching of HR goals significantly by using of HR information system and 50 % of respondents answered that HR IT tool support HR goals moderately and 25 % slightly and 3 % not at all. The results are depicted in the graph:

Figure-6: Reaching Strategic Goals using the HR IT tools in %



Sources: Authors Compilation

In a research about the role of IT on the HR professional Gardner, Lepak and Bartol (2003) stated that the extended use of IT required them to provide IT related support activities such as maintaining IT based HR applications. They hence argued that HR professionals could increase their contribution to the organization's success if they supplement their knowledge regarding IT. In line with the propositions of Nelson (1991), they note that IT is changing the needed skills for HR professionals and increases the desirability for IT training. Delorme and Arcand (2010) argue that organizations begin to outsource components of the HR function that are related to IT, because HR professionals lack skills in this area. Furthermore, they emphasize what a contribution HR professionals could make to the development of HRIS, as they are main stakeholders of the HRIS and know therefore best how important it is to develop a good HRIS (Delorme & Arcand, 2010).

DATA ANALYSIS

The involvement of Information Technology with Human Resources brings about changes in multiple actors connected with both the systems. Theoretically, e-HRM is created with a purpose to bring about many positive changes in the organization. Empirical studies bring to light various dimensions of the impact of introduction of IT in HR. Of the research papers studied, two of them highlight that IT has been able to contribute to the achievement of HR goals and that their service quality has substantially improved.

There also has been a growth in the various Service Systems developed in the field of HR, namely ESS that has helped take many of the administrative functions of HR to the hands of the process owners i.e. the employees and line managers. For e.g. when employees and their managers are made accountable to input their interactions regarding performance target setting, goal achievement, hurdles in goal achievement, when they are made accountable to ensure the timelines for entering such information, it takes away multiple tasks, which were non-value adding from HR's repository. Instead, by giving the key in the hands of the stakeholders, it helps increase the timeliness and accuracy of the data. HR then is able to focus its resources in more strategic decisions regarding performance measurement, analysis and hence is able to give shape to other crucial decision such as connecting the Performance gaps to scheduling of learning programmes and designing Reward programmes for the achievers.

Research also brings to light that HR professionals are now required to upgrade one more skill in their skill inventory i.e. the knowledge of HRIS and its applications.

CONCLUSION

The direction of Human Resource Management as a function along with the involvement of Information technology is definitely changing its role from an administrative expert to a Strategic partner. HR professionals also enhance their roles by serving the internal customers and hence becoming customer oriented; by being a Consultant and intervening in the policy related matters in an organization) and implementing various changes expected in an organization. Information Technology has provided an impetus by speeding up the process time, making the HR role more efficient and helping it to move towards the Strategic role. However, in order to make this a reality, HR has to pay heed to the fact that IT alone cannot accomplish this. The other factors viz. upgrading the skills of HR professionals & becoming more HRIT informed, involving the employees and line managers as process owners of functions which were pre-dominantly HR oriented such as Recruitment, Performance management etc., and finally being able to take a bird's eye view of the whole process will be crucial for making it a reality.

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A STUDY ON SEVERAL IMAGE SYNTHESIS ALGORITHMS

C. Rama Mohan[22] Dr. S. Kiran[23] R. Pradeep Kumar Reddy[24]

ABSTRACT

Image synthesis is a technique that combines the several details of multiple input images together, in such way gets the new image in that all objects are in focused and visual for human observation. In this paper study about several image synthesis algorithms such as, primitive fusion (simple average, simple minimum, simple maximum), DWT, DWT with texture. Comparison of all the methods gives the better results for its upcoming work.

KEYWORDS

Image Fusion, Discrete Wavelet Transform (DWT), Texture etc.

INTRODUCTION

Image Synthesis is a process of combining the significant particulars from multi-focus images into a single image, where the synthesized image will be more detailed than compared to any one of the input images, without giving particulars that are not present in the input images. Image fusion techniques can improve the quality and increase the application of these data. There are several types input images such as, Multi focus or Multi temporal, Multi sensor, Multimodal. The image synthesis process has several significant necessities such as:

- The synthesized image should conserve all features from the input images.
- The image synthesis process should not produce wrong results due to artifacts [3].

In image synthesis process, image registration is the first step, that transforms the several sets of data into a harmonize system. The applications of Image fusion find in several areas of satellite imaging for remote sensing, object detection and recognition, navigation guidance, medical diagnosis, military and civilian surveillance, etc. By using Simple primitive techniques will not get better results in terms of qualitative metric such as entropy. Recently, Discrete Wavelet Transform (DWT) and Combination of DWT with Texture have been popular image synthesis techniques. These methods produce better results than compared to simple primitive techniques.

Image synthesis algorithms can be classified into three types: pixel, feature and decision levels. Pixel level image synthesis algorithm depends on the pixels of source images while feature level image synthesis algorithm depends on features extracted from the source images. Pixel level is a low level of image synthesis, which is used to examine and combine data from different sources before original information is estimated and recognized. Feature level is a middle level of fusion, which extracts important features from an image such as shape, edges, length, direction and segments. Decision level is a high level of fusion, which points to actual target [2].

The process of image synthesis is the better content from each of the input images are combined together to form a resultant fused image whose quality is greater than compared to any one of the input images**.** Image synthesis methods can be divided into two groups such as spatial domain fusion method and transform domain fusion [3].

II. Spatial Domain Synthesis Method: Spatial domain synthesis method directly works on pixels of input images. The synthesis methods such as averaging, simple minimum, simple maximum, component analysis (PCA) and IHS based methods comes under spatial domain techniques.

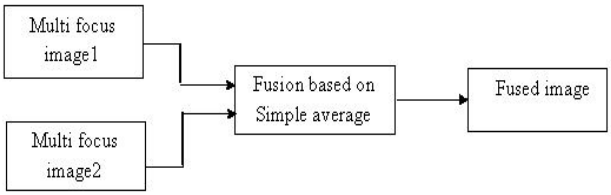
A. Simple Average Method: In this method, the resultant synthesized image is acquired by taking the average intensity of respective pixels from both input images [3].

$$F(i,j) = \frac{M(i,j) + N(i,j)}{2}$$

Where M(i,j), N(i,j) are input images and F(i,j) is fused image.

[22]Assistant Professor, Department of CSE, V.I.T.S., Andhra Pradesh, India, ramamohanchinnem@gmail.com
[23]Assistant Professor, Department of CSE, YSRCE of YVU, Andhra Pradesh, India, rkirans125@gmail.com
[24]Assistant Professor, Department of YSRCE of YVU, Andhra Pradesh, India, pradeepmadhavi@gmail.com

Figure-1: Block Diagram of Simple Average Method



Sources: Authors Compilation

Merits

- This method is trouble-free.
- It will be easy to understand and put into practice.
- Simple average method produce better results, when images to be synthesized from similar type of sensor and include Additive noise.
- This method gives better results, if the input images have high brightness and high contrast [4]

Demerits

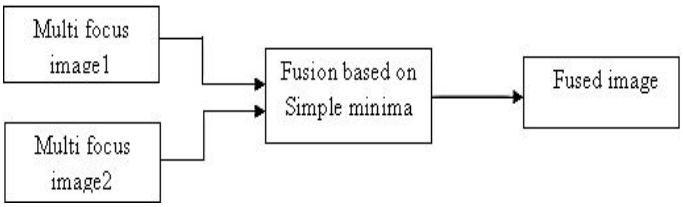
- It reduces the contrast.
- By using this method some noise is easily entered into the synthesized image, which will reduce quality of the resultant image accordingly [4]

B. Simple Minimum Method: In this method, the resultant synthesized image is acquired by selecting the minimum intensity of respective pixels from both input images [8].

$$F(i,j) = \sum_{i=0}^{m}\sum_{j=0}^{n} \min(M(i,j), N(i,j))$$

Where M(i,j), N(i,j) are input images and F(i,j) is fused image.

Figure-2: Block Diagram of Simple Minimum Method



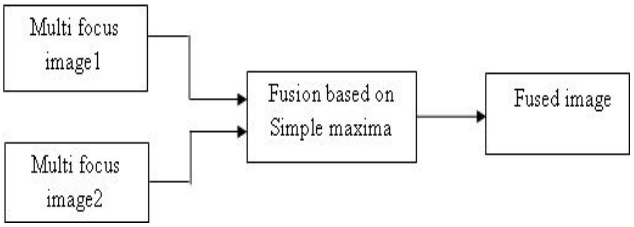
Sources: Authors Compilation

C. Simple Maximum Method: In this method, the resultant synthesized image is acquired by selecting the maximum intensity of respective pixels from both input image [8].

$$F(i,j) = \sum_{i=0}^{m}\sum_{j=0}^{n} \max(M(i,j), N(i,j))$$

Where M (i,j), N(i,j) are input images and F(i,j) is fused image.

Figure-3: Block Diagram of Simple Maximum Method



Sources: Authors Compilation

Merits of Simple Minimum / Maximum

This method produces better results than compared to average method [4]

Demerits of Simple Minimum / Maximum

Pixel level method is exaggerated by blurring effect, which directly effect on the contrast of the image [4]

III. Transform domain Synthesis method

In transform domain method image is first transferred in to frequency domain. The fusion methods such as DCT and DWT fall under transform domain method.

A. Discrete Cosine Transform (DCT): It is a significant transform widely used in digital image processing for convert the spatial domain image to frequency domain image. In the low frequency region obtain large DCT coefficients; for this reason, it has superb energy compactness. Several applications of DCT are science, engineering and in image compression like MPEG etc. [7]. However, this method has several drawbacks. They are listed below:

- Only spatial correlation of the pixels inside the single 2-D block is considered and the correlation from the pixels of the neighboring blocks is neglected.
- Impossible to completely de-correlate the blocks at their boundaries using DCT.
- Undesirable blocking artifacts affect the reconstructed images.
- Does not perform efficiently for binary images (fax or pictures of fingerprints) characterized by large periods of constant amplitude (low spatial frequencies), followed by brief periods of sharp transitions.
- To avoid the above drawbacks of DCT adapted Discrete Wavelet Transform (DWT)

B. Discrete Wavelet Transform Method:

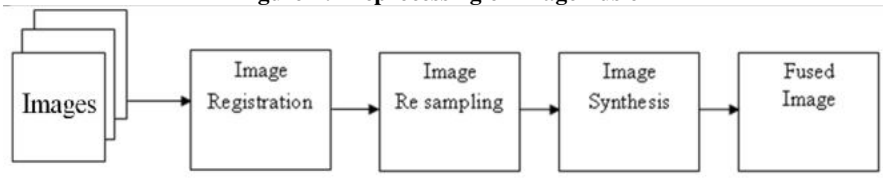
a. Introduction

Wavelets are oscillatory functions with finite duration, finite energy and zero average value. They are appropriate for study of transient signal. The irregularity and good localization properties make them better basis for study of signals with discontinuities. Wavelets can be illustrated by using two functions viz. the scaling function f (t), also called as 'father wavelet' and the wavelet function or 'mother wavelet'. Mother wavelet (t) goes through translation and scaling operations to give self-analogous wavelet families as given by Equation.

$$\psi_{c,d}(t) = \frac{1}{\sqrt{c}}\psi\left(\frac{t-d}{c}\right), \quad (c, d \in R), c>0$$

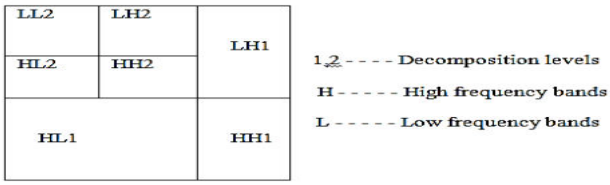
Wavelet transform is a technique that decompose image into four sub images, each image represents the same image, but difference in its frequency. It is an eminent technique for analyzing signals. When DWT is performed, the image is decomposed into four parts such as, one is approximation component (LL) and remaining three are detail components (HL, LH and HH). 2-D Discrete Wavelet Transformation (DWT) converts the image to frequency domain from the spatial domain. The LL band contains the average image information while the other bands contain directional information due to spatial orientation [5]. The basic steps carry out in image synthesis is shown in figure below:

Figure-4: Preprocessing of Image Fusion



Sources: Authors Compilation

Figure-5: Wavelet Decomposition



Sources: Authors Compilation

DWT is applied on the previously registered images, and then wavelet coefficients are generated for input images by this operation. A synthesis rule has to be applied on these coefficients then synthesized image is obtained using inverse wavelet transform. At each level are acquired two sets of coefficients, approximation (LL) and detail (HL, LH and HH). First, carry out the DWT in the vertical track, followed by the DWT in the horizontal direction. After the first stage of disintegration, obtain four sub-bands: LL1, LH1, HL1, and HH1. For each consecutive level of wavelet disintegration, the LL sub band of the prior level is used as the input. To perform DWT on second level applied DWT on LL1 and for third Level disintegration applied DWT on LL2 and finally get four sub-band of third level that are LL3, LH3, HH3, HL3 shown in Fig.1. At many different resolutions, a single image is represented simultaneously (1x1, 2x2, 4x4, …, 2Nx2N). At every level create four new images of size (2N-1)x(2N-1).

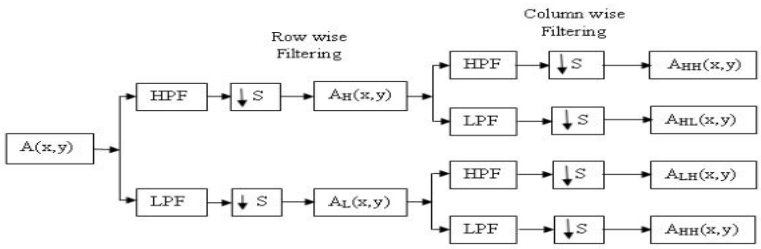
b. Filter Banks

Wavelet separately filters and down samples the 2-D data (image) in the vertical and horizontal directions. The source image is $A(x, y)$ filtered by low pass filter, *LPF* and high pass filter, *HPF* in horizontal direction and then down sampled by two to create the coefficient matrices $A_L(x, y)$ and $A_H(x, y)$. The coefficient matrices $A_L(x, y)$ and $A_H(x, y)$ are both low pass and high pass filtered in vertical track and down Sampled by two to create sub band images $A_{LL}(x, y)$, $A_{LH}(x, y)$, $A_{HL}(x, y)$ and $A_{HH}(x, y)$.

The $A_{LL}(x, y)$, contains the average image information corresponding to low frequency band of multi scale disintegration. It could be considered as soft and sub sampled version of the source image $A(x, y)$. It characterizes the approximation of source image, $A(x, y)$. $A_{LH}(x, y)$, $A_{HL}(x, y)$, and $A_{HH}(x, y)$, are detailed sub band images which contain information in various directions like horizontal, vertical and diagonal of the source image $A(x, y)$, due to spatial orientation. Multi-level disintegration could be attained by recursively applying the same algorithm to low pass coefficients from the previous disintegration.

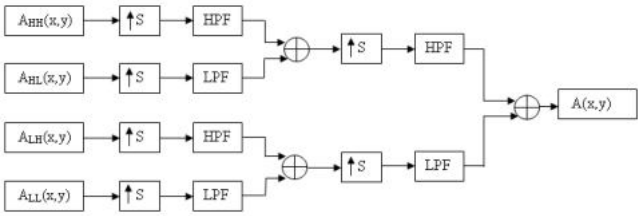
Inverse DWT is used to reconstruct the image $A(x, y)$, from sub images $A_{LL}(x, y)$, $A_{LH}(x, y)$, $A_{HL}(x, y)$ and $A_{HH}(x, y)$ as shown in Fig.7. In reconstruction process, first perform up sampling (padding zeros between samples) and then column wise filtering using low pass, *LPF* and high pass filter, *HPF* for each sub images. The image $A(x, y)$ would be reconstructed by up sampling and row wise filtering with low pass filter, *LPF* and high pass filter, *HPF* of the resulting image and summing up all matrices [1].

Figure-6: One level of 2-D Image Decomposition



Sources: Authors Compilation

Figure-7: One level of 2-D Image Reconstruction



Sources: Authors Compilation

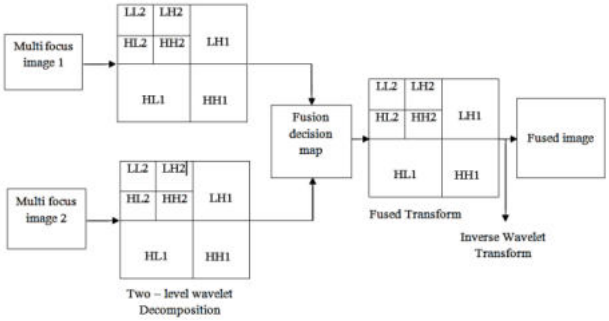
C. General process of image synthesis using DWT

Step1: Discrete Wavelet Transform implemented on both the input images to create decomposed Image.

Step2: Synthesize the each disintegration level by using several synthesis rules.

Step3: Carry out the Inverse Discrete Wavelet Transform on synthesized decomposed image, then obtain reconstructed image [3].

Figure-8: Wavelet Based Image Fusion



Sources: Authors Compilation

C. DWT with Texture features based image

Synthesis:

The high-frequency sub-band and low-frequency sub-band of the source image decomposed by wavelet have significant texture salience. For multi-focus image, the higher texture salience denotes the important visual meaningful information such as image texture and edge. The multi-focus images describing the same scene have the different texture salience in corresponding goals. The goals possessing the higher clarity in a source image have the larger texture salience than other source images in the same region. The texture feature can characterize this kind of texture salience. Texture feature-based image fusion method is to select the coefficients from the source images with higher texture saliency as the coefficients of the fused image.

a. Texture Features Measurement

Image texture is defined as the spatial deviation in pixel intensities i.e., gray values. Texture calculated in two ways such as co-occurrence matrix method and run-length matrix method. In this paper, use co-occurrence matrix method [6]. An algorithm for texture feature extraction as follows [6]:

- Read the input image and store it in a buffer.
- Requantize the input image to the required gray level, in order to reduce computation time.
- Set window size for feature calculation.
- For each window around a pixel, perform the following:
    - Calculate the co-occurrence matrix (GLCM)
    - Calculate the feature value
    - Store it in the corresponding position

- Find the minimum and maximum value.
- Normalize the feature value by intensity mapping from 0 to 255.
- Display the resultant feature image.

b. Procedure for GLCM

- Create framework matrix.
- Decide on the spatial relation between the reference and neighboring pixel.
- Count the occurrences and fill in the framework matrix.
- Add the matrix to its transpose to make symmetrical.
- Normalize the matrix to turn it into probabilities.
- The calculation for symmetrical normalized GLCM is follows:

$$\mathrm{T}_{\mathrm{i,j}} = \frac{\mathrm{Pi,j}}{\sum_{\mathrm{i,j}=0}^{\mathrm{N}-1} \mathrm{Pi,j}}$$

Where $T_{i,j}$ is defined as the texture measurement at location (i,j), is $P_{i,j}$ defined as the each pixel in the GLCM. From that texture measurement, we can calculate the texture features like:

$$Contrast = \sum_{i,j=0}^{N-1} \mathrm{T}_{\mathrm{i,j}} (i-j)\text{^}2$$

$$Dissimilarity = \sum_{i,j=0}^{N-1} \mathrm{T}_{\mathrm{i,j}} |i-j|$$

$$Homogeneity = \sum_{i,j=0}^{N-1} \frac{\mathrm{T}_{\mathrm{i,j}}}{1+(i-j)\text{^}2}$$

- Angular second moment (ASM) and energy:

$$\mathrm{ASM} = \sum_{i,j=0}^{N-} \mathrm{T}_{i,j}\text{^}2$$

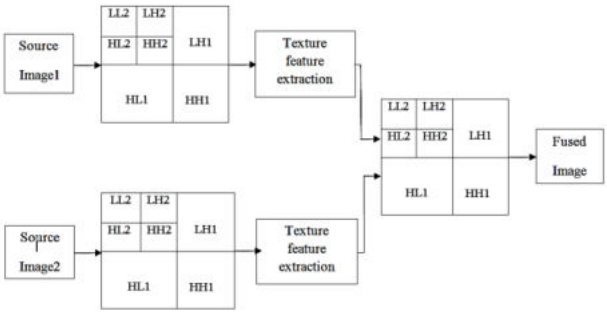
$$Energy = \sqrt{ASM}$$

$$Entropy = \sum_{i,j=0}^{N-1} \mathrm{T}_{\mathrm{i,j}} (-ln \mathrm{T}_{\mathrm{i,j}})$$

$$\text{Correlation} = \sum_{i,j=0}^{N-1} \mathrm{T}_{i,j} \left[\frac{(i-\mu_i)(j-\mu_j)}{\sqrt{(\sigma_i\text{^}2)(\sigma_j\text{^}2)}} \right]$$

c. Fusion of wavelet coefficients with texture Features

Figure-9: Image Fusion Based on Texture Features



Sources: Authors Compilation

Let $\alpha_A(i,j)$ and $\alpha_B(i,j)$ be the wavelet transform coefficient of the source image A and B at location (i,j) respectively, then $E_A(i,j)$ and $E_B(i,j)$ will be obtained from the above energy equation. To the wavelet coefficients, we adopt texture energy to determine the wavelet coefficients of the fused image. Let $\alpha_F(i,j)$ be the wavelet transform coefficients of the fused image F at location (i,j). Similarly, we can fuse the set of images into single image by using all features [6].

$$\alpha_F(i,j) = \begin{cases} \alpha_A(i,j), \text{ if } E_A(i,j) \geq E_B(i,j) \\ \alpha_B(i,j), \text{ if } E_A(i,j) < E_B(i,j) \end{cases}$$

The step of image fusion is repeated at each pyramid sample position. Finally, the image is obtained by using the inverse wavelet transform.

IV. Image Quality Metrics

The universal necessity of an image synthesis process is to conserve all valid and useful content from the source images, while at the same time it should not initiate any artifacts in resultant synthesized image. Quality metrics are used to measure the benefits of synthesis and used to compare results of different synthesis algorithms.

Entropy (EN):

Entropy is used to compute the amount of content present in the image. The privileged value of entropy indicates that the information increases and the synthesis performances are improved [3].

$$Entropy = \sum_{g=0}^{L-1} p(g) \log p(g)$$

Where p (g) is the probability of gray g, and the range of g is [0, …….. L-1]

A. **Comparison of Several Image Synthesis Algorithms for Different Images**

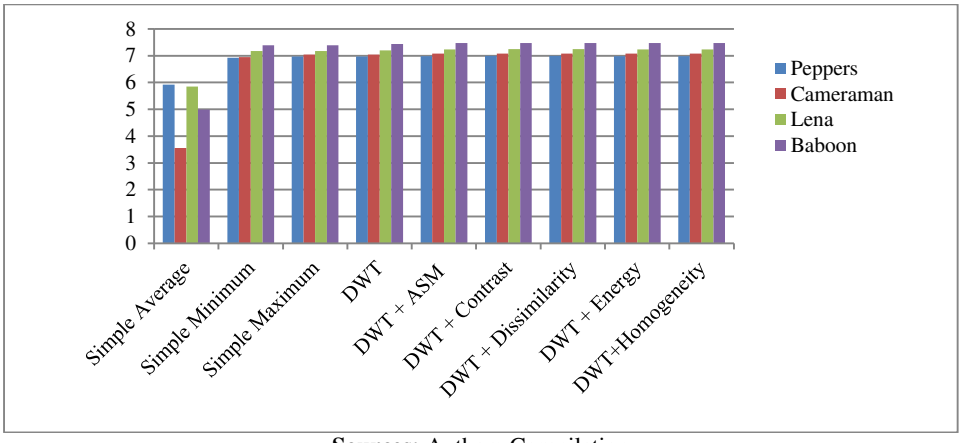
Table-1

Measuring parameter: Entropy									
Images	Primitive Image Synthesis Algorithms			DWT based Image Synthesis Algorithms					
	Simple Average	Simple Minimum	Simple Maximum	DWT	DWT + Texture features				
					ASM	Contrast	Dissimilarity	Energy	Homogeneity
Peppers (6.9837)	5.9229	6.9298	6.9670	6.9709	6.9899	6.9914	6.9938	6.9900	6.9900
Cameraman (7.0097)	3.5518	6.9457	7.0421	7.0484	7.0766	7.0839	7.0830	7.0768	7.0764
Lena (7.2398)	5.8496	7.1765	7.1775	7.1956	7.2375	7.2475	7.2451	7.2374	7.2365
Baboon (7.4840)	4.9934	7.3903	7.3903	7.4431	7.4737	7.4788	7.4775	7.4712	7.4731

Sources: Authors Compilation

B. **Graphical Representation of Image Synthesis Algorithms**

Graph-1



Sources: Authors Compilation

CONCLUSION

Spatial domain image synthesis techniques afford high spatial resolution. However, the main problem of spatial domain is image blurring. The transform domain provides high quality spectral information than compared to spatial domain. Therefore, image synthesis performs based on Discrete Wavelet Transform, which gives better results. The synthesized image quality was evaluated using Quality metrics. In combination of DWT and Texture, the quality of synthesized image still increased.

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ECONOMIC ANALYSIS OF SPECIAL ECONOMIC ZONES IN INDIA AND CHALLENGES FACED BY THEM

A. T. Srinivasa[25]

ABSTRACT

SEZs are established with an object of promoting investment and exports. Many developing countries are after establishment of SEZs in order to grow economically. The Exim Policy (1997-2000) launched the SEZ scheme in 2000 with the objective of providing the back up EPZs. By 2003, EPZs had been converted into SEZs (Mustafa 2009)[1]. SEZs are vehicles of industrialisation and employment generation.Many countries are witnessing a shift away from an important substitution based development strategy to one based on export promotion policy.

The present study took up a research question whether SEZs have contributed to employment, human development, and poverty reduction in India. It was felt that SEZs are contributing to the economic development of our country. SEZs are called differently in different nations. They are called as SEZs in China, maquiladoras in Mexico, Costa Rica and El Salvador, industrial free zones in Ghana, Camroon at Jordan, 'Special export processing zones' in Philippines and free economic zones in Russia (Armas and Sadni Jallab, 2002)[2].

KEYWORDS

Economic Analysis, SEZ, Challenges, Industrialization, Employment Generation etc.

INTRODUCTION

Export promotion is viewed as a significant policy for economic growth in developing countries. Innumerable measures have been persued to promote export competitiveness by different developing countries. Because of attaching prime important in order to achieve the stated goals, the idea of Export Processing Zones has gained strong significance in the recent years. The objective EPZ include making available goods and services free of taxes and duties and supported by integrated infrastructure for export promotion, expeditions, single window approval mechanism, and a package of incentives to attract foreign and domestic investments for promoting export led growth[3]. The terms 'special' means special economic system and policy.

The first SEZ was set up in Spain 1929 with the intention of increasing exports by value addition to the raw materials available in that country. Innumerable countries the UAE, Malaysia, Jordan, Poland, Kazakhstan, Philippines, Russia, South Korea and South Asian countries are following the Chinese path to liberalize their economics. The main objectives of SEZ Act are generation of additional economic activity, promotion of exports of goods and services, promotion of investment from domestic and foreign sources, creation of employment opportunities, and development of infrastructure facilities (Prashant Pandey) [3].

OBJECTIVE OF STUDY

- To study different challenges faced by SEZs,
- To study the pattern of investment,
- To study the employment generation,
- To study the exports done by SEZs.

METHODOLOGY OF STUDY

The study is based on secondary data. The SEZ data at the national level is primarily considered to gauge the performance of exports, employment and pattern of investment. The necessary a basic data is obtained from Ministry of Commerce, Government of India and certain websites.

In order to make this study more meaningful, relevant and appropriate percentage ratio/growth rate analysis and ANOVA to study the actual and trend projection of investments, employment generated and exports done. Secondary data has been processed and presented. Then in order to give a scientific touch to the data ANOVA statistical technique was adopted and results were interpreted. Further, the determinants are analyzed using the linear regression equation.

[25]Assistant Professor, Department of Statistics, BLDE Associations, Basaveshwara Arts and Commerce College, Karnataka, India, srinivasaat1974@gmail.com

REVIEW OF LITERATURE

Aradhana Agarwal (2004)[5] indicated the employment generation, both direct and indirect, has thus far been the most important channel, through which SEZs have impacted on human development and poverty reduction in India. Further, the author said that however, the role of SEZs in human capital formation and as an engine for promoting new knowledge, technologies and innovations through technology transfers and technology creation appears to be relatively limited.

Banumathi (2009)[6] viewed that trends in SEZs of India reveal that the number zones is increased to 870. The exports of these zones have increased 15 fold within the decade. The investments received by these zones were increased to 82 times more than 1998. The employment opportunities created were also grown 5 fold.

Prashant Ponday (2009)[7] expresed that SEZs in India is going through various ups and downs but overall it is trying to cope up with the economic crisis affecting India and the whole world.

Singh., J.P. (2005)[8] stated that SEZs turn boon to skilled with the growth of industrial activity and the skilled workers will get more opportunities to pick jobs that suit their professional aspirations.

Balasubramaniyan (2009)[9] opined that the Indian economy is growing at an average rate of 7% in the last decade. To maintain this growth rate, it is estimated the country will have to increase its energy consumption by at least 4% annually.

Civil Services Analyst (2008)[10] viewed that what contributes to greater growth is a greater scale of liberation, rather than increasing the number of SEZs.

CHALLENGES

It is said that SEZs create new employment in manufacturing, financial and other sectors. However, it is very difficult to say or to predict that many will lose their jobs with the land being acquired and how many will be employed in newly formed SEZ.

The farming community who depended an agriculture from different centuries will face severe consequences since their source of livelihood i.e., level holdings are last forever. The farmers are against forceful acquisition of their land in Punjab, Odisha, Maharashtra, and West Bengal. The State government will acquire land from farming community at cheaper prices and this renders unableness to buy new land in other areas.

Land ceiling Act do not apply to SEZs. The realtors acquire huge land through the State government at cheaper rates. In many areas governments itself involved in real estate business and this lead to violent protests in different states.

Though the different governments promoted SEZ concept, which is assuming serious proportions, yet many of the well informed in the country are lacking to understood the role of SEZs in uplifting rural economy and what consequences arises when it is mishandled in a country where land is in short supply (Gurumurthy 2007)[11].

It is feared that with huge tax rebates the existing other industries may shift to SEZs. This is a severe challenge to the national exchequer since there is a loss of high revenue to the state governments.

CONCLUSION

The wages paid in SEZs are not higher than the non-zones in India. However, in certain SEZs higher wages are paid in SEZs when compare to a non-zones. Tax exemptions are expected to be more benefited to SEZs rather than to the country amounting heavy revenue loss. In the name of economic development the government should not surrender to the private capital despite SEZs are providing gaining employment to many in India. The educated community so fare not convinced about the potentiality of SEZs in providing jobs to unemployed and attracting investments and improving exports. Force should not use to displace farmers and zones are becoming conflict zones that have to be addressed clearly.

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RESULT AND DISCUSSION

Investments

Table-1: Investments (Rs. Lakhs)

Year	Incremental Investment	Growth%	Cumulative Investment	Growth%
FY2008	73174	-	77210	
FY2009	104867	43.31	108903	41.05
FY2010	144453	37.75	148489	36.35
FY2011	198774	37.60	202810	36.58
FY2012	197839	-0.47	201875	-0.46
FY2013	232681	17.61	236717	17.26
FY2014	284441	22.25	288477	21.87

Sources: PAD Research Bureau, Compiled from CAG India Data as on 31-12-2014

Table-1 reveals that incremental investments have shown a growth over a period barring a few years. On an average the incremental investments have rising tendency from 40% from FY2009 to FY2011. However, FY2012 posted a negative growth rate of (-) 0.47%. The quick fall was arised an account of several legal and market dynamics in the both domestic and international economic including rising cost of operations, global slowdown, fall in market demand, imposition of MAT and DDT in 2011, lack of skilled manpower etc., These factors affected very much setting up if industrial projects within SEZs and thus negatively influenced the investors behaviour and sentiments. The achievements of growth rate in the FY2009-FY2011 could not be seen in the years 2013 and FY2015. The same picture emerges even from the analysis of cumulative investment growth rate.

Table-1-A: Actual and Trend of Investments in SEZs FY2008-FY2014

(Rs Crores)

Year	Incremental Investment(Y)	Trend Indices Yt=(Yt/Y0)100	Trend (Yc=a+bx)
FY2008	73174	100	75588.26
FY2009	104867	143.3118	109260.22
FY2010	144453	181.0605	142932.18
FY2011	198774	218.66511	176604.11
FY2012	197839	218.19511	210276.10
FY2013	232681	235.80631	243948.06
FY2014	284441	258.05139	277620.02
Note: Ey = 1236229, a.m. = 176604.14			

Sources: Computed from investment data from Ph.D. Research Bureau, compiled from CAG

ANOVA of Investments in SEZs

	d.f.	Ss	ms	F	F-ratio (From F table @ 5% level)
Regression	1	30816107375.7	36816107375.7	181.8921	F(1,5)
Residual	5	847098484.819	169419696.963	=6.61	
Total	6	31643205860.5			

Sources: Authors Compilation

Investments show rising trend from Rs. 73174 crores to 284441. Trend indices reveal that a rise of 2.58 times during the study period. The linear least square trend has shown an annual increase of 33671.96 in investments in SEZs. From the table-1A, it is apparent that he calculated value F value 181.8921 which is greater than TV = 6.61 @ 5% level of significance. Therefore, the null hypotheses are rejected and this proves that exists difference between actual investments and trend investments during the study period.

Table-2: Exports Form Operation SEZs 2005-06 to 2013-2014

Years	Exports Value in Rs. Crores	Billion USD	Growth over Previous year
2005-06	22840	5.08	-
2006-07	34615	7.69	52%
2007-08	66638	14.81	93%
2008-09	99689	22.15	50%
2009-10	220711	49.05	121%
2010-11	315868	70.19	43.11%
2011-12	364478	81.00	15.39%
2012-13	476159	88.18	31%
2013-14	494077	82.35	4%

Sources: (i) Ministry of Commerce & Industry Department of Commerce and Websites
(ii) DHD Research Bureau, Compiled from CAG India.

Table-2 reveals the exports scenario of the SEZs from 2005-06 to 2013-14. Exports from SEZs have shown a growth rate during the previous years. However, the exports growth rate remained extremely volatile from 52% in FY2007 to 121% in FY2010 and to 43% in FY2011. Subsequently the following years registered a declining growth rate from 15% in FY2013 declining growth rate from 15% in FY2013 to 4% FY2013-14. Though there exists huge variations in growth rate, exports from SEZs have witnessed a significant rise of around 22 fold from Rs. 22840 crores in FY2005-06 to Rs. 5 lakh crores in the FY2013-14.

Table-2A: Exports Trend

Year	Exports(Y) Rs. in crores	Trend Indices It = (Y1/Y0)100	Trend (Yc=a+by)
2005-06	22840	100	-35309.6221
2006-07	34615	151.55	-31714.1622
2007-08	66638	244.0629	98738.1445
2008-09	99689	293.6597	165762.1278
2009-10	220711	415.0592	232786.1111
2010-11	315868	458.173	299810.0944
2011-12	364478	473.5623	366834.0777
2012-13	476159	504.2033	433858.061
2013-14	494077	507.9393	500882.0443
			Arithmetic Mean = 232786.1111

Sources: Computed from Experts data, Ministry of Commerce and Industry, Dept. of Commerce

ANOVA

	d.f.	ss	ms	F	F-ratio (From F table)
Regression	1	265141787658	265141787658	120.3481	F(1,7)
Residual	7	15421860833	2203122976.14		=5.59
Total	8	280563648491			

Sources: Authors Compilation

From the above ANOVA it is clear that the unlimited F value being 120.3481 greater than the TV = 5.59 @ 5% level of significance with degree of freedom V = 1, V2 = 7 fails to accept the null hypotheses that states no difference between actual exports and trend of exports. Therefore we may conclude that since the null hypotheses is rejected the alternative that there exists difference between actual exports and trend exports may be accepted.

Table-3: Employment Generation

Year	Incremental Employment	Growth%	Cumulative Employment	Growth
FY2008	201531	-	336235	-
FY2009	252735	25.41	387439	15.23
FY2010	368907	45.97	503611	29.98
FY2011	541904	46.89	676608	34.35
FY2012	710212	31.06	844.916	24.88
FY2013	940210	32.38	1074904	27.22
FY2014	1105141	17.54	1239845	15.34
a.m. = 588661.429				

Sources: PhD Research Bureau, Compiled from CAG, India.
Note: Data as on 31-12-2014.

Table-3 reveals that employment generation has significant and to commence at 25.41% in the FY2008 to 47% in the FY2011. The table further reveals that growth rates after 2011 declined because of continuous de-notification of number of SEZs because of adverse markets dynamics corresponding to the incremental employment growth rate, cumulative employment growth rate has marked a growth from 15.23% to 27.22% in FY 2013.

Table-3A: Employment Generation: Actual and Trend Projection

Year	Employment Generation	Trend Indices It (Yt/Y0)/100	Trend (Yc=a+bx)
FY2008	201531	100	67308.1239
FY2009	252735	125.407	441092.548
FY2010	368907	171.372	514876.952
FY2011	541904	218.266	588661.429
FY2012	710212	249.325	662445.8707
FY2013	940210	281.733	736230.3124
FY2014	1105141	299.176	810014.7541

Sources: Author's compilation from the data, Ministry of Commerce Industry

ANOVA

	d.f.	ss	ms	F	F-ratio (From F table)
Regression	1	510327284992	510327284992	14.7229	F(1,5)
Residual	5	207972571466	34662095244.3		6.61
Total	6	718299856458			

Sources: Authors Compilation

The above ANOVA table reveals that he calculated F value being 14.7229 greater than TV=6.61 @ 5% level of significance with d.f. V1= 1 and V2 = 5 fails to accept the null hypotheses. Therefore, we may conclude that there exists difference in the actual employment generation to trend projection.

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E-GOVERNANCE IN CLOUD

Preeti Bansal[26] Dr. M. K. Sharma[27]

ABSTRACT

In the current scenario, every enterprise wants to implement Cloud Computing to fulfill their computing needs. Cloud computing permits to uniformly cover the whole country with e-government solutions, independently of divergence of local administrative units that may be better or worse prepared to provide e-services. Service-oriented architecture facilitates provision of compound services covering whole customer processes, where a customer may be a citizen or an enterprise and analysis of cloud computing and its application in the context of e-government. In this paper, we analyze cloud computing and examines its application in the context of e- Governance.

KEYWORDS

Computing, Governance, IaaS, SaaS, PaaS etc.

INTRODUCTION

Cloud Computing provides a great opportunity for enabling reliable E-Governance quickly at lower costs. Cloud computing features like application virtualization, end-to-end service management, instant deployment and ease of maintenance are catalysts, that jumpstart application deployment on the Cloud architectures can benefit government to reduce duplicate efforts and increase effective utilization of resources. A unified e-government infrastructure, based on cloud and SOA architectures is required, that paves the way for interagency information sharing and workflow and is enabling the delivery of seamless services to the public. Cloud architectures allow rapid deployment of turnkey test environments with little or no customization.

INTRODUCTION TO E-GOVERENANCE

E-Government' (or Digital Government) is defined as 'The employment of the Internet and the world-wide-web for delivering government information and services to the citizens. E-government describes the use of technologies to facilitate the operation of government and the disbursement of government information and services. E-government, short for electronic government, deals heavily with Internet and non-internet applications to aid in governments. E-government includes the use of electronics in government as large-scale as the use of telephones and fax machines, as well as surveillance systems, tracking systems such as RFID tags, and even the use of television and radios to provide government-related information and services to the citizens. Governance is all about flow of information between the Government and Citizens, Government and Businesses and Government and Government. E-Governance also covers all these relationships as follows:

Government-to-Citizen

G2C is the communication link between a government and private individuals or residents. Such G2C communication most often refers to that which takes place through Information and Communication Technologies (ICTs), but can also include direct mail and media campaigns. G2C can take place at the federal, state, and local levels. G2C stands in contrast to G2B, or Government-to-Business networks.

Government-to-Business

G2B is the online non-commercial interaction between local and central government and the commercial business sector, rather than private individuals (G2C), with the purpose of providing businesses information and advice on e-business 'best practices'.

Government-to-Government

G2G is the online non-commercial interaction between Government organizations, departments, and authorities and other Government organizations, departments, and authorities. Its use is common in the UK, along with G2C, the online noncommercial interaction of local and central Government and private individuals, and G2B the online non-commercial interaction of local and central Government and the commercial.

[26]Research Scholar, Mewar University, Rajasthan, India, preetibansal02061988@gmail.com
[27]Associate Professor, Amrapali Group of Institutes, Uttarakhand, India, sharmamkhld@gmail.com

Government-to-Employees

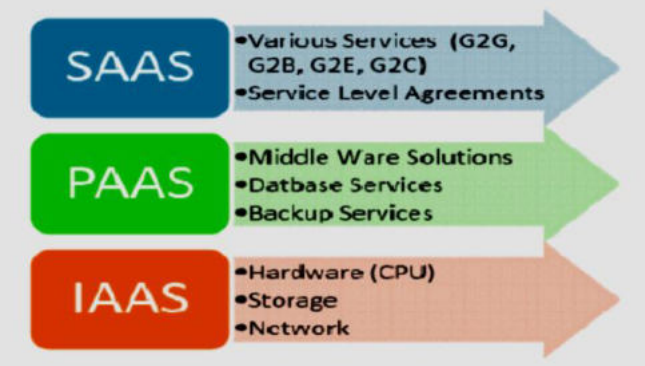
G2E is the online interactions through instantaneous communication tools between government units and their employees. G2E is one out of the four primary delivery models of e-Government. Following are the examples of G2E: a) E-payroll, b) E-training, c) E-records Management, d) Enterprise Case Management, e) Integrated Acquisition, f) One-stop Recruitment, and g) Integrated Human Resources System.

INTRODUCTION TO CLOUD COMPUTING

Cloud computing is the delivery of computing and storage capacity as a service to a community of end-recipients. The name comes from the use of a cloud-shaped symbol as an abstraction for the complex infrastructure it contains in system diagrams. According to the IEEE Computer Society Cloud Computing is "A paradigm in which information is permanently stored in servers on the Internet and cached temporarily on clients that include desktops, entertainment centers, table computers, notebooks, wall computers, handhelds, etc.".

See below the figure-1, Architecture of Cloud Computing for E-Governance (Ref IIIT, Hyderabad Cloud Computing for E-Governance A white paper)

Figure-1: Architecture of Cloud Computing for E-Governance



Sources: Authors Compilation

Infrastructure as a Service

It consists in delivering computer infrastructure as a service. The infrastructure can include servers, storage space, network equipment and system software like operating systems and database systems. The infrastructure is provided in the form of virtual environment. The applications are accessible from various client devices through a thin client interface such as a web browser from the client's point of view it looks and operates exactly like standard infrastructure, while in fact it is one of many virtual environments hosted simultaneously on the same physical infrastructure resources.

Platform as a Service

It consists in delivering application development environment. It supports the full life cycle of designing, implementing, testing, and deploying web applications and services. Developers, project managers, and testers are not required to download or install any development software on their local computers. The capability provided to the consumer is to deploy onto the cloud infrastructure consumer-created or acquired applications created using programming languages and tools supported by the provider.

Software as a Service

It consists in delivering complete applications such as customer relationship management or enterprise resource planning over the Internet. A client purchases an access to these applications instead of purchasing licenses and exploiting them locally. The capability provided to the consumer is to provision processing, storage, networks, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software, which can include operating systems and applications. However, Cloud computing enables providers to use distant data centers for cloud computing. Still, while some have predicted the end of the PC era with the rise of the cloud-computing model, many believe that most organizations and even individuals will continue to make use of traditional PCs and laptops, even if more and more of their use will be to access the cloud.

E-GOVERNANCE CHALLENGES

"E-governance, however, is not really the use of IT in governance but as a tool to ensure good governance. E-Governance does not mean proliferation of computers and accessories; it is a political decision which calls for discipline, attitudinal change in officers and employees, and massive government process re-engineering, "Ravi Kant (Special Secretary, IT, Government of West Bengal) explains. All implementers and drivers of e-governance initiatives agree that the biggest challenge of deploying e-governance is not technology but change management. Change management is important not only in terms of cultural change but also in terms of changing operations and processes workflow that the automated environment will introduce.

"It's important to educate people at all levels about the benefits of technology. The various benefits and advantages of enabling the system should be communicated clearly right at the beginning to ensure popular support which will lead to greater chances of success," explains Dr G D Gautama, Secretary, IT, Government of West Bengal. It is important to explain to people that the introduction of IT will not take away existing jobs but will make them easier, and if less manpower is required for operations the staff can be redeployed elsewhere with no threat to their career growth path. The key challenges with electronic governance are not technology or internet issues but organizational issues like: a) Redefining rules and procedures, b) Information transparency, c) Legal issues, d) Infrastructure, Skill and awareness, e) Access to right information, f) Interdepartmental collaboration, g) Tendency to resist the change in work culture.

Other obstacles are geographical distances, lack of trained human resources, and lack of ICT penetration in remote areas. For instance, a good e-governance application will not benefit anybody in remote areas if there is no supporting infrastructure such as electricity, computers and connectivity. Many pilots have been successfully implemented in almost all areas of E-Governance, but say Ravi Kant, "Rather than having an obsession to undertake pilot projects, we should capitalize on the existing successful examples in the country and customize them for our use."

The challenges of connectivity have also reduced over the years with the falling prices of bandwidth and increased reach of connectivity service providers. Major VSAT service providers already have established large footprints in India, and telecom service providers have stepped up their leased line offerings even in previously unrepresented territories. Many state governments have developed state wide area networks (SWANs), customized applications, and data banks. However, the interconnectivity of the servers is an issue, which calls for the establishment of state data centers. The NIC, which is promoting e-governance in the country, has established VSAT connectivity in all the districts of the country. There remain however, issues such as standardization, inter-operability, security, and propriety vs. open source. The other set of challenges lie in extending the reach of e- Governance services to 70% of Indian population that lives in villages. These include:

- Assessment of local needs and customizing e- Governance solutions to meet those needs,
- Connectivity,
- Content (local content based on local language),
- Building Human Capacities,
- e-Commerce,
- Sustainability.

CLOUD BENEFITS OVER THE E-GOVERNANCE

Disaster Recovery

Natural disasters like floods, earthquakes, wars and internal disturbances could not only result in the loss of data from E-Governance applications, but these events can also make services unavailable to people in times of need. Multiple installations in geographically separated locations with complete backup and recovery solutions must be provided.

Performance and Scalability

The architecture and technology adopted for the E-Governance initiatives should be scalable and common across delivery channels. It should meet the demands of a growing number of citizens. If implemented, E-Governance portals could be accessed by the highest number of users who would be beneficiaries of Information Technology.

Data Scaling

The databases should be scalable, to deal with large data, generated over the years, for E-Governance applications. Where Relational Databases ensure the integrity of data at the lowest level, Cloud databases could be scaled and can be used for such type of applications. Cloud databases available for deployment offer unprecedented level of scaling without compromising on

performance. Cloud databases must be considered if the foremost concern is on-demand, high-end scalability – that is, large scale, distributed scalability, the kind that cannot be achieved simply by scaling up.

Auditing and Logging

Traceability of any changes to informational content in the E-Government services is very important. Corruption in government organizations can be controlled by using Information Technology services, by making the providers of the services accountable. Process audits and security audits must be executed periodically to ensure system security. The Cloud can help in analyzing huge volumes of data and detecting any fraud. It can help in building and placing defense mechanisms to enhance the security, thereby making the applications reliable and available.

Reporting and Intelligence (Better Governance)

Data center usage (CPU, Storage, Network etc.), peak loads, consumption levels, power usage along with time are some of the factors that must be monitored and reported for better utilization of resources. Planning well can minimize costs. Data must be profiled in order to obtain better visibility into various services provided by the government.

Systems Integration and Legacy Software

Applications that are already deployed and are providing services not only have to be moved to the Cloud, but must also integrate with applications deployed in the Cloud. The power of Information Technology comes from co-relating the data across applications and passing messages across different systems to provide faster services to the end users. Cloud is built on SOA principles and can offer excellent solutions for integration of various applications. In addition, applications can be easily moved to the Cloud.

Obsolete Technologies and Migration to New Technologies

Technology migration is the biggest challenge. Moving to different versions of software, applying application and security patches is the key to maintaining a secure data center for E-Governance. Cloud architecture efficiently enables these kinds of requirements, by co-existing and co-locating different versions and releases of the software at the same time. Once these applications are tested, they can be migrated to production with ease.

CONCLUSIONS

Cloud computing can handle the above mention challenges and finally address global challenges of e-government system. In order to make e-government system sustain and survive for a long time in entire world, the cloud computing is only solution for today and tomorrow. Cloud helps enabling E-Governing services faster and cheaper thereby accelerating the adoption and use of Information Technology for e-services. Cloud architectures allow rapid deployment of turnkey test environments with little or no customization. The future of cloud computing has to be visible more in coming years and we will learn lessons about the drawbacks of cloud computing like security of data after some time.

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IMPACT OF TECHNOLOGICAL ADVANCEMENTS IN THE BANKING SECTOR

Rebeena Alavudeen[28] Dr. Sr. Rosa K. D.[29]

ABSTRACT

The growth of technology has revolutionized many sectors, one of which is banking industry. Banks occupy the most imperative status in the modern world. Strong banking system is a prerequisite for a healthy and prosperous economy. Growing banking sector is one of the reasons for India's growth. Now the advanced technology authorized the banking industry to survive in the environment of globalization and cutthroat competition. Moreover, central banks are also progressive for formulating and implementing new guidelines for banking sector reforms and customer satisfaction.

Now most of the functions of banking can be performed by sitting at own place. The advancement in Information Technology has changed the working of banks and has contributed to its growth. As a result, a remarkable turning point has occurred in the field of modern banking. Banks, the backbone of any economy, have started working in a new fashion. Now a bank is no more a place just for the purpose of credit and debit, but astounding growth in the IT sector has opened a colossal number of new avenues. IT has considerable impact on performance and functioning of banking sector as new service such as ATMs, large value payment systems, retail payment systems, etc., are being offered to the customers. Large value and retail value payment systems through National Electronic Fund Transfer (NEFT), Real Time Gross Settlement System (RTGS), Electronic Fund Transfer (EFT) and Electronic Clearing System (ECS) made it easy for banking customers to transfer funds without any delay. Information Technology (IT) has become the basic requirement of banking sector due to growing competition and globalization.

The present paper is an attempt to analyze the Impact of Technological Developments in the Banking Sector and the challenges faced by banking sector due to technological developments.

KEYWORDS

Information Technology, Banking, Electronic Fund Transfer, Large Value Clearing and Settlement System etc.

INTRODUCTION

In the development of Indian Economy, Banking sector plays a very important and crucial role. With the use of technology, there had been an increase in penetration, productivity and efficiency. It has not only increased the cost effectiveness but also has helped in making small value transactions viable. It also enhances choices, creates new markets, and improves productivity and efficiency. It has been noticed that financial markets have turned into a buyer's markets in India.

Technology allows banks to create what looks like a branch in a business building's lobby without having to hire manpower for manual operations. The branches are running on the concept of 24 X 7 working, made possible by the use of Tele banking, ATMs, Internet banking, Mobile banking and E-banking. This technology driven delivery channels are being used to reach out to maximum number of customers at lower cost and in most efficient manner. Effective use of technology has a multiplier effect on growth and development.

Technology allows transactions to take place faster and offer unparalleled convenience through various delivery channels. Modern banking with internet techniques leads to better results regarding customer's satisfaction and is a good tool for attaining their retention[1]. Internet banking is highly preferred by larger banks and banks having higher branching networks[2]. Information technology holds a promise to change the face of banking in the next few years. New entrants are looking to leverage their existing strengths in the Indian banking arena.

The strength of Indian banking lie in withering storms and rising up to the expectations from all the quarters-catching up with all the technological developments[3].

[28]Research Scholar, Research and P.G. Department of Commerce and Management Studies, St. Joseph's College, Kerala, India, rebinaabid@gmail.com
[29]Associate Professor and Research Guide, Research and P.G. Department of Commerce and Management Studies, St. Joseph's College, Kerala, India, srrosebastin@gmail.com

STATEMENT OF PROBLEM

The use of Information Technology in all spheres of financial and banking sectors is a deep reality. The sector has enabled the banking sector to go beyond its traditional role and is now playing an increasingly important role in its key areas of operation. The customers have high expectations and have become more demanding now as they are also more techno-savvy as compared to their counterparts of the yesteryears. Information technology poses both opportunities and challenges. The present study is analyzing the changes in the banking sector due to the technological advancement and its challenges faced by banking sector.

OBJECTIVES OF STUDY

The following are the objectives of the present study:

- To analyze the changes in the banking sector due to technological advancement;
- To identify the challenges in the banking sector because of technological advancement.

RESEARCH METHODOLOGY

The present study is based on the secondary data collected from different journals, magazines, web sites and published data from various issues of RBI. Various studies on this subject have also been referred in this study.

Technological Development in Banks

Indian banking has changed terrifically in the past few years. The changes are multiple and at a fast pace in the term of transformation of technology advancement. It has become completely dependent on technology as the service/ product channel. Up gradation of technology, innovation and modernization are the key factors of having excellence in banking sector. It becomes necessary for a bank to differentiate its products from others.

The differentiation can be in terms of specialization, new products, increasing benefit by technology convergence.

Technology in banking sector is one of the focus areas of banks. The banks in India are using Information Technology (IT) not only to improve their own internal processes but also to increase facilities and services to their customers. Technological innovation not only enables a broader reach for consumer banking and financial services, but also enhances its capacity for continued and inclusive growth. IT improves the front-end operations with back end and helps in bringing down the transaction costs for the customers.

The important changes or events in the field of IT in the banking sector are:

Internet Banking: Internet banking enables a customer to do banking transactions through the bank's website on the Internet. It is a system of accessing accounts and general information on bank products and services through a computer while sitting in its office or home. Internet banking is also called online banking. This is also called virtual banking.

Table-1: Showing Percentage of Online Banking Users

Year	Percentage
Jun-2000	18%
May-2002	30%
Sep-2002	32%
Nov-2004	44%
Jan-2005	44%
Sep-2007	53%
Dec-2008	55%
Apr-2009	57%
May-2010	58%
May-2011	61%
May-2013	61%

Sources: Pew Research Center- August 2013

According to the data published by Pew Research Center in August 2013, only a small percentage of Internet users (18%) have used online banking in the year 2000. In 2002 May, it increased into 30%, which is near double the customers. Then there is a gradual increase from 30% to 61% in the year in 2011and then became stable until now.

Automated Teller Machine (ATM): Automated Teller Machine is a computerized machine that provides the customers of banks the facility of accessing their accounts for withdrawing cash and to carry out other financial transactions without the need of actually visiting a bank branch. In addition to cash withdrawal, ATMs can also be accessed for services/ facilities such as accounts information, cash deposit, regular bill payment, purchase of re-load vouchers for mobiles, mini statement, request for cheque book/bank statement, fund transfer and loan account enquiry etc.

Table-2: Showing Growth in ATM (2005 To 2013)

Year	Total Number of ATMs in India	Increase
2005	16750	-
2006	21509	4759
2007	27088	5579
2008	34789	7701
2009	43651	8862
2010	60153	16502
2011	74743	14590
2012	92455	17712
2013	114364	21909

Sources: Cyber Media DQ Estimates Research

According to Cyber Media DQ Estimates Research, the number of ATMs in India is growing year by year. In the Year 2005, number of ATMs was 16750. In 2006, ATMs increased to 21509. The studies show that in the year 2013, the number of ATMs in India reached a number of 114364.The growth of volume of ATMs indicates that the customer most prefer ATMs for transactions because they do not want to go branches for their day to day banking transaction.

MICR Clearing: Traditional cheque clearing process is time consuming and lengthy it affects value of transaction of settlement. To enhance speed of cheque clearing the RBI has started MICR cheque and MICR clearing system. Magnetic Ink Character Recognition (MICR) is a character recognition technology adopted mainly by the banking industry to facilitate the faster processing of cheque.it is called MICR clearing system. There are 64 MICR clearing centers are operated in India in 15 divisions in India. MICR technology transformed cheque-processing systems by enabling the introduction of automated clearinghouses. Cheque clearing accounts for over 95% of the retail payment and more than 70% of cheque clearing is based on MICR technology.

Phone Banking: Customers can now dial up the bank's designed telephone number and he by dialing his ID number will be able to get connectivity to bank has designated computer. The software provided in the machine interactive with the computer asking him to dial the code number of service required by him and suitably answers him. By using Automatic voice recorder (AVR) for simple queries and transactions and manned phone terminals for complicated queries and transactions, the customer can actually do entire non-cash relating banking on telephone: Anywhere, Anytime .

Tele Banking: Tele banking is another innovation, which provided the facility of 24 hour banking to the customer. Tele banking is based on the voice processing facility available on bank computers. The caller usually a customer calls the bank anytime and can enquire balance in his account or other transaction history. In this system, the computers at bank are connected to a telephone link with the help of a modem. Voice processing facility provided in the software. This software identifies the voice of caller and provides him suitable reply.

Mobile Banking: Mobile banking enables to perform various online banking tasks from any location using a cellular device or a smart phone from bill payment to transferring fund, checking account balances to locating an ATM. Mobile banking is used for performing balance inquiry, account transactions, payments etc.

Table-3: Showing Growth of Mobile Banking

Year	Percentage
May 2011	18%
Sept 2013	29%
May 2013	32%
July 2013	35%

Sources: Pew Research Center August 2013

According to Pew Research Center August 2013, the growth of Mobile Banking in India is increasing year by year. In May 2011, Mobile Banking was 18%, In September 2012 Mobile Banking increased to 29%. The studies show that Mobile Banking reached to 35% in July 2013.

***Multifunctional Kiosk*:** Banks offer kiosk services such as E-ticketing by placing their kiosk machine at important places. Customers of Banks can book railway e-tickets using bank's kiosk machines.

Voice Mail: Talking of answering systems, there are several banks mainly foreign banks now offering very advanced touch-tone telephone answering service which route the customer call directly to the department concerned and allow the customer to leave a message for the concerned desk or department, if the person is not available.

CARDS TRANSACTION

***Debit Card*:** Debit card is a card, which designate to customer to withdraw own money from the bank in any time. It is also called a plastic card. Debit card is used for cash withdraw from ATM, funds transfer, paying bills, accessing detail account information, charging PIN etc. Bank gives debit card free of cost at the time of opening account. From 1stJan 2011, RBI declared that for every transaction with debit card on ATM user has to enter password for every transaction. This is done for security purpose.

Credit Card: Credit Card is a postpaid card. The Credit Card holder is empowered to spend money wherever and whenever he wants with his Credit Card within the limits fixed by his bank.

Table-4: Showing Card based Transactions Value (Rupees in Crores)

Category	2005-06	2006-07	2007-08	2008-09	2009-10
Debit Card	33886	41361	57985	62950	65356
Credit Card	5897	8172	12521	18547	26566

Sources: RBI, Annual Report 2009-10

According to RBI report 2009-10, the Debit Card and Credit Card users in India is increasing. From 2005-06 to 2009-10, Debit Card transaction increased from 33886 to 65356 (amount in Crores) which is almost double. Likewise, from 2005-06 to 2009-10, Credit Card transactions also increased from 5897 to 26566 (amount in Crores). Debit card transactions are very high compared to credit card.

Electronic fund Transfer (EFT & NEFT): It is a system facilitating one-to-one funds transfer. Individuals, firms and corporate can electronically transfer funds from any bank branch to any individual, firm or corporate having an account with any other bank branch. EFT System hosted and operated by the RBI, permits transfer of funds, up to Rs. 5 lakh from any account at any branch of any member bank in any city to any other account at any branch of any member bank in any other city. This system utilizes the Service Branches of the member banks and the nodal offices of RBI. The Reserve Bank of India acts as the service provider as well as regulator. The NEFT was introduced in 2005. Since its inception, the coverage of NEFT has increased. It is called Special Electronic Fund Transfer (SEFT) also. It is covering about 30,000 branches in 500 cities. This has facilitated same day transfer of funds across accounts of constituents at all these branches.

Table-5: Showing Electronic Funds Transfer EFT/NEFT

Year	Volume (Million)	Value (Trillion)
2009-10	66.3	4.1
2010-11	132.3	9.4
2011-12	226.1	17.9

Sources: Statistical Tables Relating to Banks in India 2009 to 2012

According to Statistical Tables Relating to Banks in India 2009 to 2012, the overall EFT and NEFT based clearing grow from Rs. 66.3 million to Rs. 226.1 million in the year 2009-10 to 2011-12. That shows a growth more than 4 times in a period of 3 years.

Table-6: Table Showing Electronic Transactions of Overall Industry

Metrics	Overall Banking Industry 2012-13
Percentage of paper based transaction	43%
Percentage of electronic transaction	57%
Percentage of funds transferred using paper based	9%
Percentage of funds transferred using electronic system	91%

Sources: IBA-Banking on Technology - January 2014

The pie diagram shows clearly that a giant of fund transfer (91%) is through EFT(Electronic fund transfer) and the paper based transactions are only 9% in 2012-13, in the whole banking industry and the percentage of electronic transactions comes to 57%. There is a remarkable shift to electronic mode of dealing, compared to traditional.

Real Time Gross Settlement (RTGS): RTGS stands for Real Time Gross Settlement. RTGS system is a funds transfer mechanism where transfer of money takes place from one bank to another on a real time‖ and on-gross basis. This is the fastest possible money transfer system through the banking channel. Settlement in-real time means payment transaction is not subjected to any waiting period. The transactions are settled as soon as they are processed. Gross settlement means the transaction is settled on one to one basis without bunching with any other transaction. Considering that money transfer takes place in the books of the Reserve Bank of India, the payment is taken as final and irrevocable. The system facilitates Inter-bank as well as customer payments. In India not all bank branches are RTGS enabled because only core banking (CBS) enabled bank branches can extend this facility. As on January 31st 2009, more than 57000 bank branches were enabled for RTGS system.

Table-7: Table showing Large Value Clearing and Settlement Systems (Amount in Rs. Crore)
Real Time Gross Settlement System

Year	Volume (Million)	Value (Trillion)
2009-10	33.2	322.8
2010-11	49.3	394.5
2011-12	55	484.9

Sources: Statistical Tables Relating to Banks in India 2009 to 2012

According to Statistical Tables Relating to Banks in India 2009 to 2012, as well as the graphs show a steady increase in the volume of RTGS. Transactions related customers remittances have raised from 33.2 million to 55 million. It shows that increasing popularity of RTGS in Indian banking system. Similarly, the value has increased from 322.8 trillion to 484.9 trillion.

Core Banking: Core Banking stands for "Centralized online real-time electronic banking". A core banking system is the software used to support a bank's most common transactions. This means that the entire bank's branches access applications from centralized datacenters. This means that the deposits made are reflected immediately on the bank's servers and the customer can withdraw the deposited money from any of the same bank's branches throughout the world. Core banking solution is a networking, which creates an environment where the entire bank's operations can be controlled and run from a centralized hub. This creates a centralized customer database, which makes anytime, anywhere, anyway banking possible. It provides faster and efficient service to the customers.

Table-8: Showing Banks Branches under Core Banking Solutions

Name of Bank	Branches Under Core Banking Solutions
Public Sector Banks	90%
Nationalized Banks	85.90%
State Bank Group	100

Sources: Report on Trend and Progress of Banking in India 2009-10, PP-55

Table 8 shows that by the end of March 2010, high percentages of banks have adopted core banking. Percentage of Public Sector Banks branches - 90%, Nationalized Banks branches - 85.90% and State bank -100%.

Biometric Technology: Biometric Technology enables the delivery of information safely at a faster rate and allows convenient access of confidential information. It prevents unnecessary frauds and allows easy banking transactions.

Remote Deposit Capture (RDC): RDC is the fastest growing trend in the banking industry. It allows the deposition of money to a bank from any location via an internet connection. Its process includes scanning of check images to a bank, thereby making check processing easier and safer.

Image Banking: Image Banking helps the banking system to replace manual handling and risk control with the introduction of electronic files and documents. With Image based transaction, the overall operational efficiency of banking system has improved.

Digital Wallet: A digital wallet holds the details of a user regarding payment and shipping information to make electronic commerce transaction easier.

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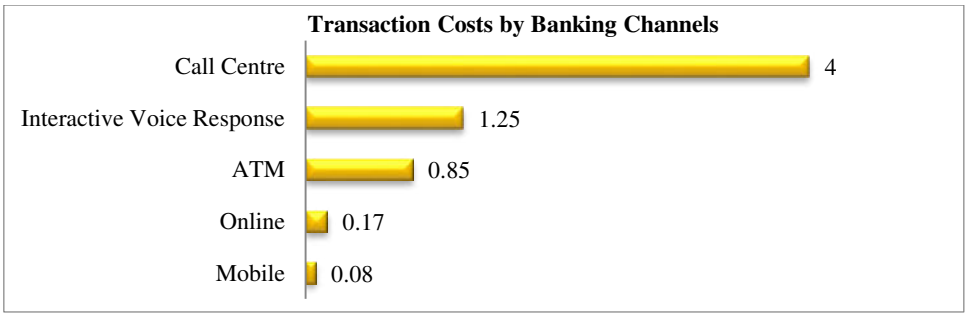
CHALLENGES

Important Operational Challenges:

The most important challenge faced by the banking sector due to technological developments is the operational cost. Transaction costs faced by banking sectors are shown in the chart below:

Graph-1



Sources: KPMG Report - Technology Enabled Transformation in Banking (Cost in US $)

Managing technology is a key challenge for the Indian banking sector. Developing or acquiring the right technology, deploying it optimally and then leveraging it to the maximum extent is essential to achieve and maintain high service and efficiency standards. Early adopters of technology acquire significant competitive advances. Frequent changes in technologies require upgrades in hardware and software. Therefore, maintenance of technology is a great challenge to the banking sector.

Customer retention, customer awareness and life cycle management is another challenge in the banking sector. Ever rising customer expectations and Retention of customers is going to be a major challenge. Banks need to emphasis on retaining customers and increasing market share. The primary challenge is to give consistent service to customers irrespective of the kind of channel they choose to use.

The banking sector is faced with multiple and concurrent challenges such as increased competition. Competition in banking sector brings various challenges before the banks such as product positioning, innovative ideas and channels, new market trends, cross selling at managerial and organizational part

Employee Training is another challenge. Banks are restricting their administrative folio by converting labor into machine power i.e. banks are decreasing manual powers and getting maximum work done through machine power. Skilled and specialized manpower is to be utilized and result oriented targeted staff are to be appointed.

Specific challenges include business risks and integrity of database i.e. ensuring that account transaction applications run efficiently between the branch offices and data centers.

Another major challenge includes the security problem. Chance for fraud is more in ATM/ electronic transactions.

Measures to Meet the Challenges

At corporate level to meet the challenges, various initiatives have been taken by various banks and implementation is in process besides up gradation of data center facilities:

- Single Window System,
- Revised Account opening from for capturing complete customer/Account data as per CBS requirement,
- Call center for customers,
- Customer Relationship Management (CRM) Application,
- Data Warehousing,
- Centralization of Functions:
  - Inward clearing data uploading and processing,
  - Check book issues,
  - MIS-On-Line Monitoring / Generation of statement by controlling offices,

- Audit from the remote location,
- Sending mails and statement of accounts to customers & completion of non-mandatory field in newly opened accounts.

Immediate Focus

To facilitate successful implementation of the above initiative, intensive efforts are to be undertaken by all of us on following issues:

- Completion of correct MIS details in all accounts and SRM's,
- Customer / Account data completion / correction,
- Customer-ID crystallization,
- Aggressive marketing of Internet Banking & Debit Card products to increase share of delivery channels transaction,
- Skill upgradation & increase in awareness of all staff member,
- Strict compliance of Circular & Guidance available online (CBSINFO) / Messages issued through scrolling ticker on login page.

FINDINGS AND SUGGESTIONS

The developments in information and communication technology resulted in numerous innovations in the banking system of India. Some of the major findings are:

- 61% of customers are using online banking as it provides perceived ease of use.
- Number of ATMs in India reached 114364. The growth of volume of ATMs indicates that customer most prefer ATMs for transactions because they do not want to go to branches for their day-to-day banking transaction.
- Mobile Banking in India increased from 18% to 35% from 2011to 2013.
- Overall EFT and NEFT based clearing grew from Rs. 66.3 million to Rs. 226.1 million in the year 2009-10 to 2011-12.
- Overall banking industry shows clearly that a giant of fund transfer (91%) is through EFT (Electronic fund transfer) and the paper-based transactions are only 9%. There is a remarkable shift to electronic mode of dealing, compared to traditional.
- Credit and Debit cards are being extensively used in the nation as they provide a convenient form of making payments for goods and services without the use of cheques and cash. Issue of credit cards is exhibiting a phenomenal growth in recent years. Debit card transactions are high compared to credit card transactions. RBI should enhance the quality and security of card based transactions.
- RTGS transactions related customers remittances raised from 33.2 million to 55 million from 2009-12. It shows that the increasing popularity of RTGS in Indian banking system.
- State Bank branches increased because of implementing Core Banking Solutions. Public Sector Banks branches - 90%, Nationalized Banks branches - 85.90% and State bank -100%. So that this creates a centralized customer, data base which makes anytime, anywhere, anyway banking possible.
- Banks are restricting their administrative folio by converting labor into machine power. Therefore, Skilled and specialized manpower is to be utilized and result oriented targeted staff have to be appointed.
- In Indian banking system, there is competition in providing modern banking facilities to their customers, but some banks are ignoring security in transaction and convenience of the customers. Banks should ensure customers security in transaction and convenience.
- The electronic clearing and settlement system is useful to bankers and customers but there is need of controlling non-secure transaction, EFT fraud, mistakes in settlement etc.
- The large number of complaints received by the Banking Ombudsman, published by RBI annual report for the financial year 2009-10 and 2010-11 are indicatives of the problems of technology developments. Complaints were related to ATM/debit/credit card transactions and remittance. In the financial transactions having transactional risk, it affects assurance about the services. For this reason there is need to minimize the transactional risks in the electronic payment system.

CONCLUSION

With I.T. revolution, banks are increasingly interconnecting their computer systems not only across branches in a city but also to other geographic locations with high-speed network infrastructure and setting up local areas and networks are now exposed to a growing number.

The cutthroat competition and increasing expectation of customers resulted in increased awareness on information technology among the banks in India. The arrival of foreign and new private sector banks with their superior technology based services has also forced the banks in India to switch over to the new technology in their day-to-day operations. The banks in India are using Information Technology not only to improve their own internal processes but also to improvise facilities and services to their customers.

The efficient use of technology has facilitated accurate and timely management of the increased transaction volumes of banks, which comes with larger customer base. Indian banking industry is greatly benefiting from I.T. revolution all over the world. It enabled sophisticated product development, better market infrastructure, implementation of reliable techniques for control of risks and has helped the financial intermediaries to reach geographically distant and diversified markets.

By designing and offering simple, safe and secure technology, banks reach at the doorsteps of the customers with an objective of delight customer satisfaction'. In fact, Information technology has succeeded in creating a win-win situation for all concerned segments in India.

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A STUDY OF TEACHING COMPETENCE OF SCHOOL TEACHERS IN RELATION TO THEIR ATTITUDE TOWARDS ICT AND TEACHER EFFECTIVENESS

Mohinder Singh[30] Dr. Sheojee Singh[31]

ABSTRACT

Teachers are the backbone of the entire education system. Their effectiveness and competencies the foundation on which the edifice of excellence in any society is built. Competence is a concept used to define the capabilities of an individual acquired through learning and education. A teacher performs number of instructional and related activities inside and outside the classroom. These activities are of varied types. The effective organization of these activities would require that a teacher possesses a certain amount of knowledge and also certain attitudes and skills. This is known as teaching competence. In other words, teacher competence refers to "the right way of conveying units of knowledge, application and skills to students". Therefore, an attempt has been made by the researcher to study the teaching competence of schoolteachers in relation to their attitude towards ICT and teacher effectiveness.

The present study has been conducted in only one developmental block Indora of district Kangra in Himachal Pradesh, India. In order to collect data, three standardized tools were used and administered to 100 private school teachers of district Kangra of Himachal Pradesh. In data analyses, descriptive statistics were used to describe and summarize the data collected from the private school teachers. The results indicate that there is no significant relationship between teaching competence and attitude towards ICT, teaching competence and teacher effectiveness, teacher effectiveness and teachers' attitude towards ICT.

KEYWORDS

Teaching Competence, Attitude towards ICT, Teacher Effectiveness etc.

INTRODUCTION

Educators, policymakers and parents agree that the key to improve school education in our country is to appoint highly skilled, effective and techno savvy teachers. Every aspect of school reform depends on highly skilled teachers for its success. Teachers need even more sophisticated abilities to teach curricula that are more complex. Improving teacher quality is one of the most direct and promising strategies for improving the quality of school education.

Medley and Shannon (1994) recommended that all evaluations of teachers be based on information about teacher effectiveness but noted, "Because direct information about teacher effectiveness is not available, many teacher evaluations are based on information about teacher competence or teacher performance".

Anderson (1991) stated, "An effective teacher is one who quite consistently achieves goals which either directly or indirectly focuses on the learning of their students".

Ryan (1960) remarked that an effective teacher might be understood as one who helps in the development of basic skills, understandings, proper work habits and desirable attitudes, value judgments and adequate personal adjustment of the students. Effectiveness is the requirements of a competency based teacher education, which includes knowledge, skills and values the trainee teacher, must demonstrate for successful completion of the teacher education programme. Information and communication technology as tools within the school environment include use for school administration and management, teaching and learning of ICT related skills for enhancing the presentation of classroom work, teaching/learning repetitive tasks, teaching/learning intellectual, thinking and problem solving skills, stimulating creativity and imagination; for research by teachers and students, and as communication tool.

Teaching Competence

A teacher's competency in 21st century, according to UNESCO (2008) is indicated by the fact that a competent teacher should have firm knowledge of the curriculum of his/her subject and to use technology into the curriculum. Formal system of education depends on three components that are curriculum, student and teacher. Teachers' role is to impart education and education builds societies (Muhammad, 2009).

[30]Research Scholar, Department of Education, Panjab University, Chandigarh, India, sahil121983@gmail.com
[31]Assistant Professor, Government College of Education, Chandigarh, India, drssingh02@gmail.com

The concept of competence is a relatively new approach that structures the vision of teaching. Competence refers to a potential ability and/or a capability to function in a given situation**.** Competency focuses on one's actual performance in a situation. This means that competence is required before one can expect to achieve competency. Thus, competence makes one capable of fulfilling his/her job responsibilities. Competency is determined by comparing current work functioning with established performance standards developed in the work environment according to a specific role and setting.

According to Verma et al (2006), "competencies in education create an environment that fosters empowerment, accountability, and performance evaluation, which is consistent and equitable. The acquisition of competencies can be through talent, experience, or training". For delivery of quality education, we need quality teachers who are committed to teaching and equipped with necessary knowledge, skills and competencies for effective teaching. Teaching competency includes teaching behaviour and teaching skills. Teaching behaviours can be linked with knowledge of the subject matter and its presentation. The teacher acquires that knowledge through his continuous efforts and learns presentation during their training which determines his effectiveness. The teaching competence of a teacher refers to the set of knowledge, abilities and beliefs a teacher possesses and brings to the teaching situation. Each specific type of competence is called competency. Teaching competence is the sum total of all the competencies possessed by the teacher that are used in the teaching situation.

Teacher Effectiveness

Barr (1952) remarked "Teacher effectiveness is a relationship between teachers, pupils and other persons concerned with the educational understanding. Teaching competence is a combination of traditional ideas that were propounded by the great educators in the past on one hand and at the new ideas like- systematic approach to education on the other hand". The term "teacher effectiveness" is used broadly, to mean the collection of characteristics, competencies, and behaviour of teachers at all educational levels that enable students to reach desired outcomes, which may include the attainment of specific learning objectives as well as broader goals such as being able to solve problems, think critically, work collaboratively, and become effective citizens. Dunkin (1997) considered that teacher effectiveness is a matter of the degree to which a teacher achieves the desired effects upon students. He defined teacher competence as the extent to which the teacher possesses the requisite knowledge and skills, and teacher performance as the way a teacher behaves in the process of teaching.

Attitude towards ICT

Attitude towards ICTis the predisposition of a person to respond positively or negatively towards computers and related technologies. It affects everything the person does with the computer and in fact reflects what experience the user has and is hence a determining factor of the user's behavior towards computers. Additionally, the user's computer attitude provides the user with a framework within which to interpret the effect and the integration of computer in the user's life (Ololube, 2009).

Review of Related Studies

Many studies have been conducted on teacher effectiveness in relation to attitude towards ICT for teachers of various levels. Most of them confirm a positive correlation between these two variables. Ahmad (2004), Regina, Grozman and Tilzon (2004), Davidovitch and Milgram (2006), Heck (2009) Vogt and Rogalla (2009) and Ndibalema (2014) found a positive correlation between these variables in their studies whereas. Kaur (2002) did not find any significant gender differences in teaching competencies of teachers at various levels. Most of these studies indicated that teaching competence of effective teachers is positively correlated with their positive attitudes towards the use of ICT for excellence in teaching learning interactions.

NEED AND SIGNIFICANCE OF PROBLEM

Most of the reforms in education are aimed at better effectiveness of teachers in facilitating a creative classroom climate. But it is found that the teachers who have better competencies in handling the students, the subject they teach, the communication styles, and the positive attitude towards optimum utilization of digital resources (ICT) create better result oriented classroom conditions. Also the integration of Information and Communication Technology (ICT) has been assumed as the new technological tool in the present educational system. Use of ICT in education motivates teachers to gain necessary knowledge and skills in imparting instructions. ICT plays a critical role in information and educational system based on the educational paradigms such as constructive theory so that teachers develop the necessary knowledge and skills sought in this digital age. Hence the investigator proposed to study the Teaching competence of school teachers in relation to their attitude towards ICT and teacher effectiveness.

OBJECTIVES OF STUDY

- To study the relationship between teaching competence and teacher effectiveness of school teachers.
- To study the relationship between teaching competence and attitude towards ICT of school teachers.
- To study the relationship between teacher effectiveness and attitude towards ICT of school teachers.

HYPOTHESES OF STUDY

- There is no significant relationship between teaching competence and teacher effectiveness of school teachers.
- There is no significant relationship between teaching competence and attitude towards ICT of school teachers.
- There is no significant relationship between teacher effectiveness and attitude towards ICT of school teachers.

METHODOLOGY OF STUDY

The present study was based on the descriptive research method:

Sampling: The present study was carried out on 100 school teachers working in 10 govt. and 10 private schools of two developmental blocks of district Kangra of Himachal Pradesh state of India. The investigator used the multistage sampling method. At the first stage, 20 government and 20 private schools of the 2 developmental blocks of District Kangra were selected randomly and then 10 schools from each block were selected by systematic alternate selection method. Then, five trained graduate teachers from each school were selected through lottery method.

Description of Tools: The selection of suitable tool is of vital importance for the collection of data in any research work:

- General Teaching Competency Scale by Passi and Lalitha (1994)
- A scale on Attitude towards Information and Communication Technology prepared by Newa, (2007).
- Teacher Effectiveness Scale by Pramod and Mutha (1974).

ANALYSIS OF DATA AND RESULTS

Relationship between Teaching Competence and Attitude towards ICT of School Teachers

H_1: There is no significant relationship between teaching competence and attitude towards ICT of school teachers.

Table-1

	N	Mean	Std. Deviation	Pearson Correlation	p-value
Teaching Competence	100	88.66	17.26	0.0874	0.39 NS
Attitude towards ICT	100	119.84	11.85		

Note: NS Not Significant at0.05 level
Sources: Authors Compilation

The value of r was found to be 0.0874, which was not significant even at 0.05 level of confidence. Hence, the two variables were not found to be related to each other and hence, H_1 was retained.

Relationship between Teaching Competence and Teacher Effectiveness of School Teachers

H_2: There is no significant relationship between teaching competence and teacher effectiveness of school teachers.

Table-2

	N	Mean	Std. Deviation	Pearson Correlation	p-value
Teaching Competence	100	88.66	17.26	0.0838	0.41ns
Teacher Effectiveness	100	284.61	22.91		

Note: NS Not Significant at0.05 level
Sources: Authors Compilation

The value of r was found to be 0.0838, which was not significant even at 0.05 level of confidence. Hence, the two variables were not found to be related to each other and hence, H_2 was retained.

Relationship between Attitude towards ICT and Teacher Effectiveness School Teachers

H_3: There is no significant relationship between attitude towards ICT and teacher effectiveness of school teachers.

Table-3

	N	Mean	Std. Deviation	Pearson Correlation	p-value
Attitude towards ICT	100	119.84	11.85	.170	.091ns
Teacher Effectiveness	100	284.61	22.91		

Note: NS Not Significant at0.05 level
Sources: Authors Compilation

The value of r was found to be 0.170, which was not significant even at 0.05 level of confidence. Hence, the two variables were not found to be related to each other and hence, H3 was retained.

RESULTSAND DISCUSSION

Teaching competence and attitude towards ICT of schoolteachers were not found to be related to one another in the present study. It means that attitude of school teachers towards ICT is not directly related to teaching competence. Attitude towards ICT and Teacher effectiveness were not found to be related to one another. It showed that attitude towards ICT and teacher effectiveness has no relationship between both of them. Teaching competence and teacher effectiveness of school teachers were not found to be related to one another. It suggests that there is no any direct relationship between teaching competence and teacher effectiveness. Therefore, based on the results it can be concluded that not all the three variables teaching competence, attitude towards ICT and teacher effectiveness are related to each other.

CONCLUSION

Teaching competences are focused on the role of the teacher in the classroom, directly linked with the 'craft' of teaching - with professional knowledge and skills mobilized for action (Hagger & McIntyre, 2006). Success of teaching entirely depends on the level of teaching competence of a teacher. There is a positive relationship between teaching competence and students' academic achievements. A competent teacher teaches his/her students in a meaningful way. In the present study results shows that there exists no relationship between teaching competence and attitude towards ICT, teaching competence and teacher effectiveness and teacher effectiveness and attitude towards ICT. This means teacher's attitude towards ICT did not contribute much to their competence and effectiveness. However, ICT skills and their effective use for creative and conducive classroom environment is essential for effective teaching learning process. There is a need to encourage the use of ICT in classroom teaching.

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IDENTIFYING THE DRIVERS FOR ADOPTION OF RFID TECHNOLOGY: A STUDY OF MANUFACTURING ORGANIZATIONS

Diljeetkaur G. Makhija[32] Dr. Pawan K. Chugan[33]

ABSTRACT

RFID Technology being a real time tracking system is the new era of automation. It has been used in several industries for different applications. However, the cost of implementing RFID system is too high, and achieving the ROI becomes difficult, because of the cost involved. Regardless of the cost, many organizations have adopted the technology and are fully conversant with it, while many are pilot testing the technology. Every organization has a different reason of adoption, as some use it because of the perceived benefits, while some go along with the industry standards. The purpose of this paper is to identify different drivers for adoption of RFID technology. Initially, through literature review, different variables were identified which affect the adoption of the technology, later organizations using the technology were surveyed, and the variables were reduced to factors by data reduction technique. It is found that the Organizational Drivers, Competitive Drivers, Technological Drivers and Environmental Drivers are the four important drivers that affect the manufacturing organizations decision to adopt the RFID technology.

KEYWORDS

RFID Technology, Drivers for Adoption, Organizational Drivers, Competitive Drivers, Technological Drivers and Environmental Drivers etc.

INTRODUCTION

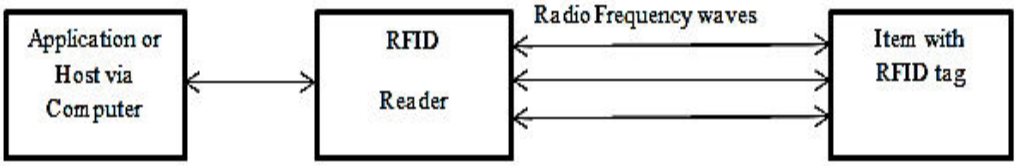
Information technology has brought revolution in day-to-day life of human beings. It brought revolution for industries where tracking of the goods is important but a task, which is quite difficult and complicated, where any mistake may result into huge losses. One such technology, which has attracted increasing attention in recent years, and has brought revolution, is the radio frequency identification (RFID) technology. It traces the objects on real time basis and is currently being used in many sectors. In Manufacturing Organizations, RFID is used to increase the visibility by real time tracking.

Introduction to RFID technology

Radio Frequency Identification (RFID) can be defined as an electronic tagging technology that automatically allows objects to be identified without direct line of sight (Want, 2004). RFID technology is falls under Automatic Identification and Data Capture (AIDC) techniques, which uses radio waves to automatically read the RFID tag attached to object/person, and comes with better data handling capabilities, as it can store the details of the object/person it is attached to (Tektronix, 2004). RFID technology is similar to barcode system (Ishikawa et al., 2003) and Optical Character Recognition (OCR) system (Phoenix Software International, 2006), but it has additional advantages not available in these technologies (Anjana et al., 2011). It does not require line of sight to read the object or person, store data in the form of ID and details of the object to be tracked, can read multiple tags simultaneously and hence can be used in automatic operations (ADC Technologies Group, 2002).

RFID system consists of RFID tags (microchip with an antenna), RFID reader and a computer network to which the reader sends the data (Finkenzeller, 2003). Figure 1 illustrates the working of an RFID system.

Figure-1: Components of RFID System



Sources: Authors Compilation

[32]Research Scholar, Kadi Sarva Vishwavidyalaya University, Gujarat, India, diljeet.makhija@gmail.com
[33]Professor, Institute of Management, Nirma University, Gujarat, India, pkchugan@nirmauni.ac.in

The above Figure 1 shows the components of RFID system and their working. RFID tags are microchips, with an antenna attached to them. They are attached to items or products that are to be traced. The microchip stores the data, which is entered into it, like tag serial number, and product details. The antenna with the chip contains a radio receiver and a power system (Garfinkel & Rosenberg, 2005). RFID readers detect the tags through the radio frequency waves emitted by the antenna of the tag. Whenever RFID tag enters the detection region of the reader, the reader detects it, reads the data from the microchip of the tag, and saves it as the time and location of the tag. This data is then sent to the host computer to application and is stored and processed there for further actions. The data stored in server and reader is known as stay records, and the data in the tag is the raw data. The raw data may have duplicates, but the stay records do not have any kind of duplicates. The stay record has the complete history of movement of a tag (Kulkarni et al., 2014).

LITERATURE REVIEW

Importance of RFID in Manufacturing Organizations

Radio frequency identification (RFID) technologies have been applied to internal automation applications for years. RFID technologies and application software interfaces introduce the potential for capturing vast amounts of data for process control, feedback, decision support, and improvement. Keskilammi, et al. (2003) studied the different passive RFID systems and their applications in different industries. Porter et al. (2004) in his study tested eight different RFID systems by developing and validating a test protocol and showed that RFID system was able to meet several of the requirements of shipping and warehouse management. Weinstein (2005) studied the implementation process of RFID and discussed the drivers and challenges for the same. Smith (2005) identified the advantages of RFID and several ways in which it can help improve customer relationship management.

Shibata et al. (2006) found a production process monitoring solution using RFID technology and discussed future development of the same. Penttila et al. (2006) studied the different tags of RFID and the differences in the identification of the product by them. Hou and Huang (2006) in their study identified information to evaluate the RFID implementation in their organization and across the supply chain. Paul (2006) found that if RFID technology is integrated with the Information Infrastructure of the organization, it could make the information sharing of the major distributors and manufacturers easy by making the logistics operation more efficient. Li, et al. (2006) explained the working of RFID technology and its various applications in different industries, and discussed the challenges for implementation and the strategies to be followed to overcome them. Chow et al. (2006) designed an RFID-based resource management system for the warehouse operations.

Drivers for RFID Adoption

While adopting a new technology, the important thing to be considered is the motivation or reason behind its adoption. It might seem that the adoption decision is in accordance with the internal research and strategy with a clear objective to improve the performance of the organization, but there might be some other factors due to external pressures, which may drive adoption (DiMaggio-Powell, 1983; Sharma et al., 2007). Specially, when the decision is about adopting a new technology, mutual interdependencies among organizations, may act as driver for adoption for the other organization (Katz-Shapiro, 1986). When considering mutual interdependencies among organizations (inter organizational systems), pressures from dominant partners, i.e., suppliers or customers may significantly adopt the adoption of the technology (Premkumar-Ramamurthy, 1995).

RFID is a new technology being adopted by organizations and hence it is true potential while considering independently and in integration with other technology is not fully understood yet. While considering the adoption, the views of internal organizational stakeholders and the supply chain partners are important. Therefore, their views may act as a driver for adoption of RFID technology. RFID can be integrated with the ERP or the Information Infrastructure of an organization, to provide better visibility across the system and hence infrastructure availability can act as a driver for adoption of RFID technology. In addition, RFID has the capability to electronically integrate supply chain (SC) firms and hence the long-term benefits can be considered drivers of adoption of the technology (Sharma et al., 2007).

Every organization may have a different practice of RFID, so it is important to understand the motivation behind adoption. For example, we may find that some organizations might not be using the technology much, i.e., they might have just initial level of adoption, just to confirm to the environmental pressure for adopting the technology. While for some organizations, adoption of the technology may be a part of its strategic decision to improve operational efficiency and organizational performance. This paper focuses on factors that drive the adoption of RFID technology for manufacturing organizations.

SIGNIFICANCE OF STUDY

Today, RFID is being used extensively by many organizations to create efficiency in business operations. RFID provides the operational benefits to business in terms of handling range of products, mobility of products with cost and time efficiencies and

maintaining uniformity (standardization) throughout the supply chain process. Many drivers / triggers lead organizations to adopt RFID technology. The literature also suggest various adoption drivers for RFID in organizations i.e., for Internal Purposes (IP) or Inter Organizational System (IOS). In the literature, hardly any study has systematically designed framework to identify the drivers affecting the adoption of RFID technology for manufacturing organizations. Therefore, it requires exploring and analyzing the criteria to identify the drivers of RFID adoption in manufacturing organizations.

OBJECTIVES OF STUDY

- To explore the use of RFID technology in manufacturing organizations.
- To identify and analyze the various drivers of adoption of RFID technology in manufacturing organizations.

RESEARCH METHODOLOGY

In this study, an attempt has been made to explore the various adoption drivers of RFID technology. For this, initially literature review was done to get an insight of various drivers for adoption of RFID technology in manufacturing organizations. Later exploratory as well as descriptive research methods have been used to explore and then analyze the drivers of adoption of RFID technology.

The Convenience Sampling method was used to select the sample. Initially, about 30 the RFID vendors across Gujarat, State of India, were contacted to get the list of 65 manufacturing organizations using RFID technology in their business organizations. All the 65 organizations were contacted for the survey, out of which 52 companies agreed to be surveyed. The respondents included the top and middle level managers who were responsible for RFID installation as well as implementation. A structured questionnaire was prepared to conduct the survey. All the statements regarding adoption drivers of RFID technology were rated on 1 to 5 on a Likert scale (1 = Least important and 5 = Most important). The personal contact method was used to conduct the survey. The questionnaires were sent to respondents in advance before the actual survey that had provided them an opportunity to study the questionnaire in advance and later on during the time of personal discussion their doubts if any, were clarified to get the required information. This has been very useful in increasing the efficiency of respondents' responses.

DATA ANALYSIS AND DISCUSSIONS

The procedure used for factor extraction involved the use of factor analysis and the calculation of Cronbach Alpha to generate the factor structure. Data analysis was done using SPSS 16.0 version.

The factor analysis method was used to find out various dimensions of scale. The Bartlett's Test of Sphericity and Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy tests were performed before factor analysis, which showed the appropriateness of the correlation matrix for factor analysis at each stage. The variables used for factor analysis are listed below:

Table-1

Sr. No.	Name of the Variable	Abr.
1	Top Management Support	D1
2	Availability of IS/IT Infrastructure	D2
3	Financial readiness/affordability	D3
4	Perceived stakeholder privacy	D4
5	Regulatory pressure	D5
6	Global Expansion	D6
7	Perceived Benefits of RFID	D7
8	Perceived or Actual RFID costs	D8
9	Perceived RFID Standard Convergence	D9
10	Professional & Trade Association Pressure	D10
11	Favorable Transactional Climate	D11
12	Government Support	D12
13	Perceived Consumer Privacy	D13
14	Competitive Pressure	D14
15	Status / Brand Pressure	D15
16	Dominant partner pressure	D16
17	Industry Pressure	D17
18	Media Pressure	D18

Sources: Authors Compilation

Initially the above-mentioned 18 items were subjected to factor analysis using principal axis factoring procedure. The obtained factor solution was subjected to Varimax rotation. The Eigen value was considered as 1 and the items which had factor loadings less than 0.70 on any factor were dropped, based on sample size to be 52 (Hair et al., 2009). The same criterion was applied at all the subsequent factor analysis stages for dropping items. Once, the factors were extracted, the Cronbach Alpha was calculated to measure reliability of proposed constructs. In addition, the value of alpha if that item was removed was calculated for each item. Using this, the items, which improved alpha if they were dropped, and alpha was calculated for the dimension again.

Factor analysis output showed that both KMO measure of sampling adequacy had the value of 0.816 and Bartlett test of Sphericity had the Chi-Square value of 1024.564, with 478 degrees of freedom and significance value of 0.000, which proved the appropriateness of the correlation matrix for factor analysis.

Table-2: Rotated Component Matrix

	Factor 1	Factor 2	Factor 3	Factor 4	Communality
D2	.941				.943
D6	.884				.946
D3	.884				.946
D1	.854				.924
D7		.919			.854
D13		.900			.895
D9		.863			.849
D8		.852			.847
D14			.936		.980
D15			.936		.980
D17			.909		.959
D10				.910	.931
D11				.900	.866
D12				.862	.824
Eigen Value	5.964	3.433	2.299	1.049	
% of Variance	42.601	24.520	16.419	7.491	
Cumulative %	42.601	67.121	83.539	91.030	

Sources: Authors Compilation

In Table-2, it can be observed that the extraction value of the communalities of all the 14 variables is sufficiently high i.e. above 0.75. So, all the variables were considered for further analysis. As per the Kaiser's Criterion, four factors were extracted, each of which have Eigen value more than one, consisting of 14 variables. The Table 1 also shows that 91.03% of their variance is explained by these four factors.

Looking at the data presented in the Rotated Component Matrix in table 1,

a. It can be observed that the four variables correlate the best to the first factor and should be grouped together to represent the first factor, which are as follows: D2 (0.941), D3 (0.884), D6 (0.884) and D1 (0.854).

b. The four variables correlate the best to the second factor and should be grouped together to represent the second factor, which are as follows: D7 (0.919), D13 (0.900), D9 (0.863) and D8 (0.852).

c. The three variables are best correlated to the third factor, which is as follows: D14 (0.936), D15 (0.936) and D17 (0.909).

d. The three variables correlate the best to the fourth factor and should be grouped together to represent the fourth factor, which are as follows: D10 (0.910), D11 (0.900) and D12 (0.862).

Factor Extraction

The descriptive statistics of the factors extracted is shown in Table-3 below:

Table-3: Descriptive Statistics of RFID Drivers

Factor	Cronbach Alpha Value	Variables	Mean	Std. Dev.
Competitive Drivers Mean – 3.77 Std. Dev. – 0.42	0.989	Competitive Pressure	4.22	0.48
		Status / Brand Pressure	3.98	.052
		Industry Pressure	3.11	0.61
Organizational Drivers Mean – 3.44 Std. Dev. – 0.44	0.973	Top Management Support	3.50	0.31
		Availability of IS/IT Infrastructure	3.31	0.42
		Financial Readiness	3.92	0.45
		Global Expansion	3.03	0.84
Technological Drivers Mean – 3.58 Std. Dev. – 0.49	0.923	Perceived Benefits of RFID	4.40	0.52
		Perceived or Actual RFID costs	4.24	0.68
		Perceived RFID Standard Convergence	3.00	0.45
		Perceived Consumer Privacy	2.68	0.71
Environmental Drivers Mean – 2.03 Std. Dev. – 0.28	0.912	Professional & Trade Association Pressure	2.00	0.30
		Favorable Transactional Climate	2.09	0.32
		Government Support	2.00	0.32

Sources: Authors Compilation

Note: *Factors removed during factor analysis and Cronbach Alpha test of reliability – D4 (Perceived stakeholder privacy); D5 (Regulatory pressure); D16 (Dominant partner pressure) and D18 (Media Pressure) were removed during the extraction.

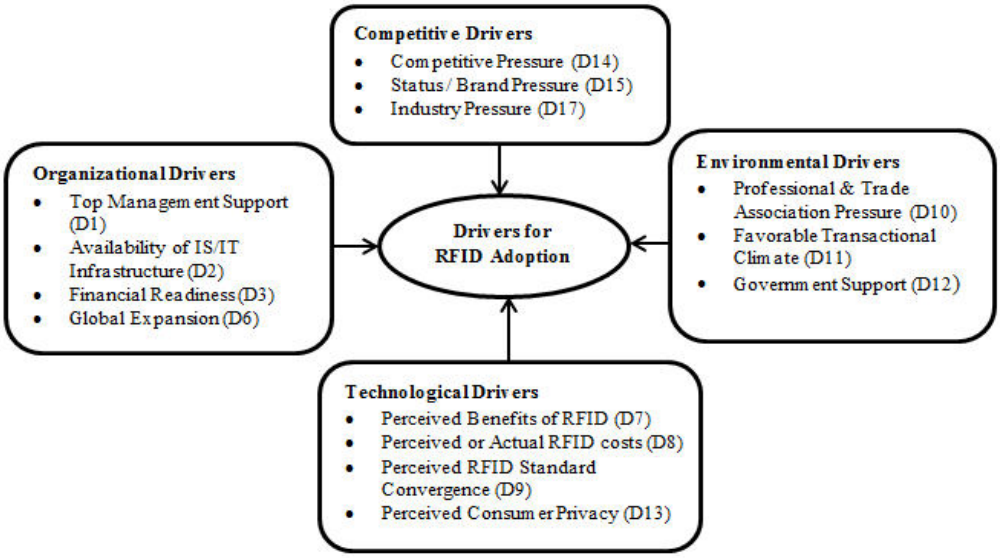
Table-4: Shows the Summary of the Factors Extracted

Factors	Name of Factors	Variables	Cronbach Alpha Value
Factor 1	Competitive Drivers	D14, D15, D17	0.989
Factor 2	Organizational Drivers	D1, D2, D3, D6	0.973
Factor 3	Technological Drivers	D7, D8, D9, D13	0.923
Factor 4	Environmental Drivers	D10, D11, D12	0.912

Sources: Authors Compilation

The factors of drivers for adoption are shown in the Figure 2 given below:

Figure-2: Drivers of RFID Adoption



Sources: Authors Compilation

Factor-1: Competitive Drivers

Competitive drivers include Competitive Pressure, Status / Brand Pressure and Industry Pressure. Often organizations adopt a technology due to peer pressure, because of competitors using a particular technology and getting benefits from it. At times, organizations switch over to a new technology, considering it to be affecting their brand or status. In addition, at times, organizations use a particular technology, as an industry pressure; i.e., adopting a particular technology for a particular Industry gives best results. All these three variables connect with the use of the technology by peers or competitors, and hence competitive driver is a factor, which leads to adoption of RFID technology because of the peer pressure in manufacturing organizations.

Factor-2: Organizational Drivers

Organizational drivers include Top Management Support, Availability of IS/IT Infrastructure, Financial Readiness and Global Expansion. All of these four variables depend upon organization's vision and goals. If there is support from top management, i.e., if the top management considers the adoption of technology to be beneficial to the organization, they may include it as a strategic decision that leads to adoption. Adopting any new technology requires adequate financial resources. When considering RFID technology, its initial cost is quite high, so unless an organization is financially ready, it may not proceed towards adopting the technology. Therefore, financial readiness is one of the important drivers of adoption of RFID. In addition, the adoption of a technology requires adequate IT infrastructure, so that the technology can be linked with the IT strategy or IT infrastructure in future. Hence, availability of relevant infrastructure is an important driver for adoption, because without it, adoption will be of no use. Any organization, which is interested in expanding globally, requires better communication between the units for planning purposes. RFID technology provides better communication, because it works on real time basis. Hence, expanding globally can be a compelling reason for adoption of RFID Technology. All the four variables, deal with the organization's strategy, and hence correlate with each other to form organizational drivers for adoption of RFID technology in manufacturing organizations.

Factor-3: Technological Drivers

Technological drivers include perceived benefits of RFID, perceived or actual RFID costs, perceived RFID standard convergence, and perceived consumer privacy. Adoption of any technology is usually driven by the benefits it provides against the cost incurred in adopting/implementing it. Apart from the perceived benefits, the adoption of technology among partners drives the organization to adopt it, to make the use easier and more accurate. The promising privacy provided by the technology is also a reason, which drives organizations to implement RFID technology. The four variables correlate with each other based on technology features, forming technological drivers for adoption of RFID technology in manufacturing organizations.

Factor-4: Environmental Drivers

Environmental drivers include professional & trade association pressure, favorable transactional climate and government support. RFID technology, when fully implemented can be integrated with the ERP of an organization. This may cause a need to ask the supply chain partners to adopt the same technology for better information sharing, because organizations in the supply chain (supply chain partners) are dependent on each other for various functions. Hence, if a firm supports RFID adoption, then for its SC partners, RFID adoption pressures will increase. If there is any kind of Government support in adoption of RFID technology, it will affect the organizations positively. These three variables correlate to form the external environment of an organization and its effect on adopting a new technology, forming environmental drivers for adoption of RFID technology in manufacturing organizations.

CONCLUSION AND IMPLICATIONS

RFID is proved an important disruptive innovation that leads to improve the operations of manufacturing companies. This research reveals four factors for adoption drivers of RFID, which are Competitive Drivers, Organizational Drivers, Technological Drivers and Environmental Drivers. This papers leads to systematic approach of analyzing the factors for drivers for adoption of RFID Technology in manufacturing organizations. This research extends knowledge regarding, the impelling reasons for RFID Technology Adoption by organizations. Managers of manufacturing companies to evaluate if they may want to adopt this technology can use these factors. In future, these factors can also be used to analyze the various reasons of adoption of RFID in various manufacturing industries. Research can be undertaken to explore and analyze the drivers for RFID adoption at strategic level.

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INFORMATION TECHNOLOGY ON NURSING PRACTICES IN INDIA: A THEORETICAL PRESPECTIVE

G. Nagarajan[34] Dr. J. Kahaja Sheriff[35]

ABSTRACT

In this Article to study the impact of Information Technology (IT) on Indian nursing practices in a private and government hospitals. Numerous advances in technology during the past decade require that nurses not only be knowledgeable in nursing science but that they also become educated in information technology (IT). Perioperative IT has the potential to improve the quality of health care, reduce costs, decrease medication administration errors, reduce time spent on paperwork, increase management efficacy, patient care and allow affordable access to health care. Nursing knowledge is needed for designing, implementing, and updating software, including an electronic healthcare. With the support of information data, nurses will be able to develop best practices for patient care and support research for evidence-based practice. When a standardized terminology, such as the Perioperative Nursing Data Set, is incorporated into an information technology, consistent documentation can be shared among systems. With advances in technology, perioperative nursing roles are expanding in relation to Information Technology requirements and nurses are pursuing additional education. In addition to traditional methods, e-learning is an effective way to provide ongoing technological education. The paper also highlights the purpose and the extent of use of IT in nursing practices.

KEYWORDS

Nursing Informatics, Health Informatics, Nursing Practices, E Healthcare etc.

INTRODUCTION

Information Technology has revolutionized the way of living. It has changed the economy, political structure, industries, financial markets and culture. Health care sector is also not far behind in opting for information technology as they have come to realize the importance of information required for timely decision making. Nursing is one of the most rewarding professions, but is also one of the most challenging and exhausting professions both physically and emotionally. Advances in technology in nursing are indeed helping to make life easier for nurses. It is good to remember that, in our high tech world, the human touch cannot be substituted. Nursing is about combining the art of caring with the science of health care. While the safe use of technology may reduce human error, humans still need to program, input data and ensure the proper outcome. This safeguard also protects the job security of the nursing profession. Physicians need to make accurate and fast decisions every day with best utilization of resources available to them. With the help of existing Information Technology technologies and developing new ones at the same time, accurate information is being made available to the decision makers so that treatment and service provided to patients will be faster, safer, affordable, and cost effective and resources employed for these services will be used efficiently.

Nurses are expected to provide safe, competent and compassionate care in an increasingly technical and digital environment. With the development of computers and evolution of internet, Information Technology has had a positive impact on health care delivery system worldwide, particularly in the areas of disease control, diagnosis, and patient management and teaching. Technology will not soon be replacing nurses. Under Health Informatics umbrella Nursing Informatics is a contrasted area, which means intersection of the information science, computer science and Nursing science with Technology in India,

NURSING INFORMATICS

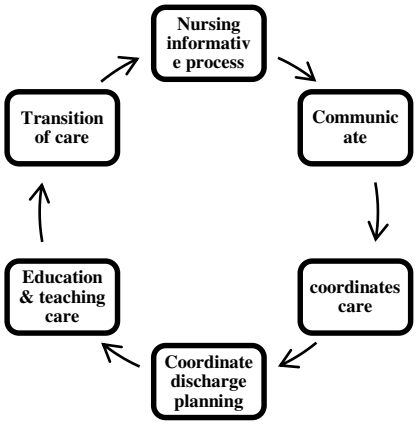
Access and attitudes to information technology by nurses have been demonstrated by others to be affected by a number of factors including: geographical location; age of the nurse; length of time in nursing; level of position; and employment sector. Analysis of the current data was undertaken using all these factors. Health care is an information intensive industry, in which quality and timely information is a critical resource.

Computer systems are used within most health care entities such as pharmacies, general medical practices, pathology and radiology services and hospitals. However many of the information exchanges between health care providers are still paper based with the attendant inefficiencies of data entry, the difficulty of sharing paper based records between clinicians, loss of the physical record, difficulties in reading handwriting, the potential for error, and the difficulties in extracting information from large paper files.

[34]Research Scholar, Department of Management Studies, University of Madras, Tamil Nadu, India, vlrnag1971@gmail.com
[35]Assistant Professor, Department of Management Studies, University of Madras, Tamil Nadu, India, jmkhaja@yahoo.com

Health and nursing information science is the study of how health care data is acquired, communicated, stored, and managed, and how it is processed into information and knowledge. This knowledge is useful to nurses in decision-making at the operational, tactical, and strategic planning levels of health care.

Figure-1



Sources: Authors Compilation

Information systems used in health care include the people, structures, processes, and manual as well as automated tools that collect, store, interpret, transform, and report pact practice and management information. The realization that health care data and information can be effectively managed and communicated using computer systems, networks, modems and telecommunications has catalyzed the emergence of the science of nursing informatics.

Nursing informatics process support is accomplished with information structures, information processes, and information technology like (i) Communicate (ii) coordinates care with ALL other clinical disciplines (iii) Coordinate discharge planning, (iv) Education & teaching, (v) Transition of care, Manages ALL information related to the nursing process and patient.

In hospitals, information systems support patient administration, billing and finance; staff roistering and human resource management; and departmental management, such as pathology, medical imaging and pharmacy. Clinical systems, including systems to support the specific needs for nursing care, are less common. Its benefits for in the practice of professional nursing and in the delivery of patient care in the healthcare continuum.

NURSING HEALTH INFORMATICS

Health Informatics (HI) defines how health information is technically captured, transmitted and utilized. New technology can be an integral part of medicine, and health informatics is no exception. Healthcare informatics is the science that underlies the fusion of health care, information technology, and business administration, and guides into all aspects of the patient health experience, including clinical care, nursing, pharmacy and public health. Not only does healthcare informatics focus on the implementation and optimization of the information systems that support clinical practice, it creates the infrastructure that connects and enables the flow of critical information to and from each of the stakeholders in a patient's care.

Health care informatics is the rapidly developing scientific field that deals with the storage, retrieval and use of biomedical data, information and knowledge for problem solving and decision-making. Biomedical and Health informatics are related fields. Health Informatics deals with four major interdisciplinary components; emerging technologies, epidemiology and health management, advanced statistics and health systems. Nursing involves taking care of patients suffering from all sorts of physical and psychological maladies. Nurses constantly have to monitor the condition of these patients and administer prescribed medicines at regular intervals. They also assist doctors and help set up medical equipment in operation theatres and clinical laboratories. They also assist the doctors in telling the medical condition of patients.

Furthermore, nurses assist people who are unable to lead a normal life due to one reason or another. They assist patients who are recovering from illness. Other than these general activities, nurses can acquire specialization in a particular area such as cardiac care, intensive care, orthopedics, pediatrics and so on. Nurses also have to keep abreast with the latest technological developments in the field of medicine.

NURSING HEALTH INFORMATICS FORUM

As knowledge expands and requires better management, role of I.T in health care can only become more important. India has a large number of trained I.T professionals (doctors, and nurses etc.,) and is in a position to leverage its Brainpower to take Health informatics to new heights. Health informatics can also help nurses attain Health rights for all in many ways (lower costs, better quality, better-informed patients, etc.). Few points about Use of Health Informatics in India as well as the various educational courses available within India. The Three major uses of Health informatics in India:

- For better training of Health care professionals (includes Doctors, Nurses, Paramedical and Non-medicals) - e-learning for improved delivery of high quality health care services to the remote areas like Telemedicine, EMRs, CDSS.
- To bring about a transparency in public health care delivery system (e-governance) - Public participation

The three major obstacles to Health Informatics in India:

- Inadequate Skills of health care personnel / others,
- Inadequate Physical infrastructure
- Inadequate access to I. T. (Digital divide).

The Three major Post Graduate Health care Informatics courses in India:

- Med varsity online P.G Diploma in Medical Informatics, associated with Apollo group of Hospitals.
- Amrita Institute of Medical sciences MSc / P.G. Diploma in Medical Informatics at Kochi, India.
- Post Graduate Programs at BII (Bioinformatics Institute of India), Noida, with good Industry integration.

The Three short online courses for Medical Informatics in India:

- eHCF School of Medical Informatics, Delhi provides Certificate course in medical informatics
- IAHI online course on Health Informatics
- BII provides various online/distance educations courses in Health care Informatics

Nursing Informatics, as an Independent speciality is not launched in India, It is a self -directed and independent endeavor, which can be achieved through online courses from other developed countries. So in India Programmes that offers basic and further education in Nursing informatics is needed to provide easy access for motivated Nurses in India. Indian Nurses use computers in Health care delivery but not for Nursing care delivery. National and State Nursing Councils and Associations have to support for Nursing Informatics to develop and grow in India.

HEALTHCARE INFORMATIVE

Health informatics or medical informatics is the intersection of information science, computer science and health care. It deals with the resources, devices and methods required to optimize the acquisition, storage, retrieval and use of information in health and biomedicine. Health informatics tools include not only computers but also clinical guidelines, formal medical terminologies, and information and communication systems. Health information technology (Health IT) allows comprehensive management of medical information and its secure exchange between health care consumers and providers.

The healthcare industry is one of the biggest spenders on IT across the globe but despite the IT revolution in India the use of IT in healthcare is confined to peripheral functions. Currently the IT investment in Government run hospitals and private hospitals is negligible may be 3 to 7 per cent of the overall hospital infrastructure budgets. However, the experts predict that the growth rate of IT in healthcare is going to be 15 to 20 per cent CAGR.

The Internet has made healthcare more accessible, interactive, and highly useful. Telemedicine, picture archiving and communication systems (PACS), and healthcare information systems (HIS) are a few of the many IT applications in healthcare. Telemedicine, a good combination of medicine and modern technology, is also raising new hopes in health care. Telemedicine means providing medical assistance at a distance with the help of Information and communication Technologies. Telemedicine is a method by which patients can be examined, monitored and treated, while the patient and doctor are located in different places. The patient's reports can be sent via text, voice, images or even video and medical advice offered from a remote location.

The Tele-health segment is growing at a rapid pace and requires professionally qualified people to support this segment. Currently, there are a few institutes in India providing courses in Telemedicine like Centre for Development of Advanced Computing(CDAC), Mohali, School of Telemedicine and Biomedicine Informatics, Lucknow, the Apollo Telemedicine Networking Foundation in a tie up with the Anna University and Tamil Nadu Dr. MGR Medical University. There are several institutes and universities running a course in Medical Informatics like Medvarsity; Amrita Institute of Medical sciences, Kochi; Bioinformatics Institute of India, Noida; eHCF School of Medical Informatics, Delhi; and Indian Academy of Health Informatics, Delhi.

NURSING PRACTICES

Many emerging technologies will change the practice of nursing in the coming decade. Seven are discussed here; genetics and genomics; less invasive and more accurate tools for diagnosis and treatment; 3-D printing; robotics; biometrics; electronic health

records; and computerized physician / provider order entry and clinical decision support (See Table-1 for a discussion of the benefits and challenges of each).

Table-1: Seven Emerging Technologies that Are Changing the Practice of Nursing

Technology	Benefits	Challenges
Genetics and Genomics	The majority of disease risk, health conditions and the therapies used to treat those conditions have a genetic and / or genomic element influenced by environmental, lifestyle, and other factors therefore affecting the entire nursing profession (Calzone et. al, 2010).	Many nurses currently in practice know little about genetics and genomics, lack the competence needed to effectively counsel, and teach patients in this regard.
Less Invasive and More Accurate Tools for Diagnostics and Treatment	Non-invasive and minimally invasive tools for diagnostics and treatment generally result in lower patient risk and cost.	The rate at which noninvasive and minimally invasive tools are being introduced makes ongoing competency regarding their use a challenge for nurses.
3-D Printing	Bio-printers, using a "bio-ink" made of living cell mixtures can build a 3D structure of cells, layer by layer, to form human tissue and eventually human organs for replacement (Thompson, 2012).	Healthcare is just beginning to explore the limits of this technology. There are limits to the materials, which can be used for printing, and materials science is a laggard in 3D printing (Nusca, 2012).
Robotics	Robotics can provide improved diagnostic abilities; a less invasive and more comfortable experience for the patient; and the ability to do smaller and more precise interventions (Newell, n.d). In addition, robots can be used as adjunct care providers for some physical and mental health care provision.	More research is needed on comparative effectiveness of robotics and human care providers. Many healthcare providers have expressed concern about the lack of emotion in robots, suggesting that this is the element that will never replace human caregivers.
Biometrics	Biometrics increases the security of confidential healthcare information and eliminates the costs of managing lost passwords.	The measurement of biometric markers may occur in less than ideal situations in healthcare settings and in a rapidly changing workforce, cost may become an issue.
Electronic Healthcare Records (EHR)	Healthcare providers have access to critical patient information from multiple providers, literally 24 hours a day, 7 days a week, allowing for better-coordinated care.	Implementation costs, getting computers to talk to each other and debates about who "owns" the data in the EHR continue to challenge its required implementation.
Computerized Physician/Provider Order; Entry (CPOE) and Clinical Decision Support	CPOE and clinical decision support fundamentally change the ordering process resulting in lower costs, reduced medical errors, and more interventions based on evidence and best practices.	The introduction of CPOE and clinical decision support requires providers to alter their practice. Resistance is common due to the time spent on order entry. Implementation and training costs are often significant.

Sources: Huston, C., (May 31, 2013) "The Impact of Emerging Technology on Nursing Care: Warp Speed Ahead" *OJIN: The Online Journal of Issues in Nursing* Vol. 18, No. 2, Manuscript 1.

In 7 stages, the hospital no longer uses paper charts to deliver and manage patient care and has a mixture of discrete data, document images, and medical images within its electronic medical record environment. Clinical data warehouses are used to analyze patterns of clinical data to improve quality of care and patient safety and clinical information can be readily shared via standardized electronic transactions with all entities within an integrated delivery system, or a health information exchange. Furthermore, there is a continuity of data flows for patients between the inpatient, emergency department, and outpatient service modalities.

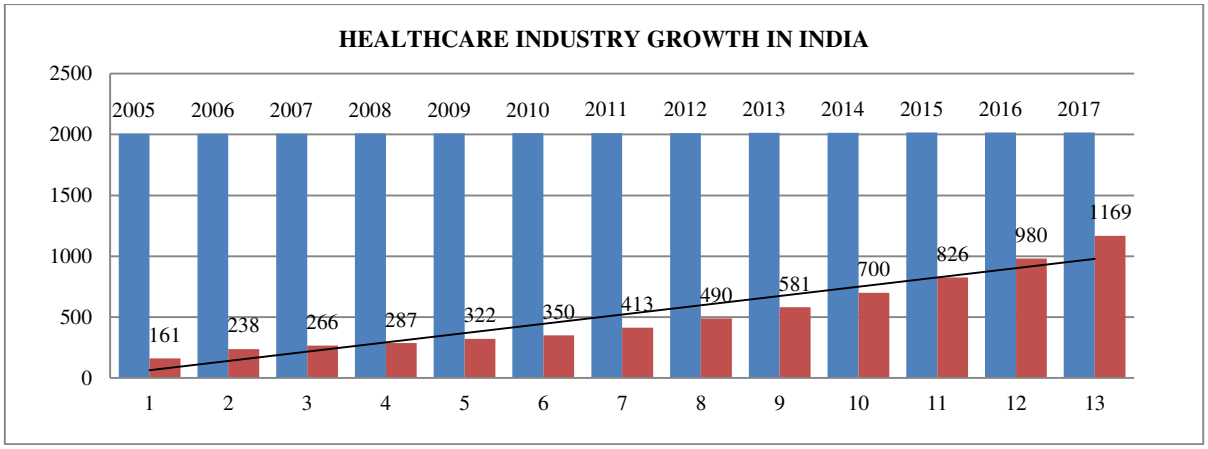
E-HEALTHCARE

Healthcare industry in India is rapidly emerging as one of the key industries that are driving economic growth in India.

It is expected to grow from SEK 161 billion (USD 23 Billion) in 2005 to SEK 1169 billion (USD 167 billon) in 2017, thereby witnessing an annual average growth of around 17%-18% per annum. Major factors that are likely to drive this growth include growing population improving health insurance penetration, increasing disposable income, government initiatives and focus on Public Private Partnership (PPP) models.

Below chart depicts the growth in the Indian healthcare industry during 2005-2017

Graph-1

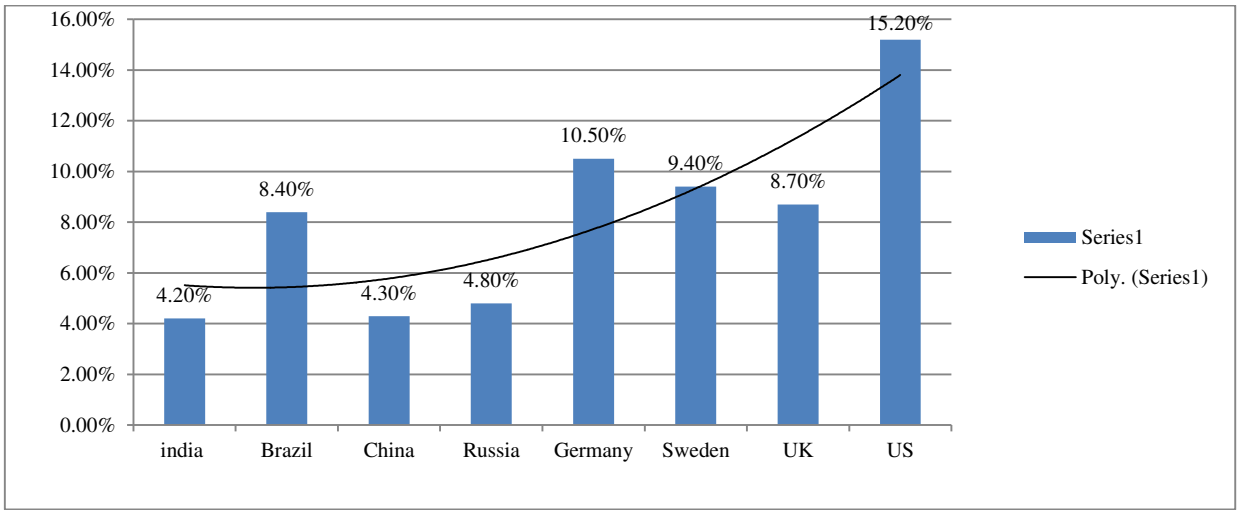


Sources: STC Analysis, Hospital Market - India by Research on India, Arnaca Research

GOVERNMENT SPEND ON HEALTHCARE

According to the WHO's World Health Statistics 2011, the Indian government spends around 4.2% of GDP on healthcare. Although growing, the expenditure is relatively low as compare to other countries as depicted in the chart below:

Graph-2



Sources: STC Analysis, Hospital Market - India by Research on India, Arnaca Research

A considerable portion of this expenditure is undertaken through various programs including National Rural Health Mission (NRHM), National Vector Borne Disease Control Program (NVBDCP) etc. Because of this, the county has improved its ranking on a number of health parameters including maternal and child mortality rates, life expectancy etc. Nurses are using new, innovative technology to help them with many of basic nursing procedures such as passing NG tubes, inserting Foley catheters, caring for chest tubes and other drainage devices. This technology provides student nurses with many learning experiences they might never have in their clinical rotations. Consequently, their skills are improved, but this technology does not provide the physical and emotional response nurses will encounter and have to work with in real world circumstances. The overall health care market in India is about $150 billion. However, the way internet penetration and awareness about health care is increasing in India, the e-health care services would grow at a very healthy rate. Nearly 80% of physician's reside in urban areas leaving only 20% of doctors to address the health and treatments needs of rural population in India. People staying in rural areas usually have to travel long distance to reach a doctor even for most basic healthcare services.

An Indian government understands these inherent problems in delivery of healthcare services to all and has taken several initiatives including development of supporting infrastructure, which includes internet and satellite connectivity, development of special software etc. Therefore, the telemedicine market in India is likely to witness an average growth of around 20% per annum thereby growing from SEK 50 million at present to around SEK 124 million by 2016. Along with the Ministry of Health and |Family Welfare, Department of Information Technology, Indian Space Research Organization, and Centre for Development of Advanced Computing are the major public sector entities involved in telemedicine and e-health projects in the country. Major opportunities are available in the form of provision of enabling solution and technologies i.e. devices and better software for integration of satellite telemedicine centers with nodal super speciality hospitals.

There are also possibilities that medical institutions from both countries collaborate and consult each other for critical requirements and special cases. The government is also in the process of starting an e-healthcare service that will intensify health awareness in the country. E-healthcare services include helping people contact and interact with good doctors, buying medicines and taking e-prescriptions. On the private front, Apollo Hospitals group, Columbia Asia and Narayana Hrudayalaya are among the leading players providing telemedicine services in India. Despite significant advantages, lack of infrastructure in rural areas, illiteracy and existing consumer behaviour of patients requiring human touch are among the major factors hampering widespread deployment of telemedicine technologies in India.

CONCLUSION

At present, nursing informatics is an emerging field of study. National nursing organizations support the need for nurses to become computer literate and versed in the dynamics of nursing informatics. We are at a transition period. Becoming educated in nursing informatics is, for the most party, a self-directed and independent endeavor. Programs that offer basic and further education in nursing informatics are beginning to spring up around the globe, but many more are needed to provide easy access for motivated nurses. They may also make recommendations as to how to improve the processes and uses of computer programs in order to improve patient outcomes. For this reason, many nurse informaticists work as consultants. Other nurse informaticists work in an administrative capacity, and contribute to decision-making on medical information technology. Some nurse informaticists educate nurses on how to effectively enter medical information into a computer system, as well as train nurses how to use new technology.

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