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AN INNOVATIVE MODEL FOR DEVELOPMENTAL ENTREPRENEURSHIP

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ABSTRACT

We present the DOREO model in the context of innovation and development. The DOREO model is developed by a) Defining Social Entrepreneurship, b) Establishing need for SE, c) Justifying Innovation for SE, d) Analyzing opportunities for innovation and SE and e) investigating resources for innovation and SE, and f) by describing current organizations that promote innovation for SE. Our concluding remarks focus on innovation and SE that create wealth for the poor of the world. We cite a variety of cases to underscore the nature and viability of mass rural development through innovation and entrepreneurship.

DOREO Development; Opportunity; Resources; Entrepreneur; Organization

SE Social Entrepreneurship (DE, Developmental Entrepreneurship, a special case of SE)

After centuries of private enterprise and large corporations, the world of developing nations is still poor, will remain poor, and the global inequalities of income, wealth, health and opportunity will increase, even more than ever before. The world now is increasingly turning to "entrepreneurs" to solve the problems related to unequal development, gaping income inequalities and consequently, burgeoning social injustices.

KEYWORDS

DOREO model, developmental entrepreneurship.

WHAT IS THE DOREO MODEL?

DOREO is an acronym for Development, Opportunity, Resources, Entrepreneur and Organization. The basic theory and assumptions of the DOREO framework for Social Entrepreneurship (SE) is as follows: We need innovative approaches to the pursuit of social developmental opportunities that are dovetailed to eradicate structural flaws in the global economic and opportunity systems. When backed by relevant committed resources and directed by able socially conscious entrepreneurs capable of creating the necessary human-centered organizations, there will arise macro forces of equitable economic growth and distribution.

Kesavan, Mascarenhas and Bernacchi (2006) report a variety of successful Social Entrepreneurship cases that fit and reinforce the OREO model of entrepreneurship. In this paper, we extend the OREO model directly to incorporate in it the role of Innovation in Developmental Entrepreneurship. We label the extension as DOREO (Development; Opportunity; Resources; Entrepreneur; Organization) model of Social Entrepreneurship.

Figure 1 demonstrates the underpinnings of the model and **Table 1** sketches the fit of the DOREO to the real world by using a wide variety of cases. Each case used in **Table 1** demonstrates that there is: a) an opportunity for Social entrepreneurship among the poorest of the poor, b) for which resources are either self-generated or provided by social venture capitalists; c) that the poor helped thereby can be potential entrepreneurs of the world, d) and an organization can be established and built up to market the products of these new socially developmental entrepreneurs.

Social Entrepreneurship (SE) is creating new business models to serve the poor (Seelos and Mair 2005). SE combines the resourcefulness of traditional entrepreneurship with a mission to change society, to bring about more equity in a society that gapingly fragments between the rich and the poor. SE seeks to help the poor and the marginalized with better job opportunities such that they eventually become self-sufficient. In other words, SE seeks progressively to reduce the global inequalities of income, opportunity, education, employment, health and wealth by new modes of entrepreneurship decidedly targeted toward the poor. Helping and serving the poor can indeed be profitable (Prahalad 2004, 2006). SE can directly help build sustainable developmental advantage for the poor nations.

In the following sections, we develop the DOREO model by a) Defining Social Entrepreneurship, b) Establishing need for SE, c) Justifying Innovation for SE, d) Analyzing opportunities for innovation and SE and e) investigating resources for innovation and SE, and f) by describing current organizations that promote innovation for SE. Our concluding remarks focus on innovation and SE that create wealth for the poor of the world.

WHAT IS SOCIAL ENTREPRENEURSHIP?

Currently, there is no agreed upon definition of SE in the literature. Here we define SE as a process that discovers a workable organizational model to enable the design, planning, production and delivery of products and services that cater directly to fulfilling certain social needs of the marginalized population within accepted sustainable development guidelines (Cornwall and Naughton 2003).

Social Entrepreneurship is driven by *social* goals that focus on the betterment of the poor of the world. By definition, SE is Developmental Entrepreneurship (DE), the latter is a special case of SE.

The term "social" is very extensive in its connotation and denotation. The primary dictionary meaning of "social" (from Latin *socius* = companion or ally) involves allies or associates. SE seeks companionship with the poor and the powerless, and strives to make them allies and co-partners in the corporate and entrepreneurial collaborative effort of making this world a more equitable place to live. In this connection, SE includes developmental entrepreneurship as well. Social Entrepreneurship (SE) is the creation of new organizational models for delivering products and services that, apart from directly addressing unsatisfied human needs, aims at fulfilling a social mission (Dees 2003). In short, SE is aimed at creating significant social value through novel organizational designs that most efficiently deploy limited resources to resolve social problems (Thompson, Alvy and Lees 2000). Often, the focus is on sustainable development of those marginalized by the existing global economic systems. This achieved by developing self-sufficient local systems that could adequately meet food, shelter,

medical, educational, safety and developmental needs of all the poor of the world. SE seeks to have no poor left behind. To affect poverty among the three to four billion people (who live on less than \$2 a day), we need programs that can positively impact large numbers in a short time span and can become a permanent feature to last several generations. SE aims at performing activities and building institutions that result in high social value that can transform the lives and destinies of the marginalized of the world today (Mort, Weerawardena and Carnegie 2003).

The *World Commission on Environment and Development* (1987) defines sustainable development as one that meets the needs of the present without compromising the ability of future generations to meet their own needs. In operationalizing this definition, the United Nations in the General Assembly of September 2000 defined a set of Millennium Development Goals (MDGs) that target eradication of poverty and misery by 2015. Critical MDGs include human rights, health, education and environmental issues. SE focuses on these and other MDGs. SE focuses on the basic needs and wants of the global community, especially of the non-industrialized nations.

THE NEED FOR SOCIAL ENTREPRENEURSHIP

Several educational institutions are offering social entrepreneurship programs to train motivated young minds to pursue this "life path." The list includes Harvard, Stanford, Duke and many others both in the U.S. and abroad.

Capital markets represent the savings of all people of the world. Eventually micro financing must be closely interlinked to such capital markets to become viable in the long run. To access capital markets micro-financing programs must establish a worldwide record of sustained and meaningful profitability. For instance, in Latin America, banking with the poor has proved to yield much higher profitability than banking with the rich.

In a very interesting study, *From the Garage to the Boardroom: The Entrepreneurial Roots of America's Largest Corporations*, the National Commission on Entrepreneurship explored the origins of the *Fortune 200* in the United States between 1917 and 1987. Its fascinating finding was that entrepreneurs created over one-half of all the *Fortune 200* corporations during this period. This finding illustrates the power of entrepreneurs to discover innovation and create successful ventures around it. When the largest corporations cannot figure out how to stay on top, presumably the entrepreneurs will take the required leadership.

Our world is changing rapidly and things making sense today may be irrelevant tomorrow. For instance, in 1960 it took 35 years to replace a third of the *Fortune 500* companies. In 1999, it took only 4 years to achieve that goal and much of this was due to the growth of high technology companies. During the last two or three decades, we have witnessed technological breakthroughs in a variety of fields such as agriculture, packaging, health care, housing, communication, safety, and transportation, among others. Those breakthroughs have resulted in higher quality of lives of those in developed nations. It is time that the focus shifts to helping those who are being left behind in poverty despite the bonanza being experienced by some of us who are more fortunate (Hart 2005). Helping local entrepreneurs succeed represents one of the more promising development strategies in the 21st century.

Ensuring success to the marginalized communities is very challenging. The alternative is failure and decline. Understanding economic development today is critically important. For rural communities to compete, they must adopt a development strategy that is in tune with economic and social realities that are driving change in the early part of the 21st century (Rashid 2000).

Taken together, vision, opportunity, assets, investment and sustainability are the keys to successful long-term development in rural communities today as in the past. Of course, there is actually another factor—luck or serendipity. A bit of good luck and chance can go a long way toward moving forward the development and refinement of the development agenda via entrepreneurship. The key is the ability to perceive good luck when it strikes.

JUSTIFYING INNOVATION FOR SOCIAL ENTREPRENEURSHIP

Management Ethics literature invokes several principles for mandating corporate social responsibility. We cite some of these in justifying innovation for SE.

The Principle of Obligation (Frederick 1986): The fundamental idea of SE is "that business corporations have an obligation to work for social betterment". This is a proscriptive and structural principle, focusing on business's obligations as a social institution, and implies that society has available sanctions that can be used when these obligations are not met. This obligation also reaffirms the principle of public responsibility: it is the firm's duty to act affirmatively for social well-being. The content of SE may vary from company to company, depending upon primary and secondary areas of social involvement. Corporations, however, do not have obligations to resolve all social problems of the nation or state or local communities. Obviously, if the corporations have created these social problems, directly or indirectly, then they have a clear legal and ethical obligation to resolve them. Even if the corporations have not created them, they may, nevertheless have a moral obligation to address them based on the following criteria (Simon, Powers, and Gunnemann 1972): a) The urgency of the problem as measured by its substantial threats to a large number of people. b) The proximity of the corporation to the problem as judged by its location and nature of activity relative to the problem. c) The capability (resources and expertise) of the corporation to respond effectively and d) the likelihood that the problem will persist unless the corporation acts.

The Principle of Stakeholder Responsibility (Freeman 1999): Corporations are responsible to a variety of stakeholders such as governments, competitors, consumers, media, local community, and environment, over and above the traditional stakeholder groups such as owners, stockholders, suppliers, and employees, since all these groups can have a stake in the corporations. Stakeholders are "those groups who can affect or be affected by the achievement of an organization's purpose" (Freeman 1984, p. 49). Stakeholders are vital to the survival and success of the corporation. The "interests of all stakeholders are of intrinsic value" (Donaldson and Preston 1995, p.67) to the corporation. Hence, managing ongoing relations (and not merely input-output transactions) with all stakeholders is crucial for the long-term success of any corporation. If central stakeholders lose confidence in the firm's social performance, they may withdraw legitimacy by refusing to provide reciprocal benefits (e.g., consumers may stop buying, stockholders sell their stock, governments may halt subsidies or impose fines, or employees withhold loyalty). This principle restates the principle of corporate legitimacy.

The Principle of Stewardship Responsibility (Donaldson and Davis 1991,1994; David, Schoorman and Donaldson 1997; Fox and Hamilton 1994): A steward's behavior is organization-centered, places higher utility on collectivistic behaviors that help the organization than on individualistic or opportunistic self-serving behaviors. When the interests of the principals (or owners) do not match those of the agents (or executives), the latter may not indulge in self-serving behavior or opportunism (as in agency theory), but instead place higher value in cooperation that aligns principal-agent objectives, and act in the best interests of the principals. This behavior results because stewards perceive greater utility in cooperative behavior than in individualistic behavior, and believe that their own personal needs are met by working toward organizational or collective ends. Stewards should to be motivated by higher- than lower-order needs, by intrinsic (e.g., commitment, virtue of selflessness, moral integrity) than extrinsic (e.g., salary increases, promotions, stock options) factors. Stewards exhibit high identification with their organization and are high in value commitment (David, Schoorman, and Donaldson 1997).

OPPORTUNITY FOR INNOVATION AND SOCIAL ENTREPRENEURSHIP

A hallmark of successful entrepreneurs is the ability to perceive and assess opportunities. We believe this is also the benchmark of successful communities. Such communities not only have eyes open for new opportunities, but they also are actively scouting for them. Just as with entrepreneurs, successful communities do not pursue all opportunities. They acquire the collective skill for assessing perceived opportunities and pursuing those that make sense. Most successful communities rely on civic leaders to do this organically by creating an organized capacity to identify and assess opportunity (Atkinson 2005, Maitland 2004).

According to Prahalad (2006), the private sector may do a better job eradicating poverty, building dignity and respect, encouraging entrepreneurship, and reducing dependency than doling handouts under traditional aid programs. Four billion poor can be the engine of the next round of global trade and prosperity and a source of innovations. The "bottom of the pyramid" consists of people living on less than \$2 a day, that is, nearly 70% of humanity. Prahalad (2004), accordingly, estimates the value of purchasing power of the poor at around \$13 trillion annually, an amount that exceeds the GDP of Japan, Germany, France, the United Kingdom, and Italy combined. The poor are in fact an underserved market. They deserve to be freed from having to pay the "poverty penalty" whereby the poor pay a premium. The poor of the world are an unexplored opportunity waiting to be tapped by the "social" entrepreneurs who are most likely

to reach out to them and ask for their business first. We believe that SE models would be the key to building the necessary bridges between the private sector and the world's poor. SE can be entrepreneurship with multiple bottom lines that also include a social mission (Kripalani 2004, Moguillansky 2006, Reena 2006). Lowering current high misery index and significant poverty levels among the poor of the world are the basic goals of the DOREO model. Concretely, the following need-list can serve as an opportunity for SE:

1. **Clean water, closed sewer systems, and clean air.**
2. **Availability of food supplies to the poor in adequate quantity and quality.**
3. **Access to health care in kind and quality.**
4. **Increasing employment/job growth among the poor.**
5. **Availability of good education and meaningful educational experiences.**
6. **Affordability of dental and vision care.**
7. **Shelter from weather and protection from natural disasters and hazards**
8. **Safety from criminal elements of society that jeopardize human dignity (e.g., child labor, forced abortion, neglect of the elderly).**
9. **Eliminating local disparities in environmental (air, land, water, greening) quality.**
10. **Capital access in impoverished neighborhoods for business start-ups.**
11. **Challenge the traditional corporate sector through social entrepreneurship efforts.**

Since World War II, small entrepreneurial firms have been responsible for half of all innovations and 95% of all radical innovations in the U. S. R&D in smaller entrepreneurial firms was more productive and robust than at large firms: they generated twice as many innovations per R&D dollar and per R&D scientist as the giants, and 24 times more innovations per R&D dollar versus those mega-firms with more than 10,000 employees (Barringer and Ireland 2004, Bellows 2006, Hart and Christensen 2002, Jung 2005)

RESOURCES FOR INNOVATION AND SOCIAL ENTREPRENEURSHIP

Every community has its challenges and its resources. Even the most distressed, poverty-stricken and crime ridden urban neighborhoods have development assets. Communities can map their resources and build a development strategy based on existing resources. Communities must build on what they have today, creating additional capacity to do more tomorrow.

Communities must be aggressive in mobilizing public and private resources to create the best infrastructure and ever-competitive businesses. These communities must learn to invest smartly in those things that will ensure future development and competitive advantage. Implied here are communities that strategically plan and are externally connected. Such communities are in a stronger position to know where to invest and how to make the case that supports necessary investment.

Resource Mobilization for Social Entrepreneurship includes various financial resources such as: a) Grants from Governments, b) Grants from charitable foundations, c) Contributions from wealthy individuals

d) Corporate donations/gifts in kind, and e) Volunteers donating time, talent and facilities. Micro financial institutions have sprung up in Latin America and Asia in response to unprecedented needs among the poor in those regions (Rock and Otero 1997). A variety of donor organizations fund SE ventures: e.g., World Bank, Millennium Change Corporation (strict criteria must be met), Ashoka.com and Private Foundations. Other organizations that focus on helping Social Entrepreneurship ventures financially and otherwise include:

- Ashoka.com: Ashoka seeks the most innovative, emerging social entrepreneurs and invests in them by supporting them financially and professionally through their global fellowship programs.
- Changemakers.net: An initiative focusing on the growing world of social entrepreneurship.
- Community Action Network: A mutual learning and support network for social entrepreneurs in the UK.
- Institute for Social Entrepreneurs: provides education and training for social entrepreneurs in the United States and abroad and draws upon a virtual community of social entrepreneurs and others to collaborate on specific projects.
- National Center for Social Entrepreneurs: The National Center for Social Entrepreneurs and the affiliated International Center for Social Entrepreneurs both have the mission "to encourage entrepreneurship throughout the nonprofit sector and to help individual nonprofits think and act in an entrepreneurial manner."
- Roberts Enterprise Development Fund: A Social Venture Capital Approach to the Support of Nonprofit Business Development. The REDF provides multi-year funding to social entrepreneurs and access to business technical assistance from MBA interns
- Social Entrepreneurs Alliance for Change: SeaChange: This is a nonprofit capital marketplace.
- Social Venture Network: A place where socially conscious entrepreneurs can meet, teach, support and create new ventures with each other.

ORGANIZATIONS FOR INNOVATION AND SOCIAL ENTREPRENEURSHIP

Successful communities are entrepreneurial in reinventing themselves. This is done most effectively by promoting appropriate institutions and efficiently by limiting those organizations to the private sector. These institutions will be entrusted with the responsibility of sustaining development efforts over the long haul. Multinational enterprises will be expected to step in to help the emerging economies realize their full potentials (Meyer 2004).

Bornstein (2004) recommended four practices that any social entrepreneurship venture must be built on: a) institutionalize listening, b) pay attention to the exceptional, c) design real solutions for real people and d) focus on human qualities. Additionally, there is a wide variety of organizational forms available in the area of social entrepreneurship. These forms include:

Category one: Nonprofits attempting to maximize earned income from their programs. These activities are not formally structured as separate businesses and they are not necessarily designed to turn a profit, although some of them might. Their primary purpose is to help the organization become increasingly self-sufficient financially by covering more of its costs through earned income and all of them directly relate to the organization's mission. Many of the activities also include partnerships of some type with government agencies, for-profit companies or other nonprofits.

Category two: Social purpose business ventures, whether started by a nonprofit, a for-profit, a public sector entity or some combination of the three: These ventures are formally structured as separate entities and have a double bottom line -- to have a direct impact on a social need and to generate a profit. Some of these ventures are structured as for-profits and some as nonprofits -- but all of them are intended to make a profit. If structured as a nonprofit business, some of the profits are used to grow the business and some are returned to the nonprofit parent(s) to support other programs. If structured as a for-profit business, some of the profits are used to grow the business and some are used to provide a return on investment for the owners (frequently nonprofit organizations that use their share of the profits to support other programs).

Category 2-A: "Affirmative" businesses: This type of business is designed specifically to provide permanent jobs, competitive wages, career opportunities and ownership for people who are disadvantaged, whether it be mentally, physically, economically or educationally (employees of successful affirmative businesses have included people who are homeless, mentally retarded, chronically mentally ill, recovering from substance abuse, former convicts, visually or physically disabled, members of inner-city minority groups, and others).

Category 2-B: Mission-driven product or service businesses: This type of business delivers services directly to their users, although payment may either be direct or may come from a third party such as a government agency or entitlement program or a private insurance company (for example, home care for the frail elderly, tutoring services for potential high school dropouts, parenting education for unwed mothers, and so on).

Category three: Earned income strategies or business ventures: these have an ancillary social purpose (an indirect impact on a social need).

Category 3-A: "Unrelated business" activities started by nonprofits themselves. Examples: Revenue-generating activities typically created from the organization's under-utilized assets (such as facility downtime, accounting expertise and copyrights) or as conveniences for its clients or patrons (gift shops, parking lots, cafeterias and so on).

Category 3-B: "For-benefit" companies: These companies are not directly associated with a nonprofit, but are created expressly to generate profits that will then be distributed to one or more nonprofit entities (for example, Newman's Own).

Category four: Business partnerships between nonprofits and for-profits: These partnerships are not structured as business ventures, but they have a business purpose for both parties.

Category 4-A: Cause-related marketing: For example, "Charge against Hunger" (American Express and Share Our Strength).

Category 4-B: Cause-related purchasing: For example, Boeing out-sourcing sheet metal fabrication work to the job shop at Pioneer Human Services in Seattle

Category five: Other earned income strategies, business ventures and partnerships: Examples: Public-private partnerships for community development (e.g., South Shore Bank); entrepreneurial efforts by government agencies

CONCLUDING REMARKS: INNOVATION AND SOCIAL ENTREPRENEURSHIP AS AN OPPORTUNITY FOR WEALTH CREATION AMONG THE POOR

For most communities, the key to success in the 21st century is to support innovation that offers the opportunity for new wealth creation. Entrepreneurs have been with us for a very long time. Entrepreneurs create new wealth for themselves and their communities by taking innovations to market and commercializing new ideas to meet consumer desires.

As research indicates, communities with strong and relevant visions for the future do better than ones that do not. Vision is about being intentional. It implies that a community takes the time and makes the effort to understand its context, its strengths and its weaknesses, and that it is willing to invest in its own perceived future. This same trait is a hallmark of entrepreneurs. A clear and powerful vision moves a community into its future within an environment of challenges, unforeseen opportunities and undesired crises (Hart 2005,

Social entrepreneurs are leaders in the field of social change and they are innovators who manage to combine an entrepreneurial spirit with a concern for the 'social' bottom line, as well as the economic one for building sustainable communities (Sachs 2005, Sen 1999). Social entrepreneurs tend to be individuals with a higher than average tolerance for uncertainty, and a willingness to pursue goals in spite of obstacles or lack of resources. They focus on opportunity, and use their ability to convince and empower others to help turn these visions into reality. Social entrepreneurs are highly collaborative individuals, with a high degree of concern for their communities. They see opportunities where others only see empty buildings, unemployable people and unvalued resources. They can make markets work for people, not the other way around, and gain strength from a wide network of alliances.

According to Bornstein (2004), the qualities of a successful social entrepreneur should include: Willingness to self connect, willingness to share credit, willingness to break free of established structures, willingness to cross disciplinary boundaries, willingness to work quietly with a strong ethical impetus.

Social entrepreneurship (SE) creates new models for the provision of products and services that cater directly to basic human needs that remain unsatisfied by current economic or social institutions. Additionally, SE emphasizes novel business models, organizational structures, and innovative strategies for brokering between very limited and disparate resources to create high social value. SE, accordingly, relies on individuals who are exceptionally skilled at mustering and mobilizing resources: human, financial, and political.

IS SOCIAL ENTREPRENEURSHIP A VIABLE CONCEPT AND THEORY?

Facts and strategies of social entrepreneurship are increasing. Moreover, freedom fighters such as Mahatma Gandhi and Nelson Mandela, or those who fought to end human suffering such as Florence Nightingale or Mother Teresa, were social entrepreneurs. These facts should vouch for the viability of the concept and theory of SE. We review some cases of great social entrepreneurship for demonstrating the viability and doability of SE (Aldrich and Martinez 2001).

ACCION INTERNATIONAL

(ACCION's Answer to Global Poverty <http://www.accion.org/helpingmillions.asp>). Today, four billion people live on less than \$2 a day. Without jobs or a social safety net, they turn to self-employment to support their families. Yet many lack access to basic financial services—working capital loans, savings, and insurance—that would help them grow their tiny businesses. ACCION is working to change that, to create a world in which the working poor have access to the capital and other financial resources needed to prosper—a world in which financial systems work for the poor.

ACCION is building on our 35 years experience in Latin America and Africa to reach ever-increasing numbers of poor people, and to lead the microfinance industry in reaching poorer, more marginalized populations. By significantly expanding microfinance worldwide to double the number of clients reached by its partners, ACCION provides leadership, encourages innovation, and promotes social responsibility—all to provide more financial products to more people in more places

THE GRAMEEN BANK

Muhammad Yunus, professor of economics, believes that the poor have skills that remain under-utilized, mainly because existing institutions and policies fail to offer the support these people require. He founded the Grameen Bank in 1976 to supply credit to those who would not qualify as customers of established banks. Today, Grameen operates 1191 branches, serving over 3 million poor people in 43,459 villages of Bangladesh. The Grameen Bank grants unsecured loans to the poor in rural Bangladesh. It differs from other lending institutions on three counts: a) priority is given to designing the system so that the loans can be repaid, and on time; b) only the poorest villagers and the landless are eligible, and c) the bank makes efforts to lend primarily to women, who are not only economically but also socially impoverished.

The loan disbursal design is unique. To qualify for a loan, a villager must demonstrate that her family assets are below a certain threshold. She is not required to put up collateral; instead, she must join a five-member group and a forty-member center, and attend a weekly meeting. She must also share responsibility for the loans granted to the other members of her group; it is the group, not the bank, which initially evaluates loan requests. Defaulters would spoil things for everybody, so group members must choose their partners wisely. The Grameen Bank has been profitable from the outset, and has inspired a global micro-credit movement that has spread to 65 developing countries, reaching 17 million borrowers.

LOW COST EYE GLASSES.COM

Over one billion people need glasses but do not own them. People who have correctable vision problems are often handicapped by limited resources. Without glasses, simple tasks become more difficult or impossible, productivity slows, and accidents occur more frequently. Based purely on the lack of productivity and enjoyment, the lack of eyeglasses is one of the largest solvable problems in the developing world. In fact, it is significantly more common than often-cited problems such as cataracts or glaucoma. Glasses could correct the majority of vision problems encountered in the developing world, reducing the impact of presbyopia, myopia, hyperopia, and astigmatism.

The surprisingly low penetration of glasses on a global basis is a result of the fundamental structure of the eye care industry. The current commercial eye care system is designed for the wealthy, first world customer, and espouses its customers' values. The system is characterized by extreme product diversity, customized product combinations, highly trained specialists, and a fashion focused product design and buying processes. As a result, prescription glasses are unaffordable by the majority of people in the world, and access is severely limited. In most developing nations, there are few optometrists, and those that are present live primarily in capital cities. Any solution must be one that is available, low cost, scalable, and wearable. To be available, glasses should be easily

purchased from a convenient local location. To be low cost, they should cost a few days' wage. In most situations, prices starting at \$5 are low cost. Cheap Eye Glasses project is intended to do exactly this.

ENTREPRENEUR FOR SOCIAL CHANGE

Launched in 1980 with \$50,000, the organization that Bill Drayton started has now a budget of \$30.5 million and has funded 1,600 "fellows" in 60 countries. Through his global nonprofit, *Ashoka: Innovators for the Public*, based in Arlington, Va., Drayton aims to find change-making leaders around the world, provide them with support and modest "social venture capital," and watch as they transform ingrained institutions and improve lives exponentially. It is a model of change that Drayton calls social entrepreneurship - a term he coined to describe individuals who combine the pragmatic and results-oriented methods of a business entrepreneur with the goals of a social reformer. That original program has set a new standard in development work, and microfinance is now used all over the world to help add to the ranks of the world's entrepreneurs. Bill Drayton witnessed the power of a simple idea to effect vast social change. Fellows, who must undergo a rigorous testing and screening process and numerous interviews, have done things like finding a way to provide cheap electricity for Brazilian farmers, changing the Indian school curriculum from rote to independent learning, and distributing micro credit loans of as small as \$60 for poor women in Bangladesh to start businesses. A Gandhian named Vinoba Bhave was walking across India and persuading individuals and whole villages legally to "gift" their land to him. Bhave then redistributed the land more equitably to support untouchables and other landless people, thus breaking an endless cycle of poverty. Drayton, just 20 years old and on summer break from Harvard, drove a red-and-white Volkswagen van from Munich to India to join him. Drayton, like three of his heroes, Mohandas Gandhi, Thomas Jefferson, and Jean Monnet (architect of European common currency), is a scholar and political operator deeply rooted in the how and why of society.

IMPLICATIONS AND FUTURE DIRECTIONS

There is a practical solution to global poverty and it is through innovative methods of promoting social entrepreneurship among the world's poor (Butler 2005, Dahle 2005). Developing products and markets for subsistence marketplaces should become priorities among product development experts in leading institutions of higher learning as well as in R & D units of multinationals. These R & D efforts should focus on turning out useful and marketable product concepts and prototypes. Leading microfinance institutions must be encouraged to expand their services throughout the developing world, if need be by partnering with the established financial institutions. In other words, micro financing should move from margin to mainstream (Rock and Otero 1997).

Traditional philanthropy has focused too much on donor satisfaction and not enough on producing measurable results - either outcomes or impacts. There is growing evidence that the 'nexus generation' of 18-34 year olds are looking for meaningful forms of social engagement that blur the boundaries between private, public and voluntary sectors. These entrepreneurs bring the language of business to the philanthropic discussions and they want to be part of sustainable social initiatives. The trend appears to be towards organizational models that recognize and value both social and economic returns on investment, and foster innovative, collaborative, multi-sectoral approaches to problem solving. In the U.S. Charter Schools are mushrooming all across inner cities providing a viable alternative to deteriorating public schools.

The number of new products in America was estimated at 26,000 in 1996, a tenfold increase from 1986, thus confirming Moore's Law (the power of the computer chip will double every 18 months at constant price), and Peter Drucker's Postulate (a tenfold increase in the productivity of any technology results in economic discontinuity). We estimate with the growth of social entrepreneurs and their disciples, the world will be filled with developmental innovations that will progressively eradicate poverty, malnutrition, pandemic disease, and thus reduce the global inequalities of income and opportunity that are ailing the world of today.

SE is one way of fulfilling corporate social obligation, corporate stakeholder responsibility and corporate stewardship of the world. In a globalizing world not to be concerned for the problems of the world is ignorance and negligence. SE challenges the corporations and entrepreneurs of the developed world to change the world they operate in for the better of all humankind, especially the developing nations (Goldfarb 2002, London and Hart 2004, Margolis and Walsh 2003).

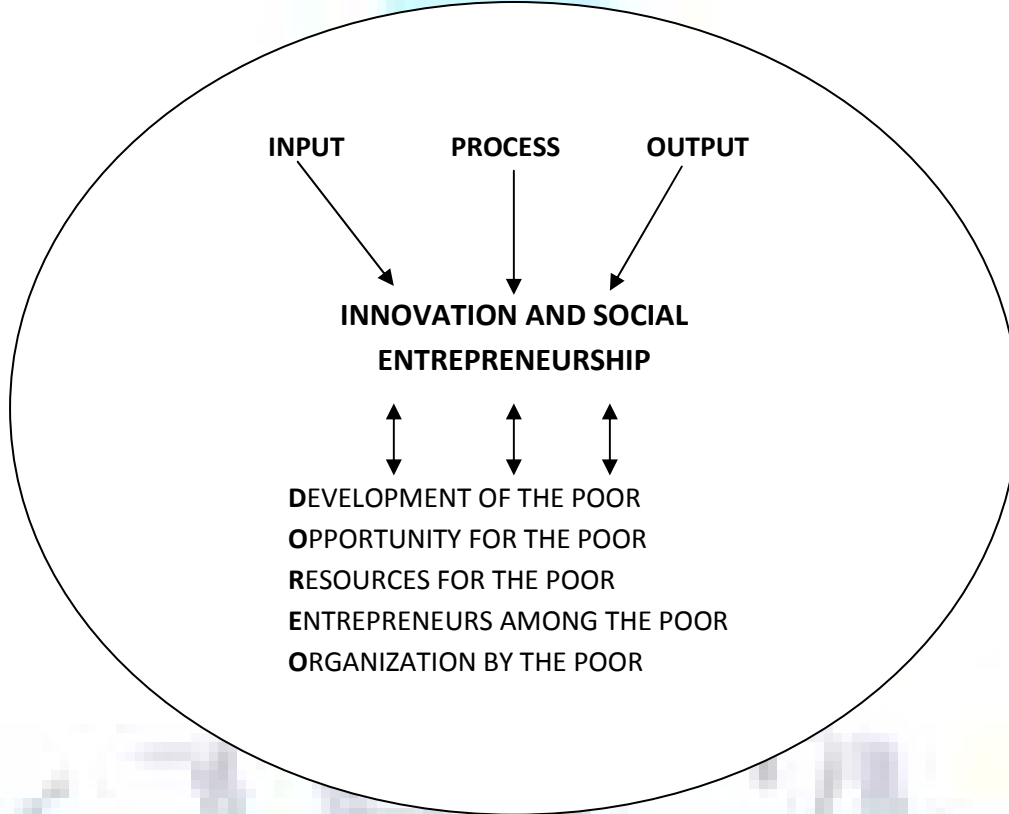
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APPENDIX

FIGURE1: THE DOREO MODEL OF INNOVATIONAND DEVELOPMENT



THE DOREO MATRIX OF INNOVATION AND ENTREPRENURSHIP

DOREO	INNOVATION MANAGEMENT			INDUSTRY EXAMPLES
	INPUTS	PROCESS	OUTPUTS	
DEVELOPMENT	Employ and develop skills from the developing countries via outsourcing.	Make local employees self-sufficient, creative, productive and effectively innovative.	Reduce misery index; reduce global disparities of income, opportunity, health and wealth; reduce effects of natural and socially imposed disadvantages of race, color, nationality, age, gender and religion.	Grameen Bank NFTE Low cost eye Glasses.com World of Good Nehemiah Corporation. Global Affirmative Action. Global Disabilities Act (after ADA 1987)
OPPORTUNITY	Scan, develop and enhance opportunities from the developing countries	Transform these opportunities into concrete ventures and adventures of mining opportunities	Opportunities should result in enhanced energy, fuel, food and housing, education and healthcare bases	Convert opportunities of untapped wind, wave, solar, ocean, tidal, saline, and planetary movements and energies.
RESOURCES	Scan, develop and enhance local untapped resources from the developing countries.	Transform these resources into concrete developmental programs and projects.	Tapping untapped resources should result in enhanced levels of energy, fuel, food and housing levels.	Natural gas, ethanol, alternative fuels, compass pits, water reservoir from monsoon floods, and national aquaducts-networks to convert fallow land, for reforestation, greening, milk-farming, cheese dairy, poultry farming, ... to make all villages self-sufficient and trade-ready.
ENTREPRENEURSHIP	Scan, develop and empower local entrepreneurship from the developing countries. Scanning and developing entrepreneurial mindsets and models in local villages and towns.	Transform local talent and skills into viable, feasible and profitable ventures and projects. K-12 entrepreneurship development. College entrepreneurial programs.	Tapping untapped local entrepreneurship must result in enhanced levels of income, education, life-styles, quality of life, ecology, health, housing, and self-development.	Development of social entrepreneurs. Diffusing the Grameen bank. Greening global villages. Recycling plants from the waste of developing countries (e.g., scrap iron, lumber, paper, and clothing).
ORGANIZATION	Develop local self-governing organizations of people, groups, gangs, tribes, ethnic centers, villages and village clusters.	Develop local self-governed organizations of learning, training, motivation, development and planning.	Such local organizations should self-govern law, order, harmony, peace, ecology, sanitation, health, and wealth and resource management.	HomeBoys in LA; Fighting poverty, crime, terrorism, violence, drugs, disease, deprivation, injustices, and inequalities by and within local groups, tribes and villages. Develop Agro-Parks, Industrial Parks, Play Parks, and Arts & Crafts Centers for empowering villagers.



THE IMPACT OF SERVICE QUALITY AND MARKETING ON CUSTOMER LOYALTY IN BANKING SECTOR, ACEH-INDONESIA

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MALAYSIA

ABSTRACT

Banks play a significant role in the economy, making up one of the biggest provider of services in the Indonesia economy. Hence, providing better service quality and planning marketing strategic are vital as banks have to compete for customers. This research explores the impact of relationship service quality and marketing on customer loyalty in banking context. A survey of customers of banking sector, Nanggroe Aceh Darussalam Province, Indonesia was conducted to determine the significance and influence of the underpinning of the relationship services quality such as tangibles, reliability, responsiveness, empathy, assurance and the relationship of strategic marketing likely strategic marketing on product, strategic marketing on price, strategic marketing on location dan strategic marketing on promotion. A total of 75 of usable questionnaire were obtain from a total of 100 questionnaires' distributed. The finding show that the all variables namely tangibles, reliability, responsiveness, empathy, assurance, strategic marketing on product, strategic marketing on price, strategic marketing on location dan strategic marketing on promotion were important in determining and influencing customers loyalty since the results of the research showed that customers loyalty are related to all variables namely tangibles, reliability, responsiveness, empathy, assurance, strategic marketing on product, strategic marketing on price, strategic marketing on location dan strategic marketing on promotion, therefore bank needs to consider these factors and provide customers loyalty other facilities that are essentials for attracting customers.

KEYWORDS

customer loyalty, services quality, strategy marketing, quantative analysis.

INTRODUCTION

Customer loyalty in banking has been a major concern to practitioners due to severe competition and higher customer expectations. Customer loyalty is considered a vital link and aspiration to organizational success, profit and business performance (Oliver, 1997; Reichheld and Sasser, 1990; Reichheld, 1993; Sheth and Parvatiyar, 1995). Selin et al. (1987) state that, "those consumers that demonstrate the greatest levels of loyalty toward the product, or service activity, tend to repurchase more often, and spend more money". Thus, loyal customers do not only increase the value of the business, but also enable business to maintain costs lower than those associated with attracting new customers. Moreover, loyalty rather than satisfaction is becoming the number one strategic goal in today's competitive business environment (Oliver, 1999).

One of the ways to enhance customer loyalty in banking is by focusing on offering excellent services and meeting the needs of customer. Banks need to have a good understanding of their customer behavior so that appropriate marketing strategies directed towards relationship building and customer retention can be developed. As a result, a great deal of research attention has focused on the identification of effective methods of actively enhancing loyalty, including loyalty programs such as point reward schemes (Lach, 2000). Loyalty programs "create a reluctance to defect" by rewarding the customer for repurchasing from the organization (Duffy, 1998). Hitherto, in recent years, customer loyalty in banking has received increasing attention from academic researchers worldwide (Caruana, 2002; Ball, Coelho & Machas, 2004; Beerli, Martin and Quintana, 2004). It is important to banks to adequately monitor their customer loyalty programs, bank management need to be knowledgeable of the drivers of customer loyalty in retail banking industry. This is the main impetus of doing this research.

Thus, the objective of this study is to examine the causal relationships of several antecedents of customer loyalty in the context of retail banking in Nanggroe Aceh Darussalam, Indonesia. This paper is structured as follows. First, we review the service quality and marketing literature on the antecedents of customer loyalty. Next, we present the research framework, methods, measures and findings. Finally, the results were discussed in terms of its contribution to the upgrading of banking services and recommendations for future research.

CUSTOMER LOYALTY

Until the 1970's, loyalty was understood as repeat purchase behavior, primarily considering repeat purchase cycles (Bass 1974). Following that, a behavioral approach toward explaining purchase patterns emerged. Among the first proponents of such a behavioral approach was Jacoby (1973, 1978). Loyalty was defined as a biased (nonrandom) repeat purchase of a specific brand (from a set of alternatives) over time by a consumer, using a deliberate evaluation process (Jacoby and Kyner 1973). Later, Jacoby and Chestnut (1978) note that the belief, affect, and intention structure of a consumer must be examined in order to analyze loyalty. Despite these seminal works, there is still no universal agreement on the definition of loyalty (Dick and Basu 1994; Jacoby and Chestnut 1978; Oliver 1999; Uncles, Dowling, and Hammond 2003). According to Uncles et al. (2003), three popular conceptualizations of loyalty exist: loyalty as an attitude that leads to a relationship with the brand; loyalty expressed mainly in terms of revealed behavior; and buying moderated by the individual's characteristics, circumstances, and/or the purchase situation. We use Oliver's (1997) definition, because it includes both attitudinal and behavioral aspects of loyalty. Oliver (1997) defines loyalty as a deeply held commitment to rebuy or repatronize a preferred product or service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing, despite situational influences and marketing efforts that have the potential to cause switching behavior. He introduces a four-stage loyalty model, implying that different aspects of loyalty do not emerge simultaneously, but rather consecutively over time (Oliver 1999). More than a clarification, this model extends the loyalty sequence "cognitive-affective-conative" by including an observable behavior, for example actual purchase behavior. At each loyalty stage, different factors influencing loyalty can be detected.

At this stage, consumer loyalty is determined by information relating to the offering, such as price, quality, and so forth. It is the weakest type of loyalty, since it is directed at costs and benefits of an offering and not at the brand itself. Therefore, consumers are likely to switch once they perceive alternative offerings as being superior with respect to the cost-benefit ratio (Kalyanaram and Little 1994; Sivakumar and Raj 1997). Cognitive loyalty is influenced largely by the consumer's evaluative response to an experience, in particular to the perceived performance of an offering relative to price (= value).

Affective loyalty relates to a favorable attitude towards a specific brand. Attitude itself is a function of cognition (e.g., expectation). Satisfaction is a global affect evaluation or feeling state which can be predicted from perceived performance as the cognitive component of the evaluation (Oliver 1993; Phillips and Baumgartner 2002; Westbrook and Oliver 1991). Expectancy confirmation leads to satisfaction, which in turn effectuates affective loyalty (Bitner 1990). Oliver (1997) defines satisfaction as "the consumer's fulfillment response, the degree to which the level of fulfillment is pleasant or unpleasant." Affective loyalty is also subject to deterioration, caused primarily by an increased attractiveness of competitive offerings (Sambandam and Lord 1995) and an enhanced liking for competitive brands. This can be, for instance, conveyed through imagery and association used in competitive communications (Oliver 1999).

Conative loyalty implies that attitudinal loyalty must be accompanied by a desire to intend an action, for example repurchase a particular brand. It is stronger than affective loyalty, but has vulnerabilities as well. Repeated delivery failures are a particularly strong factor in diminishing conative loyalty. Consumers are more likely to try alternative offerings if they experience frequent service failures. Even though the consumer is conatively loyal, he has not developed the resolve to avoid considering alternative offerings (Oliver 1999).

Action control studies imply that not all intentions are transformed into action (Kuhl and Beckmann 1985). The three previous loyalty states may result in a readiness to act (in this case, to buy). This readiness is accompanied by the consumer's willingness to search for the favorite offering despite considerable effort necessary to do so. Competitive offerings are not considered as alternatives. Despite the many attempts to consider selected links between different loyalty phases, relatively little empirical research has been conducted on testing the total four-stage loyalty model. Our study tries to fill that void by empirically testing Oliver's (1997) loyalty model and possible moderators affecting the links between the loyalty phases in a retail setting.

TYPICAL CHARACTERISTICS OF LOYAL CUSTOMERS

Customers who are loyal according to Griffin (2002: 31) has characteristics including: (1) make a purchase re-secar regularly, (2) buy out the product line / services, (3) invites another person, (4) indicates immunity from the pull of competitors. Understanding customer loyalty is not only seen from the transaction just or repeat sales. Griffin (2003: 23) promoted seorang there are some features could be considered loyal customers. Among others:

- a. Makes rugular repeat purchase
- b. Purcase across product lines and servise
- c. Refers others
- d. Demonstrates in immunity to the pull nof the competition

Loyal customers are loyal to their bank customers. Griffin (2002: 13) suggests the benefits - benefits that would be obtained if the company has loyal customers that include: (1) reduce marketing costs (because the cost to attract new customers is more expensive), (2) reduce transaction costs (such as costs of contract negotiations, order processing), (3) reduce customer turnover costs (because fewer consumers replacement), (4) to increase cross selling which will enlarge the company's market share, (5) word of mouth is more positive, with the assumption that consumers are loyal bearti also those who feel satisfied, and (6) reduce the cost of failure (such as replacement cost).

LOYALTY INDICATORS

Customers who are loyal very great significance for the company. According to Kotler (2002:25) there are five indicators that loyal customers, namely:

- a. Customers tend to buy more and longer loyal.
- b. Customers tend cross-selling or add-on-selling.
- c. Customers are not sensitive to price.
- d. Customers will make a positive word of mouth.
- e. Offer ideas to the company's goods or services.

Customer loyalty will be affected by customer satisfaction, customer characteristic swiching barrier, market competition and value. The main factors that affect loyalty is customer satisfaction, customer satisfaction will be determined by the hope (expectation) and product performance. If performance exceeds expectations, the customer satisfied and vice versa if the performance is less than expectations, the customer will be dissatisfied. If customer satisfaction is fulfilled then the customer loyalty will be created and vice versa if customer satisfaction is not met then the loyalty of customers will not be created.

SERVICE QUALITY

Definitions of service quality hold that this is the result of the comparison that customers make between their expectations about a service and their perception of the way the service has been performed (Lehtinen & Lehtinen, 1982; Lewis & Booms, 1983; Gronroos, 1984; Parasuraman et al., 1985; 1988; Caruana, 2002). Service quality is defined as the degree of discrepancy between customers' normative expectation for service and their perceptions of service performance (Parasuraman et al., 1985). The definition of service quality was further developed as "the overall evaluation of a specific service firm that results from comparing that firm's performance with the customer's general expectations of how firms in that industry should perform (Parasuraman et al., 1988). As the time evolve, quality concepts such as total quality management (TQM) and new public management (NPM) have been adopted by many organizations in most developed countries as early as 1990s. The key objective of NPM, for instance, is to improve the delivery of service quality by taking a customer-oriented approach (Mwita, 2000). Wu et al. (2006) integrates data envelopment analysis (DEA) and neural network (NNs) to examine the relative branch efficiency. The use of the DEA technique in performance benchmarking of bank branches has evolved from relative benchmarking of performance in terms of operating efficiency (service quality) and profitability (Manandhar & Tang, 2002). Among general instruments, the most popular model used for evaluation of service quality is SERVQUAL, a well-known scale developed by Parasuraman et al. (1985, 1988). The attributes of (Parasuraman et al., 1985), were: tangibles, reliability, responsiveness, competency, courtesy, assurance, credibility, security, access, and understanding. Parasuraman et al. (1988) later reduced these ten dimensions into five by using a factor analysis. Based on the five dimensions, a 22-item survey instrument for measuring service quality has been developed. These five dimensions are: Tangibles - Physical facilities, equipment and appearance of personnel. Reliability - Ability to perform the promised service dependably and accurately. Responsiveness - Willingness to help customers and provide prompt service. Assurance (including competence, courtesy, credibility and security) - Knowledge and courtesy of employees and their ability to inspire trust and confidence. Empathy (including access, communication, understanding the customer) - Caring and individualized attention that the firm provides to its customers. Although there has been criticism from some other researchers to SERVQUAL instrument (Johnston, 1995), yet SERVQUAL is the instrument most utilized for its confirmatory factor analyses in most cases. Thus, up to date, SERVQUAL has proven to be a parsimonious model that has been used in various service organizations and industries to measure service quality including banks (Mc Alexander et al., 1994; Cowling & Newman, 1996; Levesque & Mc Dougall, 1996; Caruana et al., 2000; Caruana, 2002; Sureshchandar et al., 2002; Paswan et al., 2004; Seth et al., 2005; Lymperopoulos et al., 2006).

RELIABILITY

Reliability is the customer's own reflection on the service experience and on how the service has been or is being performed. In particular, the customer will reflect on the service promise and decided if that has been kept. Most customers regard reliability as being the most important of the five dimension of service performance (Bateson, 1995). Reliability in services is defined as ability to perform the promised service dependably and accurately (Berry et al., 1990).

TANGIBLES

Tangibles are those factors the customers can see, hear and touch. In most service firms, tangibles include the physical environment, the facilities, and the appearance of the contact personnel. Tangibles are used when assessing physical quality before the service experience (Bateson, 1995). Tangibles are the appearance of physical facilities, equipment, personnel and communication materials (Berry et al., in Zainol, 2003). Tangibles include the physical evidence of

the service such as physical facilities, appearance of service providers, tools or equipment used to provided the service, physical presentation of the service, and other customers in the service facility (Haksever et al., 2000).

RESPONSIVENESS

Responsiveness is the customer's perception of the willingness and ability of staff to respond to the customer's own needs. Responsiveness is particularly important to customers who have problems or require some service over and above that which is ordinarily provided (Bateson, 1995). Responsiveness is willingness to help customers and provided prompt service (Berry et al., 1990; Philip and Steward, 1999). Responsiveness concerns the willingness or readiness of employees to provide service.

ASSURANCE

Assurance present the customers' trust and confidence in the service and also the courtesy and competence of service providers. A favorable assessment of assurances will indicate that the customer is satisfied that the staff understood his needs and met them, and that no further problems have been created (Bateson, 1995). This dimension relates to the knowledge, and courtesy of employees and their ability to convey trust and confident (Berry et al., 1990).

EMPATHY

Empathy is defined as the caring and individualized attention provided to customers (Berry et al., 1990; Philp and Stewart, 1999; Hakseveret et al., 2000). It includes the approachability and ease of contact with the service providers and making the effort to understand the customers and their needs (Hakseveret et al., 2000)

MARKETING

The success of a company is determined by the marketing ability to determine and implement appropriate marketing policy in the right circumstances as well. The notion of marketing according to Kotler translation of Nirwono and Taufik (1995:26) is an activity that is directed to meet the needs and desires of human beings through the exchange process.

MARKETING STRATEGY ON PRODUCTS

Product is the most attention in the marketing mix to another. While the notion of products by Stanton, (1995: 165) translation Swasta and Irawan that the product is anything that is offered into the market for attention, used or consumed in order to satisfy consumers' desires or needs which includes physical objects, services, people, places, organizations and ideas. Products can be goods and services consumed by final consumers or industrial consumers. Classification of goods according to the purpose of use by consumers can be divided into two groups, namely:

- a. Consumer goods, namely the final consumer of goods bought for consumption. There are three sections of consumer goods:
 - Convinient Goods
 - Shopping Goods
 - Speciality Goods
- b. Industrial goods, ie goods that are purchased to be processed again or for the benefit of the industry. Industrial goods can be grouped into:
 - Raw materials
 - Equipment operation
 - Components and semi-finished goods
 - Installation
 - Extra Equipment

MARKETING STRATEGIES FOR PRICE

After the creation of the product then the price is the second element, because if the pricing is right for the product will affect the continuation of the development of these products target market. The definition of the price by Swastha (1995: 147) is the amount of money (plus a few things if possible) required to obtain a number of combinations of goods and services. In setting policy prices there are several methods that guided the formulation:

- The price, based on the orientation of the manufacturer to request that set the selling price in accordance with a predetermined price. Policy is usually well above considerations of price discrimination among other subscriptions differences, differences over the place and differences over time.
- Determination of cost-oriented pricing that is setting the selling price based on costs incurred to produce a product so that the goods to consumer. In this case the price is a way for sellers to distinguish one offering from competitor. Meanwhile pricing goods considered as a function of differentiation in marketing.
- Several kinds of pricing objectives, namely:
 - Pricing to grab market share
 - Pricing for the purpose of maximum revenue
 - Pricing for promotional purposes
 - Pricing for profit targets

MARKETING STRATEGY FOR LOCATION

The location is an industrial product distribution channel services. The location is a place that is used in supplying services to the customer. The location associated with the decisions made about where the operating company and its staff will be involved. For the type of interaction where the customer came to service providers are like the Bank, where the location is very important. Besides that, according to Hurriyati (2005: 57): in choice place or location requires careful consideration of several factors:

- Access, such as location, easily accessible public transportation
- Visibility, such as the location which can be seen clearly from the roadside
- Traffic, where there are two things to consider, which is the number of people passing by can be a member a great chance of impulse buying, density and traffic congestion can also be a barrier
- The parking lot is spacious and safe
- Expansion, available space in which to expand business in the future
- Environment, namely the area around the support
- Competition, was the location of competitors
- Government Regulation
- Factors affecting the company in determining the alternative distribution channels, among others:
 - Market Considerations
 - Consideration Goods
 - Company Considerations
 - Consideration Broker

- Promotional Consideration

TOP PROMOTIONAL MARKETING STRATEGY

Promotion is a way to influence consumers prefer to buy directly for certain goods and services. In addition, promotions are also driving purchases act fast so as a whole will determine the success of the campaign, because of its attraction gets the message delivered. According to Alma (2004: 179) campaign is a form of marketing communication is a marketing activity that tries to spread information, influence, persuade, and / or remind the target market or company and its products to willing to accept, buy and loyal to the products offered by the company concerned. According to George (1991: 53) which be interpreted by Asri, the nature of sales promotion are:

- Sales promotions generate faster response than ads.
- Sales promotion tends to attract a new buyer is not a long-term interest only been established, because the promotion only to attract consumers, who are always moving between various kinds of brand depends on the special offers available.
- The buyers of certain brands that each tends to not change the pattern of the buyers, although there is a competitive campaign.

BANK AND CUSTOMERS

Banking and financial services are an important part of services industry mish kin, (2001). He also conducted that who are satisfied and also complained with the services recovery efforts of the bank are three times more likely to recommend the bank to some one else and to do increased business with the bank.

Now, banks managers knew that delivering quality service to customers is major important for success and survival in today's global and competitive banking environment. Customers- seller relationship is recognized as pervasive, inescapable and high interdependent, with ties between consumers and business vital to the interest of both parties. Both parties which are customer and firm will gain mutual reward by having a customer relationship. Consumer's benefit in terms of enhanced value, better quality and increased satisfaction with their purchased (File & Princed, 1993). While the other parties which are firm will gain benefit from greater sales volume, better operating efficiencies, positive word of mouth publicity, improved customer feedback, and decreased marketing expenses (Riechheld & Sasser, 1990; Vavra, 1992).

Now days, there are many variety of new banking products such as automated teller, machine, phone banking, tele- banking, inter banking and many others. All these products were developed for the purposed to accommodate the increased of the customer needs, giving a clear direction regarding the changes of the banking industry has going through during the last two decades. Cost of transaction has been reduced and at the same time can increased the speed of services substantially. Growing applications of these technologies especially the computerized networks to banking has led to more usage of electronic banking.

THEORETICAL FRAMEWORK

This study formulates the antecedents of customer loyalty as shown in Figure 1. In the research framework, it shows that tangible, reliability, responsiveness, assurance, empathy, comitment, marketing strategy on produt, marketing strategy on price, marketing strategy on location and marketing strategy on promotion are direct predictors of customer loyalty. The literature indicates that tangible, reliability, responsiveness, assurance, empathy, comitment, marketing strategy on produt, marketing strategy on price, marketing strategy on location and marketing strategy on promotion are direct antecedents of customer loyalty.

PROBLEM STATEMENT

Services quality offers a sustainable competitive advantage to a bank because it creates value and also customer satisfaction. However, services quality is reduced drastically by services breakdowns. The result of services breakdowns are customers dissatisfaction and possibly customers defection depending on the customer's trust, knowledge and the availability of alternative services provider. In the banking sector, to maintain and having a closer relationship with the entire or existing customers are very important. The maintenance of customers trust in the retail banking industry is of considerable importance as it can impact on the likelihood of retaining existing customers (Morgan & Hunt, 1994) and attaining new ones. Furthermore, trust in a bank can also be more important to a bank customer than price. So each bank must make sure that their services fulfill their customers' needs and wants. The focus on this reaserch is to identify the common relationship service quality and marketing underpinning on customer loyalty in banking sector. This research will also look whether all dimensions mentioned contributed equally or differentially towards the loyalty of the customer.

STATEMENT OF PROBLEMS

Hence this particular study focuses on the "service quality factors and strategic marketing factors on customer loyalty : indication from Nanggroe Aceh Darussalam Banks-Indonesia"

PURPOSE OF STUDY

1. General purpose

This study examines the concept of five underpinnings of relationship service quality and four underpinnings of relationship marketing and the concept of customer loyalty. In Particular, it aims to explore the nature of relationship services quality and marketing underpinning and how it will affect each of the customers to be loyal towards their bank.

2. Specific purpose

In assuring that the above objectives can be achieve, there are few specific objectives that need to be accomplished. These specific objectives are as follows:

- to determine whether services quality influence the extent to which customer's loyalty towards their banks
- to determine whether marketing strategy influence the extent to which customer's loyalty towards their banks

RESEARCH OBJECTIVES

The objectives of the research include;

1. To analyze the relationship between tangibles and customers loyalty
2. To analyze the relationship between reliability and customers loyalty
3. To analyze the relationship between responsiveness and customers loyalty
4. To analyze the relationship between assurance and customers loyalty
5. To analyze the relationship between empathy and customers loyalty
6. To analyze the relationship between marketing strategy on Product and customers loyalty
7. To analyze the relationship between marketing strategy on price and customers loyalty
8. To analyze the relationship between marketing strategy on location and customers loyalty
9. To analyze the relationship between marketing strategy on promotion and customers loyalty

HYPOTHESIS

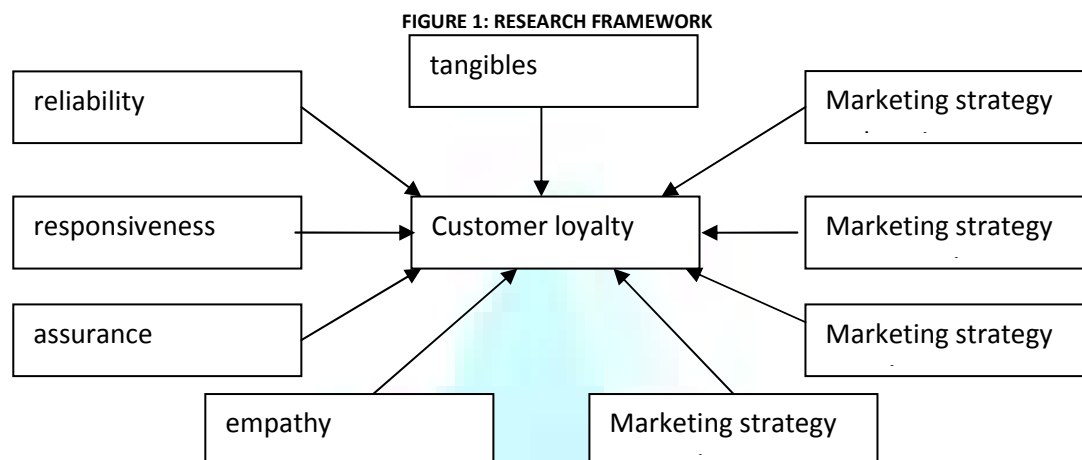
This study aims to investigate relations among service quality and marketing on customer loyalty. According to our frame work the following hypotheses are formulated.

H1: Tangibles may have significant positive relationship on customers loyalty

H2: Reliability may have significant positive relationship on customers loyalty

H3: Responsiveness may have significant positive relationship on customers loyalty

- H4: Assurance may have significant positive relationship on customers loyalty
- H5: Emphaty may have significant positive relationship on customers loyalty
- H6: Marketing strategy on product may have significant positive relationship on customers loyalty
- H7: Marketing strategy on price may have significant positive relationship on customers loyalty
- H8: Marketing strategy on location may have significant positive relationship on customers loyalty
- H9: Marketing Strategy on Promotion may have significant positive relationship on customers loyalty



METHODOLOGY

SELECTION AND MEASURES

The most frequent use of data collection is by way of questionnaires. It is used to measure the past behaviour, and respondent characteristics (Kinnear & Tylor, 1996). The questionnaire designed for this research was formulated as open ended and closed-ended questions which were normally structured for respondents to select their choices of statement from a list of questions presented to them. We use linkert scale by five-point scales described at either end by “strongly disagree” to “strongly agree” were used.

In the first part, the respondent’s demographic profiles were asked such as gender, age, educational qualification, occupation and monthly income. The second part consists of 39 questions. The entire questions were base d on the dimension of the variables.

TABLE 1: MEASUREMENT VARIABLES

Variable	Definition	Sub Indicator
Customer Loyalty (Y)	Customer Loyalty (Y) is a commitment from the consumer to use a particular product or services brand, which formed due to consistency of the company to meet customer expectations.	1. To use Bank for financial facility primarily saving 2. To give recommendations to others to use savings 3. To survive as customers, although there are inducements to move other banks 4. To delively positive things on saving products to others 5. Provide advice to the bank for the development of saving products
Tangibility (X1)	Tangibles present the appearance of physical factors such as equipment, facilities and personnel.	1. Bank physical facilities conform with services provided 2. Bank employees are well dressed 3. Bank has appealing physical Facilities 4. Bank has modern equipment and Technology
Reliability (X2)	Reliability is the ability to perform the service in an accurate and dependable manner.	1. Bank provides service as promised 2. Bank fulfills promise 3. Bank keeps accurate records 4. Bank is sympathetic and reassuring 5. Bank is dependable
Responsiveness (X3)	Responsiveness refers to the willingness to provide help and prompt service to customers	1. Bank cares about my interest 2. Bank employees knows my needs 3. Bank’s employees give personal attentions to me 4. Bank’s employees willing to help me
Assurance (X4)	Assurance involves the knowledge and courtesy of employees and their ability to convey trust and confidence.	1. I can trust the employee 2. I feel safe in dealing with the employees
Empathy (X5)	Empathy indicates providing individual attention and care to customers	1. Employees should get adequate support from Bank 2. employees should be polite
Marketing Strategy on Product (X6)	Products is something that can be offerd on the market for attention, requested, used or consumed that satisfy consumer needs and wants of both good and services (Kohtler,1990). The indicator used to measure this variable is saving safety.	1. Security Saving 2. Books withdraw savings 3. Directive in passbook is easy to understand 4. Canbe used as a means of payment
Marketing Strategy on Price (X7)	Price is the number of values assigned to a product or service to get some combination of the product or service to get some combination of priodik and ministry (Swastha,1983)	1. The amount of savings interest rate 2. The amount of administrative costs 3. The amount of replacement cost saving books 4. Other expenses
Marketing Strategy on Location (X8)	Location is institutions that have a distributor or dealer events which distribute products and services from producers to consumers (Nitisemitro,1997)	1. Bank’s strategic location 2. Availability of public transport to localized Bank 3. Number of office units 4. Easily accessible
Marketing Strategy on Promotion (X9)	Promotion is the flow of informationor persuasion of a direction made to direct a persom or organization to the action that creates an exchange in marketing (Private and Irawan, 1999)	1. The information provide through personal selling/ account officer 2. The information provide through banner 3. Mass or radio 4. Information through brochures 5. Lottery by the Bank’s procurement

RESEARCH DESIGN

This particular study focuses mainly on the effect of services quality and marketing on customer loyalty. This study considered customers from different banks by analyzing the customer loyalty. Since the study is more of fact finding one, the research follows descriptive study design as its plan of action.

POPULATION AND SAMPLE

The population selected for the study consists of the banks in various district in Nanggroe Aceh Darussalam. The customers who are having different socio background, likely gender, age, educational qualification, occupation and monthly income are considered as the criteria for the selection of sample. This criterion chosen in order to asses is there any difference among these customers with regards to their loyalty to the banks that their chosen. A total of 100 customers who are patronizing different banks were request to complete a questionnaire. A respondent rate of 75% was collected beck responding to 75 responses that contained measures of the constructs of concern the questionnaire were distributed to the respondents by using simple random sampling method. Under simple random sampling method, all elements in the customers are considered and each element in the customers are considered and each elements has an equal chance of being chosen as the subject (sekarang, 2009). A respondent rate of 75% was collected beck responding to 75 responses. The research sample was selected from a range of demographic elements for processing based on non probability sampling in Aceh-Indonesia with focus point on banks in Nanggroe Aceh Darussalam. Non probability sampling techniques are in which units of that sample are selected on the basis of personal judgment or convenience. The probability of any particular member/ customers of the population being chosen is unknown (Zikmud, 1997).

TYPES AND SOURCES OF DATA TYPE

Type of data in this study is the data subject (Self-Report Data). Where according Indriantoro (1999:145) data on the subject is the kind of research data in the form of opinion research, attitude, experience and characteristics of the person or persons who become subject research responders.

SOURCE DATA

1. Primary Data

Data used in this research is the primary data is the data sought and processed individually by the investigators and has not been published by individual groups or institutions to the various parties concerned.

2. Secondary Data

Secondary data source research data obtained directly through a media researcher intermediary / acquired and recorded by others (Indriantoro, 1999:147). Techniques used in the collection of secondary data obtained from literature studies relevant to the research, as well as an overview of enterprise data obtained from magazines or via the internet.

DATA COLLECTION TECHNIQUES

To obtain the desired data and relevant to the subject matter, the authors use several techniques pengumpulan data that can help in this research. The techniques that I use in this data collection are as follows:

I. Interview / Interview

Interviews were conducted data collection techniques and the customer respondents related to the research this objectives. Hence,with direct interviews with office banks in providing information relating to the data that the authors need.

II. Questionnaire

The questionnaire is a technique of data collection by making a list of questions and then submitted to a complete customer data and information obtained to achieve the objectives of this research.

RESEARCH INSTRUMENTS

Instruments to collect data in this study were prepared questionnaires for measuring the variables of research by providing a scale score of answers to questions. Scale was used Likert scale. Each question has five alternative answers.

DATA ANALYSIS TECHNIQUES

ANALYTICAL METHODS

To prove the influence of independent variables to the dependent variable then used multiple regression equation. Multiple regression equation as follows:

$$Y = a + b1X1 + b2X2 + b3X3 + b4X4 + b5X5 + b6X6 + b7X7 + b8X8 + b9X9 + e$$

Where:

- Y = Customer Loyalty
- a = Constant
- X1 = Tangibles
- X2 = Reliability
- X3 = Responsiveness
- X4 = Assurance
- X5 = Emphaty
- X6 = Marketing Strategies for Products
- X7 = Marketing Strategies for Price
- X8 = Marketing Strategies for Location
- X9 = for Promotion Marketing Strategy
- b1-bn = regression coefficients
- e = Error

TEST VALIDITY

It is a test that is intended to simplify the items that were used directly in measuring the research variables, whether these items have accuracy in explaining a variable used in the study who viewed the value of loading factor. Factor coefficient (loading) which has absolute value> 0:40 means that variable has a value of the accuracy of the qualified.

TEST RELIABILITY

According Supranto (2001: 45) test the reliability test is a test to measure whether realibel or reliable data and can be used in processing the data in this study, using the coefficient alpha cronbach. If the value of coefficient alpha cronbach> 0.60 then the data can be declared reliable or powerful.

ANALYSIS AND RESULTS

TABLE 2: FACTOR ANALYSIS : CUSTOMER LOYALTY FACTORS

Variables (Independent Variable)	Number of items	% of variance explained	Cronbach's alpha
Services Quality-tangibility (X1)	4 (four) items	0.021	0.976
Services Quality-reliability (X2)	5 (five) items	0.082	0.953
Services Quality-responsiveness (X3)	4 (four) items	0.019	0.976
Services Quality-assurance (X4)	4 (four) items	0.019	0.976
Services Quality-emphaty (X5)	5 (five) items	0.085	0.794
Marketing strategy on product (X6)	4 (four) items	0.062	0.954
Marketing strategy on price (X7)	4 (four) items	0.030	0.962
Marketing strategy on location (X8)	4 (four) items	0.028	0.974
Marketing strategy on promotion (X9)	5 (five) items	0.086	0.953

All the 9 factors (X1, X2, X3, X4, X4, X5, X6, X7, X8, and X9) that included infactor analysis were found most vital in survival skill explaining 0.021, 0.082, 0.019, 0.019, 0.085, 0.062, 0.030, 0.028 and 0.086 of the variance respectively. Thus all the factors then considered for further analysis.

RELIABILITY TEST

Reliability test was conducted on independent and dependent variables, services quality, marketing and customer loyalty. Reliability test used to view the reliability of instruments has been declared invalid. Instrument says reliable, using the coefficient alpha croanbach. If the value croanbach alpha coefficient > 0.60. the Cronbach’s alpha values of the study variables are shown in the table. As the result, cronbach’s alpha for the customer loyalty variables range from 0.794 to 0.976 and considered for the study.

VALIDITY TEST

Validity test is done by using the correlation between the score of each - each item questions with a total score. Techniques used in this study is factor analysis. For the calculation process, the researcher uses SPSS 14.00. The method used Varimax Rotation and variables have factor loading more than 0.4 otherwise appropriate for factor analysis. Testing with Kaiser’s MSA method shows the value of 0.500. This value means the data obtained is valid or appropriate for factor analysis.

**TABLE 3: VALIDITY TESTING RESULT
KMO AND BARTLETT’S TEST**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.500	
Bartlett’s Test of Sphericity	Approx. Chi-Square	229.765
	Df	1
	Sig.	.000

SOCIO DEMOGRAPHIC ANALYSIS

The data collected of socio demographics were analyzed on the basis of descriptive statistics. SPSS 14.00 version was used to analyzed the data collected. The details of the analysis are given below.

TABLE 4: SOCIO DEMOGRAPHIC ANALYSIS

	Frequency	Percent
A. Gender		
1. male	37	49.3
2. female	38	50.7
B. Age		
1. below 20 years	-	-
2. 20-39 years	42	56
3. 40-49 years	18	24
4. 50 years and above	15	20
C. Educational qualification		
1. Primary	-	-
2. Secondary	-	-
3. Diploma	-	-
4. Degree	24	32
4. Master	31	41.3
5. Postgraduate	20	26.7
6. Others	-	-
D. Occupation		
1. Government sector	55	73.3
2. Own business	13	17.3
3. Private sector	7	9.3
4. Student	-	-
5. Others	-	-
E. Monthly income		
1. below RM 2,000	57	76
2. RM2001-RM3999	12	16
3. RM 4,000 and above	6	8

Table. 4 shows the socio demographic of respondents. From the table most of the respondents are female 50.7% (38) and male 49.3% (37). The table also shown that 56% or 42 respondent’s age between 20- 39 years. 24percent or 18 respondents answered the questionnaire are age between 40-49 years. The remaining of 20% or 15 no’s of the respondents were age 50 years and above. The data shown, 32 % or 24 respondents’ hold degree, while 41.3% or 31 respondents’ hold a master and 26.7% or 20 respondents’ hold a postgraduate degree. The result of respondents’ occupation is shown that 73.3 % or 55 respondents are working in government sector, 17.3 % (13 respondents) had their own business and others gained is 9.3% or 7 respondents work in private sector. Table found that 76 % or 57 respondents’ income below RM 2,000.00 per month. On the other hand, 16 % or 12 respondents’ income between RM 2,001.00 – RM 3999.00 while 8 % or 6 respondents’ income between RM 4000.00 and above.

ANALYSIS OF VARIANCE (ANOVA)

In statistics, analysis of variance (ANOVA) is a collection of statistical models, and their associated procedures, in which the observed variance is partitioned into components due to different explanatory variables. The initial techniques of the analysis of variance were developed by R .A. Fisher statistician and geneticist in the 1920s and 1930s, and is sometimes known as Fisher’s ANOVA or Fisher’s analysis of variance.

The basic procedure is to derive two different estimates of population variance from the data, then calculate a static from the ratio of these two estimates (Coakes & Steed, 2007). One of these estimates (between-groups variance) is a measure of the effect of the independent variable combined with error variance while within-group variance is a measure of error variance by itself. A significant F-ratio indicates that the population means are probably not all equal.

The result of the independent variable combined is significance at 0.000 or less of 0.05 level (p < 0.5%). It can be explained that all independent variables are tangibility, reliability, responsiveness, empathy, assurance, strategy marketing on product, strategic marketing on price, strategic marketing on location, strategic marketing on promotion have significant relation with customer’s loyalty. And R-square at 0.979 or 97.9% independent variables have capability to influence or as predictors of dependent variables. The results of ANOVA are shown in the table below.

TABLE 5: ANOVA

		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	232.954	1	232.954	1713.309	.000(a)
	Residual	9.926	73	.136		
	Total	242.880	74			

TABLE 6: MODEL SUMMARY (b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.979(a)	.959	.959	.36874	.959	1713.309	1	73	.000	1.914

a Predictors: (Constant), X
 b Dependent Variable: Y

CORRELATION

A number of different coefficients are used for different situations as mentioned by Coakes & Steed (2007). The best known is the Pearson product-moment correlation coefficient, which is obtained by dividing the covariance of the two variables by them product of their standard deviations. Pearson's correlation reflects the degree of linear relationship between two variables. It ranges from +1 to -1. A correlation of +1 means that there is a perfect positive linear relationship between variables. A correlation of -1 means that there is a perfect negative linear relationship between variables. A correlation of 0 means there is no linear relationship between the two variables. Correlations are rarely if ever 0, 1, or -1. A certain outcome could indicate whether correlations are negative or positive.

TABLE 7: CORRELATION BETWEEN SERVICES QUALITY AND MARKETING ON CUSTOMER LOYALTY

Analysis	Dependent Variable : Customer's loyalty
Tangibility	0.979 (**)
Reliability	0.918 (**)
Responsiveness	0.981 (**)
Assurance	0.981 (**)
Empathy	0.915 (**)
Strategy marketing on product	0.938 (**)
Strategy marketing on price	0.970 (**)
Strategy marketing on location	0.972 (**)
Strategy marketing on promotion	0.914 (**)

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

Table 7 shows there is a significant positive correlation between services quality and marketing dimension and customers' loyalty with a significant value at 0.000. Hence we accept the Hypothesis. In other words services quality and marketing dimension and customers' loyalty are related with a high relationship (r = 0.979)

REGRESSION ANALYSIS

To determine the influence of tangibility, reliability, responsiveness, assurance, empathy, marketing strategies for product, price, place and promotion of customer loyalty in Nanggroe Aceh Darussalam Banks, then conducted multiple regression analysis as shown in Table 8 below.

TABLE 8: MULTIPLE REGRESSION

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.375	.543		-.698	.487		
	tangibility	1.230	.030	.979	40.786	.000	1.000	1.000
	reliability	1.055	.053	.918	19.805	.000	1.000	1.000
	responsiveness	1.250	.029	.981	43.501	.000	1.000	1.000
	assurance	1.250	.029	.981	43.501	.000	1.000	1.000
	empathy	.836	.043	.915	19.378	.000	1.000	1.000
	strategy marketing on product	1.095	.047	.938	23.276	.000	1.000	1.000
	strategy marketing on price	1.195	.035	.970	34.038	.000	1.000	1.000
	strategy marketing on location	1.212	.035	.972	35.093	.000	1.000	1.000
	Strategy marketing on promotion	.994	.052	.914	19.267	.000	1.000	1.000

As for the relationship and contribution of service quality variables of tangibility, reliability, responsiveness, assurance, empathy and marketing strategy variables on product, price, place and promotion of banks customer in Nanggroe Aceh Darussalam, can be seen correlations coefficient and determinants in the summary table as follows.

From the table were obtained as following equation:

$$Y = -0.375 + 1.230 X1 + 1.055 X2 + 1.250 X3 + .1.250 X4 + 0.836 X5 + 1.095 X6 + 1.195 X7 + 1.212 X8 + 0.994 X9$$

TABLE 9: THE SUMMARY OF HYPOTHESES

THE HYPOTHESIS	FINDING
H1 :Tangibles may have significant positive relationship on customers loyalty	Accepted
H2 :Reliability may have significant positive relationship on customers loyalty	Accepted
H3 :Responsiveness may have significant positive relationship on customers loyalty	Accepted
H4 :Assurance may have significant positive relationship on customers loyalty	Accepted
H5 :Emphaty may have significant positive relationship on customers loyalty	Accepted
H6 :Marketing strategy on product may have significant positive relationship on customers loyalty	Accepted
H7 :Marketing strategy on price may have significant positive relationship on customers loyalty	Accepted
H8 :Marketing strategy on location may have significant positive relationship on customers loyalty	Accepted
H9 :Marketing Strategy on Promotion may have significant positive relationship on customers loyalty	Accepted

DISCUSSION

Regression Analysis shows that tangibles have significant impact on customer loyalty. This result is similarly to the findings by Sureshchandar et al. (2003). It has been observed that there is a changing trend and respondents did not treat tangibles as an important measurement anymore due to availability of self-service terminals. Therefore, the bank must look into interior rather than upgrading the proficiency of their self-service terminals. Banks customers do view the tangibles as an important factor for them.

Reliability is found to have positive relationship with customer loyalty. The finding is supported by the previous researchers including Nguyen & Leblanc (2001) and Bellini et al. (2005). Reliability was found to be not significant to customer satisfaction. This is in the line with the finding that customers may stay with an organization even it predicts they are dissatisfied because they perceive they have no choice (Zeithaml et al.,1996).

Findings indicate that the relationship between responsiveness and customer loyalty is significant. Hence , these results are one way to the prior findings in other studies (Jun & Cai, 2001; Diaz & Ruiz, 2002; Joseph et al., 2005; Glaveli et al., 2006). Customer loyalty remains an important factor that bank has to ensure

in order to make profit. Customers, who use a particular bank service, consider switching bank as a threat. Customer are more educated and knowledgeable, their demand is also on an increasing trend. In order to stay in the business, bank need to improvise their customer service campaign. Loyalty program can be used as one of the tools to retain customer. With the emergence of foreign bank, local bank need to improve their service quality by providing more experienced employees to serve the customer in the operations. Results from hypotheses testing also show that responsiveness found to have positive relationship with customer satisfaction this is in line with Glaveli et al. (2006) who highlighted the speed of service delivery enhanced perception of service quality while Joseph et al. (2005) indicated that "no waiting time" raised customers' satisfaction level Empathy has significant positive relationship with customer loyalty. This evidence is supported by the findings by Butcher (2001), Ndubisi (2006) and Ehigie (2006). As suggested by Butcher (2001), friendship between customers and particular service employees has a major influence on the development of customer loyalty. According to Ndubisi (2006), customer satisfaction can be achieved by offering personalized, flexible and adjustable services to suit the needs of customers. This is in line with the findings of this research that empathy has positive impact on customer satisfaction.

This study shows a significant relationship between assurance and customer loyalty and is consistent with previous studies including Lymperopoulos et al. (2006) and Ndubisi (2006). In this study, assurance was found to be a significant prediction of customer satisfaction and this is in line with Ndubisi (2006) arguing the communication is clearly a strong indicator of overall satisfaction and important source of customer satisfaction in the Aceh banking sector. In this study, it is also found that satisfaction has effect on the relationships between service quality dimensions (tangibles, reliability, responsiveness, empathy and assurance) and customer loyalty. This result is consistent with studies done by Caruana (2002), Butcher (2001), Ehigie (2006) and Lam & Burton (2006). Credit cards, personal loan and insurance products marketers manage to get customers' information from somewhere. From here, they will make calls to customers, marketing their products. With the banking industry outsourcing some of their departments, this will lead to further potential of customers' information being divulged without permission. Bank should look into this area because customers will not be happy to find out that their information has been sold to third party without their consent. From this study, it can be noticed that the overall respondents evaluate the bank positively. However, there are still rooms for improvements.

Loyal customers for a product that is owned by Banks Aceh is crucial for the survival of these firms. As financial services company that manage customer, the Bank should be able to create products to meet customer needs. This is in accordance with the opinion of Kotler (2000: 428) that the service product is everything that can be offered by manufacturers to note, requested, purchased, or consumed by the market as the fulfillment of needs or desires the relevant market. Products offered include physical goods, services, people or individuals, places, organizations and ideas. So the product can be tangible and intangible benefits that may satisfy the customer.

According to Cravens (1998: 25) performance and the excellence of a product is very important in influencing the level of customer loyalty. This means that if the product offered in a response from customers and meet customer demands and in line with their expectations. Conversely, if customers disappointed with what is given then they will not repeat it again.

Furthermore Cravens (2003: 143) states set prices for goods and services is a key strategy for the company as a consequence of deregulation of increasingly fierce global competition, low growth in many markets and opportunities for companies to establish market positions. The cost factors in the product is in the form of bank profit (interest/services) obtained from customer on deposits money in an account managed by banks, interest / services specified may be greater, lower or equal to competitors. Customers feel satisfied with the price set according to the value or benefits and meet customer expectations. Their satisfied makes them loyal to the banks.

The promotion is to communicate and convey information to consumers or prospective purchaser of a marketed product. Communications that the company is often called a campaign. Wisdom of this campaign cannot walk alone, because it is part of marketing wisdom. So the implementation must also be supported by other marketing wisdom. Such as product policy, sales policy, distribution policy. To increase the volume of sales, the company doing various forms of promotion such as advertising, which is a form of presentation of the promotion of non-personnel of ideas, goods and services by a specific sponsor and paid by these sponsors. Usually advertising often uses media such as billboards, banners, radio, television, newspapers, magazines and so forth. Personal selling is a form of promotion using sales force where they entered into an oral agreement in the negotiation of one or more potential buyers to sell something. Direct sales force to deal with customers. This activity requires a large cost, if its use is expanding. Also requires a quality sales force. Sales Promotion which includes a variety of promotional tool as an incentive for short-term that is designed in such a way to invigorate marketing faster and stronger. Space for sales promotion include exit and into the company. To get out of sales promotion through a broker. As for all employees into the cover that is connected directly to the consumer loyalty.

In order to achieve success in such a technology driven, complex, and competitive market of today, there are few key areas that need to be considered if banks want their customer to be loyal. One of the keys areas is gaining the information about customers and thereby better understanding their needs and serves them satisfactorily. Hence, there are more and more firms spending a lot on strong firm customer relationship for the purpose in gaining invaluable information on how best in serving customers and keep them from turning to the firms or organizations. Therefore, nowadays customer relationship service quality and marketing becomes the key factor in determining a firm's profit.

IMPLICATION

The discussion part clearly indicates various services quality and marketing strategy and its influence on customer loyalty. It is well pointed in the finding that majority customers are having high concerns and loyal on various service quality and marketing strategy. Banks should concern the particularly area such as services quality and always to developed the strategy marketing to keep survive in business. Innovation and motivation are being a part of successful business in the future.

CONCLUSION

From the data analysis has been done at Nanggroe Aceh Darussalam Banks-Indonesia, it can be concluded that:

- There is positive significant relationship between tangibility and customer loyalty at Nanggroe Aceh Darussalam Banks-Indonesia
- There is positive significant relationship between reliability and customer loyalty at Nanggroe Aceh Darussalam Banks-Indonesia
- There is positive significant relationship between responsiveness and customer loyalty at Nanggroe Aceh Darussalam Banks-Indonesia
- There is positive significant relationship between assurance and customer loyalty at Nanggroe Aceh Darussalam Banks-Indonesia
- There is positive significant relationship between empathy and customer loyalty at Nanggroe Aceh Darussalam Banks-Indonesia
- There is positive significant relationship between Marketing strategy for products and customer loyalty at Nanggroe Aceh Darussalam Banks-Indonesia
- There is positive significant relationship between Marketing strategy over the price and customer loyalty at Nanggroe Aceh Darussalam Banks-Indonesia
- There is positive significant relationship between Marketing strategy for the location and customer loyalty at Nanggroe Aceh Darussalam Banks-Indonesia
- There is positive significant relationship between Marketing strategy on promotion and customer loyalty at Nanggroe Aceh Darussalam Banks-Indonesia

Although customer service has been evaluated long time ago, but it is still one study that banks must continue to conduct in order to meet the changes in the banking industry. New technologies must be incorporated as a factor to measure service quality in future researches. Researches and related questionnaires must also be accommodated with the new banking requirements of the customer. A clearer understanding as to the sequence of relationship between service quality, customer satisfaction and customer loyalty can help to ensure better targeting of customer using limited marketing resources.

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THE EFFECT OF INFORMATION ALLOTMENT ON THE COMPETITIVE ADVANTAGES OF THE SUPPLY CHAIN (THE CASE OF IRANIAN RAILWAY)

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ABSTRACT

The goal of this research is the role of information allotment on contest strategies and performance of supply chain in rail transportation part. In this research; we study on the relation of information allotment with competitive strategies and performance of supply chain in rail transportation part in one of the important indexes of industries that are correlated to customer. Analysis of information with questionnaires that distributed between 250 people of mentioned companies, collected and assessed with software named lisre, spss 16. Results show that in the rail companies in north area, there are a meaningful relationship between supply chain and its efficiency and performance. In addition to results say that information allotment is correlated to both supply chain strategies responsibility and efficiency.

KEYWORDS

Supply chain, Information allotment, Competitive advantage, Efficiency, Performance, Responsibility.

I. INTRODUCTION

In present universal Contest in this time, various companies work together in an organization. These companies find that profits of this co working are more than activities that are without cooperation with other companies, in this contest market. These companies follow the achievement the contest profits with the goal of achieving the more share in the market. In this case activities such as programming the yield and supply the material and product and programming and control the store and deliver and service to the customer That all worked in the organization, now shift to the supply chain. Efficiency and effectiveness of each organization is yield the performance of management and supply chain of that organization (Rahman seresht and Afsar, 2010). supply chain consists of all of the activities that are correlated to the stream and exchange of goods and services from raw material to final yield that customer use it. This transmit in addition to the stream of material consists of information and money stream. (Nichols, 1999). To day organization are not in vacuum, one of the efficiencies that is necessary for achievement to the competitiveness in supply chain is information allotment. Information allotment show the ability of the company for allotting the knowledge witch supply chain partnership in a effective and efficiency way (Clemons and Row, 1993). Effective information allotment is one of the most basic abilities of supply chain (Venkatchalam and shore, 2003). Until now there are vast researches in the case of mentioned variability that briefly will mention bellow. The mean of sustained competitive advantage in 1984 emersion with offer of Day for various strategies that is able for sustained competitiveness (Day, 1990). But in verity this vocabulary in today means is used with porter in the identity kind topic for rivalry common strategies in the company (pioneering in sale cheaply) for a achievement to the sustained competitive advantage (porter, 1995). Though Barney is the first person that delivered a sense and plastic definition of sustained competitive advantage." Company reaches to the sustained competitive advantage in the time that has strategy for creat the value that is not use at one time by potential or verbal rivals and also rivals can't copy the benefits of that strategy (Barney, 1991)."Hofman also deliver such definition. The sustained competitive advantage is after the benefit of use some strategies that in creating the value is sole so other rivals don't use it at the same time and also other rivals cant copy the benefits its strategies (Hoffman, 2000). Be having the efficiency of contest in supply chain among late years was under discussion with the development of the mean of management of supply chain. Ha and Krishnan deliver a synthetic model of AHP, DEA, NN techniques for selection of the rival providers for increase the contest in supply chain. They believe that the companies in the supply chain by nearest relationship supply chain can reach the sustained competitive advantage and meaning fully dereas the time and cost in attention to the correct management of supply chain whereas at the same time they response to the customers needs. In a competitive environment the management of the successful supply chain is salatory in competitiveness of the company (Ha and Krishnan, 2007). Wu and others with view based on benefits show that efficiency of the supply chain with IT causes a difference in relation to rivals and they can't copy that. They assessed the role of the efficiency of the of the supply chain in the case of a regulation variability between development of the IT and organizational activities. They are believed that efficiency of the supply chain can transmit relevant sources of IT to higher level (Wua and others, 2006). Li and others assessed common detentions of the supply chain management (strategic participation with the supplier, relation with the customers, the level of sharing information and quality of sharing information and deferment)and relation between common dimension of supply chain, Competitive advantage and organization Performance. The result of this research with use the view based on source say that common higher levels of SCM can cause reach to the Competitive advantage and improve the organizational performance and also Competitive advantage can effect positive and direct impact on organizational. (Li and colleagues, 2006). in this research we try to assess correction between information allotment and supply chain and responding and performance in companies the northeast of the country in rail transmit industry of country, then we will analysis with help the LISRE I, SPSS16 sassy soft wares.

II. THEORETICAL BACKGROUND

Information allotment; Scientist named different variables for performance of strategies one of them is "clemans" who referred to information allotment and say that this information in colloquy system of supply chain consist of information between direct share holders and also all of the net works of supply chain (clemans & Row, 1993). Information allotment means interest of chain companies for give supply to astute information, on time and relevance and share with each other for creating alike and cooperation in all level of supply chain, information allotment is a vast spectrum in one side of this is "non information allotment" that every provider directly give his needed information directly and in other spectrum is "complete information allotment." in complete information allotment, com plate information in cases such as amount of product and cost of product and cost and way of transport and distribution, sale, cost and amount of store in graner and channels of offer and data of request exchange in all of effective information on strategies of supply chain between all of the members .

Supply chain; Different researchers and writer give different theory and definitions about chain of support. Some restrict supply chain in relevance between seller and buyer that such theory is focused only of first level of buy performance other group give wider view to the supply chain and believe this consists of all of support believe this consists of all of support sources (supply base) for organization. With this definition supply chain will consist of all of provider in first and second and third class. This theory to supply chain will consist of analysis to supply chain third eye, is theory of value chain of porter that supply chain consists of all of the needed activities for deliver one production or service to final customer with this theory to supply chain, product and distribution as a part of goods and services flow added to chain. In trust with this view, supply chain consists of 3 area, purvey area, reduction area and distribution area (ghazanfary, et al , 2001).

The Responsibility of chain supply; Responsibility of chain supply this is defined as how members of chain supply response corporately to environmental changes responsibility of chain supply see the dynamic See the dynamic nature of capacities that give this possibility to company to develop special capacities of company and renewal them and give better response to environmental changes (collis, 1994 – teese and pisano 1997). Today complex market need always response and efficient and... of all members of supply chain (Rogers and Daugherty and Stank , 1993) , to enable for alternative act and reaction to collected information, that is final shape of learning (sin kula & Baker & Noordewier).

Performance of supply chain; Assessment the performance of supply chain was under challenge of researcher in this area.in a total lot can classify the measure of supply chain in 5 levels of ways of custom performance assessment and assessment of performance systems in universal level, harmonic grnt card model and score special models in each chain (Wisner and his coworkers 2005).

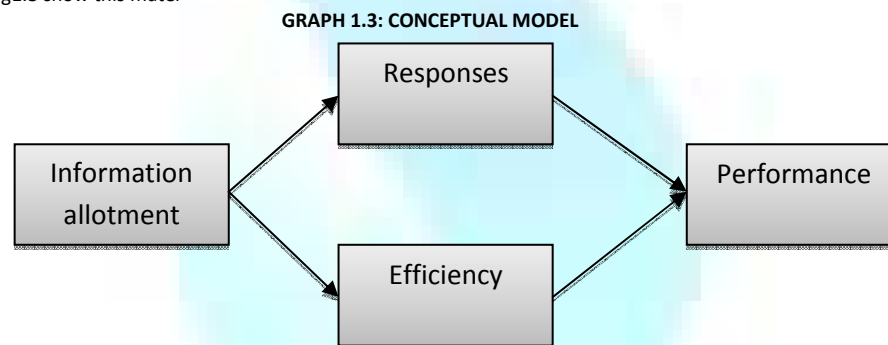
Efficiency supply chain; The goal of efficiency of supply chain is cost of production and delivers the product (Chupra and his coworkers, 2007). In efficiency of supply chain, continuum decrease of buying the material and product and... for all of the share holders of supply chain is discussed.

Competitive advantage; Competitive advantage is, distinguishing the properties or dimensions of each firm that makes it able to present the better services than the competitors (beter value) to the customers (Barney, 1991, P 139). Adam smith use the absolute advantage and he means each country export goods that product it in lower cost.

Pay attention to this definition and other definition and other definition about competitive advantage say that direct relation of values of customer, values that offer by company, determines the necessities and detentions of rival advantages. If in view of customer compare. Compare the value offered by rivals nearer to his exception we can say that company in one or more dimension has competitive advantage so this advantage cause the company in offer of the market has higher score in relation to be near to the customer and get his heart.

III. METHODOLOGY

Because of goal of research is assessment of effect the information allotment on competitive advantages and performance of supply chain in northeast area companies and rail of Islamic Republic of Iran, first competitive scales of that company will under study and assessment. Then effect of information allotment with rival way strategies with performance of chain will become under study really shaping the hypothesis of research free researcher of wonder and due to creating the meaning model. Fig1.3 show this mater



Population; In this research the population is all of the managers and experts and personas of companies in railway of Islamic republic of Iran in northeast area of country in research this society is reported 723 people. The sample based on sampling formula, determined 250 people.

Structural equation modeling; This is a technique for analysis some total and strong variable of multi variable family and carefully general linear model Glms that give this possibility to researcher examine some regression equations at the same time. Gloms examine the hypothesis about relation between clear and unclear variables so occasionally named structural covariance analysis and cause modeling and some times LISREL (human, 2008)

Validity and reliability of questioner; For this assessment and questioner is delivered to same experienced teachers in supply chain area and confirmed. For final assessment of questioner, we use Alfa Carnbokh method. As in the case of total contact this amount is 93% and for information allotment of supply chain, this reached to 76% and responsibility of supply chain was 83% and for efficiency of supply chain was 78%.

IV. EMPIRICAL RESULT

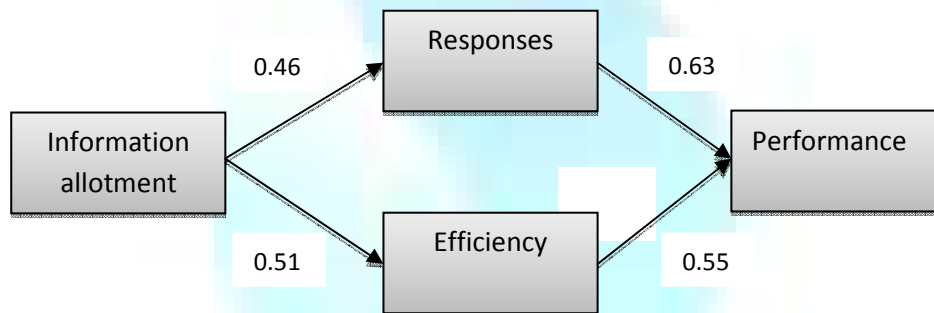
For examining the issues related to the theoretical discussions and the research literature, the library studding, past researches, web net and articles have been used. In the field of gathering of survey information research we benefit the researcher made questioner, for analysis the information of questioner, we use SPSS 16 software. All told 16 questions in 4 areas of information allotment, responsibility and efficiency and performance of chain are planed. In table 1.4, statue of variables of research is illustrated.

TABLE 1.4: RESEARCH VARIABLES POSITION

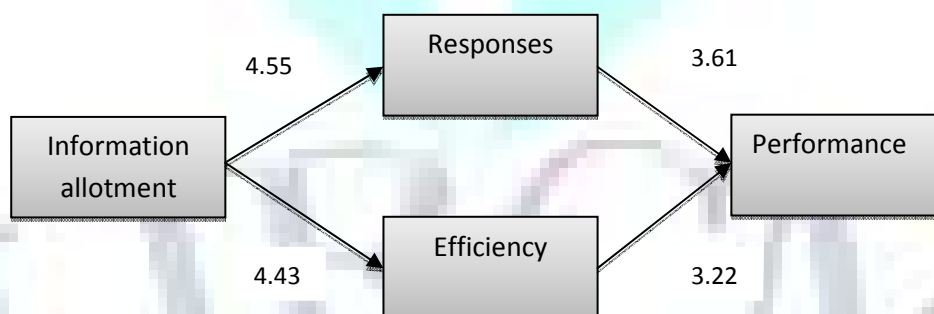
Description	Factor analysis	Amount t
information allotment - Our firm exchanges a more information with our participants relative to our competitors with their participants -Information more easily has flow between our firm and our participants relative to our competitors with their participants -Our firm acquires the more interests form the information allotment related to our participants relative to our competitors with their participants -Our participants offer us all information which has an effect on us, in any manner	confirm confirm confirm confirm	Fixed 6.75 5.36 5.46
Responsibility -In compression with our competitors, our supply chain, responses, more efficient and faster than the suppliers and customers changing -We review, periodically at, our own product to ensure from the parallelism with the Customers' demands. -When we are aware from the customer's satisfaction from our own products, we examine it and do the reforming actions -We continually measure the customer's satisfaction amount	confirm confirm confirm confirm	Fixed 8.74 8.32 7.88
Efficiency -At our firm, for decreasing the product production Cost, are continually planned, relative to our competitors. -Workers number to selling ratio is annually decreased at our firm. Approved - Profitability rate from the capacity (respecting to the standards) is higher than our competitors at our firm -At selecting the suppliers, cost and quality are contemporaneously attended	confirm confirm confirm confirm	Fixed 8.63 7.93 6.56
Performance - In our country the extinct cost of items decrease yearly than rivals - In our country the cost of cash circle in supply chain decrease than rivals yearly -In our company average of rand of benefit of supply chain increased than rivals yearly -In our company, share of market increased yearly than rivals	confirm confirm confirm confirm	Registered 7.69 6.66 8.40

In other process, each of mentioned hypothesis be assessed to determine verify of relations. For this purpose we use confirming agent analysis that its result delivers in chart 4.2, for scale of t in chart 4.3 because of the analysis the model path in estimate of canonical.

GRAPH 4.2: ANALYSES AT THE STANDARD ESTIMATE STATE



GRAPH 4.3: AMOUNT OF (T) IN ANALYSIS OF PATH OF MODEL



As show in chart 4-3, amount of T for 4 dimension model is more than 1.96. So each four hypothesis be confirmed. By attention to that square scale of k is 251.234 with free degree 249, $\chi^2/d.f$ will equal to 1/1, and because this scale is <3, the model be confirmed. On the other hand, index of goodness of model will illustrate below:

NFI=1.0034 NNFI=1.123 PNFI=1.0635
IFI= 1.034 RFI= 1.043 CFI= 1.125

V. DISCUSSION AND CONCLUSION

Knowing the role of information allotment among members of supply chain and it's efficiently cause more radiant performances in rail transportation area. The supply network is a collection of separated companies that information links them virtually and management of this network is same creating cooperation between members, that any tool such as information and its allotment can't be a key. We don't know information allotment only as exchange of information such as store of goods, request, aware of input and output and... but must know it as an out book for reach to the future opportunities. In this research first we precede the assessment of meaningful or meaningless relation between variables of research based on meaning model with statistical software SPSS. In first step, with use the coefficient of person, meaningfulness of relations between variables in a meaningful contractual model is received.

TABLE 5.1: SIGNIFICANCE OR NO SIGNIFICANCE OF RELATION BETWEEN RESEARCH VARIABLES

Variables of research	Coefficient	Meaning fullness	Results of test
Information allotment and responsibility	0.697	0.000	Reject H_0
Information allotment and efficient	0.607	0.000	Reject H_0
Responsibility and performance	0.677	0.000	Reject H_0
Performance and efficient	0.653	0.000	Reject H_0

As this table shows, in sure level 95%, hypothesis of is rejected based on naught meaningful relation between each of the variables the are tested, and so result shoe that in rail companies placed on northeast of country, there is a meaningfulness relation between information allotment and responsibility of supply chain and efficient and it’s performance in addition to this, positive coefficient that is received shows the direct relation between each other. So increase of each agent cause increase in other agent and higher meaningful scale. between information alimnt and responsibility of supply chain. In second step, leading of each variables of meaningful model of research assessed with freedman test, that its result received based on table 5.2.

TABLE 5.2: GRADING THE VARIABLES OF RESEARCH

index	Average of grad	Leading
Information allotment	2.73	1
Efficient	2.55	2
Performance	2.47	3
Responsibility	2.25	4

As this table shows, higher leading in the view of employers of this companies in railway Islamic Republic of Iran, is information allotment with average of grade 2:73 that show the it’s important role in industry.

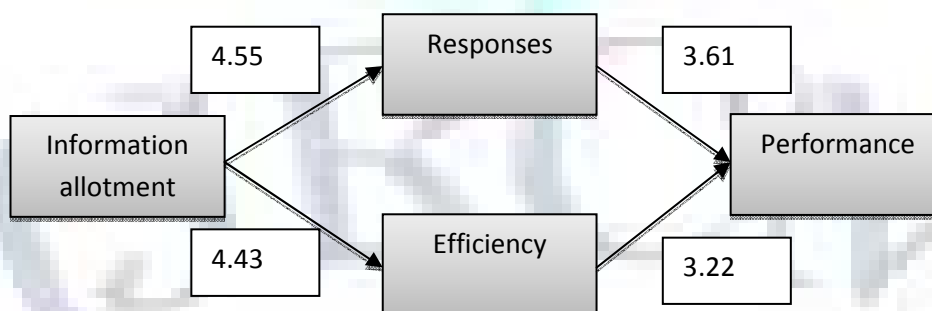
In last step, analysis in this research assessed with software LISREL and each question of test assessed with agent confirming analysis. Results are as follow:

TABLE 5.3: PRINCIPLE RESEARCH VARIABLES SUB – SET FACTOR

Question	Factor analysis
Q1	confirm
Q2	6.75
Q3	5.36
Q4	5.46
Q5	confirm
Q6	8.74
Q7	8.32
Q8	7.88
Q9	confirm
Q10	8.63
Q11	7.93
Q12	6.56
Q13	confirm
Q14	7.69
Q15	9.66
Q16	8.40

As can concluded of above table, for in models that are higher than 30 in table of canonical scale , scale of t must be higher than 1.96. All of the questions are confirmed in agent analysis. So use of them as each of assessed question selected correctly. With received result and with benefit of agent confirming analysis this case received according to chart 5.4:

FIGURE 5.4:T AMOUNT AT THE MODEL COURSE ANALYSIS



As show in above shape and its assessment, most of relation in rail transport industry is relevant to information allotment and responsibility and also information allotment and efficiently of supply chain. So information allotment has considerable benefits for each of share holders of supply chain on the other hand supplying chain reach competitive that has fit competitive strategies that due to fit performance for supply chain. In this research the relation between information allotment by competitive strategies and performance of supply chain in rail transport industry are assessed as one of most important industry that is relevant to customer. Te goal of competitive supply chain is ability to cooperation with environmental changes (responsibility) and ability to alternatively decreasing the cost (efficiency). Results say this trust that information allotment is relevant to both strategies of supply chain but has more relation to responsibility of supply chain. The reason of this case is various requests of customer in this industry and as result cooperation with environmental changes and meet their requests have high importance information allotment due to higher level of information exchanges between shareholders and high effectiveness of information. So supply chain in cooperation with environmental changes become powerful. And also relation between supply chain strategies as responsibility and efficiency by performance are emphasized. This means responsibility and efficiency are higher than supply chain and higher and better performance follow this.

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IMPORTANCE OF BEHAVIOR BASED SAFETY: A STUDY ON CHILD LABOR WORKING IN AUTO MOBILE SECTOR

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ABSTRACT

Child labor is an important global issue associated with poverty, inadequate educational opportunities, gender inequality, and a range of occupational risks for not maintaining workplace safety. Most child laborers begin working at a very young age, are malnourished, and work long hours in hazardous occupations. They are exposed to severe physical and health hazards as well as accidental events mainly due to their unawareness about safety and unsafe behavior. This study aims to find out the risk factors involved in auto-mobile sector for child labor working in Dhaka City, to sort out the type of accident and diseases occurs in this sector that is alarming for their health, to explore whether those accidents and health problems related with their unsafe behavior and to identify the effectiveness of practicing behavior based safety in this sector especially for child labor. The paper produces the findings on different important differentials of the child labour, such as- demographic features of child labour, nature of their works, risk factors that are involved with their living conditions and working environment, types of diseases and accidents and unsafe behaviours lead to accidents and health problems.

KEYWORDS

Behavior based safety, Child labor, Hazardous work, Safety culture, Work safety.

INTRODUCTION

Child labor was (based on ILO Conventions Nos. 138 and 182) defined as:

- all children aged 5-11 who are engaged in economic activity;
- all children aged 12-14 who are engaged in economic activities except those doing light work (less than 14 hours a week, to the exclusion of all hazardous work and other worst forms of child labour); and
- all children aged 15-17 in hazardous work (including working 43 hours or more in a week) and other worst forms of child labour.

Intolerable forms of child labor, as categorized by the International Labor Organization (ILO), are domestic service, slavery or near slavery, hazardous occupations, and sexual exploitation. All of these forms are practiced in Bangladesh. On September 26, 1999 the Bangladesh Minister of Labour and Manpower told a news conference that the "government has plans to eliminate child labour completely by 2005". Earlier, in 1995, the Bangladeshi Garment Manufacturers and Exporters Association, the International Labour Organisation (ILO) and UNICEF signed an agreement to "remove all child labourers from the garment sector". But the facts and figures speak otherwise. Child labour is not disappearing from Bangladesh but is on the increase. According to a 1989 labour force survey in Bangladesh, 6.1 million children aged between 5 and 14 were economically active. Now, the UNICEF survey indicates, the number has increased to 6.3 million, representing 30 percent of the child population in the same age group.

The Bangladesh Today reported on June 21, 2008, that around 1.3 million children are engaged in risky jobs. According to UNICEF's *Asian Child Labour Report (1999)*, there are some 40 industries in Bangladesh which use child labour, often under hazardous conditions and with little regard for health and safety. Children have been injured while engaged in underground mining, in maritime work and while operating or cleaning machinery in motion. Child workers are regularly exposed to dangerous levels of dust, gases, fumes, heat and noise. Muscular-skeletal and respiratory-related ailments are common among child labourers. So it is also a great concern for policy makers to reduce hazard to ensure workplace safety so that children can be safe physically and mentally by eliminating accidental incidents in their workplace.

WORKPLACE SAFETY

Workplace safety is a process that seeks to eliminate or reduce risks of injury or illness to employees. The chief aim of workplace safety is to protect an organization's most valuable asset—its people. Workplace safety is achieved through a variety of methods, including policies, procedures and specific hazard control techniques. Most of the researches indicated that workplace safety can be highly maintained by behavioural based safety. Because although difficult to control, approximately 80-95 percent of all accidents are triggered by unsafe behaviors, which tend to interact with other negative features (termed Pathogens) inherent in workflow processes or present in the working environment.

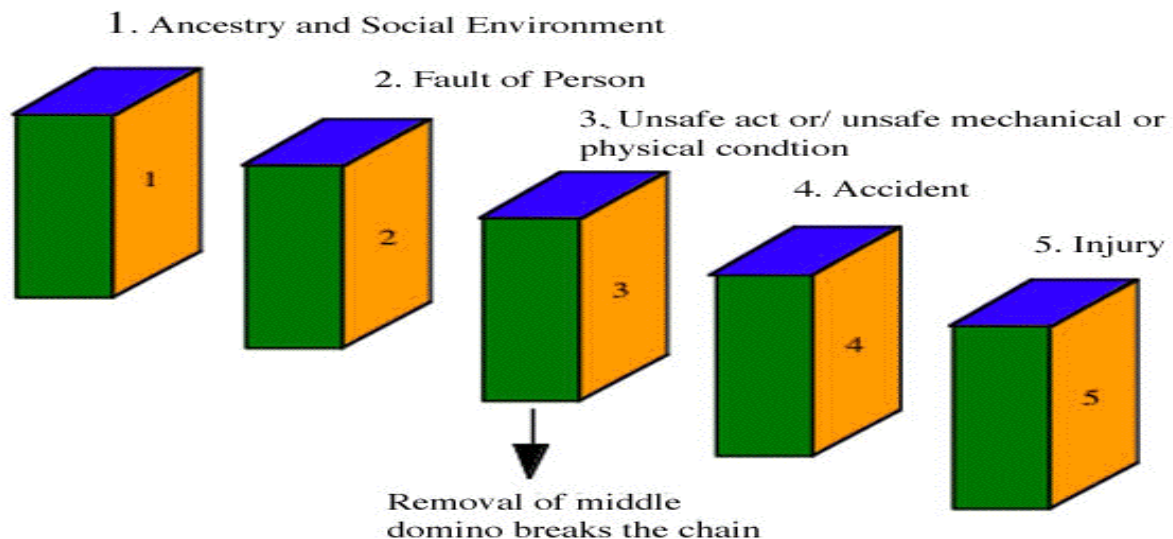
BEHAVIOR BASED SAFETY

Behavioural based safety is a scientifically-based set of strategies designed to help front-line workers engage in safe behaviors more consistently. It involves observations (usually peer-to-peer), real-time feedback and recognition for improvement.

THEORETICAL PERSPECTIVES AND LITERATURE REVIEW

People often behave unsafely because they have never been hurt before while doing their job in an unsafe way: 'I've always done the job this way' being a familiar comment. This may well be true, but the potential for an accident is never far away as illustrated by various accident triangles. Heinrich's triangle, for example, suggests that for every 330 unsafe acts, 29 will result in minor injuries and 1 in a major or lost time incident. Heinrich demonstrated his theory similar to five dominoes placed end-on-end. Knocking over one creates each domino to topple in turn.

FIGURE 1: FIVE DOMINOES ACCORDING TO HEINRICH TRIANGLE THEORY



Source: Heinrich (1959)

Heinrich hypothesised that removing one thus breaking the knockdown sequence could alter factors in an injury-accident. Essentially to prevent 'loss', remove the unsafe act or the unsafe condition (Taylor 2001). Heinrich theorised that modifying human error, given the basis that some worker traits are careless or carefree, can reduce injury because, that the actors have the ability to choose between safe and unsafe acts. Given 'man and machine and/or energy' co-exist and do not act separately; engineering solutions should be designed to relieve cognitive human weakness. (Gibson 1961).

According to B. F. Skinner's reinforcement theory, over an extended period of time, therefore, the lack of any injuries for those who are consistently unsafe is actually reinforcing the very behaviours that in all probability will eventually lead them to be seriously injured. The principle being illustrated here is that the consequences of behaving unsafely will nearly always determine future unsafe behaviour, simply because reinforced behaviour tends to be repeated.

Although it is not unusual to find the continuation of unsafe behaviors being supported by more than one reinforcer, some will exert stronger effects on peoples' behavior than others. This is particularly the case for reinforcers that are soon, certain and positive. Smokers, for example, find it hard to stop because the consequences of smoking are soon (immediate), certain (every time) and positive (a nicotine top up), whereas the negative consequences (e.g. lung cancer) are late (some years away) and uncertain (not every smoker contracts or dies from lung cancer). In exactly the same way, employees will find it hard to follow certain safety rules and procedures if they are consistently (certain) rewarded by an immediate (soon) timesaving that achieves extra production (positive) by behaving unsafely.

In some instances, the actual workflow process also reinforces peoples' unsafe behavior. Unsafe behavior is sometimes further reinforced by managers turning a blind-eye, or actively encouraging employees to take short-cuts for the sake of production. Unfortunately, this has negative effects that are not always immediately apparent: First, employees learn that unsafe behavior pays; Second, it wastes resources as the very behaviors that companies spend a lot of time, money and effort trying to eradicate are reinforced; and third, by condoning unsafe behavior, line managers are transmitting conflicting messages that undermines employee's confidence in the whole of management's commitment to safety.

Researchers from around the globe have consistently reported positive changes in both safety behaviour and accident rates, regardless of the industrial sector or company size. These include studies conducted in construction, mining, engineering, bakeries, food processing, manufacturing, oil & gas, shipbuilding and others (McAfee & Winn, 1989 & Sulzer-Azeroff et al., 1994). Positive results have also been obtained by the author and colleagues over the last decade in many sectors of the UK, Irish and US economies, such as Construction (Duff et al., 1993), Manufacturing (Cooper et al., 1994), Chemicals, Pharmaceuticals, Paper, Foods, Steel, Paints and Offshore Oil & Gas. Typical results include:

1. 40-75 percent reductions in accident rates and accident costs year on year
2. 20-30 percent improvements in safety behaviour year on year
3. Greater workforce involvement in safety
4. Better communications between management and the workforce
5. On-going improvements to safety management systems
6. Improved safety climates
7. Greater 'ownership' of safety by the workforce
8. More positive attitudes towards safety
9. Greater individual acceptance of responsibility for safety.

Based on extensive scientific research examining BBS Process designs & Safety Leadership and their impact on incident rates, National Safety Council Led by world-renowned Scott Geller, has developed a comprehensive Behavioural Safety Maturity Ladder. Reflecting the research findings, the Behavioural Safety Maturity Ladder shows that increasing ownership and coverage leads to greater injury reduction. Each level has been shown to exert an ever-increasing impact on injury rates.

FIGURE 2: BEHAVIORAL SAFETY MATURITY LADDER



Source: Scott Geller, National Safety Council

RATIONAL OF THE STUDY

Bangladesh is one of the poorest countries in the world with about 45 million "very poor" people, (as measured by the Cost of Basic Needs method). In 1996, 48 % of the people of Bangladesh did not consume enough food to obtain their minimum caloric intake recommended for good health, and thus were below what is called the absolute poverty line in most countries. In 1997, 59.3 % of children ages 6 to 59 months suffered from stunting, a long-term nutritional indicator of poverty. This grinding poverty has forced many families to put their children to work at a very young age. It may be stated that child labor, as it is today, cannot be completely eliminated unless the economy of the country is developed creating job opportunities for the vast majority of its adult work force. It is believed that poverty alleviation is a pre condition to elimination or at least minimization of child labor. In other words, child labor is such a major chronic economic issue in Bangladesh that it cannot be stopped simply by a piece of legislation; rather it can be eliminated only by adoption of suitable long term economic measures. In these circumstances, this present study tries to focus on practicing the behaviour based safety issues that may help to ensure at least the hazard free working environment by developing safety culture. It may help to build awareness to reduce the risks in workplace and to decrease accident rate so that we can save our child life.

RESEARCH QUESTIONS

The present study gives rise to some question. Such as-

- What are the risk factors involved in auto-mobile sector for child labor?
- Which type of accident and diseases occurs in this sector that is alarming for their health?
- Are those accidents and health problems related with their unsafe behavior?

OBJECTIVES OF THE STUDY

The objectives of the present study are as follows-

- To find out the risk factors involved in auto-mobile sector for child labor working in Dhaka City.
- To sort out the type of accident and diseases occurs in this sector that is alarming for their health.
- To explore whether those accidents and health problems related with their unsafe behavior.
- To identify the effectiveness of practicing behavior based safety in this sector especially for child labor.

METHODOLOGY

POPULATION SIZE

Based on statistics given by International Labor Organization (ILO), in 2002-03, the estimate of child labor was put at 3.2 million. (These are 19.1% of the 34.4 million children between the ages of 5-14 years) Children were found to work in 200 types of activities, of which 49 were identified as being particularly hazardous as they harmed children's physical and mental well-being. Auto-mobile sector is one of the most hazardous sectors among them.

SAMPLE SIZE

In this study a sample of 150 working children was interviewed from different sites and locations of the Dhaka City corporation like- New market, Dholaikhal, Hazaribagh, Lalbagh, Mohammadpur, Mirpur, Dhaka University area and from some other places. Considering the facts and requirements of the study it was ensured that all of them are belongs the age under 18 and working in auto-mobile sector.

SAMPLE SELECTION TECHNIQUES

At present, dependable, comprehensive and up-to-date information on child labour working in auto mobile sector in Bangladesh are not available. So choice of sample design was very much limited. There was also severe financial and time constraint too. Under the circumstances it was compelled to use convenience sampling technique, in which I choose the child labours that are belongs the age under 18 and working in auto-mobile sector.

DATA COLLECTION METHOD

To examine the research questions both primary and secondary data obtained from different sources.

Primary Data

The primary data was collected through structured questionnaire survey. Considering the objectives of the study a questionnaire was also carefully designed.

Secondary Data

The secondary data was collected from different sources, such as academic articles, books, journals, earlier research reports and other published documents.

MAJOR FINDINGS OF THE STUDY

DEMOGRAPHIC FEATURES

A total of 150 child labours were participated in this study. The majority (98.0%) of respondents were male and only (2.0%) were female. Their ages ranged between 7 and less than 18 years. (16.7%) of the working children never ever attended any school education. Also (83.3%) of the working children who were lucky enough to attend school, forced to drop out from school before completing their studies due to several causes. About 68% of the working children sampled in this survey attributed economic hardship as main cause for their disruption in education. Table 1 shows the general characteristics of the subjects.

TABLE 1: GENERAL CHARACTERISTICS OF THE SUBJECTS (n = 150)

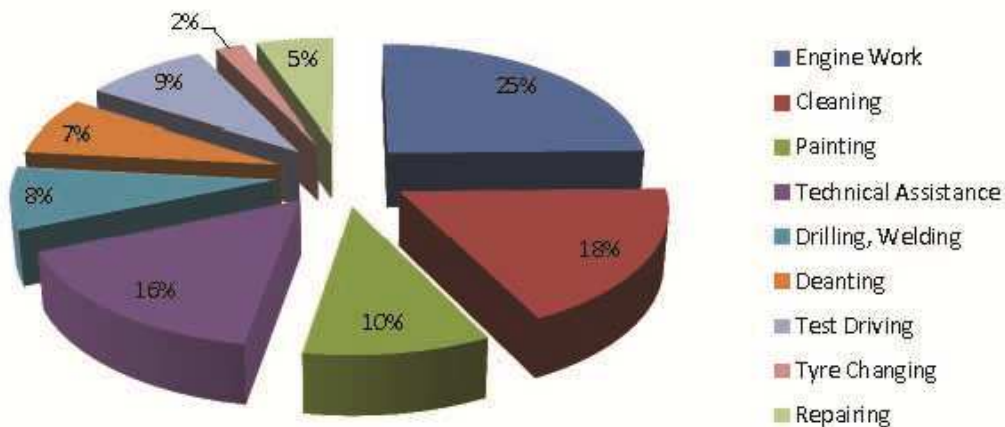
Subjects	No. of respondents (%)
Sex distribution	
Male	147 (98.0)
Female	3 (2.0)
Age distribution	
7 to 10 years	16 (10.7)
11 to 14 years	73 (48.6)
15 to 18 years	61 (40.7)
Level of education	
Never attend school	25(16.7)
Class 1 to Class 5	106 (70.6)
Class 6 to Class 9	19(12.7)

NATURE OF WORKS

In this survey different categories of child labourers in auto-mobile sectors were interviewed. Not all of them were full time employees. Child labourers are involved varieties of work in this sector and well known as motor mechanic. Depending on the work varieties the study found different nature of works in this sector that is performed by the child. Figure 3 shows the nature of works for child labours working in auto mobile sector in percentage.

FIGURE 3: NATURE OF WORK

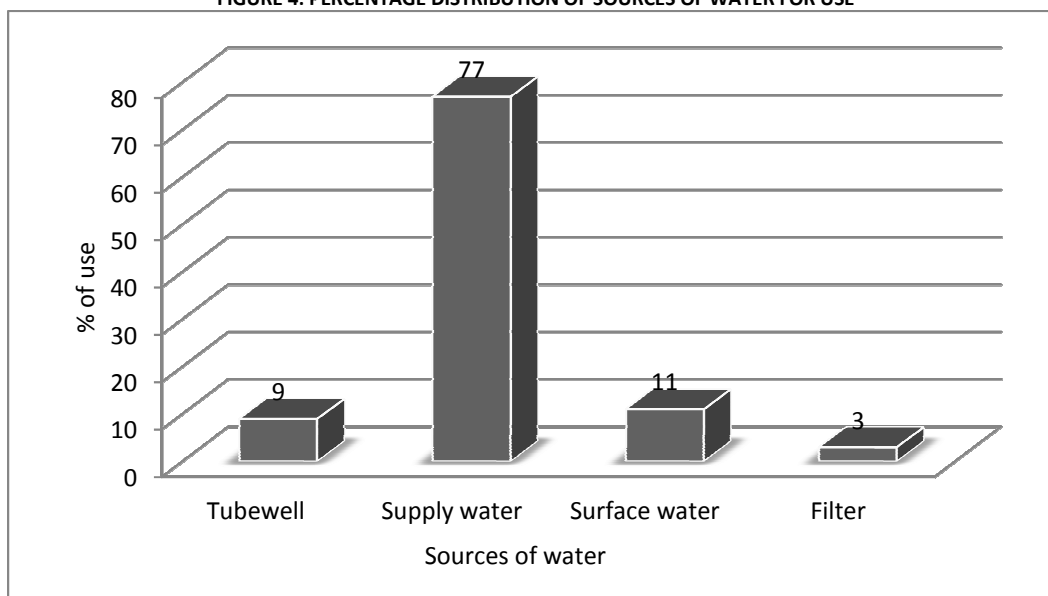
Nature of work



RISK FACTORS INVOLVED WITH LIVING CONDITIONS AND HEALTH CARE FACILITIES

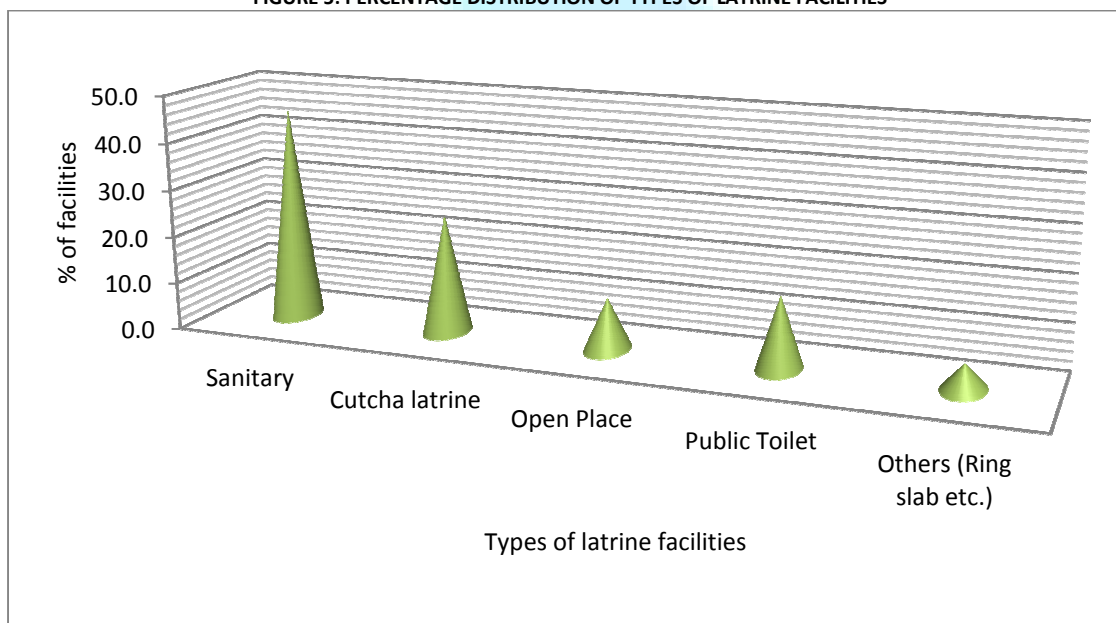
Access to Pure water and Sanitation Facilities: Supply water was found to be main source of water used for daily purpose especially for drinking in workplace and home. Some working children were compelled to depend on surface water for different purposes. Figure 4 shows the sources of water for drinking purpose.

FIGURE 4: PERCENTAGE DISTRIBUTION OF SOURCES OF WATER FOR USE



The working children had inadequate access to modern and hygienic sanitary facilities. Only 45.0 percent of the working children were found to be lucky enough to use sanitary latrine, while the rest have to depend on kachha latrine, ring slab, open places and other unhygienic means.

FIGURE 5: PERCENTAGE DISTRIBUTION OF TYPES OF LATRINE FACILITIES



RISK FACTORS INVOLVED WITH WORKING ENVIRONMENTS

As observed the working environment of the child labour was very unhygienic in most cases. Also the workers were not very much concerned about their own safety and hygiene. Even while working with sharp machinery tools or at the time of welding or carrying battery with full of acid they hardly maintain any safety measures. The risks that were found in their working condition in this sectors given below:

1. Burn with acid when carrying battery
2. Burn for extra heat of engine
3. Injuries by cut in hand while preparing or repairing parts or cutting steel
4. Pain in backbone for carrying heavy parts, tires etc.
5. Electric short circuit while welding
6. Injuries while engaged in cleaning machinery in motion.
7. Burn or injury in eyes with flames while welding
8. Respiratory-related ailments for releasing fumes and gases while painting or using grease
9. Headache or ear pain for exposing severe sound pollution
10. Injuries by burst out while pumping tyres.

TYPES OF ACCIDENTS AND DISEASES

While asked about the health problems of the working children 42 % of them were found to suffer different sorts of health problem such as fever, stomach problem, dysentery, diarrhoea, dengue, headache, breathing problem, measles etc. during the course of three-month period previous to the study period. They usually depend on available low cost treatment facilities, like homeopathic doctor, local community clinic, local medicine seller etc. The data reveals that 64 % of the working children received some sorts of occupational injuries while at work.

UNSAFE BEHAVIORS LEAD TO ACCIDENTS AND HEALTH PROBLEMS

The data revealed majority (78%) of the working children as well as their families do not boil water at all to purify the water. The working children had inadequate access (55%) to modern and hygienic sanitary facilities. Moreover 96% children do not use soap to wash hands after using toilet or before taking meals. 83% of them do not use any safety precautions. While they were asked the reasons of not using of safety precautions, most of them replied that safety

precautions are not delivered by their employer as well as the employer are not interested to maintain those. Only 32% of children are able to recognize the symbols of safety precautions that are used in hazard communication.

RECOMMENDATIONS

In the light of the experience while conducting the practical survey it was strongly felt for the eradication of the curse of child labour problem and its consequences from our society the following recommendations may be considered for implementation:

- First we have to create opportunity for identifying the reasons of why and how the children get themselves involved in risks and hazards that are alarming for their existence.
- Arrange strategies and action plan for both the short term as well as long-term basis for practicing behaviour based safety.
- We should enforce the provision of compulsory primary education including safety education about using safety precautions, hazard communication program, behaviour based safety program etc.
- Proper implementation and enforcement of the existing laws related to maintain workplace safety for child labor, if necessary introducing the new law.
- To change employer's attitude and to create and increase social awareness regarding the safety culture and consequences of practicing behaviour based safety.
- Ensure the better working conditions; building awareness regarding health related issues could enable creating a welfare condition for these distressed children.

LIMITATIONS OF THE STUDY

In conducting this Practical Survey Project the following problems were encountered –

- Lack of financial and logistic support
- Problems in determining the sample design and sample size.
- Non-cooperation: It was difficult to collect information from the working children because most of them thought that answering the questions as the waste of time. Many employers were also doubtful about the objective of the survey and did not let me interview the children working in the office.
- Though the scope of the study was much broader but it was not possible for me to carry out extensive research work involving several differentials that may be important in this context.

CONCLUSION

The prevalence of child labour has, in recent years, become a serious problem throughout the world and especially in many poor developing countries. Being one of the most densely populated poverty-stricken countries of the world the problem of child labour has become one of the prime concerns for the government and people of Bangladesh. If we properly take care of them by giving proper training about their work and reduce occupational hazards by developing safety culture according to behavioural based safety, we will be able to create efficient labour populaces. This trained labour force obviously will develop our economy and will provide their contribution to reduce child labour from our country.

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IMPACT OF ISLAMIC WORK ETHICS ON JOB SATISFACTION IN THE PRESENCE OF JOB AUTONOMY AS MODERATING

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ABSTRACT

Satisfaction is one of the most important desires in human life. The main purpose of this paper is to examine the relationship between Islamic work ethic and job satisfaction in the presence of job autonomy as moderator. This is quantitative study and conducted in natural settings of Pakistani Public Sector Organizations. Questionnaire based survey was formulated to test the hypothesis. Data analysis is based on the responses collected from employees of public sector Organizations. The results are significantly in favor of all hypotheses which were developed after comprehensive study of literature review related to this topic. All hypotheses are proven to be positive. It is found that IWE as independent variable and Job autonomy as moderating variable between IWE and Job satisfaction effects Job satisfaction. This paper would help to increase Job satisfaction of employees as well as this paper would help employers to eliminate ethical dilemmas from organization.

KEYWORDS

Islamic Work Ethics, Job satisfaction, Job Autonomy.

1. INTRODUCTION

In this study, Islamic Work Ethics, Job Satisfaction, and Job Autonomy are main variables. Islamic Work Ethics is treated as Independent Variable, Job Satisfaction as Dependent Variable and Job Autonomy as Moderating Variable.

It is Obligatory for Muslims to seek knowledge." This knowledge has 2 main branches, "Religious knowledge" and "Scientific knowledge." The scientific knowledge is called "Wisdom". Our Prophet (Peace be upon him) said, "Wisdom is the lost property of a Muslim. He should pick it up wherever he may find it." So above great hadith of Prophet Muhammad (Peace be upon him) commands Muslims to learn scientific education and knowledge. "Islamic knowledge" has twenty sub-branches, eight branches of Islamic Knowledge consist of a higher level of teaching and other 12 contain subsidiary nature of teaching. And Ethics deals with higher level of Islamic teaching (Emrullah & Hadimi, 2001). Civil or Progressive Muslim has two main qualities has Scientific knowledge and Good moral character. Alternately, a Muslim who has Scientific Knowledge but has poor moral character is called abandit, tyrant or dictator (Emrullah & Hadimi, 2001). Ethics got fundamental place in Islam. Islamic work Ethics are directly derived from sacred books of Islam ie: Quran and Hadith books, Quran is book of Allah and Hadiths are sayings of Holy Prophet Muhammad (Peace be Upon Him). Beekun (1997) defined "ethics can be a set of moral principles that distinguish what is right from what is wrong". (Beekun, 1997). In Allah's book Quran *Khuluq* is the most relevant term used for ethics (Fakhry, 1991). Once a Person asked the *Rasoolallah* (PBUH) when would the Day of Requital take place? *Rasoolallah* (PBUH) replied, "When honesty is lost" (Beekun, 1997). Islamic Work Ethics has vast scope, it has several dimensions; Sincerity, Proficiency, Truthfulness, Justice, Patience, Promise keeping, continuous self evaluation, Moderation, Courteousness etc.

Levels of Business Ethics

1. International Level
2. National Level
3. Societal Level
4. Association Level
5. Organizational Level
6. Individual Level

(Weiss, 2003)

Five Myths of Ethics

1. Ethics is personal
2. Business and Ethics don't mix
3. Business Ethics is relative
4. Good business means good ethics
5. Information is neutral and amoral

(Weiss, 2003)

Weiss (2003) Justifies ethics in business, because many times laws are not sufficient and cannot cover all aspects of a problem. Ethical dilemmas are very common all over the world. Bribery, corruption, harassment, Fraud, injustice, unfairness, inequality, dishonesty and illegal acts etc. are one of the most common problems in public as well as in private sector organizations. Prophet of Allah (PBUH) Said, "Truthful, Honest Business man will be with Prophets of Allah, Allah's Beloved Persons and Martyrs." This study aims to explore the impact of Islamic Work Ethics on Job satisfaction in presence of Job Autonomy as Moderating

Variable. In this study we try to exploring the relationship between Islamic work ethic and job autonomy and we hope this study would help HR managers and practitioners to increase job satisfaction of employees.

2. REVIEW OF LITERATURE

Only few researches have been done regarding Islamic Work Ethics (Rokhman, 2010; Abbasi, 2008; Al-Kazmi and Ali, 2007; Rahman, 2006; Yousaf, 2001; Yousaf, 2000; Ali, 1992 and Ali, 1988). Yusef (2001) investigated the moderating effect of IWE between job satisfaction and organizational commitment. Rokhman (2010) investigated outcomes of Islamic work ethics. Abbasi (2008) wrote PHD thesis about impact of Islamic ethical values on Managerial performance. All studies shows positive impact on employees, leaders and organization etc.

Islam is a complete code of life and it provides guidance about all aspects of life. Islam is most practicing religion in the world. Islam has three main parts.

- Beliefs
- Devotions/ Worship (Ibadat)
- Dealings.

Only Prophet Muhammad (Peace be upon him) is a business man among founder of religions. And Non-Muslims also said that He is a Great man. Lamertine (1854) stated that, "who could dare to compare any great man in modern history with Muhammd?" Masserman (1974) stated that, "Perhaps the Greatest Leader of All Times Was Mohammed".

The Beloved Prophet of Allah Muhammad e Mustafa (Peace be upon him) says: "I have been sent for the purpose of perfecting good morals" (Ibn Hanbal, No. 8595). and "Indeed, the most perfect believer in faith is one who has the best manners" (Tirmazi, No. 2612).

"A Mumin by his good conduct acquires the rank of one who fasts and stands in Prayer during Night" (Abdu Dawud, No. 4798) and "Allah is kind and loves kindness, whatever He confers for kindness is neither conferred upon being harsh nor through any other means except it" (Muslim, No. 6601).

Job satisfaction can be defined as "a positive feeling about one's job resulting from an evaluation of its characteristics" (Rauf, 2010; Robbins et al, 2008, p.89). Job satisfaction means "the extent to which people like their jobs" (Spector, 1996, p.214). Every human being wants satisfaction and Job satisfaction is very important for job commitment, performance, motivation and positive morale of employee.

"Job Autonomy means, degree to which a job provides an employee with the discretion and independence to schedule their work and determine how it is to be done" (Cengage, 2006). Islamic values have two important outcomes that are human's prosperity and happiness in all functions of human life. Islamic Ethics, values and norms have their great history. These norms and values are not for specific time but these are universal. Islamic values help and guide human beings in every field of life. Greed, Injustice, Arrogance, dishonesty has no place in Islam (Alhabshi & Ghazali, 1994).

There are various components of Islamic Work Ethics for example, Sincerity, Proficiency, Truthfulness, Justice, Patience, Promise keeping, continuous self evaluation, Moderation, Courteousness etc. These dimensions are directly derived from Allah's book Quran, which is proved by following references.

Sincerity

"Say you, 'I worship Allah only being purely His devotee" (Quran 39:14)

Proficiency

"And Do Good As Allah Has Done Good to You and Seek Not Mischief In The Land" (Quran 28:77)

Truthfulness

"That Allah may recompense the truthful ones for their truth and torment the hypocrites, if He will or He may turn towards them. Undoubtedly, Allah is Forgiving, Merciful" (Quran33:24)

Justice

"Undoubtedly, Allah bids justice and good doing and giving to kindred and forbids indecency and wicked things and rebellion" (Quran 16:90)

Patience

"But those who believed and did good deeds and stressed one another to accept truth and counselled one another to be steadfast" (Quran 103:3)

Promise-Keeping

"And fulfil the promise, undoubtedly the promise is to be questioned of" (Quran 17:34)

Continuous self-evaluation

"And whatever one earns it is on his own account. And no bearer of burden will bear the burden of another" (Quran 6:164)

Moderation

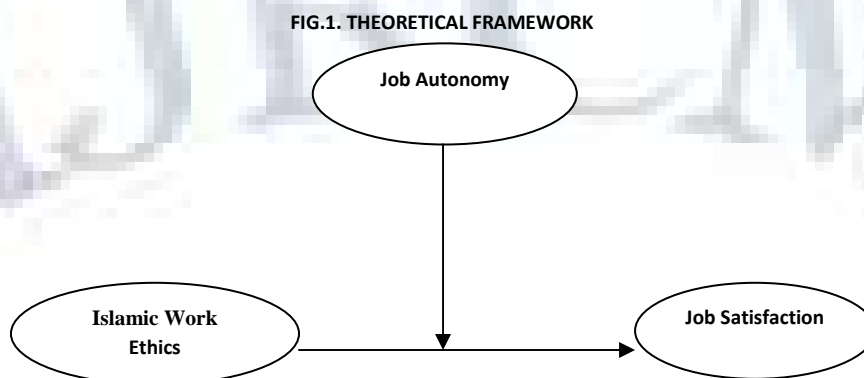
"And walk moderately and lower your voice to some extent" (Quran 31:19).

So all dimensions or components of Islamic work ethics are directly derived from Quran and Sunnah. Muslims have both type of guidance in theoretical form as well as in Practical form, Quran is guidance for whole humanity in theoretical form and Prophet Muhammad (Peace Be Upon Him) is a guidance for whole humanity in Practical form. Both Quran and Life of Prophet Muhammad Peace be upon him provides complete guidance to humanity. Quran and Life of Prophet is perfect guidance, now it is task of humanity to get complete and full benefit from Islamic work ethics.

Koh and Boo (2004) elaborated that the relationship between Islamic Work ethics and job satisfaction might be illuminated by the theory of organizational justice and this theory described that perceived justice of employee's affects the attitude of employees.

Researches also proved that employees ethical behavior affects job satisfaction (Weeks et al, 2004; Schwepker, 2001). Basic Objective of Islam is to provide satisfaction to its followers. Ghazali Moral Theory and Aristotle virtue theory also explain link between work ethics and satisfaction. And Link between Job Autonomy as moderating variable between Islamic work Ethics and Job satisfaction can be explained by Self Determination Theory (SDT) and Job Design Theory (Cengage, 2006).

2.1: Theoretical Framework



2.2. HYPOTHESIS DEVELOPMENT

In light of five theories Organizational Justice Theory, Aristotle Virtue Theory, Ghazali Moral Theory, Job Design theory and Self Determination theory (SDT) as explained in Literature Review in detail, following Hypothesis are written.

H1: Islamic Work Ethics will be positively related with job satisfaction.

3. METHODOLOGY

Non Probability Convenience Sampling technique has been used and Sample is taken from 4 public sector Organizations (District Accounts Office Rawalpindi, Rawalpindi Development Authority, Water and Sanitation Agency Rawalpindi, Parks and Horticulture Authority Rawalpindi). 150 questionnaires distributed among these public sector organizations and 103 respondents properly among of them. IWE are measured by using 17 items scale which developed by (Ali, 1992), the Cronbach's Alpha coefficient reliability of this scale was 0.80 in this study. For the measurement of job satisfaction, 3 Items' scale was used which developed by Harely and Dubinsky in 1986 and reliability of this scale in this study was noted 0.71. Job autonomy is measured by the 3 item scale adapted from (Hackman & Oldham, 1980) and reliability of this scale noted 0.70 in this study. All above subjective variables have been arranged in five point likert scale in which 1 for strongly disagree with the statement and 5 for strongly agree with the statement in questionnaires. All alpha coefficients for the data exceed the minimum standard for reliability of 0.70 recommended by Nunnally (1978) for basic research. Thus, the results indicate that these multiple measures are reliable for measuring each construct.

4. RESULTS AND DISCUSSION

The results of this study were analyzed by using the SPSS 15.0 software and examined the demographical information of respondents (table I), (M) mean, (SD) standard deviation, (SE) standard error and (correlation) strength of relationship among the variables (table II), (regression) variation between independent and dependent variables, (t values and F value) accepting and rejecting region of hypothesis, (Beta) regression coefficients which mean how much units effected on the dependent variable when increase one unit of independent variable, and (p value) significance level of the results (table III and table IV) for interpretation of study's hypothesis confirmation.

4.1: TABLE I RESPONDENTS' DEMOGRAPHICAL INFORMATION

Demographical information	No. of Respondents	Percentage rate of Respondents
Gender		
Male	65	63%
Female	38	37%
Age		
Below 25 years	24	23%
25-40 years	50	49%
Above 40 years	29	28%
Education		
Graduation	27	26%
Master	70	68%
PHD	6	6%
Experience		
0-5 years	31	30%
6-10 years	43	42%
11-15 years	16	16%
Above 16 years	13	13%
Working Area		
Finance	31	30%
HRM	38	37%
G. Management	18	17%
Others	16	16%
Management Level		
Lower Management	16	16%
Middle Management	24	23%
Top management	63	61%

Note: * p < 0.05, **p < 0.01

Table I shown the demographically information of respondents. The percentage rate of the respondents' was in gender (male 63% and female 37%), the percentage rate of the respondents was in age (23% below 25 years , 49% between 25 and 40 years, 28% and above 40 years), percentage rate of the respondents in education level (26% graduation, 68% master, and 6% PhD), percentage rate of the respondents in experience level (30% of 0-5 years, 42% of 6-10 years, 16% of 11-15 years, and 13% above 16 years), percentage rate of the respondents in working area (30% working in finance, 37% in human resource management, 17% in general management and 16% in others area), percentage rate of the respondents in management level (16% of lower level , 23% of middle level, 61% of top level) were responded on study's questionnaire during survey (table I).

4.2: TABLE II PEARSON'S CORRELATION AND DESCRIPTIVE STATISTICS OF STUDY'S VARIABLES

Measure	Islamic Work Ethics	Job Autonomy	Job Satisfaction
Islamic Work Ethics	1		
Job Autonomy	0.40**	1	
Job Satisfaction	0.62**	0.56***	1
No. of Observations	103	103	103
Mean	4.30	3.40	3.59
Standard deviation	0.28	0.50	0.67
Standard Error	0.02	0.04	0.06

Note: n = 103, * p < 0.05, **p < 0.01, ***p < 0.001 level (2-tailed) and Islamic work ethics, job autonomy and job satisfaction rating by using the 5 point likert scale 1 to 5

Table II shows the relationship between independent, moderate and dependent variables and this relationship call Pearson's correlation of the variables it means to measure the strength of relationship between two variables. There were positive and significant relationships among independent variable (Islamic Work Ethics); moderate variable (job autonomy) and dependent variable (job satisfaction) of this study (table II). The Islamic work ethics was significantly

positive correlated ($r = 0.40, p < 0.01$) with the job autonomy, and significantly positive correlated ($r = 0.62, p < 0.01$) with the job satisfaction (table II). The job autonomy was significantly positive correlated ($r = 0.32, p < 0.01$) with the job satisfaction (table II).

Table II also has been shown the mean score of respondents on Islamic work ethics scale was 4.30, standard deviation in the score was 0.28 and standard error in the mean score was 0.02, mean score on job autonomy scale was 3.40, standard deviation in the score was 0.50 and standard error in the mean score was 0.04, and the mean score of job satisfaction scale was 3.59, standard deviation was 0.67 and standard error in the mean score was 0.06. According to the Kenny's and Barron (1986) there should be significant correlation between all the variables for moderation analysis. Hence this study did meet this requirement for moderation analyses of job autonomy because there were positive and significant relationships between Islamic work ethics, job autonomy and employees' job satisfaction (table II). Table III shown the regression analysis of Islamic work ethics and job satisfaction.

4.3. REGRESSION ANALYSIS

4.3.1: TABLE III REGRESSION ANALYSIS OF ISLAMIC WORK ETHICS AND JOB SATISFACTION

Variables	Beta	Adjusted R square	Change in R square	t value	Significance p value	F
Islamic work ethics and Job Satisfaction	0.64***	0.38	0.00	7.97	0.000	63.65***

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table III has been presented regression analysis of two (Islamic work ethics and job satisfaction) variables in which Beta value (Beta = 0.64, $p < 0.001$) of these two variables interpreted, if one unit increase in Islamic work ethics then 0.64 unit increase the satisfaction of employees on $p < 0.001$ that was highly significant value (table III). Adjusted R square (0.38) explained the significant variation between Islamic work ethics and employees' job satisfaction was 38% and t value ($t = 7.97, p < 0.001$) which shows significant true relationship between these two variables, because t value (7.97) was greater than t tabular standard value (± 1.96) (table III). According to the Sobel, (1982) this t value (7.97) is normally distributed, that for large samples it will lead to accept the study hypothesis at $p < 0.05$ because it exceeds ± 1.96 which is standard normal distribution for small samples. So this study first hypothesis (H1) is significantly confirmed that was "Islamic Work Ethics will be positively related with job satisfaction".

Previous study has examined the positive association between Islamic work ethics and job satisfaction and commitment and individual's work attitude toward computer use ethics within universities' environment (Mohamed, Abdul Karim and Hussein, 2010).

Rokhman (2010) has been concluded that Islamic work ethics positively and significant affected on job satisfaction and organizational commitment but not found significantly relationships between Islamic work ethics and turnover intentions of the employees in Islamic micro finance institution at Denmark.

4.3.2: TABLE IV HIERARCHICAL REGRESSION FOR MODERATION ANALYSIS

Variables	Step 1	Step 2	Step 3	Step 4
Gender	-0.22**	-0.04	-0.04	-0.03
Age	0.01*	0.09	0.00	0.02
Education	-0.19*	-0.02	-0.02	-0.02
Experience	0.16	-0.26	-0.15	-0.17
Working Area	0.07	0.08	0.05	0.05
Management Level	0.01	0.03	-0.01	0.00
Islamic work ethics		0.67***	0.50***	0.38***
Job Satisfaction			0.35***	0.000
IWExJA				0.40***
Adjusted R Square	0.02	0.38	0.48	0.47
Change in Adj. R square	0.00	0.36	0.10	0.09
F value	1.308	10.24***	13.17***	12.54***

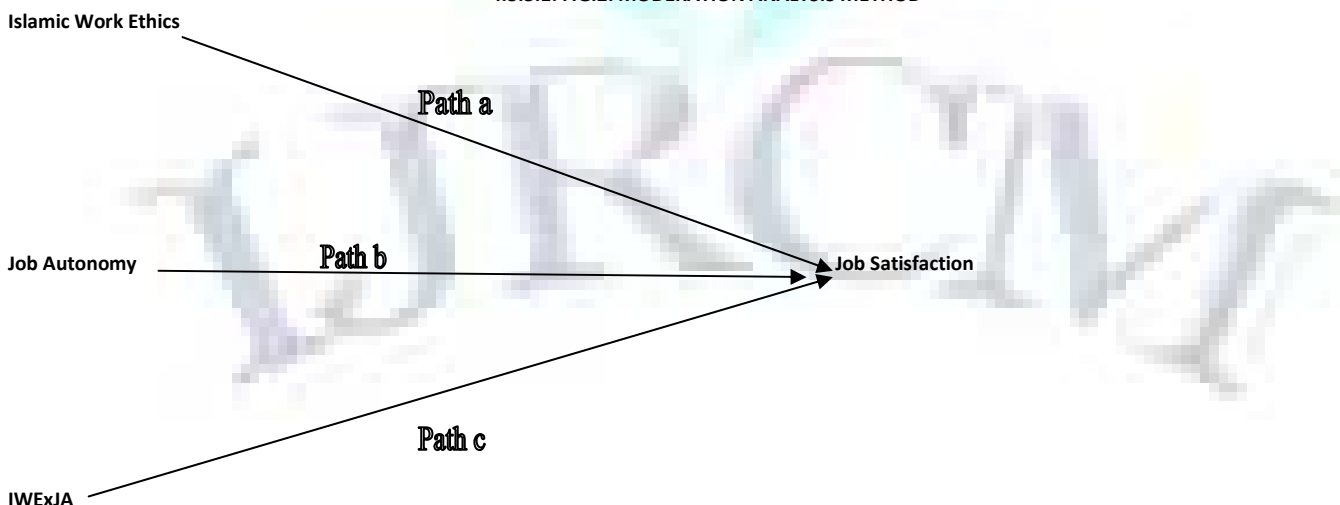
Note: The standardized regression coefficients are shown in table, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ and dependent variable is Job satisfaction

Table IV shown the hierarchical regression analysis of demographical variables (gender, age, education level, experience, working area and management level), independent variable (Islamic work ethics) and moderate variable (job autonomy) with the dependent variable (job satisfaction).

4.3.3. MODERATION ANALYSIS METHOD

Kenny and Barron (1986) declared when three paths conditions (path a, path b and path c) would be fulfilled then it is supported the moderation impact. In first path (path a), the independent (Islamic work ethics) variable must be significantly related to the dependent variable (job satisfaction) then first condition (path a) would be satisfactory meet in step 2 of hierarchical regression analysis.

4.3.3.1: FIG.2: MODERATION ANALYSIS METHOD



In second condition (path b), Barron and Kenny (1986) described that there also must be significant relationship between moderate variable (job Autonomy) and dependent variable (job Satisfaction) directly in hierarchical regression analysis of step 3. In third and last condition (path c), Barron and Kenny (1986) explained when added the interaction variable IWExJA {production of independent (islamic work ethics) variable and moderate (job autonomy) variable} in hierarchical regression analysis of step 4 and there also must be significant relationship between interaction (IWExJA) variable and dependent (job satisfaction) variable.

When the Beta value of interaction (IWExJA) variable would be significant on t value $> \pm 1.96$, $p < 0.05$ (Sobel, 1982) and Adjusted R square would greater of interaction variable (IWExJA) and dependent (job satisfaction) variable in hierarchical regression analysis of step 4 than the direct impact of independent (Islamic work ethics) and dependent (job satisfaction) variables in hierarchical regression of step 2 and shows the significant differences in Adjusted R squares in hierarchical regression analysis of step 2 & step 4 (Change in Adjusted R square). It means there would be significant presence of moderation variable (job autonomy) between (Islamic work ethics) and (job satisfaction) variables.

4.3.3.2. ISLAMIC WORK ETHICS AND JOB SATISFACTION MODERATED BY JOB AUTONOMY

Table IV shown the hierarchical regression analysis of all demographic (gender, age, education, experiences, working area and management grade level) and study's variables (Islamic work ethics, job satisfaction and job autonomy) and in hierarchical regression analysis divided into 4 steps. Step 1 analyzed the hierarchical regression analysis of demographical variables (gender, age, education, experiences, working area and management level) with the job satisfaction and table shown the standardized regression coefficients, Adjusted R square, Change in R square and F values (table IV). Adjusted R square (0.02) explained the variation between these demographical variables and dependent variable (job satisfaction) was 2% and it was not significant relationship at ($F = 1.38$, $p < 0.05$). In next step 2, independent variable (Islamic work ethics) was added in hierarchical regression analysis and the regression coefficient was (Beta = 0.67, $p < 0.001$) and Adjusted R square (0.38) explained the variation between these demographical variables and dependent variable (job satisfaction) was 38% and it was strongly significant relationship at F value ($F = 10.24$, $p < 0.001$) and t value ($t = 7.68$, $p < 0.001$) of Islamic work ethics and job satisfaction which shows significant (for large samples) true relationship between these two variables in step 2 (table VI), because t value (7.68) was greater than t normally distributed standardized value (± 1.96) for small samples (Sobel, 1982). So according to Barron and Kenny (1986) first (path a) condition in which Islamic work ethics positively related with job satisfaction was met (table IV, step 2). The moderate variable (job autonomy) was added in next step 3 and the regression coefficient was (Beta = 0.35, $p < 0.001$) and t value ($t = 4.42$, $p < 0.001$) and F value ($F = 16.17$, $p < 0.001$) of job autonomy and job satisfaction relationship which shown it was also significant positive relationship between these two variables. In step 4 interaction (IWE*JA) variable was played significant moderation role between Islamic work ethics and job satisfaction because when production of Islamic work ethics and job satisfaction (IWE*JA) was added in step 4 then there was highly significant value of Beta (Beta = 0.40, $p < 0.001$) and t value ($t = 4.09$, $p < 0.001$), and F value ($F = 12.54$, $p < 0.001$) and was adjusted R square was (0.47). While there was Beta value (Beta = 0.67, $p < 0.001$) and t value (7.68, $p < 0.001$) and F value ($F = 10.24$, $p < 0.001$), and adjusted R square (0.38) of Islamic work ethics and job satisfaction was significant in step 2 but when job autonomy variable added as moderator in step 4 there was also significant relationship between Islamic work ethics and job satisfaction at value of Beta (Beta = 0.38, $p < 0.001$) and value of t ($t = 3.64$, $p < 0.001$) and 9 percent adjusted R square (Change in Adjusted R square = 0.09) was significantly changed between independent variable Islamic work ethics (Adjusted R square = 0.38) on job satisfaction and interaction variable IWExJA (Adjusted R square = 0.47) on job satisfaction (table IV). So second hypothesis was also accepted that "Job Autonomy will play moderation role in the relationship of Islamic work ethics and Job Satisfaction."

Previous studies about Islamic work Ethics shows positive impact on Leadership, performance, job commitment, goal achievement, employee positive morale and negative impact on Turnover intention (see Ali, 1992; Yousef, 2000; Yousef, 2001; Rahman, 2006; Ali & Al-Kazemi, 2007; Abbasi, 2008; Rokhman, 2010). This study also shows Positive impact of IWE on Job satisfaction and job autonomy moderates relationship between IWE and job satisfaction.

5. CONCLUSION

Job satisfaction is one of the most important desire of employees and it causes positive impact on job commitment, goal achievement, performance, motivation and employee positive morale. IWE and job autonomy has positive impact on Job satisfaction. So this study would help to increase job satisfaction of employees.

6. FUTURE STUDIES

Research in reference with the model can be conducted on impact of Islamic work Ethics on dimensions of customer satisfaction, job insecurity and employees stress etc.

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ELECTRONIC AUCTION: A TURN-KEY FACTOR TO RENJUVINATE THE COAL INDUSTRY - A CASE STUDY OF BHARAT COKING COAL LIMITED, DHANBAD

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ABSTRACT

The Bharat Coking Coal Limited, Company which was nationalized on 01.05.1972 is the world's largest prime coking coal producer. The company was facing huge annual financial loss due to dominance of organized Mafia over the coal procurement. But with launch of E-Auction Scheme the company for the first time covered the loss as well as made the annual profit of 268 crores in financial year 2005-2006. BCCL Was the Public Sector Undertaking to launch the E-Auction Scheme in India. The Electronic-Auction also enhanced the investment from the smallest to largest procuring consumers resulting into overall huge financial profit of the company. With the financial profit the huge investments are done in many sections of the company. Especially the "Loader Less Mining" was strictly implemented on 01.04.2009 which exercised the concept of "Zero-Accident Atmosphere" in the underground mining. Further the BCCL Company was awarded the "MoU Excellence Certificate" in category of "Energy" for year 2009-2010 by Dr. Manamohan Singh, Hon'ble Prime Minister of India on 31st January 2012 at New Delhi, under aegis of Department of Public Enterprises, Ministry of Heavy Industries and Public Enterprises, Government of India. Further the Coal India Limited was able to launch its IPO (Initial Public Offer) in month of October 2010 when all the subsidiaries of CIL turned into profit making company by swift implementation of E-Auction Scheme.

KEYWORDS

Turn-Key Effect, Positive Pressure Group, Loader-Less Mining, Zero Accident Atmosphere.

INTRODUCTION

The commercial coal mining in modern times in India has been dictated by the needs of the domestic consumption. On account of the growing needs of the steel industry, a thrust had to be given on systematic exploitation of coking coal reserves in Jharia Coalfields, which is now administered by **Bharat Coking Coal Limited Company, Dhanbad**. Adequate capital investment to meet the burgeoning energy needs of the country was not forthcoming from the private coal mine owners. Unscientific mining practices adopted by some of them and poor working conditions of labor in some of the private coal mines became matters of concern for the Government. On account of these reasons, the Central Government took a decision to nationalize the private coal mines.

The nationalization was done in two phases,

[1]The first with the **Coking Coal Mines in 1971-72**

[2]And then with the **Non-Coking Coal Mines in 1973**.

LITERATURE REVIEW

India has a long history of commercial coal mining covering nearly 220 years starting from 1774 by **M/s Sumner and Heatly of East India Company** in the Raniganj Coalfield along the Western bank of river Damodar. Setting up of the National Coal Development Corporation (NCDC), a Government of India Undertaking in 1956 with the collieries owned by the railways as its nucleus was the first major step towards planned development of Indian Coal Industry. In **October, 1971**, the **Coking Coal Mines (Emergency Provisions) Act, 1971** provided for taking over in public interest of the management of coking coal mines and coke oven plants pending nationalization. This was followed by the Coking Coal Mines (Nationalization) Act, 1972 under which the coking coal mines and the coke oven plants other than those with the Tata Iron & Steel Company Limited and Indian Iron & Steel Company Limited. Nationalization on **1.5.1972** and brought under the **Bharat Coking Coal Limited (BCCL)**, a new Central Government Undertaking. Another enactment, namely the Coal Mines (Taking over of Management) Act, 1973, extended the right of the Government of India to take over the management of the coking and non-coking coal mines in seven States including the coking coal mines taken over in 1971. This was followed by the nationalization of all these mines on 1.5.1973 with the enactment of the Coal Mines (Nationalization) Act, 1973 which now is the piece of Central legislation determining the eligibility of coal mining in India.

IMPORTANCE OF STUDY

The BCCL Company was a financially a huge loss making company since its nationalization upto the financial year 2005-2006. This success was due to the "Turn-Key" effect of the "Electronic-Auction" scheme introduced for procurement of coal. The scheme of Electronic Auction is also conferred as "E-Auction". The BCCL Company is the 1st Public Sector Undertaking which started *E-Auction in the Energy Sector in India*. Electronic-Auction started in the month of January 2005. The E-Auction is governed by sales control and planning Department. E-Auction turned the BCCL Company into a profit giving company in matter of revenue for the first time since last 30 years. E-Auctioning made the company out of the financial loss and The annual financial profit for the Year 2005-2006 of the Bharat Coking Coal Limited Company was 228 crore. The purpose of E-Auction is to provide equal opportunity to purchase coal through single window service to all intending buyers. E-Auction has been introduced to facilitate across the country wide Ranging access to book coal on line for all sections of coal Buyers enabling them to buy coal through a simple transparent and consumer friendly system of marketing and distribution of coal.

STATEMENT OF THE PROBLEM

Coal distribution through E-Auction has been introduced with a view to provide access to coal for such buyers who are not able to source coal through the available institutional mechanism. As the small investors were financially not sound to invest a huge sum in the coal procurement. As well as due to dominance of "Mafia" many times the procured coal chunk was not allowed to be taken away. This led to a sense of dissatisfaction, fear and resentment among the small investors. The retail of coal supply was blocked, especially in the manufacturing of hard coke. The uncollected coal use to burn out with flammable combustion due to its interaction with free oxygen and heat. The ignition in coal grows at a rapid rate resulting into burning of high calorific value coal, resulting into huge financial loss.

OBJECTIVE

To identify the problem agents which are being eliminated out by implementation of E-Auction scheme at BCCL, Dhanbad.

HYPOTHESIS

To identify the significance and impact of the Electronic Governance in form of E-Auction scheme being implemented resulting into financial profit and expansion of the BCCL Company, Dhanbad.

RESEARCH METHODOLOGY

The data collected is absolutely secondary data collected from the Library of Public Relation Division of BCCL Dhanbad, and also from the internet survey. It is found that a prospective Buyer shall be required to get them registered with the Service Provider appointed by the CIL /BCCL for the purpose by submitting an application in the prescribed format available on the Website of the respective Service Providers. The applicant must be an "Indian". The application shall be made along with the required documents such as copy of Income Tax return (latest) , PAN Number, Sales Tax/Vat Registration Certificate, SSI Registration, Trade License, if applicable, Passport size photograph etc. as prescribed by the service provider. Registration can be done either online, or at any of the front offices of the service provider. Only one registration will be done against one PAN number. However, based on more than one independent valid sales tax registration, more than one registration against a PAN Number can be considered. In such cases, the details of valid sales tax registration will be indicated in each "Photo Identity Card".

RESULTS AND DISCUSSIONS

All Buyers been registered with the service providers shall also have to furnish non-interest bear Earnest Money Deposit (EMD) at the rate of Rs. 200/- per tone, with the service provider. This EMD shall not be specific for a particular subsidiary Coal Company and shall be available with the service provider for participation in the e-Auction across the Subsidiary Coal Companies of CIL, as long as the required amount of EMD is available in the bidders account with the service provider. There is a separate auction for dispatches by rail and road mode. The minimum quantity for bidding is fixed 50 (fifty) tones for a source for Road mode, where as in case of Rail the minimum quantity for bidding fixed to be minimum 1 (one) rake. The rake size shall be as per prevalent Railway rules. The quantity of coal in a rake is indicated in the notice of e- Auction. Due to availability of the service of transportation of the coal to the respective destinations there is a huge demand arisen from the small investors as the protection for the loading and transportation of coal to the destination is being now borne by the BBCL Company. The demand for the coking coal has arisen even from the remotest corner of India. The channelized supply of coal in higher rates has resulted the company into enormous financial profit. This has also created a huge number of job opportunities for the local people. BCCL shall issue Sale/Delivery Orders to the successful bidders after realization of payment. The Buyer has to submit the option before the issue of the Sale/Delivery Order for movement of the coal "Within state" or "Outside state" and the Sale/Delivery Order would indicate the same accordingly. However, the challan issued by BCCL shall indicate the destination. The validity period to complete lifting of coal by road shall be 45 days from the date of issue of Sale/Delivery Order. No extension of validity is allowed in any case.

FINDINGS

It is found that the E-Auction procedure is the only "Turn-Key" factor which covered the loss gaps and created an environment of financial profit with perpetual growth. The success of E-Auction at BCCL, Dhanbad has accelerated the launch of E-Auction Scheme in the entire sister subsidiaries of Coal India Limited. In addition as the most important segment of *Workers' Participation in Management in Policy Making*, the demand for the "Loader less Mining" in underground coal mining was put up in demand about 20 years back (In this mechanism no worker will be excavating out any form of coal in underground mines with their own hand. All works have to be done only with help of machineries) .This concept was under the red-tapism due to shortage of funds and hence was delayed. As the machineries to be procured for the underground coal mining by help of "Loader-Less Mining" are extremely sophisticated and too costly too. It was again demanded in the NCWA-VIII(National Coal Wage Agreement-VIII). As a "Positive Pressure Group" the representative bodies demanded this provision to be true in sense of implementation when policy of "Loader less Mining" and it was smoothly implemented on 01.04.2009 on the working grounds of all functional underground mines in B.C.C.L. Dhanbad. This action was a big transformative step with an absolute "Humantic Touch" of the Management. And this has been possible with diplomatic and strong approach of representative body of workers as well as the demands of the workers' representative to invest the financial profit earned due to swift implementation of E-Auction Scheme. This action also acted as a motivating factor for workers to create an atmosphere of enthusiasm and more dedication for work. This has also empowered the scenario of "Zero Accident Atmosphere". This step of management has made the concept of "Accident Free" mines true upto maximum. This has made an inner motivation for both the workers; the underground workers as well as the upper-surface workers to work full more enthusiasm. This has been made possible in practical due to "Collective bargaining with a positive attitude" for a situation of win-win for both the management as well as workers. In a chain mechanism it was observed that the financial profit was made due to swift and secured Implementation of E-Auction, the same financial profit was invested in procuring the most modern machineries of mines to implement the "Loader-Less Mining". These all stepwise mechanism enabled the BCCL Company to receive the honor of award of the "MoU Excellence Certificate" for year 2009-2010 by Dr. Manamohan Singh, Honorable Prime Minister of India on 31st January 2012 at New Delhi, under aegis of Department of Public Enterprises, Ministry of Heavy Industries and Public Enterprises, Government of India. As a few other subsidiaries were also in loss from last few years for the same the CIL was unable to represent it as an overall profit making company. Along with the BCCL company the E-Auction scheme was launched in the entire nine sister subsidiaries, including the loss making as well as the profit making companies. This scheme turned the loss making companies to cover the loss and profit making companies as well as the profit making companies turned to "Super-Abnormal Profit" making companies. And on an aggregate scale the CIL became a profit making company. In order of expansion to be a "Global Giant" in Core Sector Energy Industries the CIL launched its IPO (Initial Public Offer) on October 18th, 2010 in open market. The source step cause of profit earning was launch of E-Auction. The channelized co-ordination of policy and vision has created this tremendous developmental change in the BCCL as well as CIL and its subsidiaries too.

SCOPE FOR FURTHER RESEARCH

The BCCL Company has a lot of scraps and obsolete machineries which are absolute "non-functional" now. These obsolete metals are generally kept in a secured periphery so that it may not be stolen and misused. But the bulk quantity of these useless machineries and metals whose working life is over, are increasing day by day. Generally these obsolete parts are too huge, for the same they are not being claimed even in open auction for sale. It is recommended that these scraps and obsolete are same as the unpolished diamonds who are compared to common stones as they are not polished. Similarly a separate E-Auction process must be started which may be done once or maximum twice in a year for auctioning of these obsolete metals. As when bulk procurement will be there then big players of Steel, metal and alloy industry will definitely participate to claim these obsolete machineries. As maximum of these machineries can be molten and remolded easily and metal processing companies will get a good source of raw material at cheaper rates. And this will result into financial profit of both buyer and seller. It is strongly recommended that E-Auction policy to auction the scrap and obsolete machineries in BCCL as well as in maximum of Industries who operates the machineries in their organization.

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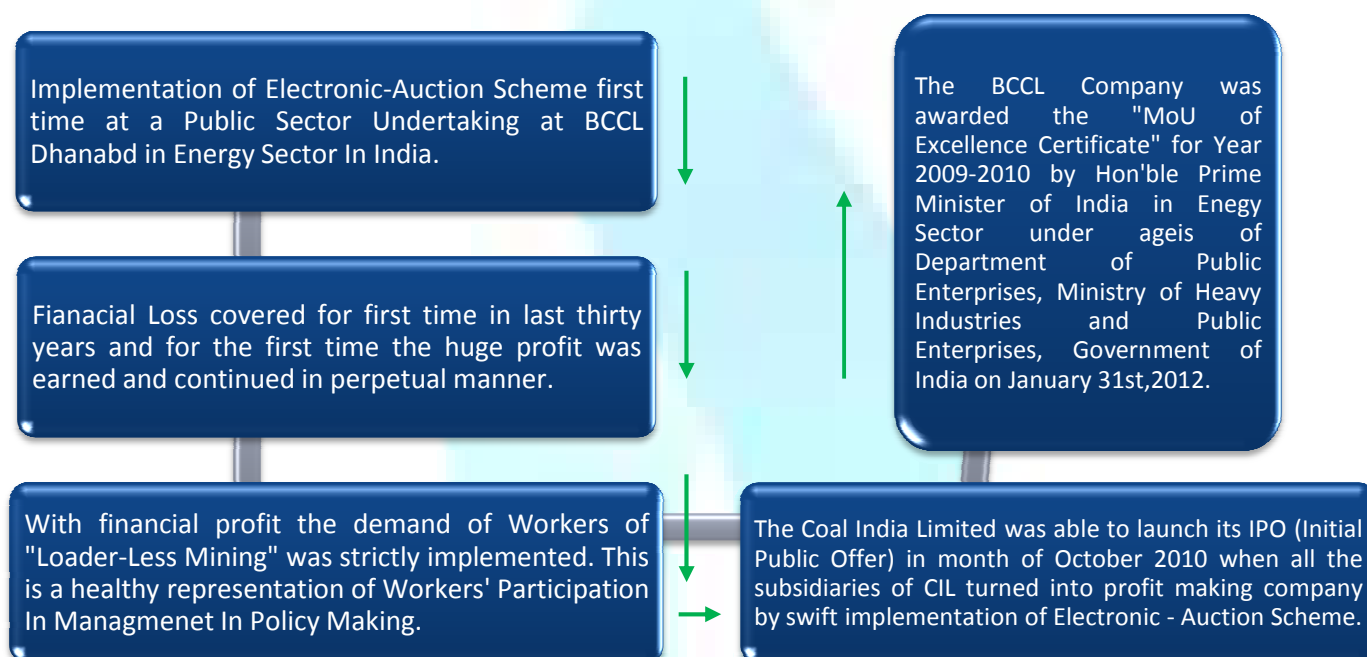
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APPENDIX

FIGURE A

A Diagrammatic Representation of Progressive Impact of Electronic – Auction (E-Auction) on the overall expansion of the BCCL Company as well as the Coal India Limited Company.



Source: "Angar" Monthly Journal, January 2011, Volume 1; Page-3, published and distributed by I.I.C.M. Ranchi (Indian Institute of Coal Management, Ranchi)

TABLE A

Hypothetical Chart Representing the comparative status of profit earning from sales of Coal before and after implementation of E-Auction Scheme

A COMPARITIVE REPRESENTATION OF THE SALES OF COAL BEFORE AND AFTER LAUNCH OF E-AUCTION (Per Ton) in INR.

Serial Number	Bid Value of Coal	Minimum Bid Value of Coal	Maximum Bid Value of Coal Before E-Auction(Average)	Maximum Bid Value of Coal After E-Auction (Average)
01.	1000.00	1000.00	1000.00	18500.00 - 22500.00

FIGURE C

The Certificate of "MoU Excellence Certificate" in category of "Energy" for year 2009-2010 by Dr. Manamohan Singh, Hon'ble Prime Minister of India on 31st January 2012 at New Delhi, under aegis of Department of Public Enterprises, Ministry of Heavy Industries and Public Enterprises, Government of India.



Source:-Public Photo Gallery, Koyla Bhawan Headquarter, Head Office of BCCL Dhanbad, Public Photo Display Week on Occasion of Labors' Day (Workers' Day) on 01.05.2012 to 08.05.2012.

A CONCEPT BASED APPROACH OF RARE ASSOCIATION RULE MINING FROM EDUCATION DATA

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ABSTRACT

Data mining is the process of discovering useful knowledge in the form of patterns from the data. Association rule mining is an important knowledge discovery technique in the field of data mining. It involves finding interesting associations between the sets of objects in a transactional database. A rare association rule is an association rule with items having low support. In many real-world applications, rare association rules can provide useful information to the users. Rare association rules are those that only appear infrequently even though they are highly associated with very specific data. In consequence, these rules can be very appropriate for using with educational datasets since they are usually imbalanced. In this paper, we provide the basic concepts about rare association rule mining and survey the list of existing rare association rule mining techniques.

KEYWORDS

data mining, knowledge discover, association rule, rare association rule.

INTRODUCTION

Data mining (also known as Knowledge Discovery in Databases) has been defined as “the nontrivial extraction of implicit, previously unknown, and potentially useful information from data”. Data mining uses machine learning, statistical and visualization techniques to discover and represent the knowledge in a form which is easily comprehensible to humans. Currently, data mining is being used in a wide range of industry applications, such as marketing, surveillance, fraud detection, and scientific discovery. The process of data mining mainly involves extraction of association rules, finding clusters, and assigning categories to data (classification). Currently, the active work in data mining has focused on discovering knowledge patterns from data streams time-series data, probabilistic databases and high-dimensional data. In addition, extraction of rare knowledge patterns (i.e., patterns involving rarely occurring entities) from different datasets is also an active research area in data mining. The main goal of association rule mining is to discover relationships among sets of items in a transactional database. Association rules aims to extract interesting correlations, frequent patterns, associations or casual structures among sets of items in transaction databases or other data repositories. Association rules are if/then statements that help uncover relationships between seemingly unrelated data in a relational database or other information repository. An example of an association rule would be “If a customer buys a dozen eggs, he is 80% likely to also purchase milk.” An association rule has two parts, an antecedent (if) and a consequent (then). An antecedent is an item found in the data. A consequent is an item that is found in combination with the antecedent. Association rules are created by analyzing data for frequent if/then patterns and using the criteria support and confidence to identify the most important relationships. Support is an indication of how frequently the items appear in the database. Confidence indicates the number of times the if/then statements have been found to be true. In data mining, association rules are useful for analyzing and predicting customer behavior. They play an important part in shopping basket data analysis, product clustering, and catalog design and store layout. Programmers use association rules to build programs capable of machine learning. Machine learning is a type of artificial intelligence (AI) that seeks to build programs with the ability to become more efficient without being explicitly programmed. A rare association rule is an association rule with items having low support. In many real-world applications, rare association rules can provide useful information to the users. Rare association rule mining has been hardly applied to educational data, despite the fact that infrequent associations can be of great interest since they are related to rare but crucial cases. For instance, they might allow the instructor to verify a set of rules concerning certain infrequent/abnormal learning problems that should be taken into account when dealing with students with special needs. Thus, this information could help the instructor to discover a minority of students who may need specific support with their learning process. From the perspective of knowledge discovery, the greatest reason for applying RARM in the field of education is the imbalanced nature of data in education, as in other real-world tasks, i.e., some classes have many more instances than others. Furthermore, in applications like education, the minor parts of an attribute can be more interesting than the major parts; for example, students who fail or drop out are usually less frequent than those students who fare well. In the field of association rule mining, the rare item problem is essentially considered to be a data imbalance problem which may, on either side of the association rule, give rise to severe problems. The problem of imbalance has only been dealt with in one educational data mining study. However, in this work, data was firstly modified/preprocessed to solve the problem of imbalance and then several different classification algorithms were applied instead of specific association rule algorithms.

CLASSIFICATION OF RARE ASSOCIATION

The rare associations are classified into two types.

1. Interesting rare association
2. Uninteresting rare association

INTERESTING RARE ASSOCIATION

An association is said to be interesting rare association if it has low support but the items contained in it are highly correlated or the confidence of the association is high.

UNINTERESTING RARE ASSOCIATION

An association is said to be uninteresting rare association if it has low support and low confidence. Usually the association rule mining algorithm consists of two steps: Finding the frequent Item sets and extracting the interesting association rules. This paper makes a combined effort to extract the interesting rare association rules and interesting frequent association rules in a single step.

REVIEW OF LITERATURE

Rare Association Rule Mining Detecting sporadic association rules, rules with low support but high confidence efficiently are a difficult data mining problem. To find these rules in traditional approaches, such as the Apriori algorithm, minimum support (minsup) has to be set very low, which results in a large amount of redundant rules. As a specific example of the problem, consider the association mining problem where we want to determine if there is an association between buying a food processor and buying a cooking pan (Liu et al. 1999). The problem is that both items are rarely purchased in a supermarket. Thus, even if the two items are almost always purchased together when either one is purchased, this association may not be found. Modifying the minsup threshold to take into account the importance of the items is one way to ensure that rare items remain in consideration. To find this association minsup must be set low. However setting this threshold low would cause a combinatorial explosion in the number of item sets generated. Frequently occurring items will be associated with one another in an enormous number of ways simply because the items are so common that they cannot help but appear together. This is known as the rare item problem. It means that using the Apriori algorithm, we are unlikely to generate rules that may indicate rare events of potentially dramatic consequence. Some individual items can have such low support that they cannot contribute to rules generated by Apriori, even though they may participate in rules that have very high confidence. They overcome this problem with a technique called MSApriori whereby each item in the database can have a minimum item support (MIS) given by user. By providing a different MIS for different items, a higher minimum support is tolerated for rules that involve frequent items and a lower minimum support for rules that involve less frequent items. Yun et al. (2003) proposed the RSAA algorithm to generate rules in which significant rare item sets take part, without any "magic numbers" specified by the user. This technique uses relative support: RSup is used in place of support. Thus, this algorithm decreases the support threshold for items that have low frequency and increases the support threshold for items that have high frequency. Koh et al. (2008) proposed an approach to find rare rules with candidate item sets that fall below a maxsup (maximum support) level but above a minimum absolute support value. They introduced an algorithm called Apriori-Inverse to find sporadic rules efficiently: for example, a rare association of two common symptoms indicating a rare disease. They later proposed another approach called MIISR. In their approach, the consequent of these rules is an item below maxsup threshold and the antecedent has support below maxsup but may consist of individual items above maxsup. In both approaches they use minimum absolute support (minabssup) threshold value derived from an inverted Fisher's exact test to prune out noise. At the low levels of co-occurrences of candidate item sets that need to be evaluated to generate rare rules. The Fisher test provided a statistically rigorous method of evaluating significance of co-occurrences and was thus an integral part of their approach. Like Apriori and MSApriori, RSAA is exhaustive in its generation of rules, so it spends time looking for rules which are not sporadic (i.e. rules with high support and high confidence). If the minimum- allowable relative support value is set close to zero, RSAA takes a similar amount of time to that taken by Apriori generate low-support rules in amongst the high support rules.

MOTIVATION

After discovering frequent patterns, approaches based on "multiple minsup framework" use minconf-based rule discovery technique proposed in [1] for mining association rules containing both frequent and rare items. However, minconf constraint may not disclose truly interesting association rules [9, 10]. Example: Consider the following market-basket data T from the grocery store, focusing on the purchase of tea and coffee. Let $f(\text{tea}; \text{coffee}) = 20$, $f(\text{tea}) = 25$, $f(\text{coffee}) = 90$ and $|T| = 100$. Using this data, we evaluate the association rule $\{\text{tea}\} \Rightarrow \{\text{coffee}\}$ to have support=20% and confidence=80%. In other words, it can be said that out of all the people who drink tea, 80% of them drink coffee. However, 90% of all the people drink coffee regardless of the fact that they drink tea or not. Thus, the knowledge that one drinks tea decreases the chances of a customer drinking coffee from 90% to 80%. Thus the rule, $\{\text{tea}\} \Rightarrow \{\text{coffee}\}$ is slightly misleading. As a result various interestingness measures, such as lift, correlation and all-confidence have been proposed for discovering useful association rules. Each measure has its own selection bias that justifies the rationale for preferring a set of association rules over another. As a result, selecting a right interestingness measure for mining association rules is a tricky problem. To confront this problem, a framework has been suggested in [11] for selecting a right measure. In this framework, authors have discussed various properties of a measure and suggested to choose a measure depending on the properties interesting to the user. In this paper, we make an effort to identify a set of properties that a user should consider for mining rare association rules.

CONCLUSION

Association rules containing rare items can provide useful knowledge to the user(s). Efforts are being made in the literature to mine frequent patterns containing both frequent and rare items. However, selecting a measure to generate rare association rules from the set of frequent patterns is an issue. This study presented an approach for finding both frequent and rare item set mining based on the Apriori framework. It uses automated item wise support thresholds for mining. This leaves the user free from finding an appropriate threshold for each dataset to run. These thresholds are automatically calculated and used by the algorithm.

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LIFE SAVING FROM FIRE USING RFID TECHNOLOGY**ARITRA DE****ASST. PROFESSOR****DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING****CAMELLIA INSTITUTE OF TECHNOLOGY****MADHYAMGRAM****DR. TIRTHANKAR DATTA****PROFESSOR & HEAD OF THE ECE DEPARTMENT****DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING****MCKV INSTITUTE OF ENGINEERING****LILUAH****ABSTRACT**

The RFID technology will save the lives of firemen as well as it will help to extinguish and control the fire in a very effective way. This paper requires some temperature sensing active RFID tags, RFID readers and high quality Host stations. The Steps for completing the project successfully are explained below:

Step1. – Temperature sensing active RFID tags covered with fire proof cloth will be placed in each floor of the fire affected building. The temperature sensing element will detect the temperature and store this temperature reading in the tag.

Step2. – RFID reader will be attached on the fire fighters ladder. Reader will only receive authenticated tag's data information (temperature reading) and it will transmit the data information to the host station for further processing.

Step3. – The RFID tag's temperature will be recorded from the RFID Reader. The Reader will transmit this data to the monitor or controller. So at a time the monitor is capable of observing different temperature for different location.

Step4. – According to the temperature of the different location of the building, the monitor or host station will take proper decision and it will inform to the firemen working in different location.

Step5. – After getting information or signal from the host station the firemen can work without taking risk of his life and able to control the fire.

KEYWORDS

a> fourth order band pass Bessel's filter> wrap to zero,

INTRODUCTION

The 1980s brought about the first widespread commercial RFID systems. The systems were simple ones. The 1990s were the significant in that RFID began to enter the main stream of business and technology. By the middle of the decade, RFID toll systems could operate at highway speed, meaning drivers could pass through toll points unimpeded by plazas or any barriers. As of 2007, it is obvious that numerous applications for RFID across a number of industries would soon emerge. In the coming years, RFID technology will grow further and further into the mainstream and become another part of every life, just as TV, PC's, and mobile phones already have.

This paper is based on one of the most upcoming technology which promises to shape our lives in the future. RFID is a next generation of wireless communication. RFID provides quick, flexible and reliable way to detect, identify, Track and control a variety of items electronically. Identification is performed in milliseconds without line-of-sight or physical contact. A typical RFID system consists of a tag, RFID reader, transceiver and a host station. It is a most promising technology that is gaining immense important in commercial today. Application of the RFID ranging from automated security system to electronic article surveillance, RFID technology solutions are receiving much attention in the research and development department of large industries or institutes.

FUTURE SCOPE OF WORK

In our project we have designed a system to detect an outbreak of fire using RFID system to achieve an efficient fire evacuation system. We can implement our designed system at over populated areas like hotel, shopping malls, and offices to detect fire at primary level. Using the same tracking people with their individual identification is possible which helps the rescue team to find out the victims stuck in the damaged area. RFID readers will be placed at the rooms, corridors, doors providing the full coverage of the premise. Individual RFID tags embedded with temperature sensor will be allotted to each individual of the organization consisting basic information about him/her serving the purpose of identification. If fire breaks out in any part of the organization, it will be detected instantly by the temperature sensor and comparing the information with the preset levels, matched level will be sent to the reader by the attached tag with the tag id. All readers will be connected in a network and controlled and monitored by a central controller. Up to our current progress evacuation process has to be performed manually by a rescue team and the people trapped in the affected area are not provided with sufficient knowledge of the nearest emergency exit. Hence, the future expansion of our project may be thought as providing the victims the knowledge of their own position and the safest way out. For this, we may have to place a display screen or an announcement system with each reader which will convey the message to the people around. The best will be achieved if the central controller system calculate the shortest path of way out by using a shortest path algorithm for each reader separated by their own reader id. The people under the coverage of these readers will be directed accordingly.

SIMULATION RESULTS AND EXPLANATION

FIG. 1: TEMPERATURE SENSOR RFID

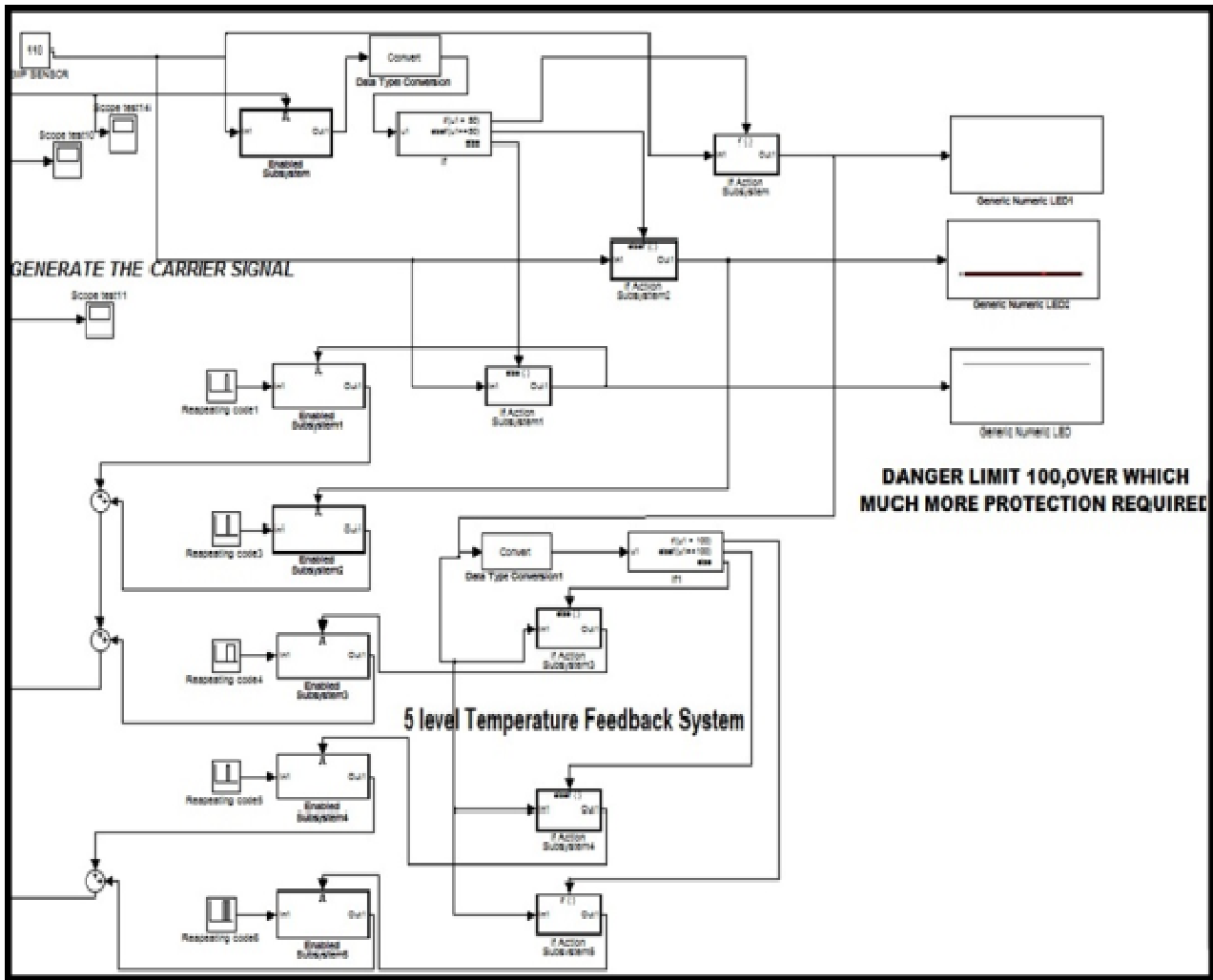
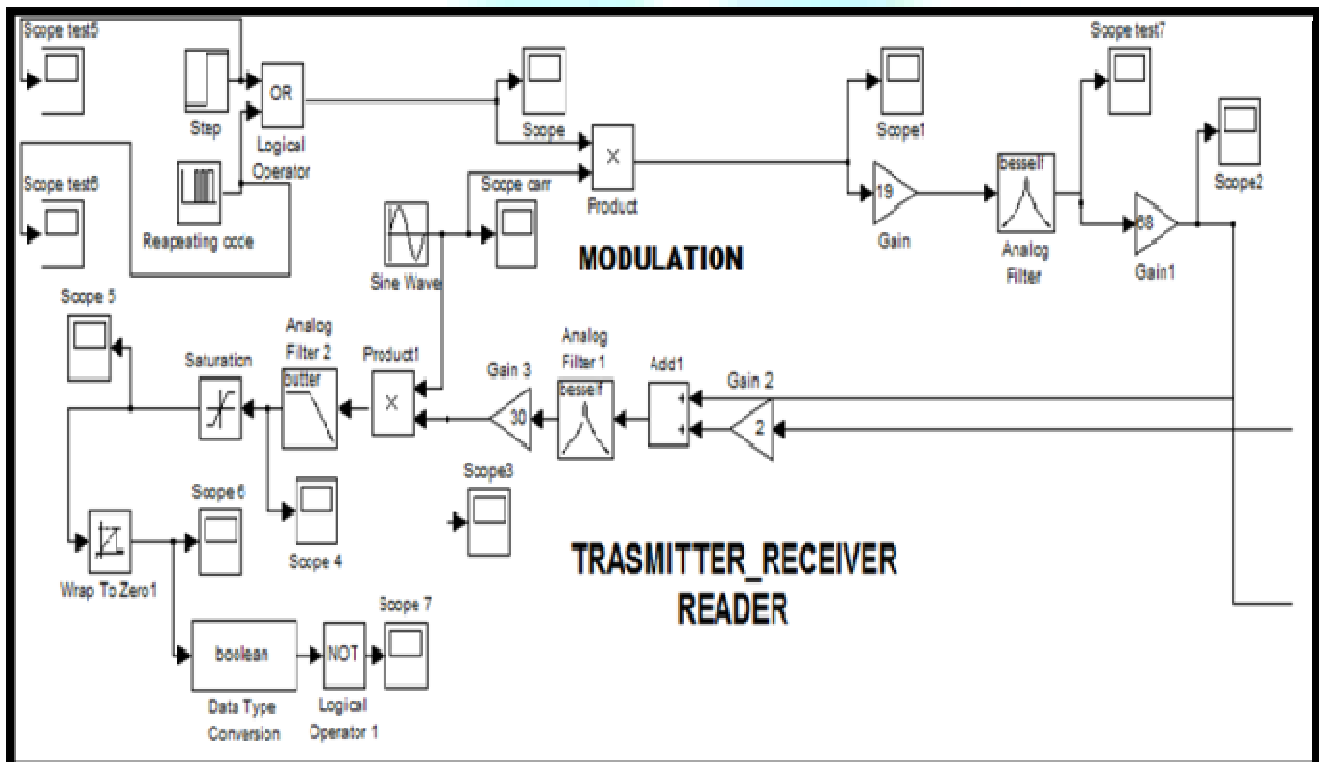


FIG. 2: RFID TAG



MODEL OF TRANSMITTE

First we have generated a modulated code along with the continuous carrier. The modulated code to enable the Tag and continuous carrier for backscatter of Tag ID. Here we have used 'Repeating sequence' and 'Step' and logical block 'OR' to get a pattern of Tag enabling code appended with a step function. The pattern is modulated with a carrier signal of 900MHz (which is in RFID usable range). Here the modulation scheme used is DSB AM. By using a 'Sine' and a 'Product' block the simulation is done. The amplitude of carrier is taken 1 mV.

1. The modulated signal is amplified and band-limited between 860MHz to 960MHz and transmitted through the antenna. Here 'Fourth order band pass Bessel's Filter' is used with lower pass band edge frequency 5.4e9 (in rad/sec) and upper pass band edge frequency 6.03e9 (in rad/sec) and 'Gain' blocks are used for amplifiers and antenna gain.

The results for simulation is shown in the following Scopes----Scope, Scope 1, Scope 2

MODEL OF RECEIVER AND READER:-The reader receives the direct signal from the transmitter and the reflected one from the surrounding environment. However strength of the signal reflected from the surrounding environment is weak and consequently can be neglected. It is essential to have a high isolation between the transmitting and receiving antenna of the reader. The receiver circuit should have a large dynamic range to handle the relatively large direct signal and detect the weak backscattered signal from the tag. In our simulation the effect of direct coupling is shown.

1. **Filter:** The backscattered signal from the tag and the direct signal from the transmitters added and passed through a Bessel type band pass filter (lower pass band freq=5.0*10⁹ rad/sec & upper pass band freq=6.5*10⁹ rad/sec). The receiver has multistage gain to amplify the weak signal. The waveform is shown in **Scope 3**
1. **Demodulation:** The Tag code is obtained by demodulating the received signal with the same wave used in the modulator part ('Sine wave') of reader and a 'Product' block is required. A low pass filter after demodulation can detect the code. The low pass filter type selected in the receiver is a 5th order Butterworth filter (pass band freq=55*10⁷ rad/sec) The waveform is shown in **Scope 4**.
2. **Reconstruction of Signal:** The resultant signal is reconstructed using a **saturation block** (upper limit=3.0V & lower limit=2.8V), followed by a **wrap to zero block** (threshold voltage=2.9V). (Same method as in the Tag Code reshaping) The tag ID is finally reproduced in **Scope no.7**.

FIRE ALARM BLOCK

1. In fire protection block we use one enable block, which is active when the transmitted id and receiver id is matched, and is deactivate when id is not matched.
2. The output of the enable block is connected with an 'if else' block, if transmitted and receive id is matched the 'if else' block is enable. The input of the block is temperature which is sensed in the room, the output is three display device, the display will on in according danger and inform to the operator who continuously monitoring the temperature.
3. If the temperature is very high, then a alarm will ringing and inform all the person about the danger of the situation.

CONCLUSION

As a conclusion we can say that this research work is very much effective for the fireman, who saves people from the fire, the person can get all the information automatically by using this RFID technology, so the person can inform about the danger to the other people also, save the life of people in more efficient and effective way.

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DIMENSIONS OF HEALTH CARE SERVICES AND THE USERS PERCEPTION ON SERVICE QUALITY IN TAMILNADU

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ABSTRACT

This study examines the service quality of healthcare centres - PHCs. It aims to assess the impact of service quality on overall patients satisfaction and their loyalty. The data collected from 688 respondents over 24 PHCs covering rural areas in Thoothukudi district. Descriptive statistical analysis, reliability test and exploratory factor analysis are used for arriving conclusion. A major determinant of physical environment quality is comfortability. The factors of answerability and attitude and behavior are responsible for service quality of doctors and nurses respectively. The factors of managerial services and special services are the important determinants for process quality and overall patient satisfaction and their loyalty.

KEYWORDS

health care, PHCs, service quality.

INTRODUCTION

Since eighties the income for the individuals increased significantly. This phenomenon has led to the boom for more concern for wellbeing-health. The value and lifestyles of the people are changing dramatically from perspective of survival to enjoying life. So quality of life requires healthy food, yoga, diet and the like. A significant portion of TV programs and books are assigned to show well-being or health-related stuff. High expectation toward health and well-being has led to demand for high quality medical services.

Quality of health care has been an issue of major concern to health professionals for a long time. One of the notable early advocates of quality health care was Florence Nightingale, who in the nineteenth century advocated the use of statistics and improve health care quality. They strongly believed that hospital operations should be driven by patients' interest and argued for process improvements on the basis of empirical data (Meyer and Bishop, 2007). So the patients interests are a fundamental part of service quality in modern health care systems. Alaloola and Albedaiwi (2008) observed that traditionally, managing service quality in health care entails such activities as checking providers credentials if they are qualified or not to provide the services; auditing clinical activities for the purposes of checking if clinical guidelines and protocols are being followed; auditing medical records as well as measuring outcomes in terms of whether the patients get better. The primary focus tends to protect patients from substandard care. The major problem however with the traditional way of managing quality in health services lies in its heavy reliance on technical clinical criteria and the absence of 'customers view' on the services provided.

SERVICE QUALITY

The quality has different meanings without accordance among scholars and managers. Parasuraman, Zeithaml & Berry (1988) made conceptualization and measurement of service quality. This focus group interview has captured not only the attributes of service quality but also the underlying psychological process by which consumers form service quality judgments. Finally they conclude that service quality judgments comprise of five underlying attributes that consumers evaluate on the basis of the expectancy-disconfirmation paradigm.

Naidu (2009) and Andaleeb (2001) observed that assessment of service quality in health services poses some interesting challenges that have engaged academics and practitioners for some time. Historically, the establishment of quality standards was delegated to the medical profession. Rashid and Jusoff (2009) noted that technical quality in health care services is primarily on the basis of technical accuracy of diagnoses or procedures as well as on compliance with professional specifications. However patients as customers of health care services often find themselves in a peculiar situation when it comes to assessing service quality as they are often not sufficiently qualified to assess all aspects of service quality particularly the technical aspects. Hardeep Chahal and Neetu Kumari (2009) identified the three dimensions of customer relationship management namely service quality, customer satisfaction and customer loyalty in healthcare sector. This study provides some important insights for CRM theory and practice. An understanding of SQ, CS and loyalty dynamics is a first step toward effective service management and the retention of customers in the long run. Three-way interactions between the main effects of SQ, CS and loyalty

yield additional insight into the relative importance of physical environment and IQ in customers' decision to be loyal, and that can provide a pave way for accomplishing CRM objectives.

METHODOLOGY

This research is basically focused on service quality of PHCs in Thoothukudi District of TamilNadu, India. It encompasses both primary and secondary data. The primary data were collected through a well structured interview schedule. The secondary data relating to health care services were obtained from text books, journals and websites. The primary data were collected from about 688 respondents who reside in the study area. In Thoothukudi District, there are 48 public health centres. Among these, 24 centres have selected as sample areas based on availability of minimum number of: doctors, nurses, beds and VHN as equal or exceeding four, three, thirty and seven respectively. The data were collected from about 688 respondents covering the villages of Karungulam, Pudukkottai, Alwarthirunagari, Ottanatham, Vellalankottai and so on.

Descriptive statistical analysis was used to describe respondents' demographic characteristics and to evaluate service quality perceptions on health care services. An exploratory factor analysis was performed on a total of 55 perception attributes included in the questionnaire which are analysed in five different aspects in order to determine underlying dimensions of health care services. Principal component analysis with varimax rotation was conducted. Items with Eigen values equal to or greater than 1, factor loadings above 0.5, and factors which contain at least three items were retained (Hair et.al 2006). Furthermore, a reliability analysis was performed to test the reliability of the scale and inner consistency of extracted factors. For this purpose, Cronbach's alpha coefficients were calculated. The Cronbach's alpha values are detected as greater than 0.60 (Nunnally, 1978). Prior to running the factor analysis, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and the Bartlett's test of sphericity were performed.

RESULTS AND DISCUSSIONS

The demographic characteristics of the sample are analysed and found that among the total respondents of 688, the males are little higher than females by nearly 5 percent. The sample was dominated by middle aged (31- 40 years). As far as educational qualification is concerned, more than 42 percent of the respondents are having the educational qualification at college level. About 42.9 percent and 28.8 percent of the respondents belong to the occupation of company and coolie respectively. In addition, 64.5 percent of the respondents drawing their family annual income exceeds Rs. 50000. More than 96 percent of the respondents are committed with their family i.e. married with having two children.

TABLE 1: DEMOGRAPHIC PROFILE OF THE RESPONDENTS

Items	Counts	%	Items	Counts	%
Gender: Male	362	52.6	Family Annual Income: Below Rs. 10000	52	7.6
Female	326	47.4	10000-20000	82	11.9
Age: Below 20	5	0.7	20001-30000	37	5.4
21-30	166	24.1	30001-40000	31	4.5
31-40	240	34.9	40001-50000	42	6.1
41-50	169	24.6	Above 50000	444	64.5
Above 50	108	15.7	Marital Status: Married	662	96.2
Education: Illiterates	124	18.0	Unmarried	26	3.8
School level	269	39.1	Family Size:		
College level	295	42.9	Two	314	45.6
Occupation: Agriculturist	93	13.5	Three	158	23.0
Coolie	198	28.8	Four	195	28.3
Govt employee	102	14.8	Above Four	21	3.1
Company	295	42.9			

PHYSICAL ENVIRONMENT AND SERVICE QUALITIES

The range of physical environment quality perception item varies from 1 (highly dissatisfied) to 5 (highly satisfied). The mean scores of health care perceptions range from 2.31 to 3.35 and their standard deviations (S.D.) vary from 0.843 to 0.992. The lowest perception item is 'natural light', on the other hand, the highest perception item is 'oxygen services'. The overall mean score for physical environment quality perception item is 2.90. This score indicates rather high perceptions of health care services (annexure i). The generated score of KMO is 0.752 and highly significant Bartlett's test of Sphericity supported the appropriateness of using factor analysis to explore the underlying structure of perceived physical environment quality of health care services. The significance value is 0.00.

TABLE 2: FACTOR AND RELIABILITY ANALYSES OF PHYSICAL ENVIRONMENT QUALITY AND SERVICE QUALITY

Factors on Physical Environment Quality						Factors on Service Quality						
Items (n=19)	1	2	3	4	5	Doctor			Nurse			
						Items (n=10)	1	2	Items (n=9)	1	2	3
v5	0.840					v8	0.827		v5	0.847		
v6	0.783					v7	0.780		v3	0.870		
v8	0.778					v4	0.763		v4	0.867		
v4	0.760					v3	0.731		v7	0.866		
v3	0.633					v6	0.716		v6	0.849		
v1	0.559					v2	0.674		v8		-0.857	
v14		0.802				v10	0.662		v1		0.807	
v7		0.693				v1		0.817	v9			0.769
v13		0.683				v5		0.688	v2			-0.627
v19		0.632				v9		0.662				
v10		0.573										
v17			0.801									
v2			0.795									
v18			0.764									
v9				0.880								
v12				0.715								
v15					0.774							
v16					0.669							
v11					0.585							
E.V.	3.937	2.850	2.796	1.969	1.879	E.V.	3.917	2.241	E.V.	4.037	1.765	1.169
% of v	20.722	15.002	14.715	10.362	9.889	% of v	39.172	22.414	% of v	44.854	19.617	12.984
C.A.	0.710	0.710	0.187	0.452	0.187	C.A.	0.894	0.619	C.A.	0.923	-2.025	-3.36
KMO	0.752					KMO	0.882		KMO	0.841		

The exploratory factor analysis extracted five factors, which accounted for 70.69 percent of variance (% of v) in the data. Most of the factor loadings are greater than 0.60 implying a reasonably high correlation between extracted factors and their individual items (table 2). The range of communalities (com.) of 19 items varies from 0.524 to 0.834 indicating that a large amount of variance has been extracted by the factor solution. Since the fourth factor contained only two items, it could not be considered as a factor and is not interpreted. In total 70.69 percent of the variation in a sample has been explained by 4 factors that 17 variables load to.

The four remaining factors are labeled as F1 - Comfortability, F2 - Responsiveness, F3 - Integrity, F5 - Facility. The first factor contains most of the items and explains most of the variance. Thus, health care service reliability is an important determinant of physical environment quality. The sum squared value of factor loading relating to a factor, is referred to as Eigen value (E.V.), which indicates the relative importance of each factor in accounting for the particular set of variable being analyzed. Factor 1 (Comfortability) has the highest Eigen value of 3.937. Factors two, three and five have the Eigen values of 2.850, 2.796 and 1.879 respectively. Hence an inference can be drawn that the rotated and labeled factor one - comfortability determines the physical environment quality of PHCs. The Cronbach's alpha (C.A.) values are detected as greater than 0.60. The Cronbach alpha internal consistency reliability estimates for factor one and two 0.710 each, factors three and four are 0.187 and 0.452 respectively. The overall perception scale is 2.246 and indicates its high reliability.

Average scores of service quality of health care perceptions of doctors and nurses are shown in annexure ii. The mean scores of doctor perceptions range from 2.36 to 3.09 and their standard deviations vary from 0.745 to 0.868 and the nurse mean scores range from 2.36 to 3.11 and their standard deviations vary from 0.745 to 1.044. The lowest perception on doctor is 'communication with staff' and the highest perception item is 'operation competence'. The overall mean score of doctor perception item is 2.77. The lowest perception on nurse is 'patience' and the highest perception item is 'nursing expertise'. The overall mean score of nursing perception item is 2.65. Since the scores of KMO for service quality of doctor and nurse are higher 0.882 and 0.841 which significantly support the appropriateness of using factor analysis to explore the underlying structure of service quality.

The exploratory factor analysis of doctor extracted two factors and three factors in case of nurses which accounted for 61.58 and 77.45 percent of variance in the data respectively. In the case of nurse, the second and third factors contained two items only so they cannot be considered as factor and are not interpreted. In total 77.45 percent of the variations in a sample has been explained by one factor that five variables load to. The ranges of communalities for doctor and nurse are ranged from 0.691-0.829, 0.438-0.923 respectively indicating that a large amount of variance has been extracted by the factor solution.

The factors on service quality of doctor are labeled as F1-answerability, F2-presentation. The first factor contains most of the items and explains most of the variance. Thus, answerability is an important determinant service quality for doctor. The Eigen values for factor one and factor two are 3.917 and 2.241 respectively. A major factor that influences the service quality of nurse is labeled as behavior. This factor contains many items and explains most of the variance. The E.V. of factor one is 4.037. Thus it seems a lower degree of attitude and behaviour of nurses in the health centres. The cronbach alpha internal consistency reliability of doctor and nurse estimates are 0.894 (F1), 0.619 (F2) and 0.923 respectively. The overall perception scale is 1.513 (doctors) and 0.923 (nurses) which indicate high reliability.

PROCESS QUALITY AND PATIENTS SATISFACTION AND LOYALTY

Average scores of process quality of health care perceptions are shown in annexure iii. The mean scores of health care perceptions range from 2.57 to 3.30 with their standard deviations ranging from 0.927 to 1.053. The lowest perception item is 'administrative function' and the highest perception item is 'blood bank services'. The overall mean score for process quality perception item is 2.93. Since the KMO measure for sampling adequacy exceeds 0.6 and the value in significant level is less than 0.05, the data are suitable for factor analysis. The seven variables are grouped under two factors depending upon Eigen values of each factor.

TABLE 3: FACTOR AND RELIABILITY ANALYSES OF PROCESS QUALITY AND PATIENT SATISFACTION AND LOYALTY

Factors on Process Quality			Factors on Patient Satisfaction and Loyalty			
Items (n=7)	1	2	Items (n=10)	1	2	3
v2	0.761		v5	0.878		
v6	0.712		v3	0.751		
v5	0.710		v4	0.747		
v1	0.707		v1	0.670		
v4	0.700		v6	0.559		
v7		0.811	v10		0.916	
v3		-0.739	v7		0.849	
			v9		0.706	
			v8		0.525	
			v2			0.864
E.V.	2.683	1.451	E.V.	3.063	2.709	1.371
% of v	38.322	20.724	% of v	30.630	27.090	13.714
C.A	0.637	0.452	C.A.	0.637	0.525	0.132
KMO	0.709		KMO	0.696		

The factor analysis extracted two factors, which accounted for 59.046 percent of variance in the data. Since the second factor contained two items, it could not be considered and is not interpreted. The percentage of variance has explained by one factor in which five variables load to. The communalities of seven items range from 0.507 to 0.666. The first factor is labeled as F1 - Managerial Services. This factor contains five items and explains most of the variances. The reliability is an important determinant of perceived process quality. The Cronbach's alpha is used to analyze the reliability of each construct. The Cronbach's alpha internal consistency reliability estimates are 0.452 (F2) and 0.637 (F1). The overall perception scale is 1.089 which indicates its high reliability.

The mean scores of patient satisfaction and patient loyalty of health care perceptions vary from 2.61 and 3.25 with their standard deviations ranging from 0.951 to 1.034. The lowest perception item is 'up-to-date health care technique'. The highest perception item is 'trust' with those of centres. The overall mean score for perception item is 2.94. This score indicates high perceptions of health care services (annexure iv). The generated score of KMO is 0.696 and significantly support the appropriateness of using factor analysis to explore the underlying structure of patient satisfaction and patient loyalty.

The results of the factor analysis of health care perceptions are patient satisfaction and their loyalty are shown in table 3. The factor analysis extracted three factors, which accounted for 71.43 percent of variance in the data. The third factor contains only one item, so it could not be interpreted. The communalities of nine items range from 0.412 to 0.904. The two remaining factors are labeled as F1 - Special services, F2 - Reliability. The generated items with Eigen value more than one are included 10 items, the value of 7.143. Hence a factor 1: special services dominates with five attributes to determine the patients' satisfaction and their loyalty towards health care services.

Reliability is an analysis of a measure's ability to provide consistent results. Internal consistency using Cronbach's alpha, is shown to be appropriate with five point scale data. The first subscale with Cronbach alpha of 0.637 contains five items related to health care technique, indoor services, patient participation in suggestion and visiting for all treatments. The second subscale with Cronbach alpha of 0.525 contains four items related to emotional attachment, satisfaction regard to doctors, trust and recommendation. It has an overall Cronbach's alpha value of 1.294.

CONCLUSION

The patients prefer PHCs because they provide better health care services in rural areas. Service quality improvement programs should have initiated to identify the patients' expectations and assessing how well the practice may be doing on a variety of service quality dimensions with the aim of ensuring patient satisfaction. Patients' comfortability ensures the physical environment quality of health centres. Regarding Service quality the factors – answerability of the doctors and attitude and behaviour of the nurses are playing a major role. A factor of managerial services confirms the process quality of the centres and special services dominates the patients' satisfaction and their loyalty towards health care services. Finally, the health care centres should continue to collect data about perceived service quality from the patients on regular basis. This way they can keep track on perceived service quality of their hospital and continuously improve their service quality.

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APPENDIX

ANNEXURE I: AVERAGE SCORES OF PHYSICAL ENVIRONMENT QUALITY

Attributes	Mean	S.D.	Com.
v1 Natural lights	2.31	0.843	0.524
v2 Cleanliness of hospital	2.65	0.831	0.665
v3 Internal atmosphere	2.99	1.035	0.834
v4 Peaceful wards	3.09	1.011	0.740
v5 Hygienically clean wards	3.18	0.964	0.762
v6 Proper placement of beds	3.04	1.069	0.656
v7 Supportive facilities	2.55	0.962	0.715
v8 Telephone facilities	2.99	0.989	0.682
v9 Oxygen Services	3.35	0.992	0.802
v10 Bed sheets are changed daily	3.11	1.122	0.765
v11 Continuous water services	3.07	1.037	0.616
v12 Well equipped operation theatre	3.11	1.140	0.732
v13 Good technical services	2.90	0.958	0.730
v14 Equitable treatment to patients	2.50	1.043	0.704
v15 Hygienic life style	2.81	0.879	0.702
v16 Special service to needy	2.98	0.930	0.643
v17 Societal commitment	2.66	0.901	0.687
v18 Integrity and honesty in medical practices	2.93	0.977	0.702
v19 Employee role towards social responsibility	2.96	0.942	0.769
Overall mean for 19 attributes	2.90		

ANNEXURE II: AVERAGE SCORES OF SERVICE QUALITY

Doctor				Nurse			
Attributes	Mean	S.D.	Com.	Attributes	Mean	S.D.	Com.
v1 Communication with staff	2.36	0.745	0.713	v1 Behaviour with your friends and relatives	2.45	1.031	0.691
v2 Helpful and supportive	2.83	0.760	0.736	v2 Explain about technical treatment	2.89	0.901	0.780
v3 Attitude	2.88	0.857	0.670	v3 Attitude and behaviour	2.67	0.955	0.786
v4 Patient involvement	2.64	0.890	0.627	v4 Helpful and supportive	2.54	0.854	0.766
v5 Availability	2.50	0.882	0.494	v5 Caring	2.62	0.903	0.772
v6 Patience	2.69	0.811	0.596	v6 Answer Queries	2.60	0.859	0.792
v7 Professional Values	2.88	0.923	0.680	v7 Listening Ability	2.58	0.865	0.776
v8 Answer Queries satisfactory	2.71	0.779	0.730	v8 Nursing Expertise	3.11	1.044	0.780
v9 Operation competence	3.09	0.868	0.474	v9 Patience	2.36	0.745	0.829
v10 Diagnosis diseases correctly	3.07	0.879	0.438				
Overall mean for 10 attributes	2.77			Overall mean for 9 attributes	2.65		

ANNEXURE III: AVERAGE SCORES OF PROCESS QUALITY

Attributes	Mean	S.D.	Com.
v1 Good housekeeping services	2.64	1.016	0.507
v2 Listening ability of supportive staff	3.02	0.872	0.666
v3 Interaction with frontline staff	3.08	1.064	0.574
v4 Grievances handling system	2.88	1.024	0.518
v5 Administration function	2.57	0.927	0.545
v6 Laboratory services	3.00	0.954	0.592
v7 Blood bank services	3.30	1.053	0.732
Overall mean for 7 attributes	2.93		

ANNEXURE IV: AVERAGE SCORES OF PATIENT SATISFACTION AND LOYALTY

Attributes	Mean	S.D.	Com.
v1 Up-to-date health care technique	2.61	0.951	0.614
v2 Good technical facilities	2.86	0.959	0.857
v3 Indoor services	2.74	0.979	0.710
v4 Consciousness towards patient participation	2.74	0.910	0.618
v5 Patient participation in suggestion	2.70	0.921	0.775
v6 Visit for all treatments	3.23	1.036	0.635
v7 Satisfaction regard to doctors	2.93	1.011	0.807
v8 Recommendation	3.17	1.052	0.412
v9 Trust	3.25	1.034	0.813
v10 Emotional attachment	3.13	1.203	0.904
Overall mean for 10 attributes	2.94		

STRATEGIES FOR SUSTAINABILITY AND QUALITY DEVELOPMENT OF MANAGEMENT INSTITUTES

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ABSTRACT

The rapid growth and proliferation of business school has led to the emergence of some excellent schools and some having dubious quality and that is why business education in India has come under serious scrutiny. The need for management graduate cannot be wished away, as the Indian industry and business is on a growth mode and need qualified manpower to power the trust. There is a gap in the kind of demand and the output of graduate in business. Management education has been expanding at a rapid rate in our country, taking into account the increasing need for professionally trained managers in a developing economy. This trend is very healthy and desirable. At the same time, one has to be cautious that the rapid expansion does not result in a decline of the quality education and training. There is every reason to suspect that this has happened. In view of this the present paper provides the strategies for Sustainability and Quality Development of management institutes.

KEYWORDS

Development, Education, Institutes, Management, Sustainability.

1. INTRODUCTION

ustainability is moving beyond a specialized staff role to a critical component of all business functions. In order to stay competitive in today's global business environment, and maintain a competitive advantage in emerging markets, it is essential for organizations to adopt sustainable business practices and strategies. The differences between education and industry are in four ways, objectives, processes, input and outputs. For industries the measure in which they use as an indicator of the effectiveness of organization is the profit, while the objectives in education are not simple. In fact, the objectives of every professional education institution should cover the answer to this question precisely, that what should a good education provide for learners? The objectives of every school, or university, should be to give each student opportunities to improve in knowledge, know how, wisdom and character. The first concept enables students to understand and the second one facilitates them to do accordingly, the third one enables students to set priorities and finally the character provides the 'possibility for them to cooperate, to persevere and to become respected and trusted members of society.

2. PURPOSE OF THE STUDY

Looking at the mushrooming growth of institutions imparting management education in the country, serious doubts are being raised on the quality, capability and desirability of the institution to meet the challenges of imparting management education. Since modern business organizations demand innovations and ability to cope with the rapidly changing environment, there is need to constantly interact with the system and improve the scope of learning, but the present management course out of necessity are constrained to teach the past. In view of this, the paper aims to provide the strategies for the sustainability and quality development of management institute's.

3. METHODOLOGY ADOPTED

The researcher has done extensive literature survey. The data has been collected by referring the various research articles, books and websites. The collected data has been analyzed and then the outcome of all this exercise is presented in the form of this article.

4. AN OVERVIEW OF THE RELEVANT LITERATURE**B-SCHOOL SURVEYS-ITS UTILITY TO THE INTERESTED**

N.P. Manjunath in his article explains that the ranking / grading of B-Schools are done on a reasonable basis. But the system does not offer the desired benefits to the community of students, their parents and business houses. Therefore, all the B-Schools must participate in the grading; and separate the gradation for academic and placement purposes. The author says that the business magazines conduct an annual survey of B-Schools and publish their grading in accordance with the recommendations of the Expert Survey Committees. The members of the expert committee develop the parameters, weightage for the parameters and other details to conduct their survey.

DETERMINANTS OF BUSINESS SCHOOLS SELECTION BY FINAL YEAR ENGINEERING STUDENTS: AN EXPLORATORY STUDY

Saptarshi Purkayastha points out that the aim of this paper was to determine the various factors that the final year engineering students would like to consider in order to decide on a business school for higher education. The author has concluded this article by mentioning his finding that five different factors are important for engineering students while selecting a business school for pursuing higher education in management. These factors are:

1. Placements (type of companies that have come for placement, the percentage of students getting placed, average initial salary and industry association).
2. Academic factors (diversity of subjects, variety of specialization, foreign collaboration and students' exchange).
3. Personal comfort zone (financial scholarship, accreditation, city in which the B-School is located).
4. Reputation (magazines and journals published, business ranking and collaboration with foreign universities).
5. Image and placement (initial salary, foreign placements, lateral placements and collaboration with foreign universities).

REWARD MANAGEMENT IN BUSINESS SCHOOLS

Colonel VRK Prasad in this article points out that the primary aim of rewards is to retain and stimulate the employees to reach higher levels of performance. Performance without quality is meaningless, more so, in an educational institution that moulds the young enthusiasts who in turn shape the economic destiny of a country. Rewarding 'quality performance' among the teaching fraternity is of utmost importance in the progress of a nation as no nation can develop without 'quality education'. Motivating employees has never been a challenging as it is today.

MEASURES FOR ENHANCING COMPETITIVENESS OF HIGHER EDUCATION

Sudhanshu Bhushanin this article point out that from a practical standpoint enhancing competitiveness in higher education implies;

- i) Establishing university-industry linkages.
- ii) Internationalizing curricula.
- iii) Identifying universities and specific courses.

IMPACT OF GLOBALIZATION AND WEO ON HIGHER EDUCATION IN INDIA

J.G. Valan Arasu in this article focuses the attention on need for quality in higher education. He mentions about what our former Prime Minister Pandit Jawaharlal Nehru declared that is, "if all were well with our educational institutions, all would be well with the nation. Educational institutions are intimately linked with society at large. They are the temples of knowledge. They are the agents of social change and transformation."

PRIVATIZATION OF HIGHER EDUCATION IN THE ERA OF GLOBALIZATION

RaminderSingh has pointed out that ever since the initiation of economic reform policies in the last decade of the twentieth century; LPG (Liberalization, Privatization and Globalization) has become the mantra of progress for our country. Thriving on the increasing spread of consumerism and information technology, it is gaining immense currency in the intellectual and socio-cultural spheres.

MANAGEMENT OF UNIVERSITIES IN INDIA: MAJOR CHALLENGES AND REQUIRED RESPONSES

Surendra Singh in this article explains that universities today are supposed to impart quality education to develop competent and capable human resource required for nation building. The author mentions that universities in many parts of the country are so badly mismanaged that quite frequently there are agitation of students, employees and teachers on one pretext or the other leading to fairly widespread indiscipline and damage to precious university property.

APPLICATION OF MODERN MANAGEMENT TECHNIQUES TO EDUCATIONAL ADMINISTRATION –AN OVERVIEW

Dr. P.A. Sathyanarayana in this article describes that educational administration by its very nature, is generally tradition-based, and one of the important functions of education is preservation of tradition. This is particularly true of the developing countries of the Asian region which ride in their ancient culture and hoary tradition. This attitude manifests itself prominently into what is called 'maintenance administration' which believes in keeping the routine going. This pattern worked satisfactorily when education was the monopoly of the few and education systems were rather static in character and limited in size.

IT BASED KNOWLEDGE MANAGEMENT FOR INSTITUTIONS OF HIGHER EDUCATION: A NEED

Ashish Kumar and Arun Kumar are of the view that technology makes a system more convenient and efficient. But for transforming tit-bits of data into information, the modern researcher needs tools, which can filter the loads of information for any significant professional use.

GLOBALIZATION AND HIGHER EDUCATION IN INDIA

Samsuddin Ahmed pointed out that India is having one of the largest systems of higher education in the world. Old syllabi, unscientific evaluation system, malpractices in teacher's appointment, poor and irregular salaries, and low level of infrastructural facilities are some of the burning problems of the present educational system.

STRATEGIES FOR BUILDING SUCCESSFUL B-SCHOOLS IN INDIA

Dr. P.L.Rao has pointed out that most of the B-Schools students behave as if they are still in Degree College. It is important that B-School students should be oriented during the initial months that they are now in a professional course which requires acceptable personality traits and individual skills which are sine-qua-non for entering into the profession. For this purpose, the B-School should catch them young and closely monitor during their orientation stage. For this purpose, certain strategies should be evolved. Close co-ordination between the students and faculty is essential. For this design, the class may be divided into four groups. One full time faculty is attached to each group who would be their mentor till they complete their two-year course.

HOLISTIC APPROACH TO MANAGEMENT EDUCATION

Prof. S.Satya has pointed out that on analyzing the vision statements of some of the business schools and on interviewing a couple of professors teaching in the B-Schools, it is clearly evident that accumulation and dispersing of information on a few sets of subjects is not their mission in this era of information proliferation. The complete development of an individual to its fullest potential to serve the society at large will be a good enough goal to set and achieve.

REDEFINING MANAGEMENT EDUCATION

Dr. Vijai S. Caprihan in his paper explains the various factors responsible for contributing to the extremely poor brand equity of many widely scattered management institutes. These factors include:

- i) The mushrooming of the institutes. The institutes have been set up for commercial reasons of self profit, rather than to develop the required caliber of professional that can meet the requirements of the industry;
- ii) The lack of full time experienced faculty;
- iii) Minimal or nil industry interaction;
- iv) Courses have been designed more as an off-shoot of commerce, rather than a need based management curriculum, which require frequent updating;
- v) Excessive work burden on teaching faculty which dissuades them to develop adequate time on research or consultancy.

BUSINESS EDUCATION IN INDIA LOOKING BEYOND 2000

Dr. R.M.Pant and Prof. N. Upadhyay in their paper explained that in the globalized world, competitiveness depends not lonely on productivity alone but also on various other factors. The competitive standards are quality, variety, customization, services, convenience and time lines. Each of the successive factors depends on human competence, making it clear case for incorporation of the Total Quality management (TQM) culture in education.

5. STRATEGIES FOR SUSTAINABILITY AND QUALITY DEVELOPMENT OF MANAGEMENT INSTITUTES**1) MOTIVATION OF EMPLOYEES**

Motivating the employees can be done through effective reward management. Effective reward management is also seen as a strategic tool to remain competitive and to deliver quality. University reward systems should be strongly based on research performance. Human resource is an important resource in any organization. As per the Herzberg's two factor theory both hygiene factors (viz. working conditions, salary, status, security etc.) and motivators (viz. responsibility, advancement, recognition of achievement etc.) should be taken into consideration and accordingly the employees should be motivated to create a sense of belongingness in them towards the institute in which they are working. Thus, motivated employees can perform effectively, producing 'Quality' output from their work. The difference between a business enterprise and an educational institution (read Business School) is rather minute in the sense that the objectives are commercial in case of the former, while it is the quality of the student output that is concern in the later. In a business enterprise or in a B-School motivated employees are responsible for enhancing quality. Competitive strength of the B-School can be enhanced by injecting mindset of the total commitment towards work and nothing but excellence in performance.

2) RESEARCH ORIENTED FACULTY

Faculty of B-School should be highly research oriented. This can be done by a keen interest in the problem identification, conducting survey, collect the data, analyze it, come to conclusions and publish the research work so that the created knowledge can be disseminated. Presentation of papers at national and international levels boosts the image of the institution. The research work carried out by the faculty members gives them an opportunity to reveal the truth behind a particular problem and then to come out with constructive solutions that will help to minimize or eliminate the problem. Research helps in improving the analytical abilities of the faculty members. The B-School in which the faculty is working can get the consultancy assignments from the industrial sector and that can be a source of additional earning for the institute. The students get benefited from such research oriented faculty since such faculty can always guide the students in their academic projects about the correct method of carrying out the research work.

3) FORMATION OF QUALITY CIRCLES (QCs)

Quality Circle is a small group of employees who meet regularly to solve work related problems in their work area. The group may have six to eight members with a leader and they usually meet once a week after their working hours. Working conditions, absenteeism and such other problems are discussed in Quality Circle. Membership of quality circle is voluntary. Members are from the same work area or doing similar type of work i.e. it is a homogeneous group. Members meet for about an hour every week. Members meet to identify, analyze and resolve work related problem. Members resolve work related problems leading to improvement in their total performance. The members in Quality circle include the steering committee / departmental committee, facilitators, circle leader and circle members. The support of the top management is also of great importance. In a B-School also, one can form quality circles such as quality circle formed by the faculty members, quality circle formed by the non-teaching staff, quality circle formed by the students etc. and then they can really contribute in the development of individual and the institute's overall performance. Some of the tangible benefits that can be achieved through formation of Quality Circles are better quality, improved productivity, higher safety, waste reduction, reduced absenteeism and reduced grievances. Some of the intangible benefits that can be achieved through formation of Quality Circles are enriched quality of life, mutual truth, efficient team work, better human relations and participative culture.

4) INTERNATIONALIZING CURRICULA

It means making the curriculum relevant to meet the needs of the business world in this highly competitive world. Try to give the best inputs to the students by timely updating the syllabus. Curriculum should suit the requirements of the industry. The employers need not spend the time in training the newly joined managers, but the needs of the employers should be well studied in advance and as per that the curriculum should be prepared so as to make our students more effective.

5) ESTABLISHING INSTITUTE-INDUSTRY INTERFACE

The institute should have a strong industry- institute interface through the arrangement of Management Development Programmes (MDP's), Training workshops for the executives, Seminars and conferences through which one can understand the expectations of the business world from academic institutions and accordingly the institutes can take the requisite steps to fulfill these expectations. Management education has great benefits to confer to the country. Industry and management education are now highly co-related with each other.

6) RESEARCH CONSULTANCY

A B-School can carry out research for a company with specific terms. The research work that can be done for company may be related to any functional area such as Marketing Management, Production Management, Human Resource Management, Financial Management etc. The B-Schools can take the consultancy assignments and then assist the company through the specialized knowledge that the faculty possess and the research work carried out by the B-School. Such assignments can also give the opportunity to the students to 'feel' the nature of the business problems and to carry the research to find the solution to such business related problems.

7) RECRUITMENT OF FACULTY

To ensure the selection of 'right man for the right job at the right time' no compromise should be made with the prescribed standard of qualification of faculty and employees while selecting or giving promotion to them. Also, AICTE requirements regarding the number of faculty members should be met. As the faculty members are the real source of knowledge and the idols for the students, one should be very careful in selection of the faculty members. Political pressures or 'sifarish' of any kind should not be allowed to overtake merit at any stage of selection. Faculty selection should be made on merit only and compromises should not be the part of the selection.

Such merit based selection will surely help the institute to build the good image in the mind of the stakeholders.

8) INSTITUTIONAL WEBSITE

Quality related information should be provided to the stakeholders for the promotion of quality literacy. Authentic and unambiguous information should be provided to the stakeholders. Institutional website is the good platform to make the data available. Now, in the age of IT everyone is quite familiar with the internet and its wide utility. The institutional website should be developed with the view that anyone can have the understanding of the major achievements of the institute and its strengths. The prospective students can use this website as the source of information for taking a decision of admission in the institute. Thus, institutional website is a platform to create the 'Brand Image' of the institute.

9) DEVELOPMENT OF CASE STUDIES AND TEACHING MATERIALS

There is a need to venture wide spread management research including case research and publications. A case represents real business situation / management problem to be tackled by a manager or a decision maker. Cases reconstruct actual decisions made in real situations that a manager has come across. Developing the case studies by the faculty can give the student an understanding of various practical aspects and the analysis of these case studies can develop the logical reasoning- induction and deduction- in dealing with a real situation where no ready-made solution is available. Also development of the teaching material by the faculty can make the student use the notes prepared by their faculty to gain the insight into the subject under study.

10) FACULTY DEVELOPMENT

Faculty members being the most crucial factor in the management education process, it is a stupendous task to meet the faculty needs of the rapidly expending management institution system. A crash programme to train faculty of the management teachers should be carried at various B-Schools in order to enable them discuss the current issues and come up with fresh innovative ideas to be implemented in management education.

11) PEDAGOGY

The 21st century has opened new hopes for re-engineering our approach to pedagogical producers at all levels of education in the new domain of information technology. Needless to observe that main focus of pedagogy still remain the art of disseminating and relating knowledge to the needs and mental equipments of the educated. Now it is the need that the pedagogy should be more learner centered than trainer centered, more case input than lecture method, more remainder workshops to envelope deep thinking on the subject, more exposure to realities of industries and work environment, project method should be directed to promote discover learning more emphasis on simulation, role-playing and socio drama.

12) INCULCATING VALUES AMONG FUTURE MANAGERS

Future managers should know the practical aspects of work ethics, like how ethics can be developed, how individual makes his/her values, what are the contents of ethics which can be utilized to motivate human resources at work place since, organizations are not having ethics, only people have. Values are something that can not be defined and taught, they are only inculcated over a period of time. To fulfill the expectations of the recruiters from the B-School graduates on whom the company or organization can rely, an institute should enhance the existing values and skills. Business ethics is something that should not be compromised. Developing values that enable decision-making is the need of the day.

13) CONTINUOUS IMPROVEMENT PHILOSOPHY (KAIZEN) SHOULD BE FOLLOWED

It should be the culture in the management institute that today should be better than yesterday and tomorrow should be better than today in every possible aspect. Even a smaller improvement from everyone and anyone in the institute is most welcome. In the words of Mother Teresa, a lady who believed in the power of one individual's contribution, "We ourselves feel that what we are doing is just a drop in an ocean. But the ocean would be less because of that missing drop."

14) BELIEVE IN SYNERGY

"Net is greater than the sum of the individuals." When two persons come together as a team, the net effect produced will be greater than what they would have produced by working individually. The increased output of teamwork is referred to as the 'synergic effect'. In this era, the mandate before every leader is to bring in the effect of synergy in every function of the organization.

6. CONCLUSION

For sustainability and development of the management institutes, constant focus should be there on the fact that all the activities and resources are linked in the creation of "Value" in the service more effectively and efficiently. Here we need to mention that effectiveness is 'doing right things' and efficiency is 'doing things right'. Efficiency is related with optimum utilization of the available resources while effectiveness is related with choosing the right course of action. It's needless to mention that to be 'quality' enhancing activity effectiveness should precede efficiency and one should focus on 'doing right things right'! We believe that the purpose of MBA program is to provide a rich and diverse array of learning resources, or, if you like, learning opportunities, with which students are encouraged to engage to satisfy their educational needs. The learning opportunities must be broadly conceived to accommodate the different learning agendas that students bring to the MBA program. The learning resources in B-Schools must develop critical thinking and action skills in our students. The MBA product is directed at achieving more informal practitioners through the development of these critically reflective and action-oriented skills.

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EMPIRICAL ASSESSMENT OF CAUSE RELATED MARKETING AND CONSUMERS PERSPECTIVE: A CASE OF IDEA CELLULAR'S '3 G PE BUSY' CAMPAIGN

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ABSTRACT

This study tends to analyze the impact of cause familiarity and cause importance on customer's attitude towards cause brand alliance. It explores the relationship between such alliance and purchase intentions and also checks whether such relationship is mediated by corporate brand image. It tries to analyse the attitude of respondents towards alliance between the cause and the brand 'Idea'. '3 G pe busy' campaign created positive attitude towards cause brand alliance. It has not enhanced the purchase intentions for 'IDEA'. It proves that the relationship between attitude towards cause brand alliance and purchase intentions is mediated by corporate brand image.

KEYWORDS

brand image, cause brand alliance, cause familiarity, cause importance, purchase intentions.

1. INTRODUCTION

Today's consumers are well aware of the activities of a firm in relation to the society, as they understand that organizations owe a lot to it. This understanding has resulted in creating a higher expectation from the organisation in terms of indebtedness towards society. Therefore, it has become imperative for the organisations to be a part of solution for the challenges of society and be perceived as responsible corporate citizens. This fact has also been supported by Polonsky and Wood (2001) who have suggested that the real motivation for a corporate donation is the perception of being a good corporate citizen.

As responsible corporate citizens, the organisations have embraced, supported and enacted a set of core values in the areas of community development, environment protection, education, health care and so on. Organisations, in their quest for becoming responsible corporate citizens, are using corporate social responsibility as a strategic tool to communicate corporate character to, and maintain support of, consumers and other stakeholders. Thus suggesting that Social responsibility has become indispensable in the present business scenario (Mintzberg, 1983). The strategic decisions of large companies involve social as well as economic consequences, which are intimately connected to each other. In their study, Porter and Kramer (2006) have also discussed the existence of the interdependence between corporations and society, since a company's activities have a direct impact on the communities with which they work.

An increasing number of companies, small and big alike have developed corporate social responsibility (CSR) programs (Maignan and Ralston, 2002). Among which, Cause related marketing campaigns are categorized as one of the CSR initiatives. As a type of CSR, cause-related marketing (CRM) has received particular corporate interest, as the use of cause-related marketing as a marketing platform has been progressively employed by companies, due to the fact that consumers increasingly value corporate support of social causes (Cone, Feldman, and DaSilva, 2003; Webster, 2005a). Most of the companies are using Cause Related Marketing as a strategic tool (Till and Nowak, 2000) to build a positive corporate image in the minds of consumers (Chattananon et al., 2008) which further results in enhancing the sales of a company's products (Varadarajan and Menon, 1988) and profits as well (Adkins, 2004).

The intent in a CRM campaign is to create a favourable mindset towards an alliance between brand and cause leading to enhanced customer's perception. Therefore, an attitude towards this alliance is of critical importance, as it represents the attitude that a consumer has toward the partnership between the cause and the brand (Lafferty and Goldsmith 2005; Lafferty, Goldsmith, and Hult 2004). Lafferty and Goldsmith (2005) in their study tested the effects that prior attitudes toward the cause and the brand have on perceptions of the alliance and post attitudes toward both partners. Familiarity with the brand and cause and the perceived importance of the cause can have differential effects on attitude toward the alliance (Lafferty and Diane R. Edmondson, 2009). The alliance does influence purchase intent (Hajjat 2003; Olsen, Pracejus, and Brown 2003). Webb and Mohr (1998) as well as Anselmsson and Johansson (2007) argued that customers' purchase intentions are influenced by the corporate image of a company involved in cause related marketing.

This paper tends to analyze the impact of cause familiarity and cause importance on customer's attitude towards cause brand alliance. The study explores the relationship between such alliance and customer's purchase intentions and also checks whether such relationship is mediated by corporate brand image. Further, since a number of studies have focused on such relationships, this study attempts to understand and interpret the attitude of respondents towards alliance between the cause and the brand "Idea".

Idea brand has been well established in the Indian market. As its campaigns have always floated Champion ideas which have the power to change the society and the way we live. Therefore it is pertinent to understand as to how the respondents have followed their attitude with regards to purchase intentions and how such relationship is being mediated by brand image.

2. REVIEW OF LITERATURE AND THEORETICAL FRAMEWORK

2.1 CAUSE RELATED MARKETING

In the literature, cause-related marketing has emerged as a distinct domain with a seminal paper by Varadarajan and Menon (1988). In marketing terms, cause-related marketing is best described as a strategy designed to promote the achievement of marketing objectives (such as brand sales) via company support of social causes (Barone, Miyazaki, and Taylor 2000).

Andreasen (1996) has divided cause related marketing into three types based on the cooperative pattern between the enterprise and the non-profit organisation. The first type relates to transaction- based promotion, wherein consumers are solicited to purchase the product or service of the enterprise through promotion activities staged jointly by the enterprise and the non-profit organisation; and, on the premises of the achievement of the sales target, a certain portion of the sales proceeds is appropriated to the non-profit organisation. The second type is characterized by joint issue promotion; wherein the enterprise and one or a plurality of non-profit organisations takes advantage of a social issue in the operation of strategic marketing. The third type of cause related marketing is done by licensing, i.e., the non-profit organisation licenses its trade name or mark to the enterprise in exchange for a return of a fixed fee or

a certain percentage of the profit while the enterprise has its sales targeted at the supporters of that non-profit organisation. Kotler (1998) has further added to Andreason's classification a type featuring a self-promoted topic or idea by the enterprise wherein the involvement a non-profit organisation is not necessarily required.

Along with the increasing popularity of cause related marketing practices, both scholars and practitioners have extensively evaluated cause-related marketing strategies and tactics, and analyzed their impact on consumers' perceptual and behavioural relationship with the sponsoring brand and/or the sponsored cause (e.g., Barone, Miyazaki, and Taylor, 2000; Cone, Feldman, and DaSilva, 2003; Hoeffler and Keller, 2002; Sen and Bhattacharya, 2001).

2.2 CAUSE FAMILIARITY AND IMPORTANCE AND ATTITUDE TOWARDS ALLIANCE

According to attitude theories, in particular attitude accessibility theory as defined by Fazio, Powell, and Williams (1989), the greater is the familiarity, the more extensive is the association in the brain, the more easily that brand will be accessed from memory, and the stronger the effect will be on outcome variables (e.g., Faircloth, Capella, and Alford 2001).

Cause familiarity is typically measured in the donor literature in terms of general awareness of the charity based on whether the cause or charity has a high or low visibility in the media (Bendapudi, Singh, and Bendapudi 1996). The effect of familiarity in a cause brand alliance was partially demonstrated in a study by Lafferty, Goldsmith, and Hult (2004). When familiarity is low for either the brand or the cause, attitudes are unformed or weakly formed making them less accessible and producing a weaker effect. Therefore, the degree of familiarity can bias information processing and have a differential effect on the attitude toward the alliance.

In CRM or cause brand alliance, the relative importance of the cause to the consumer can play a vital role. For a perfect cause brand alliance, selecting an important cause should have a stronger impact on perceptions of the alliance than an unimportant cause. Just as familiarity is considered to be a strength-related attitude attribute, so is importance (Bizer and Krosnick 2001).

The intent therefore, in a CRM campaign is to form an alliance between a brand and a cause to enhance perceptions of both. CRM has been shown to have a positive effect on attitude toward the brand. CRM researchers show that benefits can accrue to the cause as well as the brand (Basil and Herr 2003; Lafferty and Goldsmith 2005; Lafferty, Goldsmith, and Hult 2004; Ross, Patterson, and Stutts 1992). Based on the above literature review; the paper propounds the first hypothesis as:

H1: The cause familiarity and cause importance have a positive impact on respondent's attitude towards cause brand alliance.

2.3 ATTITUDE TOWARDS ALLIANCE AND PURCHASE INTENTIONS

According to information integration theory, the attitudes that exist toward the brand and the cause based on the degree of familiarity with them will be integrated with the new information provided by the alliance. Therefore new attitudes will be formed toward both partners as a consequence (Lafferty and Edmondson, 2009). Ross, Patterson, and Stutts (1992) in their study found that consumers felt that CRM was a good way to support a worthy cause, which was evident by more favourable attitudes toward the company. Because consumers perceived companies to be more socially responsible if they participate in CRM programs, evaluations of those companies were more positive (Sen and Bhattacharya 2001).

When consumers make a decision to purchase a product, how they feel about the company can influence their intentions (Sen and Bhattacharya 2001). Generally, a more favorable attitude toward the company will produce more favourable purchase intentions (e.g., Lutz 1985). Given the link between attitudes and purchase intentions in the literature, it is likely that attitude toward the company will have a direct effect on purchase intentions in this study as well. Based on the above literature review; this paper proposes the second hypothesis as:

H2: The positive attitude towards cause brand alliance enhances respondents purchase intentions.

2.4 MEDIATING ROLE OF CORPORATE BRAND IMAGE

Researchers have argued that companies should instead measure performance of cause-related marketing programs not only by measuring customer purchase levels, but also by tracking changes in company image and customer and employee satisfaction and loyalty (Andreasan 1986).

Corporate image can be defined as the perception/feelings of customers regarding the company's products and activities (Webb and Mohr, 1998). In order to build a positive corporate image in the minds of customers, companies are using cause related marketing as a strategy (Varadarajan and Menon, 1988; Chattananon et al., 2008) to gain a competitive edge in market place (Anselmsson and Johansson, 2007).

Different terms have been used to mean corporate brand and corporate brand image (e.g. company and corporate brand are used interchangeably). Therefore, company image, corporate image, or store image all mean corporate brand image (Syed Alwi and Da-Silva, 2007). According to the foregoing theory, a corporate brand image may evoke associations with the corporation or its products and services. Corporate image is the immediate mental picture that consumers have of an organisation.

Corporate brand image may play a vital role in affecting purchase intentions. In their studies, Webb and Mohr (1998) as well as Anselmsson and Johansson (2007) argued that customers' purchase intentions are influenced by the corporate image of a company involved in cause related marketing.

In this study it is presumed that the cause related marketing activity is not just one factor that effects purchase intentions of the customers, rather to some extent they are pre established. Based on the above arguments, the present study attempts to explore whether the relationship between attitude towards corporate cause alliance and customer purchase intentions is mediated by corporate brand image. Therefore on the basis of above literature review; this paper propounds the third hypothesis as:

H3: The relationship between attitude towards cause brand alliance and purchase intentions is mediated by corporate brand image.

3. RESEARCH QUESTIONS

Cause Related Marketing is most appropriate marketing strategy for the organisations if they want to reap the benefit of long term survival in today's highly turbulent business environment. In the Indian Business environment almost all the big organisations are supporting social causes in one way or the other. Idea Cellular limited, is the name which is reaching out to a large mass of people by promoting various social causes. Be it through conserving energy, recycling, or finding innovative solutions to environmental and social challenges, Idea is committed of being a respectful, responsible and positive influence on the environment and the society in which we operate

Idea Cellular, as a part of the Aditya Birla Group, is India's first truly global conglomerate and one of the oldest players in the Indian telecom industry. It has played a key role in the development of mobile telephony, particularly in rural India. As part of a socially responsible corporate group, Idea has continuously adopted such policies, and business strategies that effectively integrate emerging environmental, social and economic considerations.

Idea Cellular has been continuously promoting social causes. In 2008 idea launched "voice of people" and "education for all" campaigns, in 2009 "walk when you talk", year 2010 saw huge success of "Go green" and "breaking language barrier" campaigns. During Cricket world cup in March 2011, Idea Cellular again launched "Keep Cricket clean" campaign. Idea believes that Cricket is a microcosm of our society, and the challenges to clean cricket are not divorced from the challenges to a clean society.

Idea's new brand campaign (July, 2011), once again based on a social theme, highlights the country's challenge of Population inflation and suggests a simple telephony solution. The campaign advertisement leaves a message *that there will be 'No Aabaadi, No Barbaadi' because people will be '3G pe Busy'*. The mood of the advertisement is light and humorous, yet builds a strong connects with a larger audience, as it features people from various parts of the country. Idea cellular has successfully launched its 3G services through this campaign.

Hence, in view of above literature review and key facts about Idea cellular's '3G pe Busy' campaign, the study aims at following objectives:

1. To analyze the impact of cause familiarity and cause importance on respondent's attitude towards cause brand alliance.
2. To study the relationship between attitude towards cause brand alliance and respondents purchase intentions.
3. To assess whether the relationship between cause brand alliance and purchase intention is mediated by corporate brand image.

4. RESEARCH METHODOLOGY

Idea cellular has successfully launched its 3G services with the help of the '3G pe Busy' campaign. This campaign talks about the problem of population explosion, which is the biggest challenge that India is facing. IDEA is not only familiarizing the masses with an important social cause through this campaign, but also providing a simple 3G telephony solution to it. The '3G pe Busy' campaign is running on almost all Television Channels and has built a strong connect with a larger audience, as it features people from various parts of the country. This paper is an attempt to study the respondents' attitude towards such a familiar and important cause with the brand IDEA. Therefore the study has been based on primary data, which has been collected from the mobile users. The respondents were selected on the basis of their exposure to the said advertisement. However they were shown the advertisement copy before they were subjected to questionnaire for reference purpose.

4.1 INSTRUMENT OF STUDY

The questionnaire was designed in two parts. In the first part the respondents were asked about demographic aspects like gender and age. In the second part different statements were solicited based upon the variables of the study. A seven point scale was used to assess the respondents' level of agreement or disagreement with each statement by circling a number from 1 - 7. Before filling in the questionnaire the respondents were informed about the significance and purpose of the study.

Cause familiarity was measured by three items on a seven-point scale: very familiar/very unfamiliar, definitely recognize/definitely do not recognize, and definitely have heard of/definitely have not heard of (Simonin and Ruth 1998). The importance of the cause was measured with three items on a seven-point scale anchored at very important/ very unimportant, means a lot to me/means nothing to me, and very significant/very insignificant. The attitude towards alliance was measured with a three item, seven-point scale: good/bad, favourable/unfavourable, and positive/negative (Burnkrant and Unnava 1995; Osgood, Suci, and Tannenbaum 1957). Further, Purchase intention was measured with a three-item, seven-point scale anchored with very likely/very unlikely, definitely would consider it/definitely would not consider it, and very probable/not probable at all (Yi 1990). Corporate brand image was measured on three items on a seven point scale: the corporation is concerned the society, the corporation is often active in community affairs, and the corporation regularly sponsors/promotes public-service activities (Brown and Dacin, 1997).

5. FACTOR INTERNAL CONSISTENCY RELIABILITY

Cronbach alpha is the major measurement of internal consistency reliability. Cronbach alpha over 0.70 illustrates high satisfactory internal consistency reliability. On the other hand, if the Cronbach alpha is 0.60 or less than 0.60 it suggests unsatisfactory internal consistency reliability (Malhotra, 2007). According to Table 5.1, the Cronbach alpha for each factor is higher than .70. Therefore, the Cronbach alpha's among the factors shows high satisfactory internal consistency reliability.

TABLE 5.1: FACTOR INTERNAL CONSISTENCY ANALYSIS

Factor	Cronbach's Alpha
Cause Familiarity	0.788
Cause Importance	0.734
Attitude towards cause brand alliance	0.765
Corporate Brand Image	0.763
Purchase Intentions	0.907

6. DATA ANALYSIS AND FINDINGS

The data analysis has been analyzed in view of objectives and hypothesis outlined above in the study. The first objective dealt with analyzing the impact of cause familiarity and cause importance on respondent's attitude towards cause brand alliance. The analysis has revealed that the mean value for cause familiarity and cause importance is 5.67 and 5.34 respectively, where as it is 5.49 for respondents attitude towards Idea cellular's "3G pe busy" campaign (see table 6.1).

TABLE 6.1: DESCRIPTIVE STATISTICS (CAUSE FAMILIARITY, IMPORTANCE AND ATTITUDE).

	Mean	Std. Deviation	N
attitude	5.4941	.88583	85
familiarity	5.6667	1.06160	85
Importance	5.3373	.97386	85

In order to understand the degree of impact of cause familiarity and cause importance on attitude towards cause brand alliance, Regression analysis has been used, which suggests that R value for the relationship has been calculated at 0.672, thereby indicating that there is a relationship between cause familiarity, cause importance and attitude towards cause brand alliance. These findings are also supported by a number of studies reviewed in the literature. Further, R square value of 0.452 suggests that 45.2% variation in respondents' attitude towards cause brand alliance is due the familiarity of the respondents with an important cause being promoted by Idea cellular, which further highlights the relevance of promoting an important social cause in building a strong corporate brand. Also, adjusted R² value of 0.438 indicates that this relationship accounts for 43.8% of variance in the attitude towards cause brand alliance. (See table 6.2).

TABLE 6.2: MODEL SUMMARY (CAUSE FAMILIARITY, CAUSE IMPORTANCE AND ATTITUDE)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.672(a)	.452	.438	.66397	.452	33.758	2	82	.000

a Predictors: (Constant), Importance, familiarity

b Dependent Variable: attitude

Moreover the beta coefficient for cause familiarity and cause importance is 0.152 and 0.526 respectively which further signify positive impact on attitude towards cause brand alliance. It also indicates that cause importance has a higher impact on attitude towards cause brand alliance as compared to cause familiarity (see table 6.3).

TABLE 6.3: COEFFICIENTS (CAUSE FAMILIARITY, CAUSE IMPORTANCE AND ATTITUDE)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.825	.474		3.848	.000
	familiarity	.152	.074	.182	2.041	.044
	Importance	.526	.081	.579	6.490	.000

a. Dependent Variable: attitude

The study has proposed three hypothesis inline with the objectives. The first hypothesis has been stated as "The cause familiarity and cause importance have a positive impact on respondent's attitude towards cause brand alliance." This hypothesis has been validated as p value for the relationship is found out to be less than 0.05. This value assesses the overall significance of the model (see table 6.2).

The second objective of the study was to analyze the relationship between attitude towards cause brand alliance and respondents purchase intentions. For analyzing the same, correlation was used. The table of means and standard deviations indicates that mean values for respondents attitude towards cause brand alliance and purchase intentions are 5.49 and 4.24 respectively. Although the values indicate a positive intention to purchase the brand under study, however the value is not very high relative to the attitude towards the campaign (see table 6.4).

TABLE 6.4: DESCRIPTIVE STATISTICS (ATTITUDE AND PURCHASE INTENTIONS)

	Mean	Std. Deviation	N
Purchase	4.2471	1.52679	85
Attitude	5.4941	.88583	85

The analysis of the correlation matrix indicates that the observed relationship is not very strong. The correlation between attitude towards cause brand alliance and purchase intentions was found out to be 0.145(see table 6.5). The positive correlation means that as a positive attitude towards cause brand alliance builds up, it is likely that the respondents purchase intentions also tends to go up.

TABLE 6.5: CORRELATIONS (ATTITUDE AND PURCHASE INTENTIONS)

		purchase	attitude
Pearson Correlation	purchase	1.000	.145
	attitude	.145	1.000
Sig. (1-tailed)	purchase	.	.092
	attitude	.092	.
N	purchase	85	85
	attitude	85	85

TABLE 6.6: MODEL SUMMARY (ATTITUDE AND PURCHASE INTENTIONS)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.145(a)	.021	.009	1.51965	.021	1.791	1	83	.184

a. Predictors: (Constant), attitude

The second hypothesis in conjunction with this objective was stated as “The positive attitude towards cause brand alliance enhances respondents purchase intentions”. This hypothesis has been rejected as the p value for the relationship is found out to be greater than 0.05 (see table 6.6). These results are in line with study of Hamlin and Wilson (2004), who found that cause-related cues had no overall effect on consumers’ evaluations of the test product or on their intent to purchase it. In parallel work, Ehrenberg (1974; 2000) and also questioned the view that advertising was highly persuasive and capable of changing beliefs about brands or introducing new behaviours. Furthermore, Ehrenberg & Barwise (1985) suggested that consumers’ attitudes may follow, rather than precede, their behaviour.

These findings suggest that CRM may consolidate and reinforce the behaviour of consumers who already purchase a brand that embarks on a CRM program, but that CRM alone may be insufficient to prompt brand-switching. Trimble and Rifon (2006) relied on cognitive elaboration theory; they raised the possibility that CRM may be a low involvement process aligned to classical conditioning.

The study has proposed the third objective as to assess whether the relationship between attitude towards cause brand alliance and purchase intention is mediated by corporate brand image. To test the mediating role of corporate brand image, a three step procedure recommended by Baron and Kenny (1986) was followed. According to the procedure, in the first step a significance test of the relationship between the independent variable (attitude towards cause brand alliance) and the mediator (corporate brand image) was required. The table 6.7 below shows the relationship to be positive (R= 0.517 and R square = 0.267) and significant (p < 0.05).

TABLE 6.7: MODEL SUMMARY (ATTITUDE AND BRAND)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.517(a)	.267	.258	.79085	.267	30.202	1	83	.000

a. Predictors: (Constant), attitude

The second step required a test of relationship between the independent variable (attitude towards cause brand alliance) and the dependent variable (Consumer purchase intentions). In this step, the relationship was found to be positive but weak (see table 8; R=0.145 and R square =0.021) and insignificant (p > 0.05). Though Baron and Kenny (1986) propounded that for mediation to take place the relationship between independent and dependent variable needs to be significant. But according to Hayes, 2009; MacKinnon et al., 2000; Shrout, Bolger, 2002; Zhao et al., 2010 & Rucker et al, 2011) the requirement for significant total effect of the relationship between independent and dependent variable be abandoned. The mediator adds weight to two relationships, first between independent variable and the mediator and second between mediator and dependent variable; i.e the mediator creates an indirect effect. On the other hand, the mediator does nothing to the direct relationship between independent and dependent variable. Due to this indirect effect the independent variable exerts stronger influence on mediator as compared to the dependent variable (Rucker et al, 2011). Finally, in the third step the dependent variable needed to be regressed on both, the independent variable and the mediator. To legitimize mediation, the third step must find the mediator to be significantly related to the dependent variable and the effect of the independent variable on the dependent variable to be less than it was in the second step. In this study, mediator (corporate brand image) is significantly related to dependent variable (purchase intentions, p<.05). Further the effect of the independent variable (purchase intentions) on the dependent variable (attitude towards cause brand alliance) is less than it was in the second step (see table 6.8; R square value for step 2 and 3 are 0.123 and 0.021 respectively). These results provide evidence for acceptance of third hypothesis that was stated as the relationship between attitude towards cause brand alliance and purchase intentions is mediated by corporate brand image. This research does not claim for full or complete mediation as it is not possible to measure, without error, all possible mediators or suppressors that effect relationships (Rucker et al, 2011).

TABLE 6.8: MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.145(a)	.021	.009	1.51965	.021	1.791	1	83	.184
2	.350(b)	.123	.101	1.44737	.102	9.497	1	82	.003

a. Predictors: (Constant), attitude

b. Predictors: (Constant), attitude, Brand

7. DISCUSSION

The data analysis and findings suggest that the "3G pe Busy" campaign has proven to be a success in terms of creating a favourable and positive attitude towards cause brand alliance. However, this cause has not been able to enhance the respondents purchase intentions of brand "IDEA". This study leads to the conclusion that the cause selected by IDEA has proved to be an important and a popular cause, which together helped IDEA in building a positive attitude towards cause brand alliance. This study further proves that cause importance has far more greater impact on attitude towards cause brand alliance as compared to cause familiarity. These findings elucidate that corporate indulging in cause related marketing initiatives must look for promoting an important and a meaningful cause to make a difference. With the help of this campaign "IDEA" brand has not only been able to build a strong connects with a larger audience but also effectively launched its 3 G services in the market.

Further, another very important aspect of this research was to study the relationship between attitude towards cause brand alliance and respondents purchase intentions. The data analysis suggests that there is a positive relationship between these two constructs, but it is insignificant in nature, thus indicating that "3G pe Busy" campaign has not been able to change or induce new behaviour. It indicates that cause related marketing alone may be insufficient to promote purchase intentions.

The data analysis provides strong evidence that the relationship between attitude towards cause brand alliance and purchase intentions is mediated by corporate brand image, which is the major contribution of this research paper. These findings indicate that the companies must concentrate on increasing the corporate brand image for making consumer's purchase intentions more concrete. Positive and strong corporate image help companies in reducing consumer scepticism which further can enhance purchase intentions.

8. CONCLUSION

The exploratory study has been conducted for the cause related marketing initiatives of IDEA cellular which was targeted at the mobile users. The study was undertaken to analyze the impact of cause familiarity and cause importance on customer attitude towards cause brand alliance. And further to study the relationship between respondents attitude towards cause brand alliance and their purchase intentions and to assess whether this relationship is mediated by corporate brand image or not. The study has led to the conclusion that the mobile users have appositive attitude towards cause brand alliance due to familiarity with an important social cause which has been promoted by IDEA through its "3G pe busy" campaign. However this attitude does not significantly affect purchase intentions for brand IDEA. But interestingly, this research paper concludes the full mediation effect of corporate brand image between attitude towards cause brand alliance and purchase intentions. Thus the study suggests that the organisations in the pursuit of enhancing purchase intentions must embrace select and aggressively promote relevant and important social causes which can help in enhancing customer's attitude towards cause brand alliance. Further this positive attitude can lead to customer purchase intentions of the brand that has a strong corporate brand image.

9. LIMITATION AND FUTURE RESEARCH

This research paper has studied the impact of cause related marketing and purchase intensions and identified the mediating role of corporate brand image. For the purpose data was collected and analyzed and the results of the same have added to the body of literature on cause related marketing. But there are some inherent limitations of the study. As the respondents were from Jammu city only, future research can be conducted in other parts of the country to see the similarity and variability of the results. Also the study has taken into consideration only one brand and one cause; however other brand or cause may produce different results. Another limitation was the use of small sample for the study, so the results of the study can't be generalized.

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ROLE OF MOBILE PHONE IN INDIA'S TRANSFORMATION**KULWANT SINGH RANA****PROFESSOR****DEPARTMENT OF COMMERCE & MANAGEMENT STUDIES****HIMACHAL PRADESH UNIVERSITY****SHIMLA****DR. ASHWANI RANA****DEPARTMENT OF ENGLISH****HIMACHAL PRADESH UNIVERSITY****SHIMLA****ABSTRACT**

Technology has always played a vital role in the socio-economic and cultural transformation of all societies. In the history of human civilization, wheel and fire stand out as the most significant inventions. In the modern period, Industrial Revolution played an important role in the socio-economic transformation of Europe. In the 20th century, satellite and computer technology has played a dominant role in transforming the world into a global village. The history of Indian telecom can be started with the introduction of telegraph. The postal and telecom sectors had a slow and uneasy start in India. The foundation of present day telecommunication was laid down by the British. Major means of telecommunication during this period was telegraph, wireless sets and landline telephones. While all the major cities and towns in the country were linked with telephones during the British period, In the period of reforms, the telecommunication sector was also opened to the private and foreign players. In the two decades of reforms, India has experienced a major revolution in the field of mobile telephones. Presently India has emerged as the second largest market in the world only after China. It has broken the barriers of caste, class, religion etc. It is expected that by 2013 there will be 100 per cent teledensity in India. It has played a role of a biggest catalyst in the transformation of Indian economy. Even during the global melt down of 2008 Indian economy continue to perform as the second fastest economy of the world. Definitely, the exponential growth in mobile phone sector was one of the most important factors responsible to maintain the tempo of Indian economy. Hence it will not be wrong to call mobile phone in India as the biggest revolution in post independent era.

KEYWORDS

Communication, Cellular Telephony, Impact of Mobile-telephony, Mobile Phones, MMS.

INTRODUCTION

Technology has always played a vital role in the socio-economic and cultural transformation of all societies. In the history of human civilization, wheel and fire stand out as the most significant inventions. In the modern period, Industrial Revolution played an important role in the socio-economic transformation of Europe. In the 20th century, satellite and computer technology has played a dominant role in transforming the world into a global village. Here, it is important to mention that over-emphasis on technological variables is not very appropriate because it may lead towards technological determinism and may undermine the role of other forces that go into the making of a nation. Although the pace of technological change, has been many times faster than the social change. Nevertheless, at different junctures of history, technology has played an overvaulting role in bringing about organic changes in the basic structure of socio-economic and cultural formations. Abheek Barua in his "Paths to Prosperity" (The Times of India 26 Dec, 09), says that "History tells us that the spread of new technology often makes a permanent difference to a nations fortunes. It was, after all, the steam engine and the spinning penny that transformed a tiny rain-sodden island in the Atlantic into a global economic powerhouse in the nineteenth century.

Communication is a process of transferring information from one entity to another. Communication is commonly defined as the imparting or interchange of thoughts, opinions, or information by speech, writing, or signs. Communication requires that all parties have an area of communicative commonality. There are auditory means, such as speech, song, and tone of voice, and there are nonverbal means, such as language, sign, paralanguage, touch, eye contact, through media, . i.e., pictures, graphics, sound, and writing (Wikipedia). Over time, technology has progressed and has created new forms of and ideas about communication. These technological advances revolutionized the processes of communication. The development of language, printing press and communication through electronic waves were the three major revolutions in the field of communication. After Industrial Revolution, the world experienced another revolution in the 20th century which is generally known as Information Revolution.

A revolution in wireless telecommunications began in the first decade of the 20th century, with Marconi winning the Nobel Prize in Physics in 1909 for his pioneering developments in wireless radio communications. Other early inventors and developers in the field of electrical and electronic telecommunications included Samuel F.B. Morse and Joseph Henry of the United States, Alexander Graham Bell of Canada, Lee de Forest of the U.S., who invented the amplifying vacuum tube called the triode, Edwin Armstrong of the U.S., John Logie Baird of England, and Nikola Tesla whose most important inventions were created in the United States (Wikipedia). The history of mobile phones begins with early efforts to develop radio telephone technology and from two-way radios in vehicles and continues through emergence of modern mobile phones and associated services. In 1910 Lars Magnus Ericsson installed a telephone in his car, although this was not a radio telephone. While travelling across the country, he would stop at a place where telephone lines were accessible and using a pair of long electric wires he could connect to the national telephone network. In Europe, radio telephony was first used on the first-class passenger trains between Berlin and Hamburg in 1926. Later on, quantum jumps were noticed in this area.

OBJECTIVES

The pin pointed objectives of the present study are as under:

- 1 To study the growth and development of mobile telephony in India.
- 2 To study the impact of mobile phone on Indian economy.
- 3 To analyse the role of mobile phone as a catalyst in the transformation of Indian society.

LITERATURE REVIEW

Various studies have been conducted on the role of mobile phones in the overall transformation of the economy. Mirjam De Bruijn, Francis Nyamnjoh, Inge Brinkman (2009), have done a major study on the role of mobile phone in the transformation of African countries. It is not possible to imagine life now without a mobile phone is a frequent comment when Africans are asked about mobile phones. They have become part and parcel of the communication landscape in many urban and rural areas of Africa and the growth of mobile telephony is amazing: from 1 in 50 people being users in 2000 to 1 in 3 in 2008. Such growth is impressive but it does not even begin to tell us about the many ways in which mobile phones are being appropriated by Africans and how they are transforming

or are being transformed by society in Africa. This volume ventures into such appropriation and mutual shaping. Rich in theoretical innovation and empirical substantiation, it brings together reflections on developments around the mobile phone by scholars of six African countries (Burkina Faso, Cameroon, Ghana, Mali, Sudan and Tanzania) who explore the economic, social and cultural contexts in which the mobile phone is being adopted and harnessed by mobile Africa. Another pioneering study has been conducted by Christiana Charles-Iyoha (2008) in his edited book *Mobile Telephony: Leveraging Strengths and Opportunities for Socio-Economic Transformation in Nigeria* brought an interested findings that how a mobile phone is playing an important role in the transformation of African continent in general and Nigeria in particular..He further maintain that Mobile telephony presents the prospect for closing the access and development gap in Nigeria, Mobile penetration has increased in Nigeria at an astonishing rate; mobile phone subscribers are currently increasing at a rate of about 25% per year. According to this study, out of Nigeria's population of 140 million, 12.1 million own mobile phones and 64 million are potential mobile phone users through mobile payphones at call centers. The increase in phones has led people to modify their ways of life. Nigerians have benefited from immediate access to information on everything from health issues to commodity prices, and various radio and television programs ask for feedback through SMS and call-in numbers. Over a million indirect jobs have been created by the mobile telephony sector in the past five years. This figure indicates that mobile telephony could boost job creation and poverty alleviation if the conditions that would stimulate its spin-offs are introduced and nurtured in a consistent manner. About 10,000 direct jobs, or people employed by the mobile phone operators in Nigeria, have been created by the industry. Book also contains some primary investigations relating to entrepreneurship and gender question. The book seeks to answer the question of how to further influence socio-economic growth through the maximization of opportunities provided by mobile telephony. Nigeria has clearly been changed in numerous ways by mobile phones.

Gerard Goggin (2008) tried to explore the cultural dimensions of mobile phone. This provocative and comprehensive collection explores the cultural and media dimensions of mobile phones around the world. An international team of contributors look at how mobiles have been imagined through advertising and social representations tracing the scripting and shaping of the technology through gender, sexuality, religion, communication style and explore the locations of mobile phone culture in modernity, urban settings and even transnational families. This book also provides a guide to convergent mobile phone culture, with fresh, innovative accounts of text messaging, camera phones, and mobile adventures in television. Mobile Phone Culture opens up important new perspectives on how we understand this intimate yet public cultural technology. Kavoori and Arceneaux (2006) observed that the cell phone reader offers a diverse, eclectic set of essays that examines how this rapidly evolving technology is shaping new media cultures, new forms of identity, and media-centered relationships. The contributors focus on a range of topics, from horror films to hip-hop, from religion to race, and draw examples from across the globe. The book provides a road map for both scholars and beginning students to examine the profound social, cultural and international impact of this small device.

Shashi Tharoor (2007) observed that the cell phone revolution in India is exciting not only as a sign of India's economic transformation into a 21st century success story, but as a symptom of something far more important, a change in the attitude of our ruling classes. The government is marginal to this success story, since we don't need it to lay telephone lines across the country any more, and the private sector telecom companies develop their own connectivity. Perhaps the key contribution of the government has been in getting out of the way in cutting license fees and streamlining tariffs, easing the overly complex regulations and restrictions that discouraged investors from coming in to the Indian market, and allowing foreign firms to own up to 74 per cent of their Indian subsidiary companies. The Telecom Regulatory Authority of India (TRAI) has also been a model of its kind, a regulatory agency that saw its role as facilitating the growth of the business it was regulating, rather than stifling it with rules and restrictions. Tharoor termed this revolution as mobile miracle. VisionRI (2005) can be considered as the major study in India based largely on primary survey relating to the satisfaction provided by the telecom companies in India. The satisfaction level of users was analyzed on a five point scale ranging from not satisfied to fully satisfy. Only 14 percent of the consumers say that they are fully satisfied with the services, while 6 percent responded as not satisfied. A major group of consumers either say that they are almost satisfied (43%) or average satisfied (20%). "Very less satisfied plus not satisfied combined together comes to 20 percent of the total consumers. The major reasons cited for dissatisfaction are poor quality of signals (42%) and higher costs (38%). Poor quality of signals means unavailability of signals, call failure, call drop downs etc. Billing complaints were experienced by 4 per cent users while 9 percent are not happy with the quality of customer care services being provided. Many respondents cited multiple reasons for dissatisfaction. Users feedback on likings for various attributes of the mobile phone instrument was recorded. Operational ease (53%) and price (22%) are two attributes most valued by the customers followed by looks of the handset (11%) and multiple functionalities (10%). Major functionalities of the handset and other added services mostly used by the consumers are making and receiving calls, SMSs/MMs, telephone diary and auto answering. The usage of other attributes that are being added and advertised by the handset manufacturers like camera, organizer, games, and radio etc. is quite less. Seventy seven percent of the sampled consumers receive unsolicited calls while only seventeen percent of it feels happy on getting such calls. Out of the consumer who gets such calls twenty three percent stays indifferent to such calls while thirty percent accepts that they get disturbed and feel irritated. Six percent gets very angry on receiving unsolicited calls. These various studies provide valuable insights for understanding the role of mobile phone in today's scenario; however, the prevailing gaps in the existing literature fully justify the present study.

METHODOLOGY

In the present study both secondary and primary methods have been used. The desk work has been done in the libraries of Himachal Pradesh University and Indian Institute of Advanced Studies. The data related to mobile phones has been collected from various magazines, newspapers and books. Various sites of internet have also been surfed relating to similar themes. For the purpose of primary data, stratified, random and convenience sampling has been used. For this purpose, a sample of illiterate migratory workers has been selected. The size of sample comprised of 200 migratory illiterate labourers from Bihar, Chhatisgarh and Orissa was taken those were working in 3 districts of Himachal Pradesh i.e. Kangra, Mandi and Shimla. The information was collected with the help of discussion and observation methods. For this purpose, a comprehensive discussion and interview schedule was finalised after a thorough testing. Delfy method has also been used to know the opinion of selected experts. For this purpose, a sample of 20 Professors was taken out of which half were ladies. For of analysis and interpretation, descriptive analytic and graphic methods have been used.

EVOLUTION OF MOBILE TECHNOLOGY

Present day's mobile phone technology is the by product of a long historic process. Different countries and organisations have contributed significantly in this area.

TABLE- 1: HISTORY OF CELLULAR TELEPHONY

1947	Bell Laboratories introduced the idea of cellular communications with the police car technology.
1947	The FCC decided to limit the amount of frequencies available, the limits made only twenty-three phone conversations possible simultaneously in the same service area.
1968	AT&T and Bell Labs proposed a cellular system to the FCC of many small, low-powered, broadcast towers, each covering a 'cell' a few miles in radius and collectively covering a larger area. Each tower would use only a few of the total frequencies allocated to the system. As the phones travelled across the area, calls would be passed from tower to tower.
1968	The FCC reconsidered its position by stating "if the technology to build a better mobile service works, we will increase the frequencies allocation, freeing the airwaves for more mobile phones."
1973 (April)	The first call on a portable cell phone is made by Dr Martin Cooper, a former general manager for the systems division at Motorola, who is also considered the inventor of the first modern portable handset.
1977	AT&T and Bell Labs had constructed a prototype cellular system. A year later, public trials of the new system were started in Chicago with over 2000 trial customers.
1979	The first commercial cellular telephone system began operation in Tokyo.
1980	Analog cellular telephone systems were experiencing rapid growth in Europe, particularly in Scandinavia, United Kingdom, France and Germany. Each country developed its own system, which was incompatible with everyone else's in equipment and operation
1981	Motorola and American Radio telephone started a second U.S. cellular radio-telephone system test in the Washington/Baltimore area.
1982	FCC authorizes commercial cellular service for the USA.

Source: <http://www.coai.com/history.php> visited on November 1- 2010

The decade of the 1980s can be considered as evolutionary stage of present day mobile phones while during 1990s mobile phone acquired a stage of maturity. In the late 1990s, the second generation mobile phone systems emerged, primarily using the GSM standard. These 2G phone systems differed from the previous generation. As the use of these phones became more widespread and people began to utilize mobile phones in their daily lives, it became clear that demand for data services was growing. Furthermore, if the experience from fixed broadband services was anything to go by, there would also be a demand for ever greater data speeds. Hence, the industry began to work on the next generation of technology known as 3G. The main technological difference that distinguishes 3G technology from 2G technology is the use of packet switching rather than circuit switching for data transmission. In addition, the standardization process focused on requirements more than technology. In the first decade of 21st century, 3G services were introduced on commercial scale.

The developing countries such as Brazil, India, China, Africa and Latin America have demonstrated blistering cell phone growth in recent years. As a result providing service and hand set to developing countries has become a substantial source of profits for several major companies. Many developing countries have seen rapid economic growth since 2000. The average revenue per user was \$50 in developed countries versus \$3-\$7 in developing countries. Markets in developing countries have continued to grow at double digit rates some as high as 100% per year and have penetration rates ranging from low double digits to 50%. Given these dynamics, several major carriers have decided to move into developing countries in a major way (www.economywatch.com). A number of research works are being carried out all over the world to improve the quality and speed of transmission. Research works are also done on the basis of the users' needs. The objective of the research work is to provide quality and affordable service to the consumers. The leading telecom companies like AT&T, Vodafone, Verizon, SBC Communications, Bell South, Qwest Communications etc. are trying to take the advantage of this growth. The service revenue of the global telecommunications industry was estimated to be \$1.7 trillion in 2008, and is expected to touch \$2.7 trillion by 2013(www.wikinvest.com). Even in the third world countries, Telecommunication has emerged as a dominant sector and a major source of revenue in the overall economy. According to UNCTAD's Information Economy Report 2010, the fixed line subscriptions will soon become a thing of the past with the mobile penetration across the world deepening, especially in the poor and developing countries. The relative share of mobile phones in the overall telephone market is consistently increasing. The major reason for the substitution of landline phone by mobile phone is its technological superiority. The biggest strength of mobile phone is its manoeuvrability that it can be carried in a pocket or a purse. Further, even illiterate people can use a mobile phone with ease. Useful phone numbers can be stored in the phone memory itself and it has made a pocket diary redundant. Features like the radio, music, camera, GPS, Internet, enhance its usability and uniqueness. Person can attend missed calls when he is free which is not possible in case of landline phone. The maintenance of landline telephone is another serious problem.

GENESIS OF MOBILE PHONES IN INDIA

The history of Indian telecom can be started with the introduction of telegraph. The postal and telecom sectors had a slow and uneasy start in India. Major means of telecommunication during this period was telegraph, wireless sets and landline telephones. While all the major cities and towns in the country were linked with telephones during the British period, the total number of telephones in 1948 was only around 80,000. Even after independence, growth was extremely slow. The telephone was a status symbol rather than being an instrument of utility. The number of telephones grew leisurely to 980,000 in 1971, 2.15 million in 1981 and 5.07 million in 1991. The real transformation in scenario came with the announcement of the National Telecom Policy in 1994 (economywatch.com/world-industries/telecommunications/india.html).

TABLE-2: MAJOR DEVELOPMENTS IN THE GROWTH OF MOBILE PHONES IN INDIA

1992	Telecommunication sector in India liberalized to bridge the gap through government spending & to provide additional resources for the nation's telecom target. Private sector allowed participating
1993	The telecom industry gets an annual foreign investment Rs 20.6 million
1994	License for providing cellular mobile services granted by the government of India for the Metropolitan cities of Delhi, Mumbai, Kolkata & Chennai. Cellular mobile service to be duopoly (i.e. not more than two cellular mobile operators could be licensed in each telecom circle), under a fixed license fee regime for 10 years.
1995	19 more telecom circles get mobile licenses
1995	Kolkata became the first metro to have a cellular network
1997	Telecom Regulatory Authority of India is set up
1998	Annual foreign investment in telecom stands at Rs 17,756.4 million.
1999	FDI inflow into telecom sector falls by almost 90% to Rs. 2126.7 million
1999	National Telecom Policy is announced.
2000	FDI inflow drops further down to Rs 918 million coming

Source: Cellular operators Association of India.

Government of India implemented the unified access licensing regime, which enables basic and cellular mobile service to use any modern technology. In 1997, Telecom Regulatory Authority of India was formed to facilitate the growth of the telecom sector. India is divided into 23 telecom circles. Airtel was the first company in India to launch mobile services in India. Later on, other players also entered this sector. Due to the rapid growth of the cellular phone industry in India, landlines are facing stiff competition from cellular operators. The share of landline phones in India has declined to 5 % in the overall market. The cellular operators have been permitted to provide all types of mobile services. In India, both GSM and CDMA technologies are used by the cellular service providers.

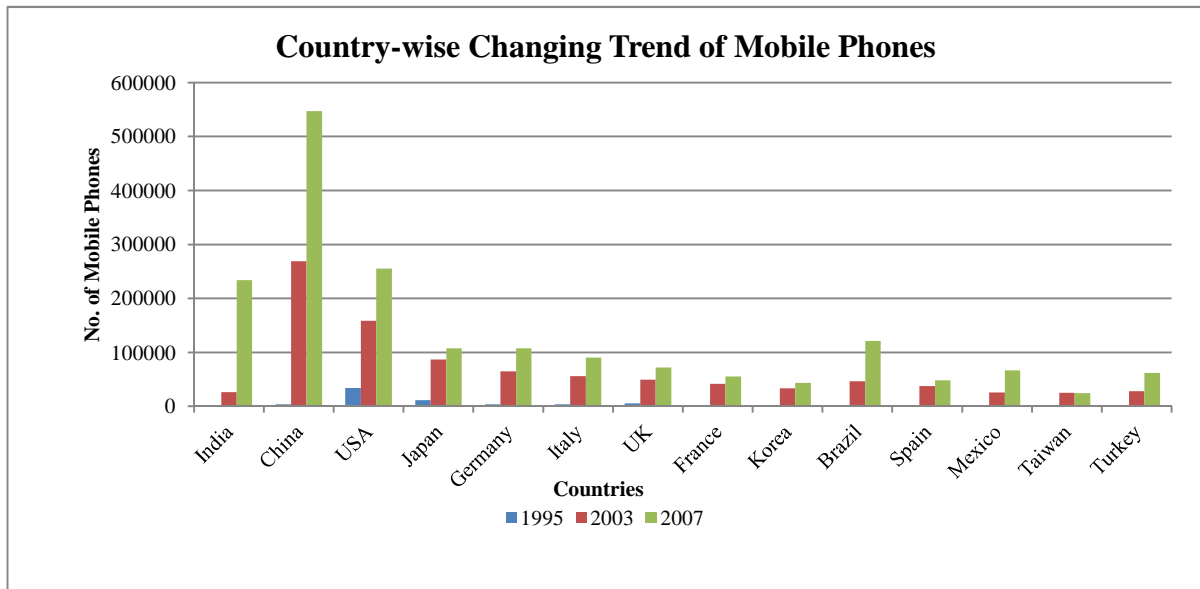
GROWTH OF MOBILE PHONES IN INDIA AND THE WORLD

Telecom industry in India has been playing a major role in Indian economy. The Indian government is also enforcing some effective telecom policies and regulations for the infrastructural growth of this industry. Indian telecom market provides a Tele-density of 8.5 percent as registered in the year 2004. A number of leading multinational telecommunication companies are approaching and showing their interest to invest for the telecom industry in India. Telecommunication industry of India ranked sixth the world.

TABLE-3: CHANGING INDIA'S RELATIVE POSITION IN THE GLOBAL CELLULAR MARKET (000)

Country	1995	2003	2007
India	76	26154	233620
China	3629	269000	547306
USA	33785	158722	255396
Japan	11712	86659	107339
Germany	3725	64800	107339
Italy	3923	55918	90151
UK	5735	49677	71993
France	1302	41683	55358
Korea	1641	33592	43498
Brazil	1285	46373	120980
Spain	945	37507	48423
Mexico	688	25928	66560
Taiwan	772	25090	24302
Turkey	437	27888	61976

Source: The figures given in the table have been compiled from Tata's Statistical Outline of India 2009.



From 1995 to 2007, the number of mobile phones in the world has gone from 90695000 to 3352767000. This shows that mobile phone has become a fastest growing product through out the world. Nevertheless, the rate of growth in India has been much higher than the global average. The compound growth rate in the mobile sector was 35.10 for whole of the world from 1995 to 2007 while this rate was 95.27 for India for the same period. In other words, India's mobile market has expanded almost three times faster than the global market. Here it is important to mention that in number of countries, it has already saturated while in India it is still growing at a much faster pace which is clear from the figures given in the next table.

TABLE- 4: LIST OF COUNTRIES ON THE BASIS OF MOBILE PHONES IN 2009- 2010

Sr. No.	Country	NO of mobile phones	Population	percentage	Updating Date
1	China	785,524,000	1,337,960,000	59.6	June 2010
2	India	635,510,000	1,180,166,000	53.8	June 2010
3	USA	285,610,580	308,505,000	91.0	Dec. 2009
4	Russia	213,900,000	141,940,000	147.3	Jun. 2010
5	Brazil	185,135,000	191,480,630	96.6	Jun. 2010
6	Indonesia	140,200,000	231,369,500	60.5	Dec. 2008
7	Japan	107,490,000	127,530,000	84.1	Mar. 2009
8	Germany	107,000,000	81,882,342	130.1	2009
9	Pakistan	97,579,940	168,500,500	59.6	Dec.2008
10	Italy	88,580,000	60,090,400	147.4	Dec.2008
11	Mexico	83,500,000	111,212,000	75.0	Apr.2010
12	UK	75,750,000	61,612,300	122.9	Dec. 2008
13	Vietnam	70,000,000	87,375,000	80.1	2009
14	Philippines	67,900,000	92,226,600	73.6	Dec. 2008
15	Turkey	66,000,000	71,517,100	92.2	2009
16	Nigeria	64,000,000	154,729,000	41.3	Dec. 2009
17	France	58,730,000	65,073,842	90.2	Dec. 2008
18	Ukraine	55,170,908	46,143,700	119.5	April. 2009
19	Thailand	51,377,000	65,000,000	79.0	2008
20	Spain	50,890,000	45,828,172	111.0	Dec. 2008
21	Bangla Dsh	50,400,000	162,221,000	31.1	Aug 2009
22	South Korea	47,000,000	48,333,000	97.2	2009
23	Argentina	40,402,000	40,482,000	99.8	2007
24	South Africa	42,300,000	47,850,700	82.9	2007
25	Iran	39,400,000	71,208,000	54.2	2008
	World	4,600,000,000	6,797,100,000	67.6	2009

Source: Wikipedia (Site visited on October 15, 2010).

The year 2009 noted a major slump in the mobile market of the world, because of the recessionary situation in the global market. However, it is important to mention here that there may be some exceptional companies those have noticed rapid expansion in their products. Like Apple's i- phone sale has increased by 91 % in 2009 (*The Tribune, 30th October, 2010*). Such cases can only be considered as an exception. In the overall market situation, it is only the markets of developing countries which have shown a major jump. Even the world wide slow down has failed to decelerate the markets of mobile phones in India and China. India has not only surpassed USA in number of mobile phones in the last two years, rather the size of the Indian market has gone more than twice bigger than USA and after China, it has emerged as the biggest market for mobile phones in the world. Moreover, gap between India and China has further come down and if the existing rate of growth is allowed to continue, it is expected that within next one decade, India's mobile market may come close to China. Another point to be mentioned is that the developed countries have limited market and major potential is mainly in the developing countries. India's mobile phone market is the fastest growing in the world, with companies adding some 20.31 million new customers in March 2010. By the end of 31st.August, 2010, the mobile figure of the country has crossed the figure of 650 million. The various estimates made by TRAI states that by 2014, the total number of mobiles is likely to cross 1 billion. According to Business Bhaskar (27th June 2010), by 2020, India is going to be world's biggest market for value added services through mobile phone. The existing trend of exponential growth in the mobile sector will continue to be there in the next decade also.

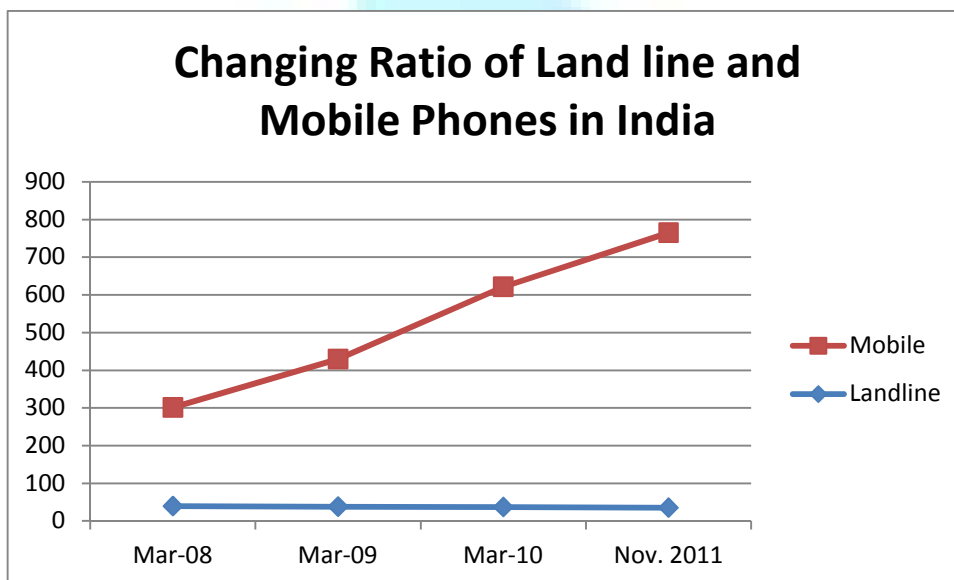
COMPARATIVE PERFORMANCE OF LAND LINE AND MOBILE PHONES IN INDIA

The biggest victim of the growth of mobile phone in India has been the land line phone. In the first decade of 21st century, mobile phone has noticed an exponential growth while the land line phone noticed a saturation and some times negative growth also.

TABLE 5: GROWTH OF TELEPHONE CONNECTIONS IN INDIA

	March 2008	March 2009	March 2010	Nov. 2011
Landline	39.41	37.96	36.96	35.19
Mobile	261.8	391.76	584.32	729.58
Gross Total	300.49	429.73	621.28	764.77
Annual growth	46	43	45	19

Source: Department of Telecommunications.



Land line phone connections are being disconnected by the people because of its inherent limitations. The overall share of land line phone has come down to less than 5 per cent in 2011 and it is further expected to fall. The trend in the graph clearly indicate that day is not for when land line is going to be a thing of past.

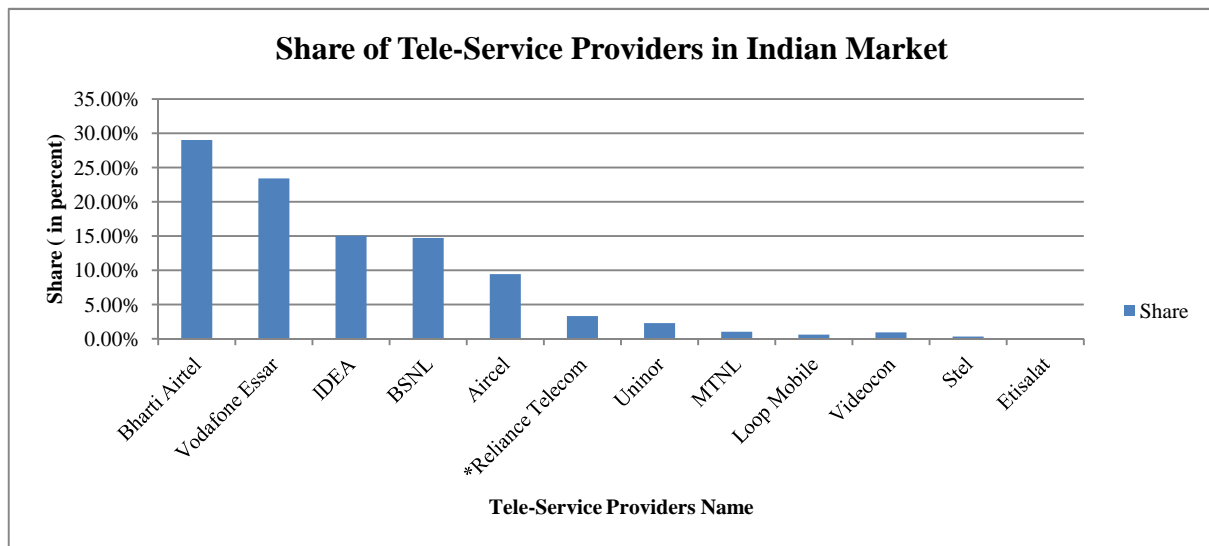
PERFORMANCE OF TELECOM COMPANIES IN INDIA

In India, large number of companies has joined this sector in the post reforms period. Presently, there is a stiff competition in this market. About a dozen companies have already joined this sector and some more companies are expected to follow them. Both public sector and private companies are there. BSNL and MTNL are mainly public sector companies and rest is private players.

TABLE 6: GROUP COMPANY WISE % MARKET SHARE AS ON SEP'2010

Sl. No.	Name of Company	Total Sub Figures	% Market Share
1	Bharti Airtel	143,292,272	29.00%
2	Vodafone Essar	115,553,042	23.39%
3	IDEA	74,213,507	15.02%
4	BSNL	72,693,217	14.71%
5	Aircel	46,515,378	9.42%
6	*Reliance Telecom	16,311,206	3.30%
7	Uninor	11,267,660	2.28%
8	MTNL	5,024,692	1.02%
9	Loop Mobile	2,983,899	0.60%
10	Videocon	4,482,272	0.91%
11	Stel	1,642,272	0.33%
12	Etisalat	56,583	0.01%
	All India	494,036,000	100.00%

Source: Cellular Operators Association of India, Site visited on October 30- 2010



Presently, Bharti Airtel is the leading company in this area which is controlling around 29% market of mobile phones in India. There are other 4 companies having market share in double digit. Here it is important to note that the share of public sector companies is gradually declining. In 2011 the share of private companies in this sector has increased to 85 per cent and the public sector companies' existence has been seriously threatened. Because of stiff competition, the various companies are coming with new schemes to attract the customers and the profit margins are quite nominal and that is why the rates of mobile calls in India are the cheapest in the world.

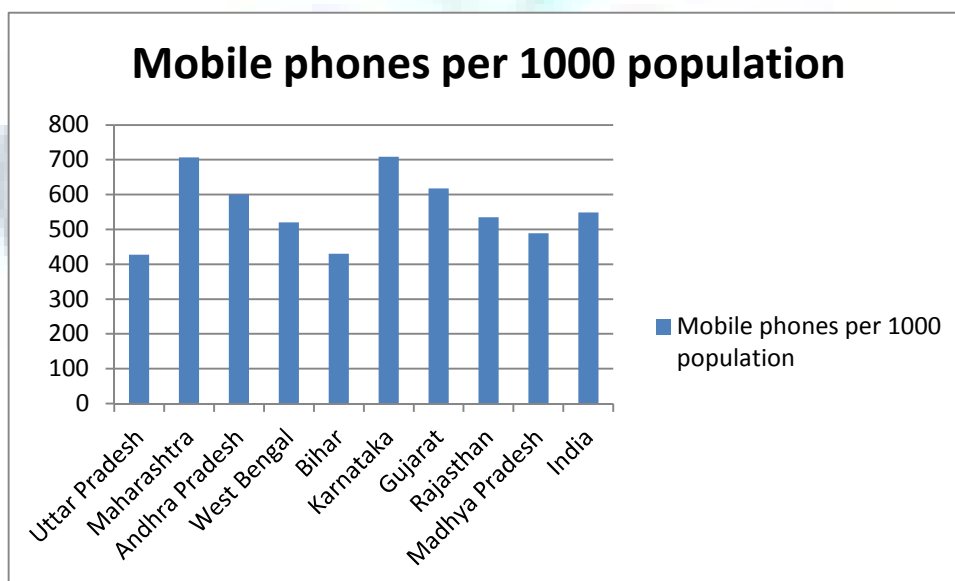
REGIONAL SPREAD OF MOBILE PHONES IN INDIA

India is a vast country comprised of more than 30 states and Union Territories. The spread of mobile phones is highly uneven.

TABLE- 6: MOBILETELE- DENSITY IN MAJOR INDIAN STATES

State	Subscriber base	Population (01/08/2010)	Mobile phones per 1000 population
Uttar Pradesh	85,185,307	199,415,992	427
Maharashtra	78,020,851	110,351,688	707
Andhra Pradesh	50,507,427	84,241,069	600
West Bengal	47,088,259	90,524,849	520
Bihar	41,898,468	97,560,027	430
Karnataka	41,804,172	58,969,294	709
Gujarat	36,097,163	58,388,625	618
Rajasthan	36,083,720	67,449,102	535
Madhya Pradesh	35,391,441	72,362,313	489
India	652,420,798	1,188,783,351	549

Source: Wikipedia visited on 1st November 2010.



Although, there are 549 mobile for 1000 people but it does not mean that more than half of India's population has been covered by the mobile phones. It is because number of people in India has got more than one sim and in actual terms roughly one third population has been brought under the mobile network. Therefore, there is still a lot of potential which is yet to be exploited. There are vast variations in the per capita income and standard of living. Amongst the 10 largest states of India, the highest tele- density has been noticed in Maharashtra while Madhya Pradesh has the lowest one. Therefore, it will not be wrong to conclude that there is some kind of positive correlation between spread of mobile phones and per capita income. The per capita income of Punjab, Haryana, Goa, Delhi etc. is many times higher than the per capita income of Bihar, JHarkhand, Chhatisgarh Madhya Pradesh etc. Similar trend can also be noticed in the spread of mobile phones also. According to the latest figure released by the TRAI in May (The Indian Express July 1st 2010) Punjab has emerged as the leading state as far as the density of mobile phones is concerned. The wireless subscriber base of the state has reached a staggering 21.24 million, just a few million below the state's estimated population of 25 million. The figures say the subscriber base of the state jumped by 6.5 lakh to touch 21.24 million users in the month of May 2010 alone. In Neighbouring Haryana, which has a population of over 21 million, the subscriber base has reached 14.93 million in May 2010 with 5.5 lakh new ones adding to the list that very month. The number of users in Himachal, too, has gone up to 5.2 million this year against the population of over 6 million. These highly Populated states still have lot of potential for further expansion in the near future also. Here it is important to mention that Punjab has also emerged as the leading state as far as the value added services like ring tones, SMS and MMS are concerned. For sustainable development, it is important that efforts should be made to cover the backward, tribal and other neglected areas and sections of the Indian society so that fruits of this technology could be distributed in every nook and corner of the country. Obviously, the rural areas of India still have huge untapped potential.

ECONOMIC DIMENSIONS OF MOBILE SECTOR

The Indian telecommunication industry is one of the fastest growing industries of the world, with 700 Million telephone (landlines and mobile) subscribers. It is projected that India will have 1.159 billion mobile subscribers by 2013. Furthermore, projections by several leading global consultancies indicate that the total number of subscribers in India will exceed the total subscriber count in the China by 2013. The industry is expected to reach a size of Rs 344,921 crore by 2012 at a growth rate of over 26 per cent, and generate employment opportunities for about 10 million people during the same period. According to analysts, the sector would create direct employment for 2.8 million people and for 7 million indirectly. In 2008-09 the overall telecom equipments revenue in India stood at Rs 136,833 crore during the fiscal, as against Rs 115,382 crore a year before (Wikipedia). A large population, low telephony penetration levels, and a rise in consumers' income and spending owing to strong economic growth have helped make India the fastest-growing telecom market in the world. A new mobile connection can be activated with a monthly commitment of Rs.100. Even some of the companies are offering life time validity where the consumer is supposed to charge his mobile once in six months. The average growth rate in this industry has been around 30 % in the first decade of 21st century.

The unprecedented growth in mobile industry in India has given a birth to the new class of entrepreneurs. The biggest example in this area can be of Sunil Bharti Mittal owner of Airtel which is the largest mobile service provider company of India. In 2010 Airtel has acquired Zain Telecom's Africa operations. It has made Airtel as the 5th largest mobile service provider in the world. Similarly, other Indian companies like Reliance, BSNL etc are also in the race for capturing global market through takeovers and tie up arrangements. Similarly, this industry has given a birth to number of entrepreneurs amongst the rural and urban poor section of the Indian society. There is hardly any village or locality in India where there is no shop relating to mobile sale, repairs, recharges coupons etc. Obviously, mobile has created a very large number of entrepreneurs through out the country.

In the last one decade, i.e. from 1999 onwards, average rate of growth of the world economy was between 3 to 4 percent while the average rate of growth of the Indian economy has stayed between 6 to 7 percent. In the face of global meltdown, the demand for a mobile phone has not seen any slump in the Indian market. Although companies like GM, Layman Brothers etc. walked into bankruptcy, however, mobile phone market in India remained unfazed and unaffected. The growth of any economy cannot be attributed to a single variable as there are multiple factors, for its socio-economic transition. Service sector has become an engine of growth for the Indian economy (See Economic Survey 2008-9). Its share in overall India's GDP has crossed 56 percent. Mobile phone sector is one of the biggest players in service sector which has boosted its exponential growth in service sector. In the last three years since 2007, the average monthly sale of mobile phones in the Indian market has been between 15 to 20 million. If the average price of a phone is taken for 2500 rupees approximately, the volume of total revenue generated through this sale is around Rupees 25000 crores. Similarly, assuming, if 65 crore mobile users spend Rs 200 per month as average expenditure on a mobile phone bill; the annual expenditure would generate Rupees 13000 crores. The amount spent on wear and tear, advertising etc. also comes around Rupees 5000 crores. The total direct contribution of this industry to the Indian economy is around rupees 50000 crores. Similarly, the indirect contribution of this sector is many times bigger than that. This amount is almost equal to the total amount spent by India's most revolutionary scheme named as Mahatma Gandhi National Rural Employment Guarantee Scheme.

Mobile phone has emerged as the fastest growing product in Indian market. In its demands it has already single-handedly surpassed all other consumer goods. Indian economy continues to grow at 7 to 8 percent while the rate of growth for the world economy has slumped to less than 1 percent. The growth of mobile phone market in India has stayed at more than 30 percent. Mobile phone has created countless employment opportunities for the people of India through its production, distribution, sales and repairs in every nook and corner of the country. For instance Nokia's plant at Chennai has provided direct employment to 4000 people. No single product has generated such a keen interest and a variety of employment opportunities in the last one decade. This appears to have surpassed even the software industry in terms of employment. Employability in mobile phone industry does not require specialized qualifications like an engineering course of four years. Here, one may add that employment need not be measured for its commercial content; it also has a multi-dimensional transformational impact on a society. The mobile phone industry has created enormous employment opportunities, especially in unorganized sector of the Indian economy. This can be substantiated by the fact that a plumber, a taxi driver or a casual worker who is generally on the move can be easily traced and contacted. Such a worker can also plan his time-schedule accordingly to serve many more customers. The unorganized work force of India has been benefited tremendously. The multiplier impact of a mobile phone has given an additional boost to the Indian economy. If any single product has to be credited for breaking the vicious cycle of underdevelopment and taking it to the stage of take-off, it has to be definitely a mobile phone. It has played an important role in checking the impact of global slowdown in India.

The founding father of India's Green Revolution Mr. Swami Nathan has pointed out that the farmers have been the biggest beneficiaries of the mobile phones because they always remain in touch with the latest developments taking place in the market. Earlier they have to sell their goods at throw away prices but mobile has sufficiently helped them in getting better price for their produce. Since, agriculture sector is still the biggest employer in India and without transforming the lives of peasantry; no worthwhile change can take place in the Indian society. This can be considered as the biggest contribution of the mobile phone in India. PTI reports in the Tribune of Jan 4, 2010 that over 1.75 million Indian nationals living in the UAE will find it easier to send money through mobile banking. It further says that at least \$25 billion in remittances were sent to India in 2008 by expatriates working across the Gulf, according to World Bank data with UAE representing about 13 percent of the total remittances to India. "Unique Identity Project of Government of India is exploring the possibility of using mobile as an instrument for the identity of Indians. Large number of banks has given the facility of mobile banking which can be operated purely with the help of mobile phone. It has become more popular than internet banking because large number of people has no access to computers. These are the few new areas; where off late mobile phone has also jumped and an important role in almost every section of the Indian society.

In the first half of the 20th century, India experienced a very slow growth, sometimes which is called as the Hindu Rate of Growth. In the post-independence era, slight improvement was noticed but till 1970s, India's rate of growth remained less than the world's economy. It was only after 1970s, that India registered a growth rate which was slightly higher than the world average. In the post reforms period, Indian economy has shown an outstanding performance in sectors like Information Technology. In the first decade of 21st century, Indian economy has emerged as the fastest growing economy of the world only next to China. Even during the world wide global melt down, Indian economy remained resilient and acted as engine of growth for taking out the world from this crisis. Although, there might be different factors responsible for this but the single most important reason for this unprecedented growth in the Indian economy is the expansion of the mobile telephone which acted as a biggest catalyst for keeping the momentum of the Indian economy. The sales volume of mobile phone has surpassed all other consumer goods including television, washing machines, radio sets, computers, etc. None of the changes that mobile phone connectivity brought about

seems earthshaking in isolation. As the steam engine and power loom played a role in England's Industrial Revolution, almost similar role is being played by mobile phone in India.

SOCIO-CULTURAL IMPACT OF MOBILE-TELEPHONY IN INDIA

Mobile phone is not merely a technological innovation; it has but also had serious implications for the socio-cultural fabric of Indian society. India is still considered a conservative society when compared to its Western counterparts. With the emergence of a mobile phone as a household product, the barriers in communication have broken down substantially. A popular advertisement on the TV has rightly exploited this theme that earlier it were the parents who introduced their children for marriage, now it is the children who in order to marry get their parents introduced. This has helped in bringing more freedom and frankness in the otherwise traditionally conservative Indian society. Generally it is said that Information Revolution has created a digital divide but a mobile phone can be considered as an exception to it because a large section of Indian population, living below poverty line has been successfully brought under the gamut of its usage. For the haves and have-nots, a mobile phone has become an integral part of their life. It has successfully dented the digital divide to a great extent and no more does it remain a sole domain of the elite class. Rural poor, labourers and other weaker sections of the Indian society have also started benefiting from this miraculous gadget.

Mobile phone is a product of mass consumption. Its sales in India far exceed in numbers when compared with other consumer goods. Although computer is also playing a vital role in India's economy but its access is limited to a negligible section of the Indian society. For operating a computer one has to possess certain specialized knowledge and skills whereas for operating a mobile phone one does not need any specialized training or education. Even illiterate people can operate it and in India where 300 million people have no educational background, a mobile phone has provided them with new opportunities in the various spheres.

According to The Times of India, Dec. 5, 09, in Andhra Pradesh's Jeedimetla village where people encouraged playing mobile games to learn English. Irani says Matthew Kam, an assistant professor at Carnegie Mellon University and his team are developing these games as part of Mobile and Immersive Learning for Literacy in Emerging Economies, a research project that aims to help poor Indian children acquire English as a second language. Generally literary creativity has little to do with a common man. Everybody need not be a professional play writer poet or a literary person to be creative. Since, mobile phone makes available various modes (verbal or written) of communication; it has promoted hidden creative potential of the younger generation. Shakespeare once said: "When hearts are full words are few" clearly depicts the limitations of the emotional human oral communication. A mobile phone has helped in overcoming this human hurdle through different means. One can write SMS message send a picture message or a MMS, which at times communicates more than the words. Therefore, the most unexplored and orally unspeakable dimension of a human personality finds a written or symbolic expression through the use of a mobile phone. Axel Mayer, the designer of N-series of Nokia phones says that "We wanted to capture life and wed it with technology, like taking pictures and sharing with others" (M. Rajendran 58) says that Mayer is working on the next N series phone which for him would "join the virtual with real world". Similar creative attempt is being made by other mobile companies which bank on creative people like Mayer in order to bridge the gap between expectations, aspirations and hopes of the new generation in constantly innovating mobile technology.

The reality of a mobile phone has come to stay. It would, indeed, go on endlessly redefining/reworking human lines. The boundaries of 'known-ness' (which perennially expands the territory of reality itself) have broadened. In present times, the dimension of mobility added by a mobile phone has re-modified our body language. It has now generated its own register, its own discourse. Mobile phone has extended the range of topics which could be discussed telephonically. It is a transition from transference of significant information to a dilution of seriousness of information to chat like gossip. It has freed the act of communication and further simplified it. It certainly has transformed the tone of a communication.

If one explores the feature of SMS offered by the mobile phones, one finds that it has added a new dimension in written language. A SMS flaunts the correctness of language. A simple letter 'd' is capable of representing 'the' or 'u' can now represent 'you'. This almost numerical representation for complete words or shortening of words, for instance, 'dat' for 'that'—are certain challenges of this new found language posed to the purely assumed by grammatical language. The language of SMS takes to task correctness. Language is forced to liberate out of its conventional grammatical correctness. Language and its uncomfortable other have now learned to tolerate each other and co-exist. Love-letters have become redundant and old fashioned. The discourse of love is now an admixture of a free-flowing, bolder and uninhibited speech between a boy and a girl while SMS questions the written form of a love-letters. This change is significant, since this gives a glimpse of how secretly this modern mode of communication has replaced a traditional mode, and in doing so, has manipulated the emotional and social habits. It would not be wrong to call a mobile phone a sign that is capable of altering human speech, language and social behaviour. It has added to the play in language. Now a days, mobile phones have come to be linked with modern day human identify. One is reminded of yet another advertisement where the husband while sitting in the same room goes on sending SMS's to his wife. The advertisement is constructed after the idea that mobile phone communication can redefine and promote a closer bonding between husband - wife relationship. As a new mode of communication it has added another dimension to rediscovery of their relationship. It has induced an element of surprise and variety to a relationship.

Lately, with the growth of communication technology in the last two decades the repressive in Indian traditional value system has found an expression through communication technology. If literature of the bygone era celebrated motifs like "Heer-Ranjha", "Laila -Majnu", "Sohni-Mahiwal" as reflections of traditional family system which opposed love relationships. Technology has indirectly empowered individuals and weakened the control of traditional value system. The barriers to meeting of a girl and boy imposed by typical traditional parents can be surmounted with the use of a mobile phone. The male female relations in India and now defy the spacio-temporal limitations imposed on them by their traditional parents to a reasonable extent. Walls that separate two lovers have noticed major cracks through the tsunami waves of the mobile phone. The mobile phone signifies a means to revolt against sanctions on communication.

With the growing use of mobile phone, the change in the Indian society is more visible at socio-cultural level, whereas for the poor this transformation is more visible in having improved their economic life. The middle class being more psychologically alive is more imaginative in its use of the mobile phone. The rich might only be obsessed with purchasing expensive phone sets. Definitely, there is hardly any section which has not been touched by this instrument. The experience of a mobile is multi-fold and it provides a secular space wherein the high and low could meet in the materiality of a phone. Purchasing an expensive handset is an elitist fad, whereas an inexpensive phone would give a symbolic opportunity to the poor to feel equal to the rich. More recently with the introduction of the 3G services on mobile phones, the act of communication has become a hyper-real act. While it adds an element of fiction to communication, its video imagery adds a sense of picturesque reality to a conversation and re-modifies relationships. It has added a dimension of "entertainment-value" to the otherwise mundane act of telephony. The mobile phone has combined the possibility of verbal, visual and the written word all in a single space.

MISCELLANEOUS CONTRIBUTIONS OF MOBILE PHONE TO THE INDIAN SOCIETY

Apart from the above stated contributions, mobile phone has played an important role in number of other areas also. According to 2001 census, India's literacy rate was 64 percent and the literacy figure projected for the year 2011 is 78 percent. Mobile phone has added a new dimension to extending literacy to helping improve the functional literacy of its users in a unique way. The computer is at times feared for being a highly technical gadget. Majority of people feel inhibited to use it in their daily life. This inhibition has been successfully broken by the mobile phone, because a variety of functions in a mobile phone are quite similar to that of the computer like enter, backspace, delete, copy, save alphabets, numbers etc. After using mobile one gets psychological confidence that like mobile even computer can also be operated. During the last five years there has been a tremendous increase in the sale of computers in India and the overwhelming familiarity with a mobile phone and its cheaper price has aided in boosting the demand of computers.

In a mobile phone has helped people during calamities and unexpected crises which has situations occurred in India during the last decade. Tsunami was the single biggest tragedy where death toll touched 16,000 in India during this decade. Mobile phone played an important role in reaching help to the needy similarly, during the Kosi floods in Bihar, lakhs of people could be saved only because of the connectivity provided by a mobile phone. A number of lives could be saved during Aila Tornado in West Bengal because of a mobile phone. The recent cloud burst in Leh played havoc and where all communication networks was damaged and the relief operations could be started with the help of satellite mobile phones and number of precious lives could be saved. At micro level in case

of an emergency mobile phone plays an important role. If a person meets with an accident or if a lady is travelling alone, in both cases it can provide ready succour and security. The GPS facility provided on the mobile phone will act checks crime as your guide in case one has to find ones way. Similarly, police or the family members can be called at one call in case of an emergency. Moreover, in case of natural calamity, the persons can be located by tracking mobile phone. Here it is important to mention that the police and security agencies have successfully used this technology to trap a large number of criminals/terrorists. No doubt criminals and terrorists have repeatedly made use of this technology but its use now can make them gullible. Number of criminals forget that once they use this device, they come under the global network and can be traced if the security agencies desire to so. In large number of criminal cases, the police investigation starts with the mobile calls. There is a strong tendency in the Indian society to hide a crime and most of the times; these crimes are put under the carpet. With the ever-growing use of a mobile phone, a large number of crimes have been brought to the book. Police and other security agencies keep a regular track of the communication network of the terrorists and the organized criminal gangs. Family as a unit is strengthening into a cohesive unit since parents can now monitor their children. Even husband and wife can follow track to each other's activities. In so many cases a number of rapists, kidnappers and other anti-social elements have been successfully trapped through mobile phone technology. The recent bribe case of parliamentarians or more recently the case of an IAS officer at Bhopal who was caught red-handed sexually assaulting his subordinate who called the media from his mobile phone had created a sensation in India. This technology is going to play an important role in tracing criminals and checking crime even in the near future also.

SOME PRIMARY OBSERVATIONS

The growing use of mobile phone amongst the various sections of the Indian society has virtually enhanced their skills and proved to be quite useful in sorting out their social problems in number of ways. It was interesting to note that majority of them have become conversant with English alphabets and numeric figures given in mobile phone. They further elaborated that now they can save mobile numbers, redial them and monitor their mobile bills. They further mentioned that mobile phone has helped them in enhancing their income through increased access to work. Even majority of them have provided phones to their household wives. Most of them preferred to buy another handset to their children rather than purchasing television or washing machine.

The intellectual community is of the opinion that mobile has played a multidimensional role in the transformation of Indian society. It will not be wrong to call mobile as the biggest revolution experienced by the independent India. It has broken the barriers of caste, creed, religion and class. It has emerged as a symbol of new India. Even the most neglected sections of the Indian society have been brought under its network. It has given a new dimension to the teacher/taught and employer/employee relationship. It was observed from the discussion with the university lady teachers that that mobile has played a revolutionary role in the sorting out the gender question. Any time they feel the problem of eve teasers, etc., mobile acts like a helping hand because they can call their family members and friends in case of any emergency. Further they believe that mobile has helped significantly in improving the social status of women in the Indian society because now they can better express themselves according to their convenience and through non verbal communication. For number of women, it is acting like a companion when they are alone or away from their homes. The mobile phone has helped significantly in enhancing their communication. Apart from an inhibited chat, women using SMS messaging whenever they find oral communication is either insufficient or undesirable. Obviously, mobile is playing multi-dimensional role in Indian society and further intensifying the process of social transformation.

MAJOR ISSUES IN MOBILE INDUSTRY OF INDIA

No doubt, Indian mobile industry has noticed unprecedented growth in the last one decade but at the same time it is also confronting with number of controversial issues. In 2008, India banned the unbranded Chinese mobiles which are without IMEI numbers. Also a large number of SIM connections have been deactivated in a number of Indian states because the identity of these SIM cardholders was suspect. In a recent development the Indian govt. went on to shut down 2 crore mobile connections which failed to procure IMEA identification number for their mobile handsets. Under WTO regime, such issues can create some legal problems. Similarly, Blackberry company of Canada also faces similar controversies at differ occasions. According to The Tribune (18th July 2010), the Blackberry has sold more than 75 million devices used in more than 170 countries. However, along the way, there were problems, financial vicissitudes, a patent battle and accounting issues with the Canadian securities regulators. Both times the firm paid major sums of money to settle the issues. Recently, Saudi Arabia and some Middle East countries have banned the products of Blackberry in their respective countries. According to Daily Herald (3rd August 2010), BlackBerry maker Research In Motion may make concessions to India and Kuwait after their governments voiced concerns about the smart phone as a security threat, newspapers said on Tuesday. According to Economic Times (9th August 2010) Blackberry has made a fresh attempt to break the logjam over its services in India by offering Metadata and relevant information to security agencies which will enable them in lawful interception but has failed to enthruse them. This issue has yet to settle between India and Blackberry.

Absorption and development of technology to meet the specific needs of different areas is very important. Mobile phones technology relies mainly on multinational companies for imports. Therefore, the product designing to meet the specific needs of India's rural, tribal and backward areas has yet to be satisfactorily achieved. The biggest handicap of a mobile phone in India is that its battery has to be charged frequently and in India, there are one lakh villages where there is no electricity. One fifth of India's population has yet to be brought under the cover of electricity network. Therefore, charging a mobile phone battery remains an important problem which might be addressed by some mobile phone manufacturing company in future. Mobile phone companies also claim that they provide all India network but in reality, a number of hilly, tribal and backward regions are yet to be brought under a far reaching electronic signal cover. In these areas, the so-called mobile network remains restricted to a district or tehsil headquarters. In the tribal districts of Lahaul Spiti and Kinnaur Himachal Pradesh only 20 percent area has been covered by mobile network. India has emerged a world power in software development but unfortunately computer hardware parts are yet to be manufactured in India. Microchips and semi-conductors are not manufactured in India hence; the price of a mobile handset in India is still higher in comparison to China, Taiwan, and Singapore. Also the excise duty structure in India is quite high in comparison to these countries.

MOBILE: A CRITIQUE

Since, every technology has its demerits; therefore a mobile phone cannot be an exception. As a sign it has come to mean different things in different situations. Some people believe that it has affected their privacy and thereby, to a large extent contracted human anonymity and freedom. In the early years of mobile phones in India incidence of pornographic MMSs' and obscene SMSs' are on the increase. The mobile phone has been frequently used to capture a sexual act wherein after an unaware girl is exploited by a boyfriend which amounts to a new kind of rape (unheard as Indian Penal code would define it). It can act as an instrument of revenge, a variety of sado-masochistic behaviour. The biggest criticism of mobile phones has been that it has broken down the taboos of Indian society drastically and obscene SMS are sent and even the climax of this obscenity can be found in MMS where some teenagers have exposed themselves beyond all limits. In some cases, it has seriously created not only law and order problem but also threatened the social fabrication of Indian society. Similarly, the criminals, terrorists and other anti-social elements have also taken a big advantage of this technology. In some of the Indian states like Jammu and Kashmir mobile services were not extended in full scale because of terrorism. According to Punjab Women Commission, out of 20 cases of crime against women, at least two cases were those of suspicion due to cell phone usage. It is interesting to put into perspective the use of mobile phone among the youth (who happen to be the biggest chunk of the total users of the mobile phone). The use of this technology has created enormous freedom for the youth in their domestic (private) sphere. However, when it comes the institutional (public) sphere the youth demonstrate an entirely different attitude. In public life the youth appear very conservative, they confirm to maintaining decorum, they plant in private. This compared to their behaviour in private sphere (home), which is hostile, volatile and different from their conformist streak in public life. This leads us to inquire into the kind of impact of mobile technology on the youth. This technology has promoted the personal ahead of the national/ public/social/ vision in the youth. It has redefined /reworked personal relationships while on a public front the social concerns have been reduced to insignificance. The 'I' culture has undermined the social 'we'. One recalls village life where the social ties even without a mobile phone would translate into community bonding. The mobile technology (which should have strengthened the 'we-ness) has oddly enough ended up in promoting 'I-ness. Maxim Gorky in his famous noble Mother mentioned that I hate a person who has invented the word I. Technology has grown but social

responsibility has taken a beating. In short, mobile technology while creating endless connectivity and freedom on the personal front has simultaneously enhanced narcissistic streak in the youth. Mobile handsets are not manufactured in India; hence, the demand of Indian market for handsets or spare-parts is met through imports. Around \$ 15 billion are siphoned off from India every year through its imports and it has further intensified the problem of current account deficit which has already worsened in recent years. Charging is another problem in India where people in the state of Bihar and Jharkhand etc. used to go to cities for charging their mobile phones. Another criticism against the mobile phone can be hoax calls and undesirable messages which some times disturb a person particularly during the odd hours. Similarly, mobile telephony is also criticized because people change their numbers very frequently. Perhaps this problem could be checked to an extent once the portability of the mobile numbers will be possible by the end of 2010. Roaming charges is also a major issue in India. Number of countries like USA has already gone away with the roaming charges. It is important to mention that any technology takes little time for its absorption. By now this technology appears to have been absorbed which can be substantiated by the fact that frequency of obscene MMS etc. has declined significantly over a period of time. It will not be wrong to say that mobile has become necessary evil of Indian society.

SUMMING UP

Technology plays an important role in the socio-economic transformation of any society. Each invention in the human history has played a unique role in changing human life. In countries like India where socio-economic formations are quite strong, the process of change and transition is very slow. However, in the last two decades, India has experienced drastic changes in its socio-economic fabric. Indian economy has emerged as the second fastest growing economy of the world. Many factors have contributed to this growth but the role mobile phone has been most crucial. Although computer has managed its place as a household product but its usage and know-how is limited to a few. Mobile phone has emerged as the single largest selling consumer product in the Indian market. It has made a major contribution to the Indian economy in terms of revenue generation, employment etc. This is the only product, which has overcome the digital divide to a large extent and has its reach beyond the class distinctions to the most under-privileged section of the Indian society. It has created a new class of entrepreneurs. It is also acting like a new tool of surveillance both for the security agencies as well as for the common public. It has acquired a dominant position in the India's GDP and has helped in substantially minimizing the impact of global meltdown. Taking into account the peculiar character of India's social and cultural formations, it has successfully diluted the retrogressive social taboos prevalent in Indian society. It is no more a tool of simple communication but rather it has emerged as a way of life in India. Nevertheless, for further improving the role of mobile in Indian economy; it is important to boost the hardware manufacturing within the country so as to provide cheap handsets to the Indian people. Moreover, electrification of all villages must be taken on top priority so that rural market of the country for mobile phones may be further expanded. In spite of some other limitations of mobile phones it will not be wrong to conclude that a mobile phone has played a role of most important catalyst in the socio-economic transformation of India.

NOTES

1. Nandan Nilekani in "Giving Indians an identity" in Times of India Dec 26, 2009 says that "Electronic stock markets have allowed individuals to execute their trading orders from anywhere in the country and wide spread access to mobile phones has meant farmers can call up 'mandis' to negotiate prices."
2. In "The dance of digitalization" Atul Sethi says that "The boundaries of cellular technology were pushed further with the arrival of smart-phones that added a lot more zing to the humble mobile." He also that "Their biggest contribution, however, was to fulfill a need that most people didn't even realize existed- adding more power to the mobile." (The times of India Dec 27, 09).
3. The Women Commission of Punjab came out with an interesting case of Navneet Kaur and Iqbal Singh for separation. Navneet Kaur was suspicious because of missed calls and SMS on Iqbal's phone. They have made charges of disloyalty against each other. See The Tribune 16th October, 2010. Similar another case can be of Tiger Woods. (See Times of India New Delhi, December 24-2009).

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CONSUMER PERCEPTION TOWARDS TELEVISION ADVERTISEMENTS

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ABSTRACT

Television advertisements plays a major role in the bridging the communication gap between the manufacturers and the consumers. The focus of this research is to study the behaviour of audience towards selected television advertisements. Field survey method was employed to collect primary data from the selected 300 respondents with the help of a structured questionnaire. Aided recall with ten television advertisements of regional language was used. The study explores the behaviour of the audience and their preferences in watching television advertisements. Audience perception towards selected television advertisements was studied and positioned with a perceptual map.

KEYWORDS

advertising, television advertisements.

INTRODUCTION

Advertising is a cultural form that reflects and moulds our lives. Several media scholars have emphasized advertising's role as one of a major reinforcement because of its presumed power for molding opinions, attitudes and behaviour. Advertisement is an effective tool of marketing and the most vital component of promotional activity. Advertising is used by the marketers to publicize the happenings of the company and their offerings to the customers. In the contemporary era, the influence and impact of advertisement over both the classes and the masses has refined the entire ambience of marketing. So great is the power of advertisements to influence the buyer's decision that it has become mandatory for sellers to allocate higher budgets to advertise of their products. Along with the manufacture of products, the sellers and manufacturers are also entrusted with the responsibility of stimulating a desire for their products in the minds of the customers and advertising is doing a great service.

The advertisement industry is one of the most dynamic industries in the world as the process of buying is a continual action and the choice making of customers is in a state of constant flux. In addition to bridging the consumer awareness gap and disseminating information, the focus of the advertisement industry is also to arouse the curiosity and trust of prospective buyers. The culture of buying has undergone a drastic change in the past two decades and advertisements rule the roost in the present market. This is also due to increased brand awareness. Television advertisements have brought a paradigm shift in the arena of advertising.

Television advertisements have in filtered into the very existence of the Indian consumer. Television advertisements especially those which are telecasted at the prime time are strategic tools of mobilizing potential customers. The study explores the behaviour of consumers towards television advertisements.

REVIEW OF LITERATURE

Advertising is created for and targeted at the audience. Consequently the importance of audience reactions to advertisements has been studied at various intensities by researchers across the globe. Ewen (1992) refers advertising as that not only sells products and services, but also indirectly tells us ways to understand the world. Similarly, Goldman (1992) has opined that advertising is a major social and economic institution which strives to maintain cultural hegemony by providing us socially constructed ways of seeing and making sense of our world. "Advertising is a useful source of reflection on representation in consumer research because it is a succinct metaphor for the wider marketing industry" (Chris, 2003).

Advertisers take the responsibility of communicating the commercial messages and it is an important element in Integrated Marketing Communication (IMC) strategy. It supports the advertisers in various stages of the decision making process. The need is felt in all the stages of consumer decision making and advertisements fills the 'communication gap'. A planned communication process acts as a door opener in the decision making process in buying. Therefore, advertisers, admen and academic researchers give importance to test the communication and message strategies used in ads.

Thomas (1996) studied the aspects of advertising and hype created by ads and highlighted the effects of it. Advertising can create awareness on products as well as brands. Brand awareness in customers a) creates the possibility of purchase b) helps them to see a brand in the store c) biases people in favour of the known brand. Advertisements can communicate unknown facts of the products and services and can suggest a better brand to the prospective customers.

Aaker et al. (1997) suggested that the proficient advertising man must understand the psychology of advertising. One must learn that certain effects lead to certain reactions, and increase the results by avoiding mistakes. Weilbacher (1984) opined that advertising is a form of communication that provides useful and relevant information to the audience to act immediately or to use it at the time of purchase. He also states that advertising is a fraction of the incoming messages seeks to attract attention of the audiences and to convert the loyalty to products, services and institutions. Relevance of information is vital in approaching the audience and converting them to go for the products and services.

In fact, advertising is communication that provides generally useful, relevant and pertinent information upon which the consumer either acts immediately or stores for later reference, application and use. Creative ability in advertising is to solve problem in unique way that is different from any solution ever before devised (Richard, 1982). To succeed in marketing, the advertisers need to understand what makes people behave the way they do.

Haley and Bal Dinger (1991) explains that likeable advertising has an impact on persuasion and it affects the emotional component of audience's attitude towards the brand. Extensive research has accumulated over three decades that indicates both disliked and liked advertisements are memorable and result in recall. Schoham and Aviv (1996) selected a set of three ads and conducted their research on the effectiveness of standardized and adapted TV advertising, and presented the findings from the perspective of target market and assessed the set of outcome measures in the same perspective. The commercials represented varied levels of standardization, recognition, recall, believability and purchase levels in the outcome measures.

Eva et al. (2007) conducted a study on the effects of television ads in brand placement on brand image. Results of the study confirm the applicability of learning and human associative memories to brand placement. The major findings of the research include brand placement and its effects, brand image and image components that were not associated with the program were not affected and neither was brand attitude. Finally it is suggested that placing a brand in television program can result in very specific image change and advertisers should make a well-defined choice for a program that conveys the desired image before they decide to get involved.

Ahbilasha (2000) studied the relationship between the attitude of audiences towards advertisement and its effectiveness. The study aimed to identify that consumers with more favourable attitude toward advertising in general would recall more ads and tend to get persuaded by them. The results of the study indicated favourable attitude towards ads persuades the audiences and also ads which can create a favorable attitude have a positive impact in them.

The present study is of great significance as it directly relates to the most dynamic channel of promotion on which the modern market and even the economy depends. The broad concern of this study directly relates to the behaviour of audience in relation to the TV commercials.

Most of the studies conducted in India had taken the "unaided - recall" method of measuring the effectiveness of the ads. The respondents involved in these research processes give responses based on the memory power they have i.e. the ads watched by them was assessed after a long period. These responses may not reveal the real impact, as the recall is made after a long interval. The period of the ads watched by them and the responses provided by them as input for research is longer to be reliable. In this research the gap is eliminated by using the aided recall method. Ten selective regional ads were chosen and the impact and factors preferred in those advertisements were assessed in this research.

The studies relating to advertising highlights the importance and need for higher level of influencing elements for the success of advertising. The focus of this research is on the audience perception towards television advertisements, the traits liked and disliked by the audience and the consumers positioning of the advertisements.

OBJECTIVES OF THE STUDY

The study understands the behaviour of the audience and their preferences in watching television advertisements. The following are the objectives studied in specific:

1. To understand the perception of audiences towards selected television advertisements;
2. To examine the features of television advertisements that influence the audiences;
3. To position the selected television advertisements based on the respondent's perception of the attributes measured.

RESEARCH METHODOLOGY

SAMPLE DESIGN

The study was descriptive in nature and conducted in Tamilnadu, India. Sample was selected at convenience in the states of Krishnagiri and Dharmapuri of Tamilnadu. The population above 18 years of age in these two districts was considered as sample for the study. Majority of the population are agricultural labourers and they were not ready to spend time to respond to the questionnaire. This made the researcher to adopt the convenience sampling method that gives flexibility to approach, with only those who are ready to spend time and respond to the questionnaire. Sample size is determined using the "Sample size determination for the means method". The formula for computing "n", the sample size used in the study.

$$N = (Z\sigma / Dx)^2$$

The 'z' value represents the 'z' score from the standard normal distribution for the confidence level desired by the research. At 95% confidence level, the associated value of z score is 1.96. 'σ' represents the standard deviation of the population and 'x' represents the mean of the population. The standard deviation of the population is estimated by conducting pilot study. The interval scale is used in the pilot study. With the mean of 4.3 and the standard deviation of 1.89, the estimated sample size is 296. To round the figures, a sample of 300 was considered for the study. Equal number of samples, 150 from Dharmapuri and Krishnagiri districts was considered.

METHODS OF DATA COLLECTION

The focus of this research is to study the behaviour of audience towards television advertisements. Field survey method was employed to collect the primary data from the selected 300 respondents with the help of a structured questionnaire. Ten television advertisements of the regional language (i.e. Tamil) were shown to the respondents and their opinion on those advertisements were drawn. The advertisements selected were of Ashirvad, Fair & Lovely, Fevicol, Hamam, Lakme, Mentos, Parachute, Power soap, Sugar Free, Surf Excel. The advertisements were selected after pilot study. In the pilot study, 20 popular regional ads were shown to the respondents participated and were asked to rank them. Top ten ranking ads were considered for the research. Care was taken in wording the questions in the questionnaire because poorly worded questions can cause respondents to report miscomprehension even though they actually comprehend the message (Lynn et.al. 1992). In case of respondents who were not having formal education, the researcher read and briefed about the questions and recorded their response. Respondents with varying background were selected based on the important demographic aspects like age, gender, educational qualification, marital status, occupation and income level for this study.

PROFILE OF DHARMAPURI DISTRICT

Dharmapuri is one of the 30 administrative districts of Tamilnadu situated in the north-western corner of the state and the district's economy depends on agriculture. Dharmapuri district came into existence since the year 1965. The total geographical area of this district is 4497.77 square kilometers i.e. 3.46% of Tamilnadu, India. According to 2001 census, the total population of the district is 12, 95,182 consisting of 6, 70,520 males and 6, 24,662 females. The literacy rate of this district is 63.5%.

PROFILE OF KRISHNAGIRI DISTRICT

Krishnagiri district has been bifurcated from Dharmapuri district as the thirtieth district of Tamilnadu, India. It has 2 municipalities, 10 panchayat unions, 7 town panchayats, 352 village panchayats and 636 revenue villages. The total geographical area of this district is 5143 square kilometers. According to 2001 census, the total population of the district is 15, 46,700 consisting of 7, 95,718 males and 7, 50,982 females. The literacy rate of this district is 58.11%. Three languages namely Tamil, Telugu, and Kannada are predominantly spoken in this district.

STATISTICAL TOOLS USED FOR ANALYSIS

The data collected was checked for its validity and reliability. Statistical package SPSS 15.0 was used to analyze the data collected. To study the perception of audience towards selected television advertisements, respondents were asked to rate them from best to worst. Weighted average scores were calculated to understand the perception of the audiences on television commercials, and the ads were ranked.

Weighted average score = $\sum (\text{No of Respondents preferred the ads} \times \text{weights assigned}) / \text{total no. of respondents}$.

Perceptual mapping is used to visually display the perceptions of consumers. It is a marketing research technique in which consumer's views about a product are traced or plotted (mapped) on a chart. In SPSS, discriminant analysis is performed considering the brands as the decision variable and the opinion in a scale as the independent variables. A combined group plot is activated to have the perceptual map. The strength of the variables is understood from the coefficient matrix. Perceptual mapping is done to position the advertisements based on the attributes measured as opined by the respondents.

VALIDITY AND RELIABILITY

The validity of the instrument, questionnaire was ensured at the time of pilot study. Content Validity was established by enquiring the sample considered for pilot study. Focus was given on whether or not they are able to understand the concept that is targeted in the questionnaire. The respondents who said that television ads influence their decisions in purchasing a product had different levels of influence on the attributes of television ads than those who said that television ads do not influence their decision in purchasing a product. This ensures construct validity of the questionnaire.

The reliability of the questions was empirically examined in order to understand the coherence in the responses made. Reliability of the scales was ensured with Cronbach's alpha coefficient. The coefficient varies between the values 0 to 1. If the score is closer to the value '1', the internal consistency in the questionnaire is perfect and if the score is closer to '0' there is poor internal consistency among the questions in the scale constructed. Cronbach's alpha measures how well a set of items (or variables) measures a single unidimensional latent construct.

Cronbach's alpha can be written as a function of the number of test items and the average inter-correlation among the items. Cronbach's α is defined as

$$\alpha = \frac{N}{N - 1} \left(1 - \frac{\sum_{i=1}^N \sigma_{Y_i}^2}{\sigma_X^2} \right)$$

where N is the number of components (items or testlets), σ_X^2 is the variance of the observed total test scores, and $\sigma_{Y_i}^2$ is the variance of component i. The Chronbach alpha score for the attributes that influences the television ads was calculated to be 0.748 which is greater than 0.5. Thus, the internal consistency of the questionnaire is good enough to proceed with the research.

PERCEPTION OF AUDIENCE TOWARDS SELECTED TELEVISION ADVERTISEMENTS

Respondents were asked to reveal their opinion towards the ads selected for the study based on the attributes of the advertisements. Ten television advertisements selected were shown to the respondents and they were asked to rate the ads comprised in it. The rating was done on a five point scale (where 1 – perceive the best, 2 – perceive to be good, 3 – neither good nor bad, 4 – perceive bad and 5 – perceive to be worst) and the results are presented in Table 1 and ranked with weighted average scores.

TABLE 1: PERCEPTION TOWARDS TELEVISION ADVERTISEMENTS

Advertisements	1 (5)	2 (4)	3 (3)	4 (2)	5 (1)	Mean Score	Rank
Ashirvaad	27	172	145	26	0	3.5	6
Fair & Lovely	107	170	80	13	0	4.0	3
Fevicol	211	93	53	0	13	4.3	1
Hamam	13	106	212	39	0	3.3	9
Lakme	52	130	136	52	0	3.5	6
Mentos	183	80	80	14	13	4.1	2
Parachute	67	171	119	13	0	3.8	5
Power soap	26	79	186	26	53	3.0	10
Sugar free	14	184	133	26	13	3.4	8
Surf Excel	79	211	54	26	0	3.9	4

Note: Figures given in brackets are the weights assigned

Mean Score = \sum (Number of Responses * Weights assigned) / Total number of Respondents

Out of the ten selected television advertisements, the advertisement for Fevicol was perceived to be the best advertisement among all the ten advertisements. The ad for the brand Fevicol is a humorous advertisement. Fevicol is followed by Mentos again an advertisement with humour appeal in it, Fair and lovely, Surf excel and Parachute. These ads were perceived to be good for their unique qualities like humorous appeal, celebrity endorsement, and attractiveness as revealed by the respondents. Informative ads of the brands Ashirvad and Lakme were ranked equally as sixth and Sugar Free ad was ranked as eighth by the respondents. The advertisements of the brands Hamam and Power soap are ranked as ninth and tenth respectively by the audience.

FEATURES OF TELEVISION ADVERTISEMENT THAT INFLUENCES AUDIENCE BEHAVIOUR

From the ten advertisements of the brands Ashirvad, Fair & Lovely, Fevicol, Hamam, Lakme, Mentos, Parachute, Power soap, Sugar free, Surf Excel were considered for the study, top five advertisements that influence respondents to a greater extent were selected. It includes the advertisements of Fevicol, Mentos, Fair & Lovely, Surf Excel and Parachute. Perceptual mapping was executed with these top five ads preferred by the respondents in the study. Positioning of the advertisements was done with discriminant analysis using SPSS. The variables considered for positioning the advertisements include: persuasive, relevance, informative, recall, simple, surprising, precise, likeable, credible and unique. The four discriminate functions represent the dimensions. The dimensions are determined based on the standardized discriminant coefficients given in the table 2.

TABLE 2: STANDARDIZED DISCRIMINANT COEFFICIENT FUNCTIONS

Variables	Functions			
	1	2	3	4
Persuasive	.050	-.640	-.006	-.094
Relevant	.410	.013	.261	-.456
Informative	-.526	.400	-.288	.432
Recallable	.055	.470	-.051	-.041
Simple	.006	-.088	-.247	.256
Surprising	.606	.438	-.353	-.326
Precise	-.072	.286	.156	-.335
Likeable	-.153	-.587	-.370	-.326
Credible	-.105	.132	1.148	.151
Unique	.499	-.254	-.233	.740

The highest score in first dimension is for the feature surprising (with standardized coefficient 0.606); second dimension is recall (with standard coefficient 0.470); third dimension is credibility (with standardized coefficient 1.148); and fourth dimension is uniqueness (with standardized coefficient 0.740). These are the four important dimensions considered by the respondents in watching the selected advertisements.

POSITIONING OF TELEVISION ADVERTISEMENT

The advertisements that are positioned based on the strength of the dimensions are decided from the scores of group centroid functions. The results of the data collected are given in the table 3.

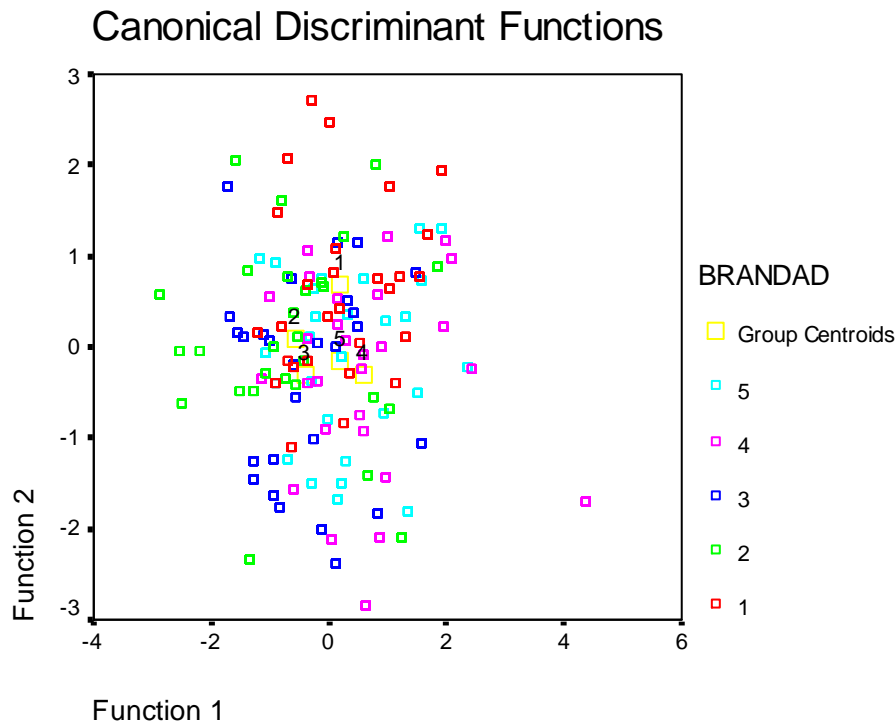
TABLE 3: FUNCTIONS AT GROUP CENTROIDS

BRAND/ Function	1	2	3	4
Fair & Lovely	.189	.689	.130	-5.908E-02
Fevicol	-.576	8.028E-02	-.452	6.852E-02
Mentos	-.396	-.314	.356	-.138
Parachute	.590	-.305	-.346	-7.235E-02
Surf Excel	.192	-.150	.312	.201

Unstandardized canonical discriminant functions evaluated at group means

The advertisement that has the advantages of first dimension (i.e. Surprising) is of Parachute. The advertisement that has the strength over the second dimension (i.e. recall) is for the brand Fair & Lovely. The ad that has the inclination towards third dimension (i.e. credibility) is Mentos and the ad that inclines towards fourth dimension (i.e. uniqueness) is Surf Excel. The advertisement for the brand Fevicol does not have the strength of any of these dimensions. But still it is one among the top 5 preferred advertisements. This may be because it is inclined to the dimension that is not considered. The positioning map of the advertisements of five brands is given in figure 1.

FIGURE 1: PERCEPTUAL MAP



The advertisements are positioned based on the group centroid function generated from discriminant function. Thus the ad of five top brands as per the perception of the respondents is positioned.

CONCLUSION

The research work focused on the audience perception towards television advertisements, with the traits liked and disliked by them. From the ten advertisements considered for the study, perceptual mapping was executed with the top five ads preferred by the respondents. Positioning of the advertisements done with discriminant analysis revealed Parachute advertisement is preferred for its surprising features, Fair & Lovely for recall features, Mentos for its credibility and Surf Excel for its uniqueness. It is important for the marketers to consider these dimensions that are opined by the customers. This will help them to position the ads in the minds of the customers and break the existing clutter.

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BUSINESS BEYOND BOUNDARIES (B3B): E-COMMERCE AND E-BUSINESS CHALLENGES

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ABSTRACT

The Internet has dramatically changed the way companies carry out trade and commerce. In the present volatile market one of the most distinctive competitive advantages companies can gain and sustain is the rise of computer technology and the Internet. The rise of electronic commerce has led to abundant online markets where buyers and sellers share a relationship and ironically they have never met. This is the condition of post-modern civilization which is supposed to have impacts on the customers' behavior and perception. And, if so the companies must accustom to this trends. All this has led to companies adapting a more aggressive approach towards creating sustainable business with changing dynamics. Consequently, the purpose of the study is to expand an understanding that explains how and in what ways a company can craft sustainable business strategy in this ever changing market. In order to visualize the process of Business beyond Boundaries we conducted our study, we have researched comprehensively on the Internet for resources. We chose the Internet as primary resource. Since it is technology related, the Internet will offer the most up to date data available. Printed publications may not be able to adapt to changes as fast and efficient as electronic publications. We analyzed various e-commerce related web sites along with some companies. Some of the e-commerce web sites that we took as point of references are Web marketing today, Internet news, Commvault updates, Ecommerce-journals, E-Commerce Times, E-retail, and e-Marketer. The statistical research firms that we researched are market Research, Forrester Research, internet news and Jupiter Communication. These firms provided valuable statistical data that shows the rise of ecommerce. In conducting our research study, we accomplished the following steps:

- We searched extensively on the Internet for sites that are e-commerce related. Upon visiting the sites, we evaluated each sites for the contents, meticulousness, and objectiveness. There are plainly hundreds of sites that are dedicated to e-commerce industry. However, we carefully examined most of them which are relevant for this report.

- We have also researched many firms that conduct statistical researches. Such as Forrester Research, web marketing today and Jupiter Communication. These firms are known for their preciseness, non-objectiveness, and thoroughness. The statistical data we collected from these firms will support our findings and recommendation.

A comprehensive concept has also been developed on the basis of experts interviews, case studies and market analysis pertaining to post-modernism, leveraging customer information, challenges of today's market dynamics etc. The hypothesis indicates that the prerequisite for a relationship to exist is that the customers perceive that there is a trust and commitment of quality in the company's offering.

KEYWORDS

Business beyond Boundaries, e-consumerism, post-modernism, Market dynamics, Ecommerce resolution, brick & mortar, trade and commerce.

1. ECOMMERCE

Electronic commerce, e-commerce or ecommerce primarily consists of exchange of goods and services such as distributing, buying, selling, marketing, and servicing of products or services over electronic systems such as the Internet and other computer networks. The information technology industry might see it as an electronic business application designed at commercial dealings. It entails electronic funds transfer, online marketing, online transaction processing, electronic data interchange, supply chain management, e-marketing, automated inventory management systems, and automated data-collection systems. It normally uses electronic communications technology such as the Internet, extranets, e-mail, EBooks, databases, and mobile phones.

When a company integrates an e-commerce resolution, the business will reduce considerable amount of operation cost simultaneously increasing its profit margins. The e-commerce resolution also allows company to eliminate needless paperwork. The entire paperwork and data can be transformed into an electronic format. Consequently, it will eliminate valuable shelf space and data can be searched and accessed in matter of few seconds. E-commerce will also automate the entire marketing process. In the midst of an e-commerce resolution, the business will be operating 24/7 hours at any point of time irrespective of regional holidays or any climactic conditions which would sometimes make companies to shut down business transactions. People from anywhere in the world with Internet connectivity will be able to visit the site at any point of time removing the barrier of restricted to the "normal" business operating hours.

A "brick & mortar" business is normally limited to serving the customers in its local geographical location. With an e-commerce resolution, that business will not be limited a geographical restriction, rather it opens itself to the global on-line market. Essentially, the business' market exposure will be greatly increased.

Customers can have plenty of offerings at their finger tips and they may chose conveniently any of the products they may wish to purchase, fill out the customer information and the product will be shipped and received in a matter of few days. The administration department interference is going to reduce considerably because it does not have to bother about any paperwork since the customer had done it already. Thus, the efficiency of business deal will be to a great extent improved.

It is appropriate that the definition of ecommerce as "ecommerce primarily consists of exchange of goods and services" must be expanded towards creating sustainable customer relationship management. the entry has been traced from where it begins with the definition of e-commerce from a free encyclopedia, self-described as "the largest encyclopedia in history, in terms of both breadth and depth," entirely created by the voluntary contributions of the Internet community—for that is a very good indication of the revolutionary basis upon which e-commerce has thrived. The entry on e-commerce in the previous edition of this work also began with a quote, but one in which it was seen more as a promise than a reality: "No single force embodies our electronic transformation more than the evolving medium known as the Internet. Internet technology is having a profound effect on the global trade in services".

2. E-MARKET ANALYSIS

In two decades, the Web has completely changed many industries' sector has experienced as much of an impact as e-commerce. Consumers today habitually glance through for the best deals online and procure products using their portable devices.

At any given time there are millions of people online and each of them is a potential customer for a company providing online sales. Due to rapid increase in technology, most of the retail stores are coming up with the websites to sell their products online to compete with the competition. Since there are different types of consumers, companies should understand what are the needs and wants of consumer so that they can serve them better. The importance of analyzing and identifying factors that influence the consumer when he/she decides to purchase on the internet is vital. Since online shopping is a new concept, consumers expect something more than the traditional way of shopping.

An e-commerce resolution for a business is the amalgamation of all aspects of the business process into an electronic format. Many well-established businesses have been selling on-line for years. According to IBM, 70 percent of customers have their first experience with a product or service on the Web, while 64 percent make an initial buy due to the online experience. In fact, of some two billion users on the Internet, more than 600 million of them have Face-book pages. For example, Dell Computers Corp. has been selling computers directly to end-users for years. Currently, Dell is selling excessive of more than 1 million dollars worth of computers everyday on the World Wide Web (WWW).

While Facebook referred more retail shoppers than any other social media source, it is still accounted for less than one percent of the total web traffic. Shoppers who purchased through Twitter had the highest average order value, outpacing consumers who were referred by Google. Google still refers the majority of the online shoppers to your website; however shoppers are also spending much time on Facebook and Twitter. Experiment with social media in the promotion of your brand. Traffic to retail sites from Facebook increased 92% in 2011 over the year 2010 (*In news by Cyndi Williams, September 26th, 2011*).

The latest consumer-to-consumer (C2C) Internet market roars at eBay, Yahoo, Amazon, OLX, Flipkart, Jabong and new sites have added new faces to the science of e-commerce and e-business challenges. In just a few years, eBay has emerged as a dominant force in e-commerce. eBay has become a global force in electronic commerce. Founded in September 1995, eBay has become the world's major online marketplace. The eBay population includes more than a hundred million registered members from around the globe. Perhaps people spend more time on eBay than any other online site, making it the most popular shopping destination on the Internet. As stated in their Annual Report, eBay's mission is to provide a global trading platform where practically anyone can trade practically anything. On an average day, there are millions of items listed on eBay.

According to research by VeriSign, e-commerce was born on August 11, 1994, when a CD by Sting was sold by Net Market. To celebrate, the Internet infrastructure and technology company hosted a panel discussion with Net honchos to reminisce and, more important, to imagine the next 10 years of shopping online. Today it is indeed a remarkable journey the web has taken so far.

Web is becoming an important part of every one of us. A survey conducted showed that roughly 25% of all adults are relying on Internet before they decide what to buy and where to buy it. These adults use the web to research products and services. Web is closely becoming an indispensable part of teenagers as well. A survey claimed that 80% of online teens (in the age group of 12-17) visit online stores to quench their shopping needs. Most people might believe it natural for the present affiliate of teens to Internet for all their needs including shopping and hopping. However, teens are restless and would require all the decision parameters (like price, quick checkout, sorting by preference etc) to be within the reach of their decision making process.

TRENDS IN ONLINE SHOPPING (www.businessreviews.in)

- 71% Indians trust recommendations from family while making an online purchase decision, followed by recommendations from friends at 64% and online products reviews 29%
- Half the Indian consumers use social media sites to help them make online purchase decisions
- Online reviews and opinions are most important for Indians consumer electronics 57%, software 50%, and a car 47%
- More than 4 out of 10 Indian consumers are more likely to share (tweet/post review) a negative product or service experience online than they were to share a positive experience.

The application of an e-commerce generates a new revenue stream, expands the market exposure, and decreases the operation cost. Many Fortune 500 companies, such as Dell Computer Corp., have found that their business is never going to be the same as they adapted e-commerce into their business operation. Many well-known "brick & mortar" businesses are starting to establish their presence on the web.

3. E-BUSINESS CHALLENGES

3.1 Trust Building:

Much of the earlier research into e-business has focused on the role of trust. Trust is an important factor in every marketplace, but even more so in electronic commerce. The impersonal and anonymous nature of electronic commerce creates a fertile environment for the manipulation of transactions and potential fraud. Almost all online auction sites address this issue through the use of information exchange about the background and experience of buyers and sellers. The most notable of these systems is eBay's Feedback Forum. Online feedback mechanisms allow buyers and sellers to report their satisfaction with each transaction in a public forum. These mechanisms can serve to build trust among the participants in electronic commerce.

3.2 Quality of service:

The fundamental problem is the information asymmetry between buyer and seller. When bidders view a product at an auction site, they do not have the opportunity to inspect the product and directly observe the quality. These unequal accesses to information pose as a major challenge which can lead to frauds in e-market.

3.2 Minimizing Security fear factor:

Security is as much of an issue as ever while consumers' fears about providing credit card information online, or personal information is a top barrier to the growth of e-commerce, in order to avoid this security fear factor companies can create sound confidentiality rules and regulations.

While the number of e-shoppers continues to grow, there is still widespread concern in the internet population about the safety of financial and personal data online. 58% of internet users say that they have felt frustrated, confused or overwhelmed during online shopping.

3.4 Creating Niche Presence:

There are approximately 70 million people worldwide that have access to the World Wide Web (WWW). No matter what industry or business one is in, one cannot ignore 70 million people. To be a distinguishing part of this on-line community, one would need to create niche on the WWW. Because if one does not do it, one's competitor definitely will. What if one's widget is great, but people would really love it if they could see it in action? The album is great but with no airplay, nobody knows that it sounds great? A picture is worth a thousand words, but one does not have the space for a thousand words? The WWW allows one to add sound, pictures and short movie files to one's company's info if that will serve one's potential customers. No brochure will do that.

3.5 Enhancing Public Interest:

Web page information can be accessed by anybody from anywhere who can access the internet and hears about one's site is a potential visitor to one's Web site and a potential customer for one's information there. Therefore, creating public interest is challenging and paramount in e-commerce. If one could keep one's customer informed of every reason why they should do business with them, doesn't one think one could do more business? One can on the WWW.

3.6 Building Network:

A lot of what passes for business is simply nothing more than making connections with other people. Every smart businessperson knows, it is not what one knows, it is whom one knows. Passing out one's business card is part of every good meeting and every businessperson can tell more than one story how a chance meeting turned into the big deal. Well, what if one could pass out the business card to thousands, maybe millions of potential clients and partners, saying this is what I do and if you are ever in need of my services, this is how you can reach me. One can, 24 hours a day, inexpensively and simply, on the WWW. Therefore building network is essential in e-business.

3.7 Providing Effective Business Information:

Providing customers the most sought after basic business information is crucial: What are business hours? What does one do? How can someone contact the business? What method of payment does one take? Where is the business located at? Now think of ads where one can have instant communication. What is today's special? Today's interest rate? Next week's parking lot sale information?

3.8 Venturing into International Market:

The e-commerce resolution will allow a dialogue with international markets as easily as with the company across the street. Therefore, one should decide how one wants to handle the international business that will come one's way, because one's postings are certain to bring international opportunities to one's way, whether it is part of one's plan or not. Another added benefit; if one's company has offices overseas, they can access the home offices information for the price of a local phone call.

3.9 Maximizing Media exposure:

Being visible is another important factor in ever growing e-market. The media is the most energetic profession today, since their main product is information and they can get it more quickly, cheaply and easily on-line. Every kind of business needs the exposure that the media can bring. On-line press kits are becoming

more and more common, since they work with the digital environment of more and more pressrooms. Digital images can be put in place without the stripping and shooting of the old pressrooms and digital text can be edited and outputted on tight deadlines. All these can be made available on an e-commerce solution.

3.10 Focusing Demographic Market

The demographic of the WWW user is probably the highest and most influential mass-market demographic available. Usually they are college-educated or being college educated, making a high salary or soon to make a high salary. It is no wonder that the best website or most viewed site is the also common choice of the Internet community. It has no problem getting any brand and other high-end marketer's advertising at its door step. Even with the addition of the commercial on-line community, the demographic will remain high for many years to come.

3.11 Targeting Specialized Market:

Selecting and targeting a specific group of viewers is becoming essential. If one's market is education, consider that most universities already offer Internet accesses to their students and most youngsters are on the Internet. Books, athletic shoes, study courses, youth fashion and anything else that want to reach these overlapping markets needs to be on the WWW. Even with the coming of the commercial on-line services and their somewhat older populations there will be nothing but growth in the percentage of the under 25 market that will be on-line. One may think that the Internet is not a good place to be. Well, think again. The Internet isn't just for computer science students anymore. With the millions users of the WWW, even the most narrowly defined interest group will be represented in large numbers. Since the Web has several very good search programs, one's interest group will be able to find one's company, or one's competitors. This is the power of internet to serve the world with an e-commerce solution.

3.12 Updating Information:

Keeping information up to date is very important. Electronic publishing changes with one's needs. No paper, no ink, no printer's bill. One can even attach one's web page to a database which customizes the page's output to a database one can change as many times in a day as one needs. No printed piece can match that flexibility. Sometimes, information changes before it gets off the press. If one has ever remembered too late or too early to call the opposite coast, one knows the hassle. Not all businesses are on the same schedule. Business is worldwide but one's office hours aren't. However, Web pages serve all 24/7. The companies must customize information to match needs and collect important information that will put one ahead of the competition, even before they get into the office.

OBJECTIVES OF THE STUDY

- To study the challenges involved in ecommerce market.
- To study the factors influencing online shoppers and consumers
- To study the customer level of satisfaction with regards to online shopping
- To examine whether customers attitude towards online shopping.

SCOPE OF THE STUDY

At any given time there are millions of people online and each of them is a potential customer for a company providing online sales. Due to rapid increase in technology, most of the retail stores are coming up with the websites to sell their products online to compete with the competition. Since there are different types of consumers, companies should understand what are the needs and wants of consumer so that they can serve them better. The importance of analyzing and identifying factors that influence the consumer when he/she decides to purchase on the internet is vital. Since online shopping is a new concept, consumers expect something more than the traditional way of shopping. That is why it is crucial for the online retailers to know what influences the online consumer. Analyzing consumer behavior is not a new phenomenon. The renowned marketing expert Philip Kotler has published several works on the topic of consumer behavior theories. These theories have been used for many years not only to understand the consumer, but also to create a marketing strategy that will attract the consumer efficiently. Hence identifying and understanding the consumer needs decide the direction of companies marketing strategies. These theories can be applied to identify the online consumer and create certain consumer segments. However, some distinctions must be still be made when considering traditional consumer behavior and online consumer. Analyzing the process of consumer online shopping, companies should tailor made their services for an increased satisfaction level of consumers.

RESEARCH METHODOLOGY

Data for this study was collected by means of a survey and by means of web based data collection. The sample size was 200. The Questionnaire was used mainly to test the model proposed for Attitude towards online shopping. Likert five points scale ranging from strongly agree to strongly disagree was used as a basis of questions. Around eleven different factors were taken by studying the existing models of consumer attitudes that play an important role in online purchase.

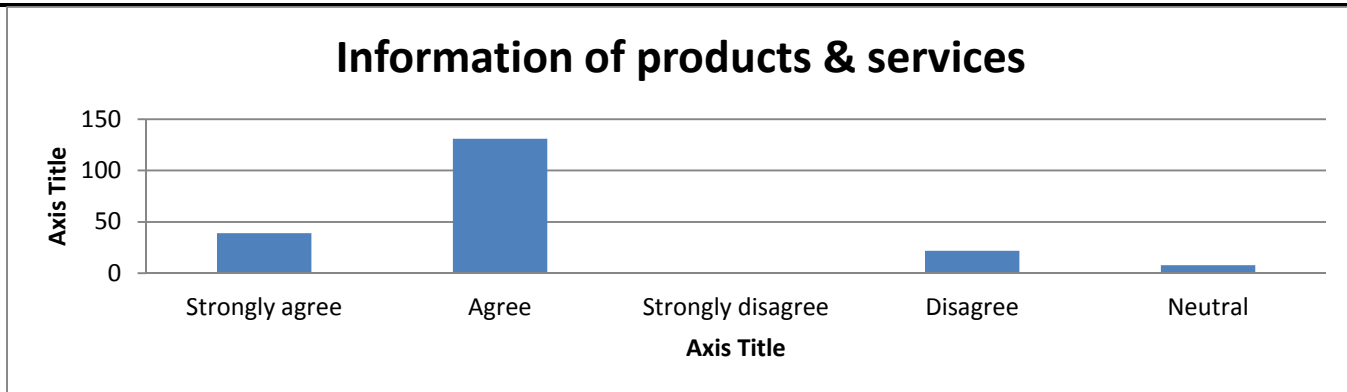
SAMPLE DESIGN

Web based survey as well as field survey was conducted. The factors intended to examine can be applied to and investigated at any population that uses internet and buys products online. Since there are time and resources restraints, a specific population had to be identified in order to generalize and create relevant segments. It was decided that the sample size should contain over 200 respondents. The populations for this research are professionals & students. The city was chosen on a convenience basis. Convenience sampling involves using samples that are the easiest to obtain and is continued until the sampling size that is need is reached. It is assumed that there will be little variation in the population making it more approved to generalize the response rates.

ANALYSIS & INTERPRETATION

Q1: Through Online Shopping I get easy access to the information about product and services.

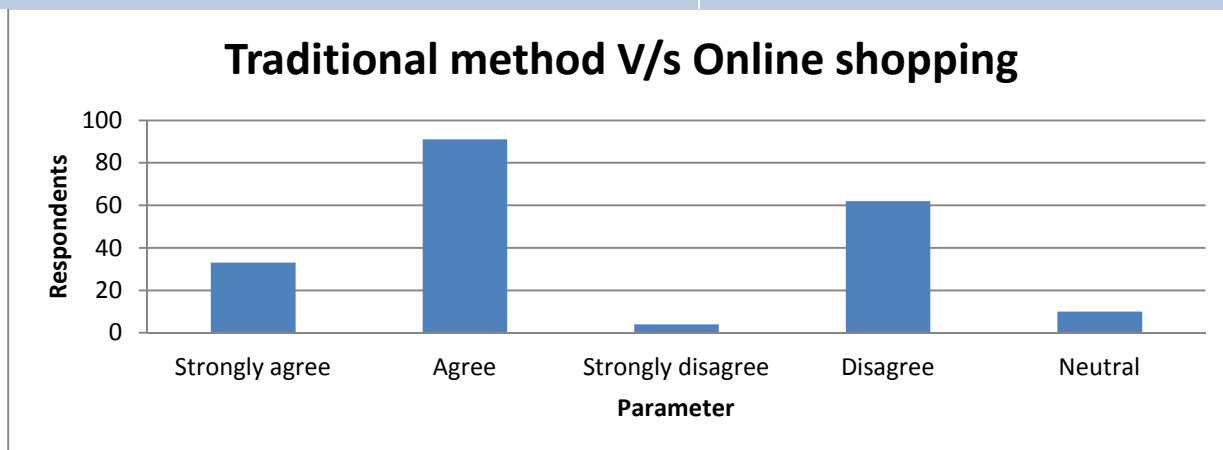
Parameter	Respondents
Strongly agree	39
Agree	131
Strongly disagree	
Disagree	22
Neutral	8



Interpretation: From the above graph we can say that out of 200, most (131) of the respondents agree and some strongly agree (39) that they get easy access to the information about the products and services they want online.

Q2: It is faster and convenient to purchase goods or services online than traditional method.

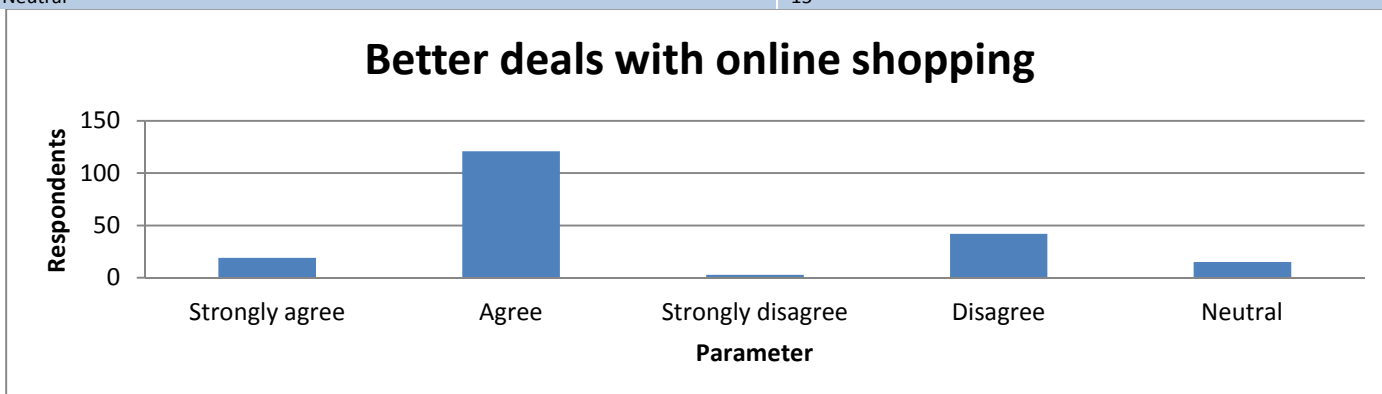
Parameter	Respondents
Strongly agree	33
Agree	91
Strongly disagree	4
Disagree	62
Neutral	10



Interpretation: Out of 200 respondents 91 agreed and 33 strongly agreed that online shopping easier and convenient way than traditional way of shopping and 62 respondents disagreed with the statement as believe in traditional way of shopping. As most of the respondents are students and young professionals the result came favor towards online shopping because they are the people uses internet more than any other category.

Q3: We get better deals during online shopping.

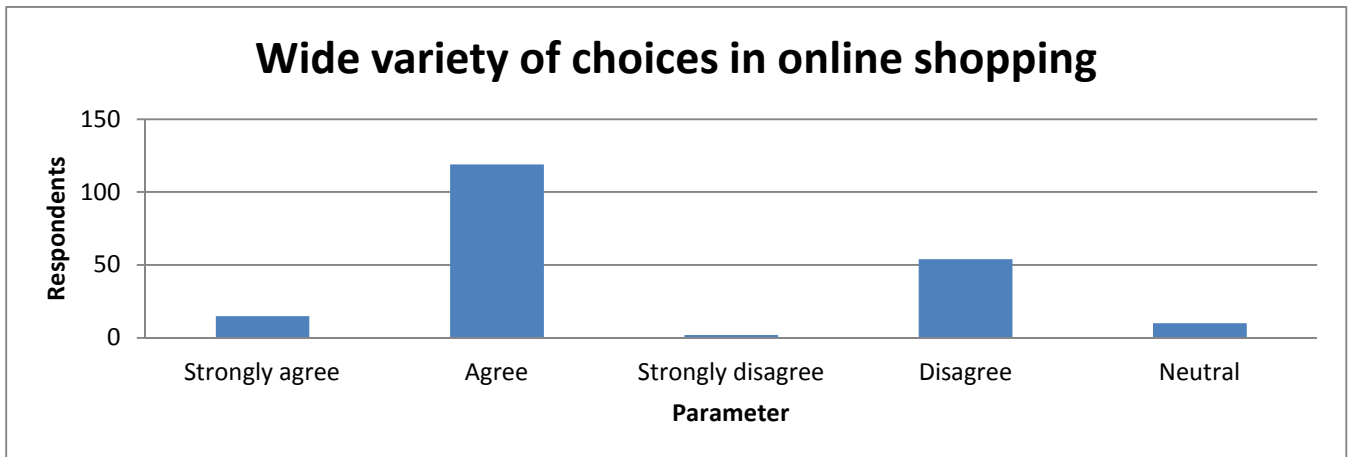
Parameter	Respondents
Strongly agree	19
Agree	121
Strongly disagree	3
Disagree	42
Neutral	15



Interpretation: From the above graph we can tell that most (121) of the respondents agreed that they get better deals during online shopping and some portion (42) of respondents disagreed with the statement. It tells that most of the respondents believe that they get better deals when compare to traditional way of shopping.

Q4: We can choose products from a wide variety.

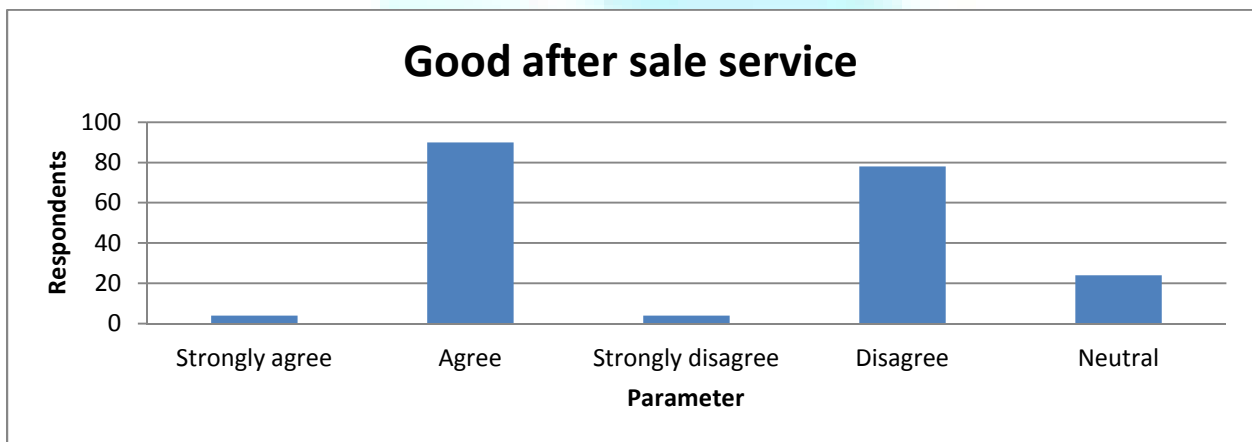
Parameter	Respondents
Strongly agree	15
Agree	119
Strongly disagree	2
Disagree	54
Neutral	10



Interpretation: Out of 200 respondents 119 respondents told they can view a wide variety of products through online shopping and 54 respondents disagreed with the statement saying that they don't get access to variety of products online.

Q5: We do get good after sales service.

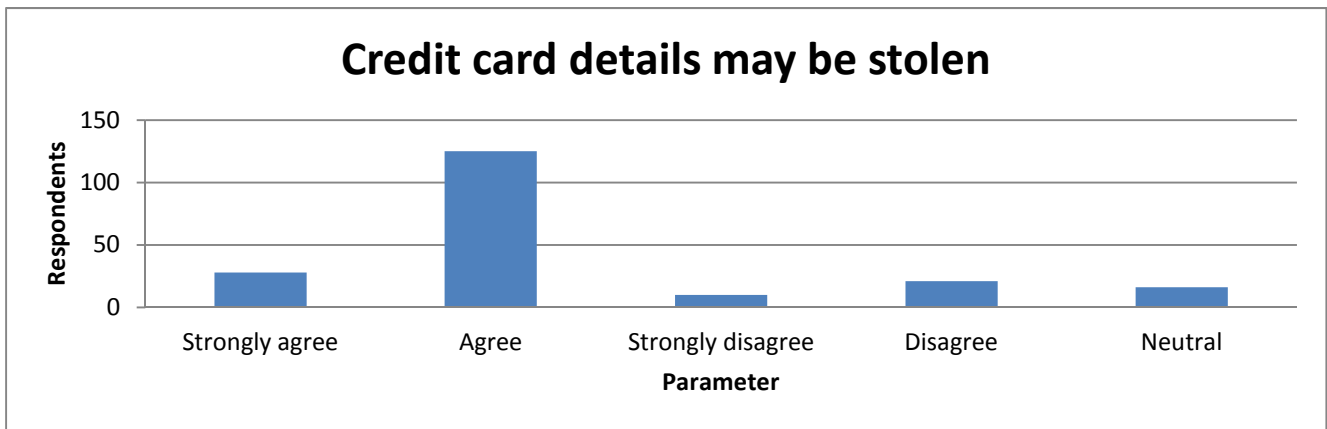
Parameter	Respondents
Strongly agree	4
Agree	90
Strongly disagree	4
Disagree	78
Neutral	24



Interpretation: The graph suggests us that almost 45% (90) of the respondents believe that they get good after sale service when they do online shopping. Similarly, almost 40% (78) of the respondents don't believe in after sale service with online shopping. So it is almost 50% positive and 50% negative response to the statement.

Q6: We may doubt that the credit card number may be stolen if used.

Parameter	Respondents
Strongly agree	28
Agree	125
Strongly disagree	10
Disagree	21
Neutral	16



Interpretation: Majority (125) of the respondents said that they may lose credit card details if they use it for online shopping. They said this statement as the internet hackers are increasing day by day and users cannot differentiate between original and false bank website pages.

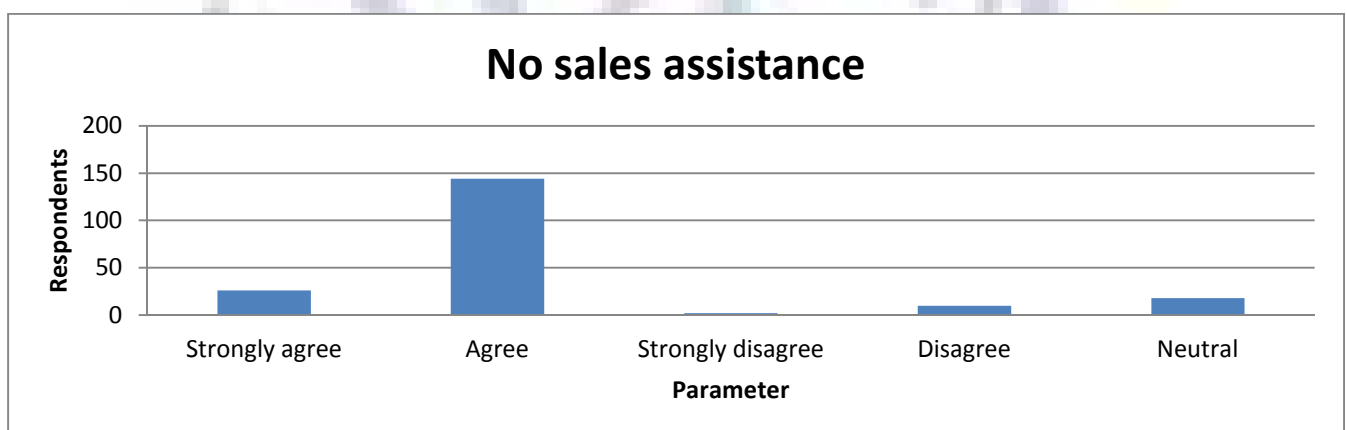
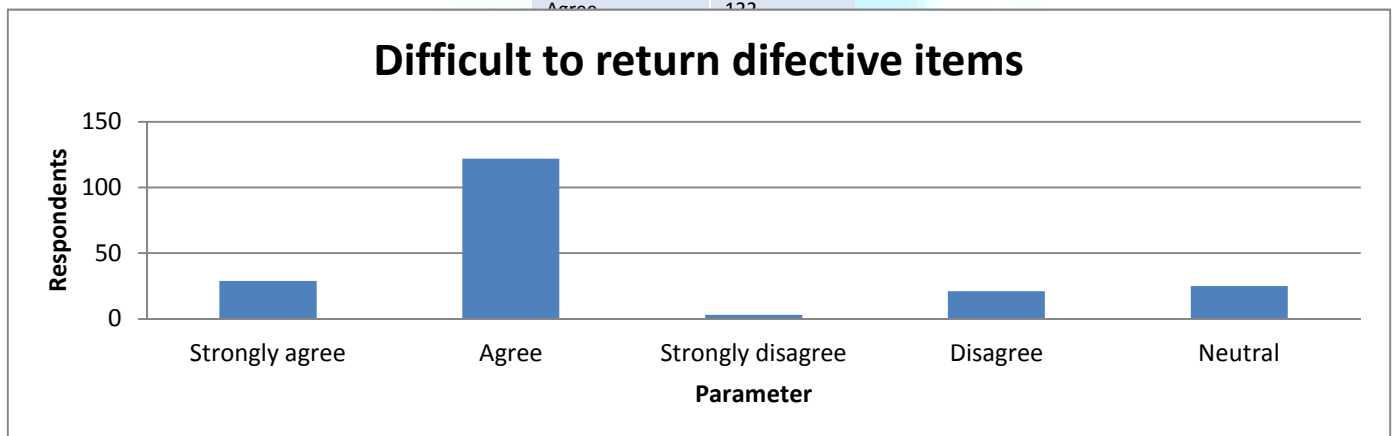
Parameter	Respondents
Strongly agree	26
Agree	144
Strongly disagree	2
Disagree	10
Neutral	18

Q7: It is difficult to return defective items if purchased through online.

Interpretation: The graph suggests us that many (122) of the respondents believe that they can't give back defective items if purchased through online. They said it as they don't find any physical stores available for them to go and give back.

Q8: There is no sales assistant to give advice/explain about the product.

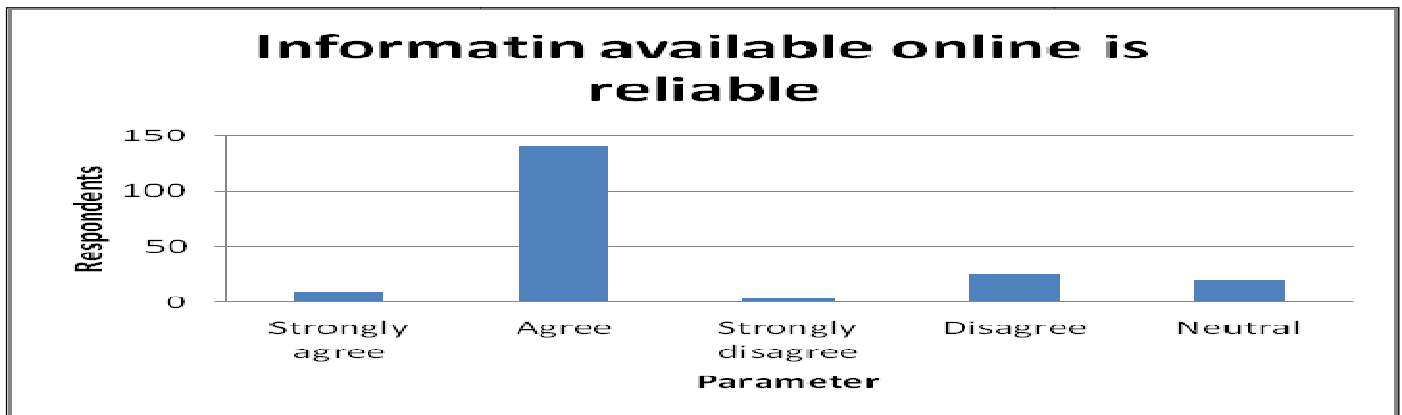
Parameter	Respondents
Strongly agree	29
Agree	122



Interpretation: As many (144) of the customers need assistance regarding product before they purchase it, they agreed with the above statement. They feel that the information available on the website about the product is not sufficient enough to make decision on purchase.

Q9: The information available online is authentic and reliable.

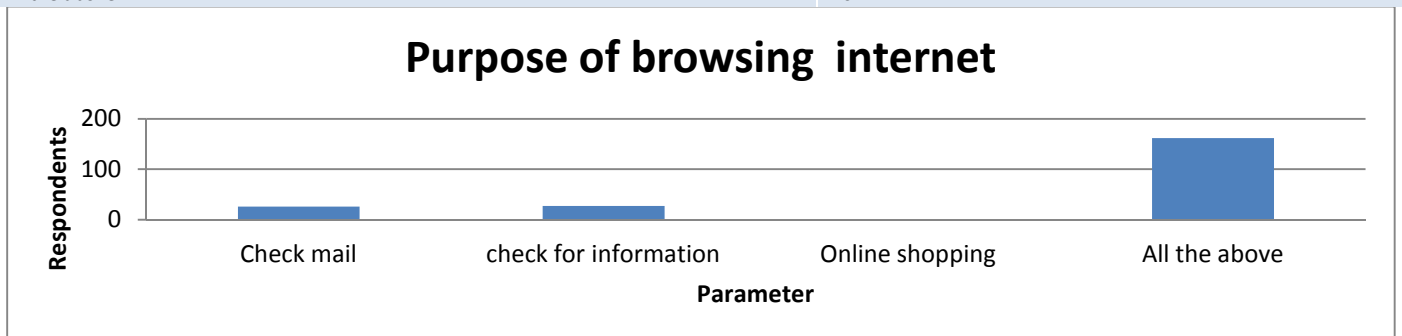
Parameter	Respondents
Strongly agree	10
Agree	140
Strongly disagree	4
Disagree	26
Neutral	20



Interpretation: Most (140) of the respondents believe that the information available online is reliable. Now-a-days many people use internet for the information purpose.

Q10: What is your purpose of browsing internet?

Parameter	Respondents
Check mail	26
check for information	27
Online shopping	
All the above	162



Interpretation: Most (162) of the respondents said that they use internet to check mails, check for information and online shopping as well. Further they shared that they may not be doing online shopping every time but they look at the websites for the best deals and if they find any best deals, they go for purchase.

Q11: If you choose online shopping, what do you look to shop for?

Parameter	Respondents
Books	46
Clothing & Jewelry	80
Tickets	131
Digital camera	22
Shoes	75
Toys	10
Bikes/Cars	33
computer accessories	66
Mobile & accessories	106
Fashion accessories	92



Interpretation: Most of the customers look for tickets (131), mobiles & accessories (106), fashion accessories (92) and clothing (80) when they go for online shopping.

FINDINGS AND RESULTS

- Customers believe that they get easy access to the products and services they want through online shopping and they believe that it is faster and convenient than the traditional way of shopping. As most of the respondents are students and employees, we have got positive response towards online shopping though it has not risen to that extent because they use much of internet and they get easily attracted towards the offerings which online shoppers provide.
- Customers believe that they get best deals when they shop online and they told that they find variety of brands at one place.
- Regarding after sales service, half of the customers are favorable and another half are unfavorable to it as some of the customer had a bad experience with it.
- When it comes to payment option with online shopping, most of the customers are unhappy as they faced some issues regarding over payment of cash when using credit/debit card and also faced issues with hacking of credit/debit card details.
- Customer are facing problems in giving back the defective items through online shopping though online shoppers are telling that they are providing good after sale service.
- Online shoppers are giving description beside any product. But customers are feeling that it is not sufficient for them to understand and make a decision on purchase.
- As most of the customers rely on internet for information about anything, they believe in that information as it has been trusted source for many of the customers.
- Only some of the customers look for car/bike information online as they believe in going directly to showroom when they plan to purchase any vehicle.
- Most of the customers look for fashion accessories, clothing, tickets and mobile accessories when they go for online shopping.

FEW EXPERTS TIP FOR SAFE ONLINE SHOPPING www.ecommerceforum.in

- Bookmark reliable online shopping sites. Relying on search engine results can lead you to malicious sites.
- Ignore suspicious offers sent via E-mail. Spam offering huge discounts and bargains may contain malicious links or file attachments that lead to system infection.
- Verify unbelievable offers. Spam and online ads that offer mind boggling promos and discounts can lead to web threats.
- Double check payment sites URL's. Phishers trick users into giving out personal information via spoofed pages.
- Use reliable security software. Avoid visiting compromised sites with the help of security software that blocks access to fake online shopping sites.

SUGGESTIONS AND RECOMMENDATIONS

1. Online shoppers should concentrate on after sale service to the customers as many customers are facing problems with it.
2. They also should make payment option very secure, so that customers will have some faith to shop online.
3. The retailers must make sure that their website is out of malwares and virus attacks.
4. The online advertisement made for products in other website must have direct link for purchasing site.
5. Retailers have to give reasonable discounts to their customers so that they visit regularly to their website for shopping.
6. To attract customers, the competing online players are adopting all means to provide products and services at the lowest prices. This has resulted in making the consumers choice-spoilt, who in turn surf various websites to spot the lowest price for the products, although the number of transactions is increasing, the value of the product sold is continuously falling, owing to high competition and lesser margins.
7. It might take few minutes to search for products & services and payment of money, but the delivery of the product may take unreasonable time. So e-retailers must concentrate on fast delivery of goods, so that customers don't face any problem in shopping and receiving the product.
8. e- tailing market is faced by seasonal fluctuations .As told by an industry player, " August to February is the peak season for sale, while March to July is the dry seasons for sale ".During the peak season, occasions that drive the sales are Diwali, Rakhi, Valentine's day, New year, Christmas, Mother's day ,Friendship Day etc are. On these occasions' younger generations prefers buying and gifts online.

CONCLUSION

The research shows that ecommerce has very bright future. Perception towards online shopping is getting better. With the use of internet, consumer can shop anywhere, anything and anytime with easy and safe payment options. Consumers can do comparison shopping between products, as well as online stores.

Increased internet penetration changed online shopping environment to high levels. Net savvies see more and more are shopping online. But at the same time the companies need to reduce the risks related to consumer incompetence by tactics such as making purchase websites easier to navigate, and introducing internet kiosks, computers and other aid in services

More than 4 out of 10 Indian consumers are more likely to share (tweet/post review) a negative product or service experience online than they were to share a positive experience.

Change (yes we can) is the classic mantra of the many businesses who are adapting the transformation by putting abundance of efforts to create smart strategies to survive and flourish in this ever dynamic market. Ultimately the reality of any e-business set up is: Regenerate or degenerate.

Constant evolution of animal species has kept them from being obsolete. And the same holds true for business that do not desire to degenerate into obsolescence. Businesses have to keep evolving continuously and this evolution has to be fuelled by innovation. Companies have to keep innovating about new ways to communicate effectively with consumers and to build long-term relevance.

Lastly, the application of an e-commerce generates a new revenue stream, expands the market exposure, and decreases the operation cost. Many Fortune 500 companies, such as Dell Computer Corp., have found that their business is never going to be the same as they adapted e-commerce into their business operation. Many well-known "brick & mortar" businesses are starting to establish their presence on the web.

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ANALYTICAL STUDY ON BIOMETRIC SECURITY APPLICATION IN INDUSTRIAL AND MOBILE BANKING SECTOR

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ABSTRACT

The aim is to enable users to exchange information that can not be disputed afterward. That could be a voice recording that is authenticated to eliminate any doubt that the speaker is what they actually said and prove that it has not been manipulated. To achieve this it is necessary to digitally sign the data and to ensure only the legitimate user can perform the signing. At present, security for mobile banking transactions rests on several parallel approaches: device-based security, such as the unique SIM card within each mobile handset that identifies the customer who owns the phone; know-your-customer requirements and establish their identity to the bank in order to open the account. The weakest link is device-base security. In order to do so, countries need to pursue both broader coverage of cellular networks, and better connectivity in the form of affordable mobile phones and easier access to financial and other types of services. For the banking sector to provide financial services in rural areas, the issues they face include not just coverage and connectivity, but also basic familiarity with banking systems, from training and education in the use of bank accounts to the provision of adequate security measures for users unfamiliar with Pins and passwords and who often have few formal identification documents. It is the security issue that is of particular importance to financial institutions, not just in developing countries but worldwide, led by growing concerns about money laundering and terrorist financing, fraud and consumer protection. An area of rapid development in security systems is the use of biometrics. While fingerprints have long been used in law enforcement, other types of biometrics have largely been the stuff of research and science fiction. As technology improves, the ability to use biometrics for individual applications, particularly in mobile banking, is of great interest to financial institutions seeking secure means of signing up rural customers.

KEYWORDS

Biometric security, mobile banking.

1.1 INTRODUCTION

Many different aspects of human physiology, chemistry or behavior can be used for biometric authentication. The selection of a particular biometric for use in a specific application involves a weighting of several factors. Jain *et al.* (1999) [1] identified seven such factors to be used when assessing the suitability of any trait for use in biometric authentication. **Universality** means that every person using a system should possess the trait. **Uniqueness** means the trait should be sufficiently different for individuals in the relevant population such that they can be distinguished from one another. **Permanence** relates to the manner in which a trait varies over time. More specifically, a trait with 'good' permanence will be reasonably invariant over time with respect to the specific matching algorithm. **Measurability** (collectability) relates to the ease of acquisition or measurement of the trait. In addition, acquired data should be in a form that permits subsequent processing and extraction of the relevant feature sets. **Performance** relates to the accuracy, speed, and robustness of technology used. **Acceptability** relates to how well individuals in the relevant population accept the technology such that they are willing to have their biometric trait captured and assessed. **Circumvention** relates to the ease with which a trait might be imitated using an artifact or substitute.

A biometric system can operate in the following two modes. In **verification** mode the system performs a one-to-one comparison of a captured biometric with a specific template stored in a biometric database in order to verify the individual is the person they claim to be. This process may use a smart card, username or ID number (e.g. PIN) to indicate which template should be used for comparison. 'Positive recognition' is a common use of verification mode, "where the aim is to prevent multiple people from using same identity".

In **identification** mode the system performs a one-to-many comparison against a biometric database in attempt to establish the identity of an unknown individual. The system will succeed in identifying the individual if the comparison of the biometric sample to a template in the database falls within a previously set threshold. Identification mode can be used either for 'positive recognition' (so that the user does not have to provide any information about the template to be used) or for 'negative recognition' of the person "where the system establishes whether the person is who she (implicitly or explicitly) denies to be" The latter function can only be achieved through biometrics since other methods of personal recognition such as passwords, PINs or keys are ineffective EITO [2].

The first time an individual uses a biometric system is called *enrollment*. During the enrollment, biometric information from an individual is captured and stored. In subsequent uses, biometric information is detected and compared with the information stored at the time of enrollment. Note that it is crucial that storage and retrieval of such systems themselves be secure if the biometric system is to be robust. The first block (sensor) is the interface between the real world and the system; it has to acquire all the necessary data. Most of the times it is an image acquisition system, but it can change according to the characteristics desired. The second block performs all the necessary pre-processing: it has to remove artifacts from the sensor, to enhance the input (e.g. removing background noise), to use some kind of normalization, etc. In the third block necessary features are extracted. This step is an important step as the correct features need to be extracted in the optimal way. A vector of numbers or an image with particular properties is used to create a *template*. A template is a synthesis of the relevant characteristics extracted from the source. Elements of the biometric measurement that are not used in the comparison algorithm are discarded in the template to reduce the file size and to protect the identity of the enrollee.

If enrollment is being performed, the template is simply stored somewhere (on a card or within a database or both). If a matching phase is being performed, the obtained template is passed to a matcher that compares it with other existing templates, estimating the distance between them using any algorithm (e.g. Hamming distance). The matching program will analyze the template with the input. This will then be output for any specified use or purpose (e.g. entrance in a restricted area)

2.0 OBJECTIVES

PRIMARY OBJECTIVE

The aim is to enable users to exchange information that can not be disputed afterward. That could be a voice recording that is authenticated to eliminate any doubt that the speaker is what they actually said and prove that it has not been manipulated. To achieve this it is necessary to digitally sign the data and to

ensure only the legitimate user can perform the signing. At present, security for mobile banking transactions rests on several parallel approaches: device-based security, such as the unique SIM card within each mobile handset that identifies the customer who owns the phone; know-your-customer requirements, especially for the retail cash-in/cash-out points that are usually required to have a traditional bank account and establish their identity to the bank in order to open the account. The weakest link is device-base security. In order to do so, countries need to pursue both broader coverage of cellular networks, and better connectivity in the form of affordable mobile phones and easier access to financial and other types of services. The economics of extending high-cost cellular networks into rural areas cannot usually be justified without high voice and data traffic forecasts beyond basic coverage, however, is the need to link users to useful financial services via easy-to-use handsets and simple applications N.K.Ratha[3]. For the banking sector to provide financial services in rural areas, the issues they face include not just coverage and connectivity, but also basic familiarity with banking systems, from training and education in the use of bank accounts to the provision of adequate security measures for users unfamiliar with Pins and passwords and who often have few formal identification documents. It is the security issue that is of particular importance to financial institutions, not just in developing countries but worldwide, led by growing concerns about money laundering and terrorist financing, fraud and consumer protection. An area of rapid development in security systems is the use of biometrics. While fingerprints have long been used in law enforcement, other types of biometrics have largely been the stuff of research and science fiction. However, rapid advances in biometric technology, largely driven by national security concerns, have brought several biometric solutions to the market, especially for border control, physical access and fraud prevention. To date these biometric systems have largely been complex and expensive to build and operate, and have thus been limited in their implementation. As technology improves, the ability to use biometrics for individual applications, particularly in mobile banking, is of great interest to financial institutions seeking secure means of signing up rural customers.

MAIN OBJECTIVES OF THIS STUDY

As today scenario many changes and crimes happened in every sector, we see many frauds in every sector just like misuse of credit and debit cards, wrong identity and most wrong customer description so all these frauds created by only one reason that is no sound details about the consumer. In said research we find out those ways and methods which create more effective data record for bank and describe how biometric instrument help in this process. Some specified objectives are-

- To identify the need and reasons behind of using biometric security system.
- Giving details about security equipment which useful in banking and industrial sector.
- Identify the importance of these security and how much these useful in organization.
- Identify all perquisites about the security system in organization and what's technique using prefer in the organization.

3.0 SCOPE OF RESEARCH

With the growth of Modern Era, People started showing more interest in ATM Banking, etc. Biometric is a speedy and efficient mode of identifying the valid user. Not limited to general application, Biometric is also used for security measures such as identifying terrorist who never believes in holding password and always carry fake Smart cards etc. To prevent identity theft, biometric data is usually encrypted when it's gathered. Here's how biometric verification works on the back end: To convert the biometric input, a software application is used to identify specific points of data as match points. The match points in the database are processed using an algorithm that translates that information into a numeric value. The database value is compared with the biometric input the end user has entered into the scanner and authentication is either approved or denied.

It is certain that fingerprint sensors will be central in new phone offerings. Consumers will need this new approach to security to handle the high-speed access that cell phones will provide. Cell phones will act as debit and credit devices. The practice of swiping an ATM card or a credit card at the supermarket is already established. Putting that same technology into a cell phone's SIM card is the next logical step. There is evidence of that trend already developing in foreign markets. In Japan, workers use cell phones for keyless entry. Train stations have devices that read the cell phone data chip to make a ticket purchase, rather than using a debit card. In South Korea, consumers are able to conduct online banking transactions from their mobile phones much the way they do from their desktop computers. M-Commerce from cell phones will be one of the next big advancements in consumer convenience learn[10]. Consumers will not only be able to order tickets and make seat selections with their cell phones; they will download the ticket into their cell phone's memory and use that data to enter the theater.

4.0 LITERATURE REVIEW

COUNTRIES APPLYING BIOMETRICS

AUSTRALIA

Visitors intending to visit Australia may soon have to submit to biometric authentication as part of the Smart gate system, linking individuals to their visas and passports. Biometric data are already collected from some visa applicants by Immigration. Australia is the first country to introduce a Biometrics Privacy Code, which is established and administered by the Biometrics Institute. The Biometrics Institute Privacy Code Biometrics Institute forms part of Australian privacy legislation Gefen [8]. The Code includes privacy standards that are at least equivalent to the Australian National Privacy Principles (NPPs) in the Privacy Act and also incorporates higher standards of privacy protection in relation to certain acts and practices. Only members of the Biometrics Institute are eligible to subscribe to this Code. Biometrics Institute membership, and thus subscription to this Code, is voluntary.

BRAZIL

Since the beginning of the 20th century, Brazilian citizens have had user ID cards. Each state in Brazil is allowed to print its own ID card, but the layout and data are the same for all of them. The ID cards printed in Rio de Janeiro are fully digitized using a 2D bar code with information which can be matched against its owner off-line. The 2D bar code encodes a color photo, a signature, two fingerprints, and other citizen data. This technology was developed in 2000 in order to enhance the safety of the Brazilian ID cards Wang[9].

CANADA

Canada has begun research into the use of biometric technology in the area of border security and immigration (Center for Security Sciences, Public Security Technical Program, and Biometrics Community of Practice). At least one program, the NEXUS program operated jointly by the Canada Border Services Agency and U.S. Customs and Border Protection, is already operational. Friedman[7] it is a functioning example of biometric technology, specifically "iris recognition biometric technology"^[16] used for border control and security for air travelers.

GERMANY

The biometrics market in Germany will experience enormous growth until the year 2009. "The market size will increase from approximately 120 million € (2004) to 377 million €" (2009). "The federal government will be a major contributor to this development". In particular, the biometric procedures of fingerprint and facial recognition can profit from the government project. The ePass has been in circulation since November 2005, and contains a chip that holds a digital photograph and one fingerprint from each hand, usually of the index fingers, though others may be used if these fingers are missing or have extremely distorted prints. "A third biometric identifier – iris scans – could be added at a later stage". An increase in the prevalence of biometric technology in Germany is an effort to not only keep citizens safe within German borders but also to comply with the current US deadline for visa-waiver countries to introduce biometric passports. Germany is also one of the first countries to implement biometric technology at the Olympic Games to protect German athletes Ggorgi[4]. "The Olympic Games is always a diplomatically tense affair and previous events have been rocked by terrorist attacks—most notably when Germany last held the Games in Munich in 1972 and 11 Israeli athletes were killed".

Biometric technology was first used at the Olympic Summer Games in Athens, Greece in 2004. "On registering with the scheme, accredited visitors will receive an ID card containing their fingerprint biometrics data that will enable them to access the 'German House'. Accredited visitors will include athletes, coaching staff, team management and members of the media".

As a protest against the increasing use of biometric data, the influential hacker group Chaos Computer Club published a fingerprint of German Minister of the Interior Wolfgang Schäuble in the March 2008 edition of its magazine *Datenschleuder*. Wang [9]. The magazine also included the fingerprint on a film that readers could use to fool fingerprint readers.

INDIA

India is undertaking an ambitious mega project to provide a unique identification number to each of its 1.25 billion people Sathye [5]. The Identification number will be stored in central databases, consisting the biometric information of the individual. If implemented, this would be the biggest implementation of the Biometrics in the world. India's Home Minister, P Chidambaram, described the process as "the biggest exercise... since humankind came into existence". The government will then use the information to issue identity cards. Officials in India will spend one year classifying India's population according to demographics indicators. The physical count will begin on February 2011.

UNITED KINGDOM

Fingerprint scanners used in some schools to facilitate the subtraction of funds from an account financed by parents for the payment of school dinners. By using such a system nutritional reports can be produced for parents to surveil a child's intake Thornton [6]. This has raised questions from liberty groups as taking away the liberty of choice from the youth of society. Other concerns arise from the possibility of data leaking from the providers of school meals to interest groups that provide health services such as the NHS and insurance groups that may end up having a detrimental effect on the ability of individuals to enjoy equality of access to services.

5.0 RESEARCH PROBLEM

The intention is to understand and evaluate how biometrics might be used for mobile banking and payment systems, and to identify the best approach to take given the current state of the technology and the nature of most rural markets in the developing world. It assesses the potential of biometric security systems-user-based, not device-based-for mobile phones. As far as we know there is no other biometrically-enabled digital signature application available for mobile devices that can guarantee security by storing and processing all sensitive information on the device's SIM card. Biometric data never leaves the device's SIM card and can not be accessed except by the verification module which also runs on the SIM card; the user's biometric profile is completely safe. This is important to meet the highest privacy requirements. As we know there is no accessed, except by requirements

6.0 LIMITATION OF STUDY-

1. Research facility and money problem mostly common in research.
2. Purity of report depends on the respondents how willingly they have given the answer.
3. Also it is very important to study deeply about different states separately.
4. Research depends on the mutual relations but peoples don't understand the importance of study.
5. Importance of policies is very difficult to understand by common person.
6. Research depends on the correct response of customers and market both are variables in this research.

7.0 RESEARCH DESIGN AND RESEARCH METHODOLOGY

RESEARCH METHODOLOGY

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research done scientifically. In study the various steps that are generally adopted by a researcher in studying his research problem along with logic behind them. Descriptive research studies are those studies which are concerned with describing the characteristics of a particular individual or of a group. So in that said research we use **descriptive and analytical method** to define importance and need of biometric system in mobile banking and security in organization. In this said research also describe the how much this are use in these sector and how much biometric system in the banking and organization. It's also important in said research to define how they create efficiency and smoothness in the work of organization and banking system. In this methodology we use secondary and primary data both to analyze the thinking and scope in the organization and banking areas. To find out the secondary data we use survey and observation method to identify the effect on consumer and other industries?

HYPOTHESIS

A hypothesis is a specific statement of prediction. It describes in concrete (rather than theoretical) terms what you expect will happen in your study. Not all studies have hypotheses. Sometimes a study is designed to be exploratory. There is no formal hypothesis, and perhaps the purpose of the study is to explore some area more thoroughly in order to develop some specific hypothesis or prediction that can be tested in future research. A single study may have one or many hypotheses. In said research we use null hypothesis in this thinking the security system always beneficial for organization and if it implement in the organization and banking areas it increase efficiency and control.

The **null hypothesis** typically corresponds to a general or default position. For example, the null hypothesis might be that there is no relationship between two measured phenomena, or that a potential treatment has no effect. In most legal systems, the presumption that a defendant is innocent ("until proven guilty") can be interpreted as saying that the null hypothesis is that the defendant is innocent.

RESEARCH DESIGN

This will discuss the various stages of the development of the proposed research model. First, the importance of context within the realm of biometrics is discussed as an introduction to the qualitative research that was conducted with Indian banks (SBI, ICICI, PNB, HDFC, AXIS BANK) to help determine what they felt might influence consumer perceptions about the acceptability of using biometric authentication. Next, further qualitative research was carried out to elicit any privacy and security concerns that may have been overlooked during the literature review. Finally, a proposed research model is presented and hypotheses developed.

7.1 PRELIMINARY QUALITATIVE RESEARCH – BANKS

In their attempt to thwart fraud, Indian banks are exploring a variety of avenues. Part of the impetus behind this initiative is the fact that Indian banks typically reimburse customers for any direct financial losses associated with fraud, again be it skimming a debit card or stealing a credit card, etc. To this end, four of the five major banks joined together to assist in reviewing the problem and investigate various ways of at least reducing the problem as they realize that it is unlikely that it will ever be completely eradicated.

In addition to the banks, the consortium consisted of representatives from various governmental and police organizations, as well as researchers from various Indian universities. Bank representation typically came from those areas responsible for privacy and/or security. Several meetings were held to assess the prevalence of identity fraud and discuss various alternatives to mitigate its occurrence. One of the areas of interest that came out of these discussions was the use of biometrics for customer identity authentication. Therefore, individual meetings, with personnel responsibility for privacy and/or security at the four banks, were suggested as a method to supplement the information gathered from the literature review.

Semi-structured exploratory interviews were conducted to establish which variables are most salient for consumer acceptance of biometric technology in the financial industry. When selecting interviewees, purposive sampling was used as outlined to insure reasonable representation from subject matter experts. This resulted in the identification of one individual from each of the four banks to be interviewed. As recommended by Miles and Huberman (1994), interviews continued as long as unique contributors were being identified. In this case conceptual saturation occurred quickly, after only 3 interviews. This was not surprising due to the high levels of industry communication, shared policies, and relative homogeneity within the Indian banking industry. All interviews were done in person and via Phone. The phone interview lasted approximately 45 minutes while the in-person interviews went longer and took approximately 75 minutes.

Cognitive interviewing techniques were used to minimize interviewer bias as recommended by Willis (1999). This included the "think aloud" technique outlined in Willis (1999), which encourages respondents to verbalize their thought processes as they respond to the questions. This technique allows a more sophisticated understanding of complex issues to emerge as the interviewer is exposed to the interviewee's reasoning, not simply their responses. The interviewer also paraphrased the responses throughout the interviews to ensure correct interpretations of respondent's statements were made.

Initial Banks interview questions included the following:

1. Does your bank have a vision and/or plan regarding biometrics?
2. Do you believe that vision is shared by other banks and financial institutions?
3. Do you think customers are satisfied with the existing level of security offered by financial institutions?
4. What would your bank like to know with respect to people's perceptions of biometrics?
5. Do you see any issues that might impede biometric adoption within the Indian banking industry?
6. In what contexts, scenarios, or applications would you like to examine consumer acceptability of biometric authentication technology?

Initial customer interviews questions include the following:

1. What you think how much biometric system safe for mobile banking and other facilities?
2. In what context you feel that mobile banking profitable and safely way for doing Purchasing or transaction?
3. Are you feeling that's more comfortable than other banking facilities?
4. How much you know about Biometric system and how you hope Indians accept this change in banking sector?
5. Are you fulfilling basic requirement which needed for Biometric access? (That's instrument base question)

Data analysis was conducted after each interview, allowing questions to change over time in response to emerging categories. Data categorization and descriptive and pattern-based coding were used.

The results of the interviews with the bank employees are laid out as follows.

Table 3-1 lists the results of the initial discussion with the three bank representatives in order of the points raised. Table 3-2 lists possible contexts that the bank employees felt it would be worthwhile examining as context was envisioned as being an influencing factor in consumer perceptions about biometric identity authentication technology. For those contexts that they felt were worthy of exploring, they were also asked to rank them in order of importance; this ranking is provided in the table.

TABLE 3-1: KEY INSIGHTS PROVIDED BY BANK PERSONNEL

Bank#1 (ICICI)	
1	Unlikely to be pursued unilaterally by their bank, or any other Indian bank.
2	Banks need to collectively assess the tradeoffs between consumer perceptions, cost, and the level of security biometrics provide their customers.
3	In terms of customer perceptions, where do their responsibility for security end and the banks' begin?
4	What do customers see as the key benefits and drawbacks of using biometrics?
5	Do people understand biometrics?
6	Finger recognition biometrics is already being used for telephone banking, but this is not considered a "high" security application.
Bank #2 (SBI)	
1	Unlikely to be pursued unilaterally by their bank, or any other Indian bank.
2	In terms of customer perceptions, where do their responsibility for security end and the banks' begin?
3	Do people understand biometrics?
4	What do customers see as the key benefits and drawbacks of using biometrics?
Bank #3 (HDFC)	
1	Wonders if biometrics is a solution in search of a problem.
2	Unlikely to be pursued unilaterally by their bank, or any other Indian bank.
3	In terms of customer perceptions, where do their responsibility for security end and the banks' begin?
4	Interoperability concerns.
5	Do people understand biometrics?
6	What do customers see as the key benefits and drawbacks of using biometrics?
7	Will the introduction of chip technology on credit cards confuse consumers and, as such, confound the results of the survey?

Table 3-1 shows considerable consistency in terms of how Indian banks view biometrics in general. Given the nature of the Indian banking industry, it was unanimous that biometrics was viewed as something that would be pursued by all the banks or none of the banks. This was due to two considerations.

First, there are five major Indian banks that collectively have a significant share of the consumer banking market but that individually do not have enough clout to be market leaders. Therefore, if any one of them unilaterally decided to pursue customer identity authentication via biometrics and it was not well received, it could cost them market share and the associated profits; and this would be in addition to the substantial upfront costs of installing the technology. Even if it was embraced by customers such that it created initial competitive advantage, this would not be sustainable simply because the technology is widely available and, hence, could be easily replicated relatively quickly by the other four banks. However, if the five Indian banks deemed that it was in their best interests, most likely from a cost-benefit perspective, to introduce biometrics and collectively agreed to do so at approximately the same time, this would mitigate the possibility of any major redistribution of market share should there be consumer backlash simply because of the limited options available to the Indian consumer.

The other consideration as to why Indian banks would pursue it collectively is due to the existing technological infrastructure with respect to debit cards. While the initial rollout of identity authentication using biometrics would be at bank ATMs, the feeling is that it would inevitably become more widespread such that it would be used essentially wherever you use a debit card. Given this envisioned pervasiveness, banks would have to involve those companies (e.g. Interac) that control the debit card industry and the associated protocols. Again, from both a cost-benefit and competitive standpoint, this is yet another impediment making it unlikely that any Indian bank would initiate biometric identity authentication individually [11].

Examining other general discussion points, all three interviewees wondered what people thought with respect to where a customer's responsibility for security ended and the bank's responsibility began. As the focus of this research was acceptability of biometrics for identity authentication, this issue was not addressed given the difficulty of operationalizing this concept.

The other common concern was whether or not people would understand what was meant by the term "biometrics". In order to address this concern, there would be appropriate wording in the questionnaire defining the term.

Looking at the potential contexts in Table 3-2, there was a good degree of consistency in terms of what were perceived to be the most relevant contexts to examine, and unanimous agreement on the ranking of the top two contexts: voluntariness and control. The importance of whether using biometrics should be voluntary or not is relatively self-explanatory. As mentioned previously, all bank personnel were of the opinion that either the five biggest Indian banks would adopt biometric identity authentication, or none of them would. Given this statement, combined with their collective market share and a lack of viable options for the Indian consumer, one might wonder why they would consider voluntariness an issue. The answer is basic customer service. If consumers don't want, or worse are opposed to, biometric identity authentication, than why pursue it, especially given the implementation costs involved.

Granted, with only five major banks, the Indian banking industry gives consumers limited options presently, but that doesn't mean other institutions (i.e. credit unions and smaller banks) won't try to take advantage of any significant customer backlash. Whether or not customers would pursue alternatives (i.e. smaller

banks or credit unions) simply due to being forced to use biometrics is debatable, but these smaller market players would inevitably try to leverage any customer discontent to their advantage.

TABLE 3-2: RANKING OF POSSIBLE CONTEXTS TO CONSIDER IN EXAMINING CONSUMER PERCEPTIONS OF BIOMETRIC AUTHENTICATION TECHNOLOGY AS IDENTIFIED BY BANK PERSONNEL

Possible Context	Ranking		
	Bank#1	Bank #2	Bank #3
Voluntary versus involuntary	1	1	1
Bank control versus shared control	2	2	2
Type of application (debit card, credit card, etc.)	3		
Online use versus ATM use versus POS use			3
Type of biometric	4	3	
Safety deposit boxes	5		4
Applicable only to new customers	6	2	5

In terms of control, this was framed in terms of where the biometric information is stored. Bank control means it is centrally stored by the bank. Shared control means that only a portion of the information is centrally stored by the bank, and the remainder is stored on a "smart card" retained by the customer. In the latter case, the information stored at the bank is useless without being combined with the information from the card, and vice versa. What this means in terms of a consumer's privacy calculus is that while the benefit of convenience is lessened (i.e. the consumer still doesn't need a password, but they now require the card), the "cost" of privacy and security also drops (i.e. the information stored by the bank is incomplete and, therefore, useless regardless of whether it is shared or stolen). While the bank personnel viewed this as key given people's reticence towards the amount of information being captured in general, and by banks in particular, it also aligns well with the conception that the issue of control is central to consumers' privacy perceptions as previously discussed.

Beyond these two issues, type of biometric and application (i.e. debit cards versus credit cards) were deemed areas worthy of investigation by two respondents, while one interviewee suggested that it would be interesting to examine whether there would be any difference based upon ATM use versus online use versus POS (point-of-sale) use. Interestingly enough, no one saw the importance of testing the acceptance of multi-modal (i.e. two or more biometrics, biometric and a password, etc.) authentication methods as they did not foresee that as being offered by the banks.

Two of the interviewees thought examining the acceptability of biometrics within the context of safety deposit boxes would be worthwhile as they envisioned the initial use, or testing, of biometrics potentially being to access safety deposit boxes: This was based upon the premise that, on average, people tend to keep highly valuable assets (be they financial or nonfinancial) in safety deposit boxes, combined with the fact that they are typically used infrequently. The latter point often leads to lost keys and/or forgotten passwords; standalone biometrics (i.e. no shared control with a smart card) would address these problems quite well. Despite the above positive aspects of looking at this application, it was dropped due to the fact that considerably more people tend to have debit cards and use ATMs versus having safety deposit boxes. Ultimately, the aspects of voluntariness and control were the top two choices among the three interviewees and, as such, were the ones chosen for investigation.

Looking at demographics, all three bank employees identified age, gender, income level, and education as being worthwhile to examine. The former two align with previous research as age and gender have been shown to impact technology adoption. Income level was considered salient as it is presumed that people with higher income would typically have more financial assets available via debit cards. As such, they may be more amenable to the use of what is a more secure method of identity authentication, presuming, again, that their perceived benefits outweigh their perceived concerns/costs. Similarly, people that are more educated may have a better understanding of what biometrics can and can't do which may influence their perceptions.

7.2 PRELIMINARY QUALITATIVE RESEARCH - UNDERSTANDING PERCEIVED BENEFITS AND CONCERNS

The privacy and security concerns and usefulness were discussed as factors that influence the attitudes and/or adoption intentions of consumers with respect to certain types of technology such as the internet, m-commerce, and u-commerce.

Furthermore, the discussions with bank personnel indicated that they would like to know what consumers see as the key benefits and drawbacks of using biometrics. Therefore, given the lack of research with respect to factors influencing biometric adoption, it was deemed necessary to obtain a better understanding of the key perceived benefits and concerns that are top-of-mind for consumers prior to the development of the proposed research model and related hypotheses.

7.3 RESEARCH METHODOLOGY

Data was gathered via an online survey. A description of fingerprint biometric authentication for ATM transactions was provided and subjects were asked the following three open-ended questions:

1. What do you feel are the benefits/advantages of using biometrics?
2. What concerns do you have using biometrics?
3. Please provide any other comments regarding the use of biometrics.

A total of 367 usable surveys were obtained from across Delhi Region. There was a roughly equal representation from the demographic perspectives of gender and age, the latter ranging from 18 through to over 55. In terms of education, the majority of respondents had at least some college or university education. Looking at income level, approximately half of the respondents made Rs. 50,000 or less, while roughly 10% preferred not to answer. All subjects were above 18, used an ATM and mobile banking, and were not employed by financial institutions.

The data was analyzed using a three stage iterative process. In the first stage, respondents' answers to the questions were reviewed and open coding was used to identify shared characteristics and generate initial descriptive categories. The second stage consisted of scrutinizing the initially identified categories and integrating them into more centralized categories. In the final stage, the use of pattern coding allowed the clustering of these centralized categories into overriding themes. While the first and second stages were conducted by one researcher, the final stage was done through meetings and discussion with two other researchers during which the responses were reviewed for consistency and to build consensus.

Answers to the three open-ended questions were copied into a qualitative analysis program called NVivo. After the first and second stage analyses, the following general Categories were identified as concerns of using biometric verification in the context of Mobile transactions:

1. How secure is my information from hackers/insiders?
2. My fingerprints can be copied.
3. The increased possibility of identity theft.
4. Inconvenience.
5. Inability to share banking responsibilities with others.
6. Reliability of the technology in terms of startup glitches, ongoing maintenance issues, and accuracy of the fingerprint reader due to dirt, grease, etc.
7. Slower access to accounts.
8. What happens if my fingers are damaged, or if they become damaged?
9. What happens when I go overseas and they aren't using biometrics at ATMs?
10. Its too much information for the banks to have.
- 11.1 don't like supplying biometric information to the bank.
- 12.1 am concerned about my privacy.
13. How well will my privacy be protected?

14. Will my biometric information be used for reasons beyond those intended (i.e. shared with other corporations, law enforcement, governmental agencies, etc.)?

15. Physical harm as thieves will now sever my fingers and/or hand to gain access to my account.

The third stage analysis resulted in the synthesis of the twelve concern categories into five recurring themes. They were:

1. Security Concerns (Items 1 through 3)
2. Inconvenience (Items 4 through 9)
3. Privacy Issues (Items 10 through 13)
4. Function Creep (Item 14)
5. Physical Harm (Item 15)

The NVivo analysis revealed the following 13 general benefit categories in the first and second stage analyses:

1. Increased security
2. Increased safety
3. Difficulty in reproduction of fingerprints
4. Deterrent to identity theft
5. I am the only one with access to my accounts
6. Less chance of theft from my accounts
7. Less chance of theft of my PIN/password
8. Less concern if I lose my card
9. Easier to use
10. No chance of forgetting your card
11. No PIN/password to remember
12. Convenience
13. Faster access to accounts

The third stage analysis, again, conducted in conjunction with two other researchers through meetings and discussions, resulted in the synthesis of the thirteen broad benefit categories into two overriding themes due to the sufficient commonality identified among the second stage categories. The two higher level benefit constructs identified were:

1. Increased Security (Items 1 through 8)
2. Convenience (Items 9 through 13)

8.0 RESULTS AND DISCUSSION

Looking at Table 3-3, the concerns, ranked by order of number of mentions, are security, inconvenience, function creep, privacy, and physical harm. Security was the greatest concern for people and by a considerable margin as it was cited as an issue by 145 respondents, which represents almost 40% of the usable surveys. Typically, respondents were worried about the ability of thieves to access their biometric data thereby giving them access to their financial information and assets as is exemplified by the following comments: "Anyone could hack into the system and take information"; "If identity theft occurred, it would be far worse than now."; "I have concerns about fingerprints which I think can be copied."; "Somebody somehow getting my fingerprint to access my account"; "Fingerprints left on ATMs may be lifted and used by those who know how"; "Overall security is a concern because there are ways to replicate fingerprints."

TABLE 3-3: CONCERNS OF USING BIOMETRIC AUTHENTICATION AT ATMS

Concern	Number of Mentions	Percent of Respondents
Security	145	39.50%
Inconvenience	99	27.00%
Function Creep	81	22.10%
Privacy	77	21.00%
Physical Harm	38	10.40%

Of particular interest was the finding that some people believe that it is the actual biometric that is stored when, in actuality, recall that the biometric is converted into a mathematical expression which is then stored as the template for identity authentication.

Currently, it is not possible to reverse engineer a viable biometric from the encrypted mathematical expression. Inconvenience was the second most cited concern as it was mentioned by 99 people, or 27% of the survey participants. The biggest issue around inconvenience seemed to be the inability to have someone else do your banking for you. Despite bank direction to the contrary, it would appear that some people are in the habit of sharing banking duties with their friends and significant others. Unfortunately, the implementation of biometric authentication would make it impossible for this practice to continue. Presumably, shared accounts will be able to be accessed by either owner providing their fingerprint for authentication, but for those relationships where the parties prefer to have separate bank accounts; this may be a significant hurdle with respect to acceptance. Beyond this aspect, the issues of being incapacitated, startup glitches, and ongoing reliability were also mentioned. Some of the responses within the inconvenience context included:

"Sometimes I give my bank card to my significant other or close friends or relatives to withdraw money or deposit cheques for my business. They would not be able to do this"; "Personally, I allow my fiancée to access my bank account. Whoever has the free time that day takes both cards and pay cheques or withdrawals and runs to the bank for us both."; "If I am sick and unable to go to the bank to get money, my partner would not be able to go for me. "; "The time it will take to get the system running without any glitches (but it's standard with any new thing) "; "The technology is still young and imperfect"; "Early models flawed. Quality of biometric reading component, not working"; "Could be more complicated, and I have my doubts concerning the reliability of the new system "

Function creep was mentioned by 81 respondents, which represents just over 22% of the usable surveys. Recall from Section 2.2.1 that function creep refers to the concern that the initial use of biometric-based systems will morph and expand, innocently and/or covertly, into other areas not previously envisioned or agreed to by those enrolled in this type of authentication mechanism. Also as previously stated, CRISIL (2008) suggest that function creep may be one of the biggest impediments to widespread biometric use due to current information sharing practices amongst for-profit and governmental organizations. In fact, some law enforcement information systems have been sold based upon their ability to assimilate information from an array of various databases. Some of the responses were:

"I would not accept this service unless there was legislation in place where NO one else could access this information, including the government"; "Banks releasing my fingerprint to other companies/agencies."; "I am concerned that the info could be made available to the government or any other agency as well"; "Who else will be able to get their hands on this biometrics and use it for other situations?";

Privacy was close behind function creep as 77 people, or 21% of the survey participants, mentioned it as an issue. Responses included:

"Privacy is important to all of us and by using this we are giving out way too much"; "I don't like the idea of someone having that much information about me"; "I don't know that I like the idea of providing my bank with my fingerprint, although not for any definable reason, I just feel that it's very personal"; "Biometrics is more secure but we have to make sure that our privacy and our rights remain protected at all cost."; "I am concerned about misuse of the technology and the potential of loss of privacy."

Finally, while the concern that garnered the least number of mentions was the threat of physical harm, it was still mentioned by 38 people, or just over 10% of those surveyed. While there are viability tests to help ensure that the biometric being authenticated is coming from living tissue, this may be of little comfort in

the minds of consumers given that the present system just requires one to surrender their debit card and PIN to a would-be thief thus potentially avoiding physical violence more so than when one is dealing with a piece of oneself. Comments with regard to this concern included:

Fear the crime that might take place against the person. Now if a thief wants access to your account, they simply steal your card even if that means knocking you out for it. In this new scenario, the thief would have to basically kill you to steal your finger.; *"I would also be concerned about people attacking me, cutting off my finger, and using it to access my account. Then I've lost money and a finger.*"; *"People cutting off fingers to rob someone.*"; *"Please be aware that criminals will use whatever means they have to in order to steal, and therefore they may cut off fingers to gain access etc.*"; *"Someone cutting your finger off to access your account*"; *"The Hollywood scenario to cut the finger off to access bank accounts is more probable."*

In addition to the above findings, another trend was noted that lends support to the Notion espoused by Narshima committee (2008) that perhaps there is not a clear distinction between privacy and security in the minds of consumers, at least within the context of biometric authentication technology for accessing one's bank accounts. When people discuss privacy and security concerns from this perspective, many of them tend to mention more than one dimension of either privacy, security, or both. Of the 367 respondents, 92, or just over 25%, mentioned both privacy and a security concern. When multiple mentions of privacy concerns or security concerns are added to this group, the number jumps to 142 participants, or almost 39%. Some of the comments that exemplify this phenomenon are as follows:

"Privacy is important to all of us and by using this we are giving out way too much. In the past people have hacked cards, etc. and if they ever hacked into this it would be a nightmare."; *"I would be concerned about the bank having personal material on me, such as my fingerprint, and how this could be used by hackers and police."*; *"Too much info and not enough safeguards."*; *"My personal information could be sold, offered, stolen, etc. by, or to, other parties."*

Moving on to benefits, the findings are summarized in Table 3-4. Increased security was mentioned as a benefit by 203 respondents which equates to just over 55% of the total, while convenience was cited by 97 people or just over 26% of the survey participants. Some of the comments made regarding security were: *"I think in itself it should be more secure because no one has the same fingerprints"*; *"Less chance of someone else stealing my identity."*; *"I wouldn't need to worry about someone stealing my PIN number (whether by watching over my shoulder or on security cameras, etc). I'd feel more secure that my money couldn't be accessed as easily"*; *"I feel that it will increase the security regarding personal banking"*; *"You feel more secure in knowing that only you can access your bank account, because nobody else has the same fingerprint as you"*; *"Foolproof identification and protection of my banking transactions"*; *"It would be another layer of security to protect my identity"*; *"I think maybe it would be more secure than a bank card because only one person has your fingerprint... YOU!"*

TABLE 3-4: BENEFITS OF USING BIOMETRIC AUTHENTICATION AT ATMS AND MOBILE BANKING

Benefit	Number of Mentions	Percent of Respondents
Increased Security	203	55.30%
Convenience	97	26.40%

On first glance, it seems odd that security is identified as a benefit by over 55% of the respondents while being simultaneously cited as the primary concern by almost 40% of the survey participants. However, upon further review of the answers, the respondents appear to be discussing two different points of view. When security is mentioned as a benefit, it is typically within the context of access to financial data (i.e. only I can access my accounts, the bank is sure it is me, etc.). When security is mentioned as a concern, it is typically mentioned within the context of the bank not having appropriate safeguards to protect the biometric data itself. In several cases, respondents mention both contexts in the same sentence saying that it will be a much more secure method of verification for access to financial assets provided the security around the biometric data is sufficient.

This is exemplified by the following sample of comments: *"If it could be guaranteed (the security) I would like it very much, because I think in itself it should be more secure because no one has the same fingerprints"*; *"As long as the other [biometric] information is kept safely at the bank, I believe this is a great security upgrade and will prevent identity theft"*; *"I know the day is coming, and this would seem to be more secure than a card access with a PIN number. As long as the security of the biometric information can be guaranteed (as much as any security can be), then this would be a great move"*

A similar phenomenon can be seen in terms inconvenience versus convenience in that 99 respondents, or 27%, mentioned the former as a concern while almost the same number (97 respondents, or just over 26%) mentioned the latter as a benefit. However, unlike security in which it appears that the respondents seem to be discussing two different points of view, in looking at inconvenience and convenience, it seems to be more of a paradox in that participants are looking at opposite sides of the same issue. In other words, if they adopt biometric authentication they will have the convenience of no longer having to use debit cards and PINs, but will have to give up the convenience of being able to get someone to do their banking for them.

Upon further analysis of the micro-level classifications, the convenience benefits are typically: (i) not having to remember a card and/or PIN; (ii) faster service; and (iii) it being easier to use. Remarks made with regard to convenience include: *'you need to have a debit card or [to] remember a password'*; *"It would be a faster way to access my money"*; *"You can't forget your fingerprint"*; *"No pin numbers to remember"*; *"Fast, convenient, don't have to search for debit card or risk forgetting the PIN"*; *"No more carrying a card around, don't have to know a PIN, don't have to worry about losing your card"*; *"It's one less password to forget."*

9 CONCLUSION AND FUTURE DIRECTIONS

The empirical results represent an important first step in understanding consumers' attitudes towards using biometrics as a means of identity authentication at ATMs. However, as with most research, the findings suggest a variety of additional directions that should be considered.

While consumers appear to understand the value of using biometrics for identity authentication at their banks, what should be explored is whether or not the positive effect of usefulness upon attitude outweighs the negative effect of privacy and security concerns. It would be interesting to determine at what point these two conflicting concepts balance out in the minds of consumers, a "tipping point" if you will, such that the consumer is ambivalent towards the use of biometrics. As it is unlikely that this balance would remain static across applications, the impact of various scenarios and contexts should be examined. However, this would merely be a starting point. Examining the responses to the open-ended questions, it would appear that the consumer is simultaneously evaluating a myriad array of conflicting factors when determining the value of biometric authentication. Looking at control for example, as consumer control increases, so does their attitude towards using biometrics. In addition, their privacy and security concerns drop; but so does usefulness. In other words, increased control would appear to make consumers feel better about the prospect of biometrics, presumably due in part to the reduced privacy and security concerns; but this is being mitigated by the loss of convenience associated with now being required to carry a card as with the present debit card system, albeit the latter requires a PIN, which can be forgotten. Furthermore, based upon the initial qualitative study and subsequently demonstrated in the answers to the open ended questions in the final survey, consumers simultaneously see security as a concern and an advantage; and, in conditions of shared control, this advantage is seen as greater, and the concern less, than in the context of bank control. The nature of some of the comments made in the open-ended questions suggests that Indians may not have the background or knowledge with respect to how biometrics work and why they can be much more secure than other classical forms of security. As mentioned previously, this underscores the need for public education; but the question remains as to what should be taught and what would be the impact. Presuming that the banks wish to pursue using biometrics for identity authentication, it would be useful to measure people's initial understanding of biometrics generally and under the proposed context, provide some education through various forums and media, and then measure people's subsequent understanding. This would allow the banks to assess the impact of various educational alternatives which should consequently lead to a better allocation of scarce marketing resources and, hopefully, to a more positive attitude with respect to the use of biometrics in the Canadian banking industry. Institutional trust was found to influence attitude both directly and indirectly. While the direct impact of institutional trust on attitude was significant (p < 0.05), it appears to have a more indirect influence through privacy and security concerns. This mediation effect should be examined further in future research, under varying scenarios and contexts. This research reaffirmed the importance of control in the minds of consumers when considering initiatives that are perceived as having privacy implications. Recall that it was demonstrated that control was significant when enrolment in the biometric identity authentication program was mandatory, but was not significant when the program was voluntary. It was suggested that this may be due to the supposition by consumers that a voluntary program gives the consumer de facto control in the sense that they don't have to enroll in the first place. Further investigation is needed to fully understand this phenomenon as

examining the interaction of control and voluntariness could provide for some interesting future research that could offer practitioners valuable insights as to what the most effective strategies might be when deploying biometric identity authentication technologies. The previous paragraphs suggest future research along the lines of how to expand upon the concepts and constructs in the proposed model. However, a variety of other avenues for continuing research exist beyond the model. First, as alluded to in the limitations section, only fingerprints were examined in this research. While this biometric does enjoy a significant market share, face recognition and iris recognition are also quite popular. Also, as face recognition becomes more accurate it will probably attract more of the market. Looking at iris recognition, this is considered to be the most reliable biometric available. However, the costs of the scanners make it prohibitively expensive for widespread use at the present time; but as the costs come down, it may replace fingerprints as the market leader. Then there are the emerging biometrics. This suggests that similar research is required to assess consumer perceptions of acceptability of alternative biometrics. This research examined consumer acceptability within the financial sector. Given the interests of governments with respect to biometrically enabled documents and of businesses regarding more accurate time and attendance, to name just two potential markets, further research could examine acceptability across a variety of potential applications. Recall from the qualitative research done with bank personnel that a number of different contexts were identified as being worthwhile to investigate, and this was strictly within the realm of the Canadian banking industry. There are probably a considerable number of contexts of interest to a variety of organizations. These contexts could be examined individually, or in conjunction with other circumstances, to assess how they interact with one another.

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IMPACT OF TRAINING ACTIVITIES & LABOUR WELFARE PROVISIONS ON ORGANIZATIONAL PRODUCTIVITY

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ABSTRACT

In India, many enterprises implement various training activities as well as labour welfare provisions to enhance their overall productivity. Today the FMCG sector is the fourth largest sector in Indian economy and the Dabur India Ltd. is India's fourth largest FMCG Company. Now a days, Employee training has been a great matter of concern and attention by many FMCG firms. The present study is based on identifying the training and development activities and various labour welfare provisions that contribute to the productivity of the FMCG (Dabur India Ltd) company. The scope of labour welfare provisions can be interpreted with the various stages of employee development, organizational excellence and its productivity. The research design used in the study is exploratory and descriptive. Based on the convenience of the employees, the sample was selected. The combination of primary and secondary data includes a total number of 100 respondents (employees) on whom the survey was conducted. The secondary data was collected through various sources like text books, websites, company manuals and records etc. From the study, it was found that majority of employees were highly satisfied and motivated as a result of implementation of labour welfare provisions and usage of training –development activities.

KEYWORDS

Labour welfare measures, training and development activities, organizational productivity etc.

1. INTRODUCTION

Training both physically, socially, intellectually and mentally are very essential in facilitating not only the level of productivity but also the development of personnel in any organization. Training is systematic development of the knowledge skills and attitude required by the employees to perform adequately on a given task or job. It can take place in a number of ways, on the job or off the job, in the organization or outside organization. Adeniyi (1995) observe that employee training and development is a work activity that can make a very significant contribution to the overall effectiveness and productivity of an organization. He therefore provide a systematic approach to training which encases the main element of training. The objectivity of training and development and its continued learning process has always been leverage with the FMCG industry and now it has become rather an over arching trend of social needs, emphasizing the organization must inculcate learning culture as social responsibility. It has also been proved by many studies done earlier there is a sound linkage between various training activities and different factors of organizational productivity (Delery and Doty 1996; Becker and Huselid 1998). Human resources are the valuable assets of the any organization, with the machine, material and even the money, nothing gets done without manpower. The term welfare suggests the state of well being and implies wholesomeness of the human being. It is a desirable state of existence involving the mental, physical, moral and emotional factor of Employees. Adequate levels of earnings, safe and humane conditions of work life and social security benefits are the major qualitative areas of employment which enhance quality of workers life and their productivity. Labour welfare provisions implies the setting up to minimum desirable standards and the provisions of facilities like health, food, clothing, housing, medical assistance, education, insurance, job security, reaction etc. such facilities enable the worker and his family to lead a good work life, family life & social life. Since the overall effectiveness and the productivity of an organization lies on the people who form and work within the organization. Organizational productivity depends upon, what kind of welfare measures implemented in the organization, what kind training and development activities are being organized for the employees and how these factor strengthen organizational performance and productivity. Thus, FMCG sector in India needs to concentrate in the area of labour welfare provisions and various training activities etc.

2. OBJECTIVES OF THE STUDY

The idea behind carrying out this study is based on having an indepth analysis the existing training programs and various labour welfare provisions being implemented at Dabur India Ltd., hence the present study is based on following objective:

1. What are the various training and development activities conducted at Dabar India Ltd.
2. What are various labour welfare provisions at dabur India ltd.
3. What is the impact of usage of Training factor and labour welfare provisions on the organization productivity at Dabur India ltd.

3. REVIEW OF LITERATURE

Now a Days, the relationship between the organization and the employee has grown stronger. The employee is viewed as a 'learner', bringing personal preferences and motivation to the workplace, and thereby displaying innovation in his managerial skills and competencies. There is a positive relationship between Training and Development strategies and Organizational Productivity. Performance orientation has been included as an important association in training, in a number of studies (Aycan 2003; House et al. 2004; Javidan 2004). In case of learning organizations, training has been linked to both corporate strategy and organizational productivity; Training must be aligned to organizational strategy in order to result in high productivity (Delery and Doty 1996). So organizations invest huge amount on the human resource capital because the performance of human resource will ultimately increase the performance of the organization. Performance is a major multidimensional aspect aimed to achieve results and has a strong link to strategic goals of an organization (Mwita, 2000). But the question arise that how an employee can work more effectively and efficiently to increase the growth and the productivity of an organization (Qaiser Abbas and Sara Yaqoob). It is very necessary for the organization to design the training very carefully (Michael Armstrong 2000). The design of the training should be according to the needs of the employees (Ginsberg, 1997). Those organizations which develop a good training design according to the need of the employees as well as to the organization always get good results (Partlow, 1996); Tihanyi et al., 2000; Boudreau et al., 2001). Conventions and Recommendations of ILO (1949) set forth a fundamental principle at its 26th conference held in Philadelphia recommended some of the measures in the area of welfare measures which includes adequate protection for life and health of workers in all occupations, provision for child welfare and

maternity protection, provision of adequate nutrition, housing and facilities for recreation and culture, the assurance of equality of educational and vocational opportunity etc. Jayadevadas (1980), based on his study of coir workers, suggested that the model before the trade unions in Kerala was that of modern industrial employment characterized by high wage rates, stable employment, fair working conditions, non-wage benefits, and long-term economic security. Subrahmanya (1994) defined the concept of social security in its broadest sense, as support provided by the society to the individual to enable him to attain a reasonable standard of living and to protect the standard from falling due to any contingency.

Report of National Commission on Labour (2002) Government of India, made recommendation in the area of Labour welfare measures which includes social security, extending the application of the Provident fund, gratuity and unemployment insurance etc. Shobha Mishra and Manju Bhagat(2002) in their "Principles for successful Implementation of Labour Welfare Activities ", stated that labour absenteeism in Indian industries can be reduced to a great extent by provision of good housing, health and family care,canteen,educational and training facilities and provision of welfare activities. P.L.Rao (2002) in his "Labour Legislation in the Making", opines that professional bodies like National Institute of Personal Management should constitute a standing committee to monitor the proceeding in the Parliament regarding the labour welfare measures. Rao and Deo observed that self-help organizations constitute the sole agencies, which guarantee the minimum standards of social and economic security to workers in non-traditional and informal sectors of the society.K. P. Kannan (2002) stated that the ever-increasing demand for Welfare Funds for each and every sub-sector of the informal sector may be viewed as a desperate reaction of the workers for a measure of social security in an unprotected labour market.

4. ROLE OF TRAINING ACTIVITIES IN ACHIEVING ORGANIZATIONAL PRODUCTIVITY

Training has the distinct role in the achievement of an organizational goals by incorporating the interests of organization and the employees (Stone R.J. Human Resource Management, 2002). Now a days training is the most important factor in the business world because training increases the efficiency and the effectiveness of both employees and the organization and therefore it leads to organisational productivity. The employee performance depends on a number of factors. But the most important factor of employee performance is training. Training is important to enhance the capabilities and competencies of employees. The employees who have more on the job experience have better performance because there is an increase in the both skills & competencies because of more on the job learning experience. Employee performance depends on many factors like job satisfaction, knowledge and management but there exists a strong relationship between Training activities and Organisational overall productivity (Chris Amisano,2010). This shows that in order to improve organisational productivity, first of all employee performance is important which in turn would be improved through appropriate training programmes in the organisations.

5. IMPACT OF LABOUR WELFARE PROVISIONS ON ORGANIZATIONAL PRODUCTIVITY

The industrial progress of a country depends on the efficiency of employees. Any organization can be effective only when there is high degree of co-operation of labor force by providing welfare facilities. These welfare facilities go a long way in stimulating interest in the workers to produce their full capacity and pay good returns to the management in the long run, therefore, labor welfare activities act as motivator, and result in higher productivity and profits.

The term 'Labour Welfare' refers to the facilities provided to workers in and outside the factory premises such as canteens, rest and recreation facilities, housing and all other services that contribute to the wellbeing of workers. Welfare measures are concerned with general wellbeing and efficiency of workers. In the early stages of industrialization, welfare activities for factory workers did not receive adequate attention. Employers were not inclined to accept the financial burden of welfare activities. Wherever employers provided for such amenities, it was more with a paternalistic approach to labour rather than recognition of workers' needs. Hence the state had to intervene, in discharge of its welfare responsibility, by using its persuasive powers and/or by enforcing legislation, where persuasion failed. Compulsory provisions are thus incorporated in the Factories Act, 1948 with respect to the health, safety and welfare of workers engaged in the manufacturing process.

6. TRAINING ACTIVITIES AND LABOUR WELFARE PROVISIONS AT DABUR INDIA LTD.

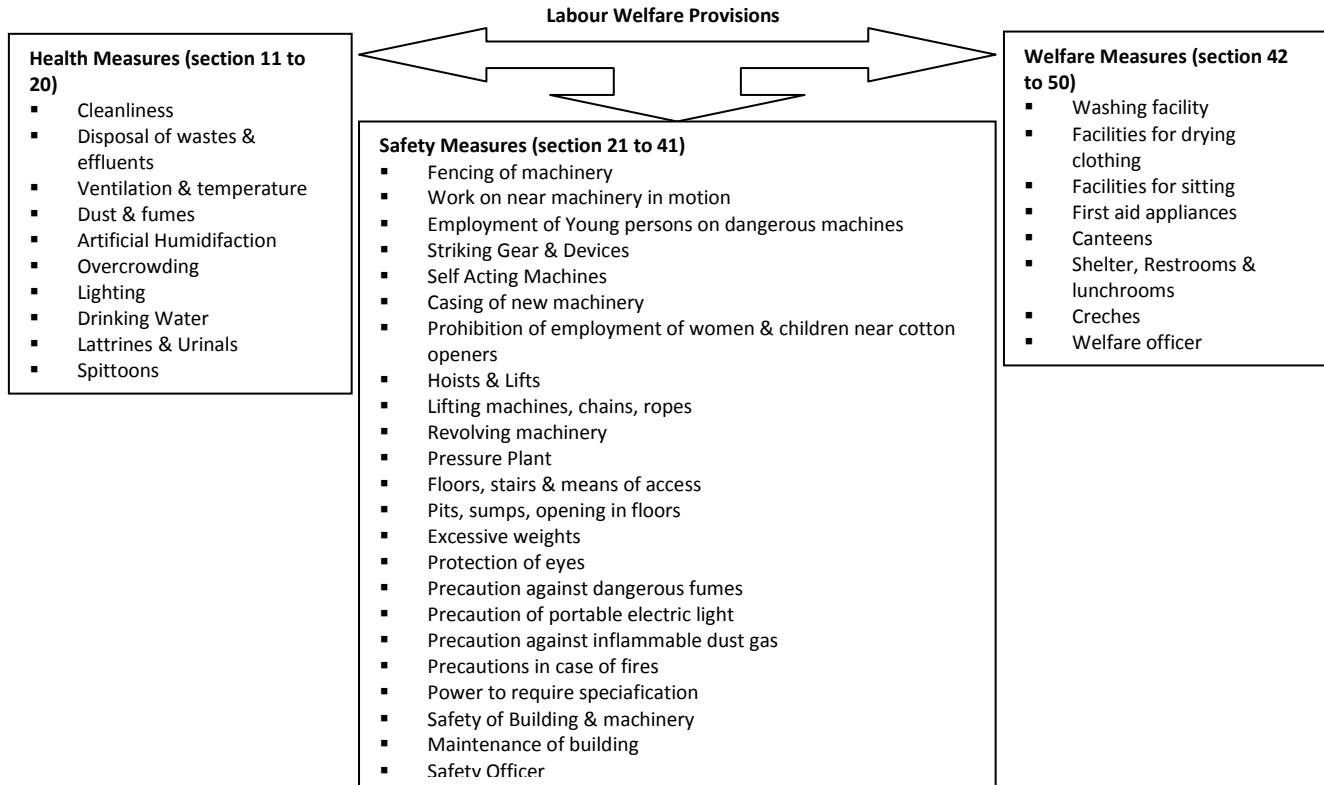
Today, the FMCG sector is the fourth-largest sector in the Indian economy. Dabur India Limited is India's fourth largest FMCG Company. Over the period, various training programs are organized at Dabur India Limited. The purpose of these programs is to bring awareness among the employees on the latest techniques & technical up-gradation & enhancement of their knowledge to improve the productivity, efficiency, best resources utilization & built positive attitude and culture in the organization.

Labour sector addresses multidimensional socio-economic aspects affecting labour welfare, productivity, living standard of labour force & social security. The purpose of labour welfare is to bring about the development of the whole personality of the worker to make a better workforce. In dabur India limited, the employee welfare schemes classified into two categories – Statutory & non-Statutory. The Statutory schemes are compulsory provided by an organisation as compliance to laws governing under factories act 1948 with respect to employee health, safety & welfare measures.

FIGURE -1 TRAINING PROCEDURE AT DABUR INDIA LIMITED



FIGURE-2 VARIOUS LABOUR WELFARE PROVISIONS AT DABUR INDIA LIMITED



7. RESEARCH METHODOLOGY

Research methodology is the way to the systematic solution of a research problem. This section basically presents the general procedure for carrying out the study. A description of the design and appropriate methodology is adopted in carrying out the study. The study is based on descriptive research. A well defined questionnaire was used for gathering the information about training and its effectiveness and implementation of labour welfare provisions.

7.1 Hypothesis of the study

Towards fulfilling the objective few working hypothesis were framed

H₁ Training activities affect organizational productivity.

H₂ Labour welfare provisions affect organizational productivity.

H₃ Implementation of labour welfare provisions & usage of T & D activities improve organizational productivity.

7.2 Sampling

The research made use of probability sampling for the selection of samples. Sample random sampling was used for this research. A total of 100 respondents were administered from Dabur India Ltd to determine the productivity of Training activities and labour welfare provisions.

7.3 Data Collection method

Primary data was collected by survey (through Questionnaire) on the employees of the company. Secondary data was collected from historical records and websites of the company.

7.4 Statement of Rating Scale

Highly Satisfied	Satisfied	No opinion	Dissatisfied	Highly Dissatisfied
5	4	3	2	1

8. DATA ANALYSIS

TABLE-1 FRAME TO ANALYSE THE OPINION OF THE EMPLOYEES REGARDING HEALTH & SAFETY FACILITIES

S. No	Health & Safety Facilities	Highly Satisfied	Satisfied	No Opinion	Dissatisfied	Higly Dissatisfied
1.	Drinking Water Facilities	20 (20%)	42 (42%)	12 (12%)	16 (16%)	10 (10%)
2.	Cleanliness & Proper Sanitation	18 (18%)	45 (45%)	10 (10%)	19 (19%)	8 (8%)
3.	Ventilation, Temperature & Lighting Facilities	25 (25%)	47 (47%)	13 (13%)	10 (10%)	5 (5%)
4.	Fencing of Machinery	17 (17%)	38 (38%)	15 (15%)	20 (20%)	10 (10%)
5.	Fire safety measures	12 (12%)	54 (54%)	14 (14%)	12 (12%)	8 (8%)
6.	Employment of young persons	10 (10%)	32 (32%)	16 (16%)	20 (20%)	22 (22%)
	Total	102	254	80	97	63
	Overall	17	43	13.3	16.16	10.5

Source- Primary Data

Note: Figure within the parenthesis indicate Percentage (%)

TABLE-2 FRAME TO ANALYSE THE OPINION OF THE EMPLOYEES REGARDING WELFARE FACILITIES

S. No	Welfare Facilities	Highly Satisfied	Satisfied	No Opinion	Dissatisfied	Higly Dissatisfied
1.	Medical facilities & First-aid Appliances	14 (14%)	32 (32%)	20 (20%)	12 (12%)	22 (22%)
2.	Canteen, shelters, Restrooms	14 (14%)	46 (46%)	15 (15%)	15 (15%)	10 (10%)
3.	Creches	50 (50%)	40 (40%)	2 (2%)	5 (5%)	3 (3%)
4.	Prevention of Dust fumes & smoke in work place	8 (8%)	34 (34%)	4 (4%)	10 (10%)	44 (44%)
5.	Regular visit of Labour welfare officer	14 (14%)	74 (74%)	2 (2%)	8 (8%)	2 (2%)
	Total	100	226	43	50	81
	Overall	20	45.2	8.6	10	16.2

Source- Primary Data

Note: Figure within the parenthesis indicate Percentage (%)

TABLE-3 FRAME TO ANALYSE THE OPINION OF THE EMPLOYEES REGARDING CONDUCT OF TRAINING & DEVELOPMENT ACTIVITIES

S. No	Training & Development Activities	Highly Satisfied	Satisfied	No Opinion	Dissatisfied	Higjly Dissatisfied
1.	Training Design & Delivery System	12 (12%)	58 (58%)	6 (6%)	18 (18%)	6 (6%)
2.	On-the job training	14 (14%)	74 (74%)	0 (0%)	10 (10%)	2 (2%)
3.	Off-the-job training	26 (26%)	60 (60%)	6 (6%)	4 (4%)	4 (4%)
4.	Procedure for T & D activities	32 (32%)	56 (56%)	2 (2%)	6 (6%)	4 (4%)
5.	Usage of Modern techniques	30 (30%)	40 (40%)	5 (5%)	15 (15%)	10 (10%)
	Total	114	288	19	53	26
	Overall	22.8	57.6	3.8	10.6	5.2

Source- Primary Data

Note: Figure within the parenthesis indicate Percentage (%)

TABLE-4 FRAME TO ANALYSE THE OPINION OF THE EMPLOYEES REGARDING EFFECTIVENESS OF TRAINING & DEVELOPMENT ACTIVITIES

S. No	Effectiveness of Training & Development Activities	Highly Satisfied	Satisfied	No Opinion	Dissatisfied	Higjly Dissatisfied
1.	Regular conduct of T & D programs	28 (28%)	42 (42%)	6 (6%)	14 (14%)	10 (10%)
2.	Training programs improve employee performance	30 (30%)	55 (55%)	4 (4%)	7 (7%)	4 (4%)
3.	T & D provides better opportunities for Growth of employees	15 (15%)	65 (65%)	5 (5%)	8 (8%)	7 (7%)
4.	Training programs help in achieving Organisational goals	18 (18%)	60 (60%)	6 (6%)	9 (9%)	7 (7%)
	Total	91	222	21	38	28
	Overall	22.75	55.5	5.25	9.5	7

Source- Primary Data

Note: Figure within the parenthesis indicate Percentage (%)

TABLE-5 CONSOLIDATED TRAINING ACTIVITIES & LABOUR WELFARE PROVISIONS AT DABUR INDIA LIMITED

S. No	Training activities & labour welfare facilities	Highly Satisfied	Satisfied	No Opinion	Dissatisfied	Higjly Dissatisfied
1.	Drinking Water Facilities	20	42	12	16	10
2.	Cleanliness & Proper Sanitation	18	45	10	19	8
3.	Ventilation, Temperature & Lighting Facilities	25	47	13	10	5
4.	Fencing of Machinery	17	38	15	20	10
5.	Fire safety measures	12	54	14	12	8
6.	Employment of young persons	10	32	16	20	22
7.	Medical facilities & First-aid Appliances	14	32	20	12	22
8.	Canteen, shelters, Restrooms	14	46	15	15	10
9.	Creches	50	40	2	5	3
10.	Prevention of Dust fumes & smoke in work place	8	34	4	10	44
11.	Regular visit of Labour welfare officer	14	74	2	8	2
12.	Training Design & Delivery System	12	58	6	18	6
13.	On-the job training	14	74	0	10	2
14.	Off-the-job training	26	60	6	4	4
15.	Procedure for T & D activities	32	56	2	6	4
16.	Usage of Modern techniques	30	40	5	15	10
17.	Regular conduct of T & D programs	28	42	6	14	10
18.	Training programs improve employee performance	30	55	4	7	4
19.	T & D provides better opportunities for Growth of employees	15	65	5	8	7
20.	Training programs help in achieving Organisational goals	18	60	6	9	7
	Total	407	994	163	238	198
	Overall	20.35	49.7	8.15	11.90	9.9

Source- Primary Data

9. FINDINGS

From the forgoing analysis, the study brings to light some important findings regarding training effectiveness & welfare measures. It showed that HR's role is to establish and implement a high-level roadmap for strategic training activities and welfare measures. The strategic positioning of these activities directly promotes organisational business goals and objectives, and thereby enhancing overall organisational productivity. Data collected through various manuals & information obtained through questionnaire revealed the following major analysis-

1. It has come to notice that 60% employees were satisfied about the Health & safety facilities. 13.3% were in the category of no opinion while 26.6% employees were dissatisfied with these facilities.
2. Regarding welfare facilities, 65% employees were satisfied, near about 9 employees seemed to give no comments and about 26% employees showed dissatisfaction about welfare facilities.
3. 80% employees were satisfied with the training & development activities at dabur India limited, near about 4% employees gave no comments while near about 16% employees were dissatisfied with it.
4. 78% employees were very satisfied with the the effectiveness of training activities at Dabur India Limited, near about 5% employees gave no comments while 16% employees were dissatisfied with this.
5. Superiors give adequate feedback to employees periodically. They also provide proper diagnostic tips/ counseling methods at required levels.
6. Dabur India Limited gives both types of trainings i.e. on the job trainings & off the job trainings.
7. According to the survey of employees, result comes out that most of the trainings are given in the area of social skills, knowledge and in the area of technical skills. DIL provide trainings for the techniques also.
8. The result comes out that dabur India limited effectively implements the labour welfare provisions and it is really concerned about the health, safety, welfare as well as improving the overall performance of the employees.

10. RECOMMENDATIONS

In this research, a lot of material related to the variables used in this research has been reviewed. In the light of all this research and all the material which is being used to conduct this research and all the literature review, it comes to the decision that there should be proper Training and development in every organisation as well as labour welfare provisions should be effectively implemented. Although some disadvantages like providing all these facilities include a

huge cost to the organisation, but the advantages are much more than the disadvantages. Here are some recommendations which could be considered so as to help the company improve its organisational productivity. These recommendations have been discussed as follows-

1. Proper steps must be taken to improve the quality of food in canteen.
2. The visits of the labour welfare officer should be regular.
3. Company has to give more attention to dust, smoke, & urinals in the workspot.
4. The training design & delivery system should be orderly enhancing the effectiveness of the employees.
5. The company should change the tendency and perception of their workers towards training programs.
6. The company should give adequate knowledge regarding the use of modern methods & techniques so that the employees can become fully aware with the usage of them.
7. There should be more participation from the Top Level management in implementation of training activities as well as labour welfare facilities in the organisation.
8. Training evaluation should be conducted after every training session and proper feedback should be given to the trainees.
9. Implementation of training activities as well as labour welfare facilities should be done openly and involve every individual in determining the kind of training they need and the welfare activities which they further want to be improved by the top level.
10. The top level management should identify a broad career path for employees and it should also conduct proper career counselling programs for boosting their morale and providing career related informations to them.

11. CONCLUSION

Training & Development activities as well as labour welfare provisions are very important for an organisation to compete with this challenging & changing world. Although these facilities are basically directly related to employee but its ultimate effect goes to organisation because the end user is organisation itself. Now a days when the corporate world is designing newer techniques for developing employees and retaining them, the Dabur India Limited is no way behind and the organizational structure is such that people works hand in hand to align the organizational goals with the individuals' goals. A lot of improvements can be brought about in the company with the help of effective training and coaching. Training & development program is helpful as to strengthen the employee's productivity, their promotion, transfer, training & developments needs etc. The labour welfare provisions will improve the physique, intelligence, morality and standard of living of the workers, which in turn to improve their efficiency and productivity. From the study on labour welfare provisions in Dabur India Ltd, enable workers to live a rich and more satisfactory life .However, for any organization to succeed, training and labour welfare provisions should be vigorously pursued and made compulsory.

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COMPARATIVE STUDY ON THE FEATURES OF DIFFERENT WEB SERVICES PROTOCOLS

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ABSTRACT

This article focuses on the basic idea of web services and its basic protocols. Basic architecture of SOAP & REST as well as the comparison of SOAP & REST.

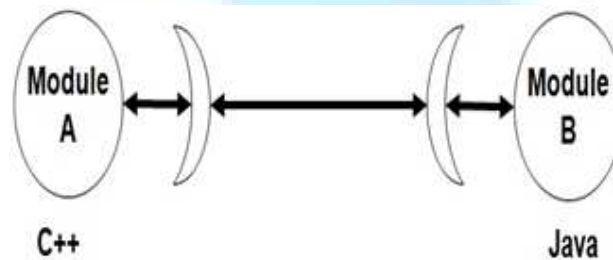
KEYWORDS

DISCO, REST, SOAP, UDDI, WSDL.

WHAT IS WEB SERVICES

Web service is a software system designed to support interoperable machine-to-machine interaction over a network. Distributed components are interfaced via non-object-specific protocols

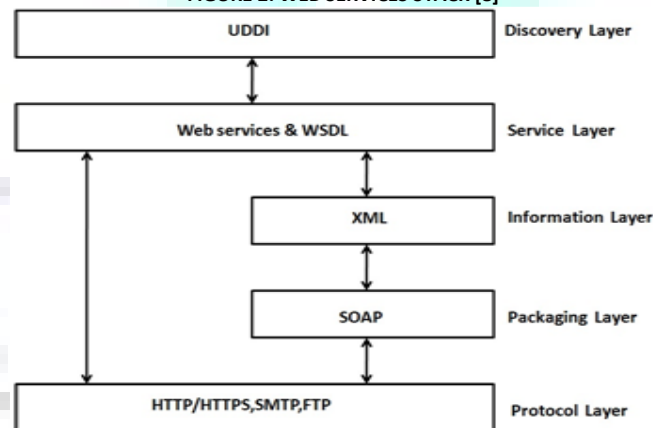
FIGURE 1: COMMUNICATION BETWEEN DIFFERENT APPLICATION [8]



In other words, Web Services is a software system that allows machines (including servers) to communicate with each other regardless of each individual machine's operating systems and programming languages. The Symons's Extensible Markup Language (XML) Page provides a very nice formula that neatly defines the major components of Web Services [1]:

Web services = XML + SOAP + WSDL + UDDI

FIGURE 2: WEB SERVICES STACK [8]



XML (EXTENSIBLE MARK-UP Language)

XML is an acronym for eXtensible Mark-up Language and was developed and finalized by the W3C in 1998. XML is a well formed, tree structured, plain text document that is human readable and machine consumable.

XML forms the basis for all modern Web services, which use XML-based technologies to describe their interfaces and to encode their messages. WSDL, SOAP, and UDDI all use XML-based messaging that any machine can interpret [1].

WSDL (Web Services Description Language)

WSDL is an XML-based format for describing Web services. Clients wishing to access a Web service can read and interpret its WSDL file to learn about the location of the service and its available operations. Through the WSDL, a Web services client learns where a service can be accessed, what operations the service performs, the communication protocols the service supports, and the correct format for sending messages to the service.

A WSDL file is an XML document that describes a Web service using six main elements:

Port type – groups and describes the operations performed by the service through the defined interface.

Port – specifies an address for a binding, i.e., defines a communication port.

Message – describes the names and format of the messages supported by the service.

Types – defines the data types (as defined in an XML Schema) used by the service for sending messages between the client and server.

Binding – defines the communication protocols supported by the operations provided by the service.

Service – specifies the address (URL) for accessing the service.

The WSDL document that describes a Web service acts as a contract between Web service client and server. By adhering to this contract the service provider and consumer are able to exchange data in a standard way, regardless of the underlying platforms and applications on which they are operating [1].

UDDI (Universal Description Discovery and Integration)

UDDI is a standard sponsored by OASIS (Organization for the Advancement of Structured Information Standards). Often described as the yellow pages of Web services, UDDI is a specification for creating an XML-based registry that lists information about businesses and the Web services they offer. UDDI provides businesses a uniform way of listing their services and discovering services offered by other organizations. Though implementations vary, UDDI often describes services using WSDL and communicates via SOAP messaging. Registering a Web service in a UDDI registry is an optional step, and UDDI registries can be public or private (i.e. isolated behind a corporate firewall). To search for a Web service, a developer can query a UDDI registry to obtain the WSDL for the service he/she wishes to utilize. Developers can also design their Web services clients to receive automatic updates about any changes to a service from the UDDI registry [1].

SOAP (Simple Object Access Protocol)

SOAP is one of XML-based web service's messaging protocols, which is used for information exchange in distributed computing environment. SOAP defines mechanisms for message transferring between distributed system and remote procedure call (RPC) processes. Web services use SOAP to send messages between a service and its client(s). Because HTTP is supported by all Web servers and browsers, SOAP messages can be sent between applications regardless of their platform or programming language. This quality gives Web services their characteristic interoperability.

Data is sent between the client(s) and the Web service using request and response SOAP messages, the format for which is specified in the WSDL definition. Because the client and server adhere to the WSDL contract when creating SOAP messages, the messages are guaranteed to be compatible [1].

Anatomy of web services

Basic Architecture of web services

The basic architecture includes Web services technologies capable of [6]:

- Exchanging messages
- Describing Web services
- Publishing and discovering Web service descriptions

The basic Web services architecture defines an interaction between software agents as an exchange of messages between service requesters and service providers. Requesters are software agents that request the execution of a service. Providers are software agents that provide a service. Agents can be both service requesters and providers. Providers are responsible for publishing a description of the service(s) they provide. Requesters must be able to find the description(s) of the services.

The basic Web service architecture models the interactions between three roles: the service provider, service discovery agency, and service requestor. The interactions involve to publish, find, and bind operations. These roles and operations act upon the web service artifacts: the web service software module and its description. In a typical scenario a service provider hosts a network accessible software module (an implementation of a web service). The service provider defines a service description for the web service and publishes it to a requestor or service discovery agency. The service requestor uses a find operation to retrieve the service description locally or from the discovery agency (i.e. a registry or repository) and uses the service description to bind with the service provider and invoke or interact with the web service implementation. Service provider and service requestor roles are logical constructs and a service may exhibit characteristics of both.

Requesters and providers interact using one or more message exchange patterns (MEPs) that define the sequence of one or more messages exchanged between them. A service description is hosted by a discovery service, to which a provider publishes the description, and from which the requester discovers the description. The description includes data type and structure information, identifies the MEP, and contains the address of the service provider.

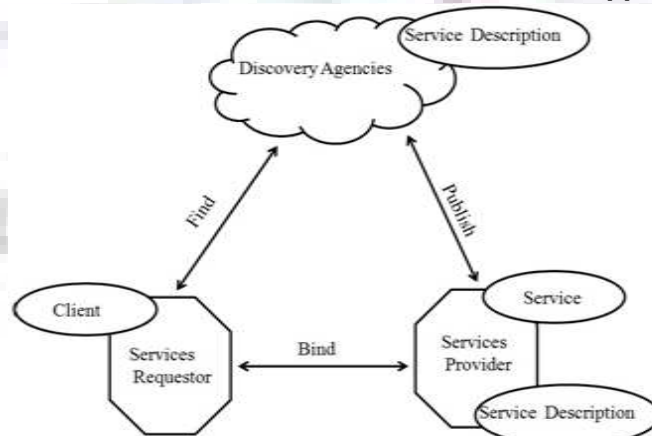
The extended architecture describes Web services support for MEPs that group basic messages into higher-level interactions, details how support for features such as security, transactions, orchestration, privacy and others may be represented in messages (SOAP modules), and describes how additional features can be added to support business level interactions. The extended architecture builds on the basic architecture using the extensibility mechanisms inherent in the basic technologies.

Software agents in the basic architecture can take on one or all of the following roles:

- Service requester -- requests the execution of a Web service
- Service provider -- processes a Web service request
- Discovery agency -- agency through which a Web service description is published and made discoverable

A software agent in the Web services architecture can act in one or multiple roles, acting as requester or provider only, both requester and provider, or as requester, provider, and discovery agency. A service is invoked after the description is found, since the service description is required to establish a binding.

FIGURE 3: WEB SERVICES ACTORS, OBJECTS & OPERATION [6]



Features of Web services

Web services provide several technological and business benefits, a few of which include:

- Application and data integration
- Versatility
- Code re-use

- Cost savings

The inherent interoperability that comes with using vendor, platform, and language independent XML technologies and the ubiquitous HTTP as a transport mean that any application can communicate with any other application using Web services. The client only requires the WSDL definition to effectively exchange data with the service – and neither part needs to know how the other is implemented or in what format its underlying data is stored. These benefits allow organizations to integrate disparate applications and data formats with relative ease. (Web services provide interoperability between various software applications running on disparate platforms/operating systems)

(Web services allow software and services from different companies and locations to be combined easily to provide an integrated service.)

Web services use open standards and protocols

Web services are also versatile by design. They can be accessed by humans via a Web-based client interface, or they can be accessed by other applications and other Web services. A client can even combine data from multiple Web services to, for instance, present a user with an application to update sales, shipping, and ERP systems from one unified interface – even if the systems themselves are incompatible. Because the systems exchange information via

Web services, a change to the sales database, for example, will not affect the service itself.

Code re-use is another positive side-effect of Web services' interoperability and flexibility. One service might be utilized by several clients, all of which employ the operations provided to fulfill different business objectives. Instead of having to create a custom service for each unique requirement, portions of a service are simply re-used as necessary. All these benefits add up to significant cost savings. Easy interoperability means the need to create highly customized applications for integrating data, which can be expensive, is removed. Existing investments in systems development and infrastructure can be utilized easily and combined to add additional value. Since Web services are based on open standards their cost is low and the associated learning curve is smaller than that of many proprietary solutions. Finally, Web services take advantage of ubiquitous protocols and the Web infrastructure that already exists in every organization, so they require little if any additional technology investment. Web services allow the reuse of services and components within an infrastructure. Web services are loosely coupled thereby facilitating a distributed approach to application integration.

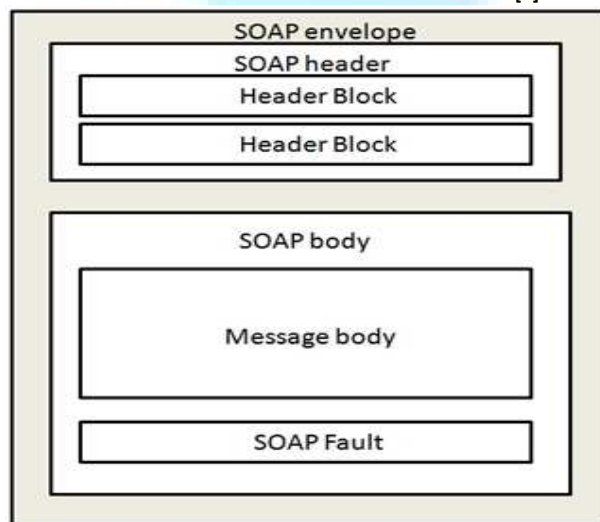
What is soap

Architecture of SOAP message

SOAP messages are XML documents that contain some or all of the following elements [2]

- Envelope – specifies that the XML document is a SOAP message; encloses the message itself.
- Header (optional) – contains information relevant to the message, e.g., the date the message was sent, authentication data, etc.
- Body – includes the message payload.
- Fault (optional) – carries information about a client or server error within a SOAP message.

FIGURE 4: DIAGRAM OF A SOAP MESSAGE [3]



Advantages of the SOAP

- Supported by the popular companies such as IBM & Microsoft and also supported by open source communities
- Simple & easy to understand because the messages of SOAP is in XML
- SOAP is scalable for transporting messages because its uses HTTP protocol
- SOAP is Platform independent & portable[7]

Disadvantages of the SOAP

- SOAP is slow because of parsing of envelop all time.
- SOAP coding is complicated. Performing SOAP request is quite detailed. The
- SOAP programmer has to construct a message, put the arguments in the message, and then send it. After that, he has to wait for reply, parse the reply XML message, and find out the data.
- The roles of interacting parties are fixed, when relying on HTTP as a transfer protocol and not using Web services addressing. Only one party (the client) can use the services of the other. So developers must use polling instead of notification in these common cases.
- SOAP toolkit is always needed for the developers to form requests and parse the results.
- There is no standard way to dynamically discover the services (for example, parameters, methods).
- It is depending on WSDL which is an external standard [7].

What is REST?

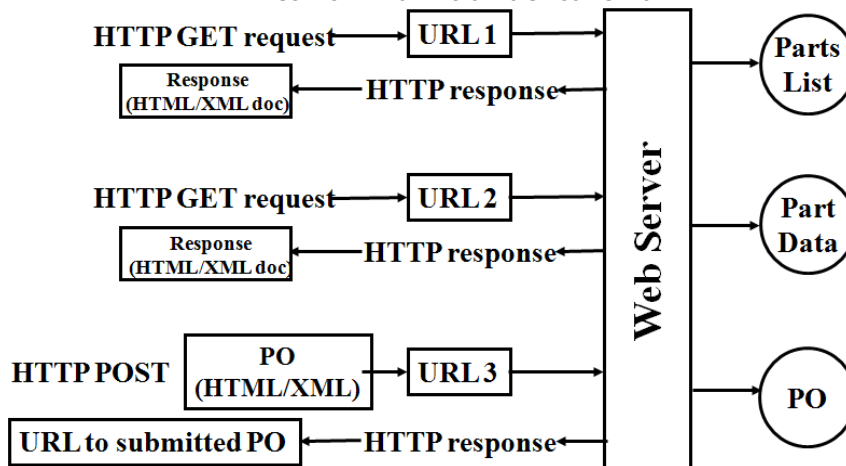
REST defines a set of architectural principles by which you can design Web services that focus on a system's resources, including how resource states are addressed and transferred over HTTP by a wide range of clients written in different languages.

The acronym REST stands for *Representational State Transfer*, this basically means that each unique URL is a representation of some object. To get the contents of that object using an HTTP GET, to delete it, use a POST, PUT, or DELETE

- Resources are identified by uniform resource identifiers (URIs)
- Resources are manipulated through their representations
- Messages are self-descriptive and stateless
- Multiple representations are accepted or sent

REST way of designing the web services

FIGURE 5: WEB SERVICES DESIGN USING REST



The web service makes available a URL to a parts list resource. A client uses this URL to get the parts list [4]

This type of design,

- Create a resource for every service.
- Identify each resource using a URL.

Advantages of the REST

- Main advantage for the REST is that, it is easy technology, which can be used to create web services. Using REST gives more benefit to the users. In order to implement web services developers need to know HTTP, HTML and XML and they can start building Web services right away, without needing any toolkit.
- Another benefit of the REST interface is that requests and responses can be short.
- REST developers can easily create and modify an URI to access different Web resources.
- With the support for caching, REST provides improved response times and server loadings.
- By reducing the need to maintain communication state, REST improves server scalability. This means that initial and subsequent requests can be handled in different servers.
- Since a single browser can access any resource and application, REST demands less client-side software to be written than other approaches.
- With the use of hyperlinks in content, a separate resource discovery mechanism is not needed [7].

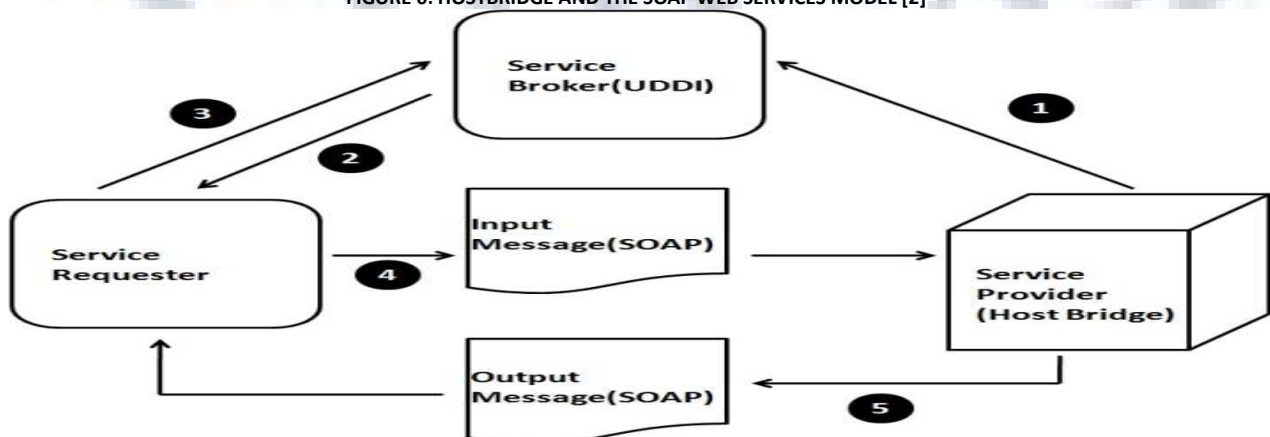
Disadvantages of the REST

- REST is a good solution for most Web service, but not the best, because in REST data is sent as parameters in URIs. This is not very good. The large amounts of data such as purchase orders can be too big and too complicated for an URI.
- Probably the most important debate is the security area. REST calls go over HTTP that creates not reliable messaging.[7]

Comparison of SOAP & REST

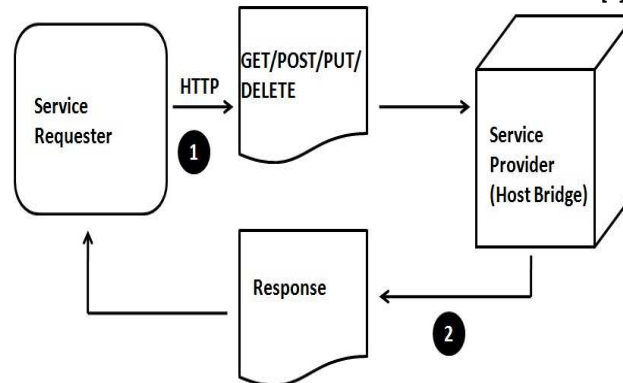
SOAP	REST
Focus on design of integrated (distributed) applications Designed to handle distributed computing environments[2]	Focus on scalability and performance of large scale distributed hypermedia systems Assumes a point-to-point Communication model--not usable for distributed computing environment where message may go through one or more Intermediaries[2]
Activity/Service oriented Conceptually more difficult, more "heavy-weight" than REST Harder to develop, requires tools[2]	Resource oriented Simpler to develop than SOAP Small learning curve, less reliance on tools Concise, no need for additional messaging layer[2]
Lack of standard naming mechanism The prevailing standard for web services, and hence has better support from other standards (WSDL, WS-*) and tooling from vendors	URI: Consistent naming mechanism for resources Lack of standards support for security, policy, reliable messaging, etc., so services that have more sophisticated requirements are harder to develop
Who's using REST? All of Yahoo's web services use REST, including Flickr, del.icio.us API uses it, pubsub, bloglines, technorati, and both eBay, and Amazon have web services for both REST and SOAP.	Who's using SOAP? Google seems to be consistent in implementing their web services to use SOAP, with the exception of Blogger, which uses XML-RPC. You will find SOAP web services in lots of enterprise software as well.

FIGURE 6: HOSTBRIDGE AND THE SOAP WEB SERVICES MODEL [2]



1. REST has no WSDL interface definition
2. REST is over HTTP, but SOAP can be over any transport protocols such HTTP, FTP, STMP, JMS etc.
3. SOAP is using soap envelope, but REST is just XML.

FIGURE 7: HOSTBRIDGE AND THE RESTFUL WEB SERVICES MODEL [2]



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HUMAN CAPITAL – THE MOST IMPORTANT RESOURCE OF MANAGEMENT (WITH SPECIAL REFERENCE TO INDIA IN AN ERA OF GLOBAL UNCERTAINTIES)

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FEROZPUR

ABSTRACT

Human Capital is the most important resource of the management resources i.e. Men, Material, Money, Method and machinery. Here, word men represents to Human Capital. Human capital is a valuable concept because it recognizes that people should be treated as assets, rather than as an expense. Organizations that appreciate the financial impact of their employees often refer to them as human capital. Corporations are recognizing the importance of investing in their employees now more than ever before. It has great importance in developing country like India. Modern technology is becoming more and more complex. With the growth of science, machinery and equipment are becoming more sophisticated. Their efficient operation requires skill and technical knowledge. Complexity and uncertainties have become common problems in Global business world. Therefore, Human capital development is very significant in any business organization. The developed countries are increasingly adopting the new methods of production and management techniques. In order to keep pace with this growth, it is necessary that India should increasingly provide scope for assimilation and adoption of that knowledge so that it can globally compete with developed countries. For facing Global uncertainties, Indian business organizations should give more and more emphasis on developing and retaining their Human Resource.

KEYWORDS

Human Capital, Global uncertainties, Business Competitiveness.

INTRODUCTION

In Globalized business world, which is becoming increasingly competitive, as pressure of quality goods and service grow, business organizations will have to strive hard to get most from all their employees and managers. Therefore, organizations have to create decentralized, autonomous workforce with greater responsibility on the individuals. Managers will have to create empowered organizations with talented employees to survive in the highly increasing competitive world and have a competitive edge over others ultimately. Over the years, the terms used to describe staff and employees in businesses have changed. Over the long period of time the word has moved from "personnel" to "human resources" (HR) and now "human capital". **Gary S. Becker, (Noble prize winner economist) says that "the basic resource in any company is the people. The most successful companies and the most successful countries will be those that manage human capital in the most effective and efficient manner."**

Human capital is a valuable concept because it recognizes that people should be treated as assets, rather than as an expense. Corporations are recognizing the importance of investing in their employees now more than ever before. Companies are beginning to understand that to stay on top in the global economy; they need to place more and more emphasis on developing and retaining their people. Organizations that appreciate the financial impact of their employees often refer to them as human capital.

The term human capital can be understood as the people in organizations and businesses are an important and essential asset who contributes to development and growth, in a similar way as physical assets such as machines and money. The collective attitudes, skills and abilities of people contribute to organizational performance and productivity. Any expenditure in training, development, health and support is an investment, not just an expense. In other words, a firm's human asset consists of the employees and the collection of their knowledge, skills, and abilities, also known as human capital. The firm can 'buy' the human capital by hiring employees; and it can 'make' human capital through training, job experience etc. Several researchers have discussed human capital as a valuable strategic asset for the firm (Becker and Huselid, 1998; Snell, Yound and Wright, 1996; Wright, McMahan, and McWilliams, 1984). Hamel and Prahalad (1994) and Ulrich and Lake (1990) discuss how people are the main sources of 'competencies' and 'capabilities' of the firm. Most of the capabilities that a firm possesses can be linked to human capital and therefore this form of asset is considered critical for creating and sustaining competitive advantage.

SIGNIFICANCE OF HUMAN CAPITAL IN GLOBAL UNCERTAINTIES

Any business organization is run or managed by human beings. Human being may be leaders, directors, members, employees - are required to maintain an organization's existence. Human Resource has lot of importance in any business organization but sometimes the people issues can be neglected and emphasis is given on competition, financial return and viability. This situation is harmful for business. The main stress must be given on trained Human Resource because it is fact that having good employees who are skilled and motivated can make a significant difference.

In modern age, competition is so hard and change is so fast, that any competitive edge gained by the introduction of methods or technology can be short-lived if competitors adopt the same technology. But to implement change, their people must have the same or better skills and abilities. To grow and adapt, the organization's leadership must recognize the value and contribution of people.

Money spent on human resource should be treated as investment not as expenditure because attaining and retaining good personnel is an asset in business and money spent on it provides heavy returns in future. Moreover, HR professionals must act now and do so with confidence, linking performance expectations to organizational objectives and those objectives to individual agreements and developmental plans geared at measuring the success of organizational outputs. When the belief of people adding value to the organization is cemented, the role of Human Resources professionals as strategic business partners becomes more of a noted reality.

With the foundation of a new appreciation for human capital as a key business advantage, also comes the responsibility for Human Resources Professionals to become more prudent in their work while ensuring that the right strategic direction is provided in the area of talent management. The human capital era is evident and businesses with vision and savvy strategic focus will find the best ways to recruit, retain and development top talent with intention of using such human capital to compete, sustain and progress the company's business mission.

HUMAN RESOURCE - THE REAL ASSETS

Human resource can be treated as important real assets of the business organization. There are some uncertainties which are related with these assets. A firm invests in real assets to generate returns over time, but there are uncertainties associated with the returns. Sometimes, values of the real assets. Bowman & Hurry, (1993); Dixit, & Pindyck, (1994); Trigeorgis, (1996) analyzes uncertainties related to real assets and suggest that 'options' created on these assets will reduce risks of loss of value and increase future opportunities for returns. Through these capabilities, the firm may choose to adjust, reduce, increase, or abandon the investment in the future, thereby stabilizing returns from these assets.

In real options view, uncertainty is the randomness of outcomes from an investment decision (Amram and Kulatilaka, 1999). Uncertainties may be of different types and may arise from different underlying sources (Dixit and Pindyck, 1994; Trigeorgis, 1996). There may be uncertainties regarding future value of an asset

or uncertainty of returns. These uncertainties can arise from changes in external forces or changes within the firm. Regardless of the source or the type of uncertainty, the basic argument of real options theory is that firms can make investment decisions in ways that can reduce downside risk or enhance the scope to capitalize on opportunities that the uncertainty creates. As Amram and Kulatilaka states, "In rethinking strategic investments, managers must try to view their markets in terms of the source, trend, and evolution of uncertainty; determine the degree of exposure for their investments; and then respond by positioning the investments to best take advantage of uncertainty (1999:14)."

HUMAN CAPITAL AND GLOBAL UNCERTAINTY

A firm's human asset consists of the employees and the collection of their knowledge, skills, and abilities, also known as human capital.

The Human Capital can be obtained by two methods:

- Buying method
- Making method

The firm can 'buy' the human capital by hiring employees; and it can 'make' human capital through training, job experience etc. Several researchers have discussed human capital as a valuable strategic asset for the firm (Becker and Huselid, 1998; Snell, Youndt and Wright, 1996; Wright, McMahan, and McWilliams, 1984).

Hamel and Prahalad (1994) and Ulrich and Lake (1990) discuss how people are the main sources of 'competencies' and 'capabilities' of the firm. Most of the capabilities that a firm possesses can be linked to human capital and therefore this form of asset is considered critical for creating and sustaining competitive advantage.

However, human assets, like other forms of assets, have several uncertainties associated with it. The future value of human assets can be uncertain for example, performance of employees may go down over time or job responsibilities may change causing a misfit between the person and the job, which, as per real options theory, is uncertainty of returns. The number of employees demanded may fluctuate according to market conditions or there may be unexpected demands for skills that the employees do not possess. Real options scholars have called this uncertainty of volume and combinations. Furthermore, costs of human assets, in the form of wages, salaries, benefits etc., may also be uncertain for instance, significant rise in health benefit costs or high fixed costs vis-à-vis low cash flow of the firm, which real options scholars have referred to as uncertainty of cost of continued investments. Consequently, any investment in human assets, from the decision to acquire (employ), develop, motivate, or retain employees, carries with it uncertainty regarding the future return from that investment, and the risk that the payoff may not be as expected.

Finally, we consider the scenario when all these conditions are met i.e. willingness of the employee to learn, opportunity by the firm to learn, and variable pay; but changed demand requires him to relocate, which is difficult for him due to family obligations. This gives rise to uncertainty of combination. In addition, a unique uncertainty associated with human assets is that the employee may leave voluntarily, thereby taking valuable human capital away. Each of these scenarios assumes that the employee is valuable and the firm wishes to retain him, else the option to 'disinvest' the employee through layoff is open (although that may not be the case in some countries of the world where layoffs are not easy).

As seen in the above scenarios, following uncertainties may arise:-

- Uncertainty of human assets can come from the firm, due to things
- Changed strategic direction, or from the market,
- Business conditions,
- Customer needs and competitor actions change.
- Behavioral choices may not be predictable

However, in exploring a real options approach to managing human assets, we need to recognize that uncertainties can also arise from individuals because one way in which human capital differs from real assets is that the firm does not own the capital; the employee does. Consequently each employee makes behavioral choices, and these choices may or may not be predictable. Thus, in addition to the firm and the market, the individual serves as a potential source of uncertainty for human assets.

MANAGEING HUMAN CAPITAL - THE MAGIC MANTRA FOR SUCCESS OF BUSINESS

Human Capital Management helps organizations analyze workforce strengths and vulnerabilities, while surfacing opportunities and strategies that allow business leaders to proactively manage human capital. By providing a holistic view the work force, the solution gives the consistent and accurate answers needed for strategic decision making. The main resources (5 M's) of the business organization are:

- Men
- Material
- Machinery
- Money
- Method

Men represents to Human Capital which is most important resource of the business. Human Resource is the only resource having 'brain'. It changes its working according to the uncertain situations. Management of human resource works like a magic for facing the global uncertainty and solving the problems of the business and achieving competitiveness. Human capital can solve following purposes in the business organization:

- Measure and improve workforce productivity.
- Minimize risk by changing likely outcomes.
- Proactively plan for future workforce needs.
- Support enterprise performance improvement.

As first M (men) from the 5M's represents to Human Capital, is the most important resource because it leads to other M's like material, machine, method and money. If the Human Resource is trained, efficient and goal oriented then all other resources can be properly managed. All these other resources can provides better results to the organization.

CONCLUSION

In global competitive environment and uncertainties, Human resource can be treated as important real assets of the business organization. For meeting cut throat competition, there is need to manage human capital and reduce the overall cost of business concern. Strategies should be used in managing human capital in business. Ideally HR & top management work together to formulate the company's overall business strategy; that strategy then provides the framework within which HR activities such as recruiting & appraising must be crafted. If it is done successfully, it should result out in the employee competencies & behavior that in turn should help the business implement its strategies & realize its goals. The human resources management system must be tailored to the demands of business strategy". In order to be successful the employees should be developed in such a manner that they can be the competitive advantage, & for this the human resource management must be an equal partner in both the formulation & the implementation of the corporate & competitive strategies.

The amount of human capital in business is a key determinant of its economic strength and long-run economic success. While many economic forces that affect the distribution of human capital across places are largely outside the control of policy makers, finding ways to more effectively harness the potential of a region's higher education institutions can provide a promising pathway to foster local economic development. There may be uncertainties regarding future value of an asset or uncertainty of returns. These uncertainties can arise from changes in external forces or changes within the firm. Regardless of the source or the type of uncertainty, the basic argument of real options theory is that firms can make investment decisions in such ways that can reduce downside risk or

enhance the scope to capitalize on opportunities that the uncertainty creates. In rethinking strategic investments, managers must try to view their markets in terms of the source, trend, and evolution of uncertainty; determine the degree of exposure for their investments; and then respond by positioning the investments to best take advantage of uncertainty.

In summary, people should be treated as an asset rather than an expense item. Every effort should be taken, whether formally or informally, to develop skills and abilities and to provide opportunities for people to maximize their contribution. While human capital includes a wide array of knowledge and skills, a college degree represents a significant piece of human capital development. While the positive correlation between human capital and economic activity is clear, other factors contribute to differences in economic activity. Higher levels of economic activity may lead to an increase in human capital levels if highly skilled people are attracted to more productive places.

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A STUDY ON CUSTOMERS AWARENESS AND PERCEPTIONS TOWARDS GREEN PACKAGING

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ABSTRACT

Marketing is a core function of an organization to satisfy the customer needs, wants and demands of the customer. In the process of marketing products and services, organizations are ignoring the global responsibility towards environment. Many organizations are doing their businesses without any environmental concern. This paper attempted to find out the customers preferences towards green packing and their source of awareness. This paper highlighted the role of Government, NGO's, Customers, marketing intermediaries and other environmental activists in replacing plastic bags with other eco-friendly packaging. This paper also tried to find out customers willingness to spend additional amount for green packing and the extent of additional payment they are ready to pay for greener packs. There is growing interest among the consumers all over the world regarding protection of environment. Worldwide evidence indicates people are concerned about the environment and are changing their behavior. The present study is the modest attempt to stress on pressing need of the hour of green marketing and green packaging in particular. While the shift to "green" may appear to be expensive in the short term, it will definitely prove to be indispensable and advantageous, cost-wise too, in the long run. Sooner or later all the organizations have to shift to the clean and green practices or it should exit from the market.

KEYWORDS

Bio-degradable polymers, Environment-friendly, Eco-friendly, Green Marketing, Green Packaging, Pollution.

INTRODUCTION

 Progress is possible, No one can stop it, but obstacle is there, we have to face it."

-Amartya Sen.

Green marketing can be defined as, "All activities designed to generate and facilitate any exchange intended to satisfy human needs or wants such that satisfying of these needs and wants Occur with minimal detrimental input on the national environment." According to the American Marketing Association, Green marketing is the marketing of products that are presumed to be environmentally safe. In general green marketing is much broader concept, one that can be applied to consumer goods, industrial goods and even services. Thus green marketing incorporates broad range of activities, including product modification, changes to the production process, packaging changes, as well as modifying advertising. Thus "Green Marketing" refers to holistic marketing concept where in the production, marketing, consumption and disposal of products and services happen in a manner that is less detrimental to the environment with growing awareness about the implications of global warming, non-biodegradable solid waste, harmful impact of pollutants etc., both marketers and Consumers are becoming increasingly sensitive to the need for switch in to green products and services. While the shift to "green" may appear to be expensive in the short term, it will definitely prove to be indispensable and advantageous, cost-wise too, in the long run.

Other similar terms used are Environmental Marketing and Ecological Marketing. Every firm needs to adopt innovative methods to sustain itself in the competitive environment, thus Green marketing becomes an important aspect which every firm will have to implement in near future, so why not start practicing it immediately. The Government in near future is going to adopt rigid policies to enable sustainable development. The marketers should realize this and head on towards Green Marketing. There are similar terms used are environmental marketing and ecological marketing. Every firm needs to adopt innovative methods to sustain itself in the competitive environment, thus green marketing becomes an important aspect which every firm will have to implement to in near future, so why not start practicing it immediately. The government in near future is going to adopt rigid polices to enable sustainable development. The marketers should realize this and head on towards green marketing.

REVIEW OF LITERATURE

Green marketing has been an important academic research topic since it came. (coddinton. 1993: Fuller: 1999: Ottman, 1994). Attention was drawn to the subject in the late 1970's when the American Marketing Association organized the first ever work shop on "Ecological marketing" by Henion and Kinnear in 1976. The definition on "green marketing accorded to Henion (1976) was "the implementation of marketing programmes directed at the environmentally conscious market segment". Peattie and crane (2005) claims that despite the early development, it was only in the late 1980's that the idea of Green Marketing actually made an appearance because of the consumers growing interest in green products. As per fuller (1994); Green Marketing can be defined as a process of planning, implementing and controlling the development, pricing, promotion and distribution of products in a manner that satisfies the three following criteria:

1. Customer needs are met, 2. Organizational goals are attained and 3. The process is compatible with ecosystems

Furthermore, Green marketing was given prominence in the late 1980s and 1990s after the proceedings of the first workshop on Ecological marketing held in Austin, Texas (US), in 1975. Several books on green marketing began to be published thereafter. According to the Joel makeover (a writer, speaker and strategist on clean technology and green marketing), green marketing faces a lot of challenges because of lack of standards and public consensus to what constitutes "Green". The green marketing has evolved over a period of time. According to Peattie(2001), The evolution of green marketing has three phases. First phase was termed as "Ecological green marketing, and during this period all marketing activities were concerned to help environment problems. Second phase was "Environmental" green marketing and the focus shifted on clean technology that involved designing of innovative new products, which take care of pollution and waste issues. Third phase was "sustainable" green marketing. It came into prominence in the late 1990s and early 2000.

HISTORY OF GREEN MARKETING

The term Green Marketing came into prominence in the late 1980s and early 1990s. The American Marketing Association (AMA) Held the first workshop on "Ecological Marketing" in 1975. The proceeding of this workshop resulted in one of the first books on green marketing entitled "Ecological Marketing". The first wave of Green Marketing occurred in the 1980s. In 1987 a document prepared by the World Commission on Environment and Development defined sustainable development as meeting "the needs of the present without compromising the ability of future generations to meet their own need", this became known as the Brundtland Report and was another step towards widespread thinking on sustainability in everyday activity. Two tangible milestones for wave 1 of green marketing came in the form of published books, both of which were called Green Marketing. They were by Ken Peattie (1992) in the United Kingdom and by Jacquelyn Ottman (1993) in the United States of America.

The past decade has shown that harnessing consumer power to effect positive environmental change is far easier said than done. The so-called "green consumer" movements in the U.S. and other countries have struggles to reach critical mass and to remain in the fore front of shoppers' minds. While public opinion polls taken since the late 1980s have shown consistently that a significant percentage of consumers in the U.S. and elsewhere profess a strong willingness to favor environmentally conscious products and companies, consumers' efforts to do so in real life have remained sketchy at best. One of green marketing's challengers is the lack of standards or public consensus about what constitutes "green", according to Joel Makower, a writer on green marketing.

HISTORY OF PLASTIC BAGS

Plastic bags were rarely found during the 60s and 70s but now a day they use of plastic bags has been increased tremendously, since plastic bags became popular during the 80s. Every year around 500 billion plastic bags are used worldwide. Over one million bags are used every minute and these bags are damaging the environment. Research shows that, every man, woman and child in the world use 83 plastic bags every year. That's one bag per person every four and half days. Of these 500 billion bags, 100 billion bags (1/5th of 500 billion) are consumed in the United States. The planet is becoming increasingly contaminated by heavy use of plastic bags. When we observed our surroundings, we find that plastic bags are hanging on the branches of trees, flying in the air on windy season, settled amongst bushes and floating on the rivers. They clog-up gutters and drains causing water and sewage to overflow and become the breeding grounds of germs and bacteria that cause diseases. Animals and sea creatures are hurt and killed every day by discarded plastic bags.

MARKETING MIX OR 4P's OF GREEN MARKETING

Marketing mix or 4P's of green marketing are product, price, place and promotion. A producer should offer ecological products which not only must not contaminate the environment but should protect it and even liquidate existing environment damages. Prices for such products may be a little higher than conventional alternatives. But target groups are willing to pay extra for green products. A distribution logistics is of crucial importance and the main focus is on ecological packaging. Marketing local and seasonal products e.g. vegetables from regional farms is more easy to be marked "green" than products imported. A communication with the market should put stress on environmental aspects, for example the company possesses a CP certificates or is ISO 14000 certified. This may be publicized to improve a firm's image. Furthermore, the fact that a company spends expenditures on environmental protection should be advertised. Third sponsoring the natural environment is also very important and last but not least, ecological products will probably require special sales promotions. The four C's – customer solution, Customer cost, Communication and convenience are taking the point of view of the customer (not the producer). These solutions go beyond selling physical products and present solutions to customers; problems. They imply knowing customers their needs well and offering products and services that satisfy customer needs and that take into account social as well as environmental aspects. Customer Cost does not only include the financial price buyer has to pay for a product or a service; it also considers the psychological, social and environmental cost of obtaining, using and disposing of a product. Green communication goes beyond promotion, which is a form of persuasion and one-way communication from seller to buyer. Communication is a process of interactive dialogue within which it is essential to build trust and credibility.

PLASTIC BAGS ARE A PROBLEM FOR FOLLOWING AND SEVERAL OTHER REASONS

1. Use of plastic bags has increased dramatically and every year. Worldwide, Around 500 billion plastic bags are used.
2. Planet Ark estimates that plastic bags kill at least 100000 birds, whales, seals and turtles every year.
3. Plastic bag is considered as a free commodity. However, the cost of plastic bags is added to the price of goods that customers purchase.
4. The production of plastic bags accounts for thousands of tones of plastic polymer derived from non-renewable resources. Though some plastic bags can be recycled, only a tiny proportion of plastic bags is collected and reprocessed.
5. As a single use disposable form of packaging, plastic bags are typically used for a short period of time but take hundreds of years to break down in landfill.

NEED AND IMPORTANCE OF THE STUDY

There is a growing need for green Marketing because now- a- days every person rich or poor is interested in quality life with full of health and strength. But are problems like Global warming and depletion of ozone layer are deterrent to the health of human being. Financial gain and economic profit is the main aim of any corporate business. But it should not be the cost of causing harm to the environment. So green marketing is an opportunity to the organization to achieve its objectives by producing consumer preferred products that do not harm the environment and also the human health. Now a day's most of the customers using plastic for packing and for carrying goods from one place to another place also. They are using plastic bags, but they don't know the effects of using plastic bags in future. Plastic causes pollution to nature. Some educated people knew the effects of using plastics, then also they are using plastic bags because of convenience, availability, cheaper price etc... Some people unknowingly using plastic bags. The main need of this study is to motivate the educated or uneducated people about avoiding the use of plastic bags. The main purpose of this study is to bring awareness in customers about green packaging Bio - degradable products. These plastic bags causes pollution to nature, in the place of plastic bags try to use alternative bags like jute bags ,paper bags, leaf packing material or any biodegradable polymers etc..,

OBJECTIVES OF THE STUDY

- To study the nature of problems created by heavy use of plastic packaging.
- To understand the effects of problems created by heavy use of plastic packaging.
- To check the awareness among the educated customers about the use of plastic material.
- To analyze the customers opinions on the use of plastic bags.

RESEARCH METHODOLOGY

The following methodology is adopted for the study of titled "A Study on Green Marketing with reference to Green packaging". Primary as well as secondary data is used for the purpose of data collection. The research tool for the study is survey method. The research instrument used to collect the data is questionnaire. The tools and techniques used for data analysis are tables, percentages and graphs. The sample size for the study is 100. The sample design used for the study is convenient sample. The sample is selected from Hyderabad and secunderabad. Sample of 100 customers is relatively less and the time taken for the study is only 3 months duration, which is very less.

DATA ANALYSIS

TABLE 1: SHOWING AGE OF THE RESPONDENTS

Age	No. of respondents	Percentage
15-20 Years	25	25%
21-25 Years	55	55%
26-30 Years	15	15%
Above 30	5	5%
Total	100	100%

From the above analysis, it is observed that out of 100 persons interviewed, 25% belong to age group of 15-20 years, 55% belong to age group of 21-25 years, 15% belong to age group of 26-30 years, and 5% belong to age group of above 30.

TABLE 2: SHOWING GENDER OF THE RESPONDENTS

Gender	No. of respondents	Percentage
Male	72	72%
Female	28	28%
Total	100	100%

From the above table and graph, it can be observed that out of 100 Respondents interviewed, 72% belongs to Male Group and 28% belong to Female Group.

TABLE 3: SHOWING OCCUPATION OF THE RESPONDENTS

Occupation	No. of respondents	Percentage
Student	81	81%
Business	2	2%
Employee	15	15%
Others	2	2%
Total	100	100%

From the above Table, it is analyzed that 81% are from student’s category, 2% are from Business category, 15% are from employee category and 2% are from others.

TABLE 4: TABLE SHOWING INCOME OF THE RESPONDENTS

Income	No. of the respondents	Percentage
Below 10000	60	60%
10000 - 20000	25	25%
20000 - 30000	4	4%
30000 - 40000	2	2%
Above 40000	9	9%
Total	100	100%

From the above analysis, it can be interpreted that out of 100 respondents, 60% respondent’s income is below Rs. 10,000, 25% respondent’s income is between 10,000 to 20,000, 4% respondents income is between Rs. 20,000 to 30,000, 2% respondent’s income is between Rs. 30,000 to 40,000, and 9% respondents income is above 40,000.

TABLE 5: SHOWING EDUCATIONAL QUALIFICATION OF THE RESPONDENTS

Education	No. of respondents	Percentage
SSC	3	3%
Intermediate	10	10%
Graduate	51	51%
Post Graduate	31	31%
Others	5	5%
Total	100	100%

From the above table and graph, it is understood that out of 100 respondents all were literate of which 3% were S.S.C., 10% were Intermediate, 51% are Graduates, 31% are Post Graduate and others 5%.

TABLE 6: TABLE SHOWING CUSTOMER PREFERENCES TOWARDS TYPES OF PACKING

Customer preference about types of packing	No. of respondents	Percentage
Plastic packing	5	5%
Green packing	21	21%
Own bags	68	68%
Others	6	6%
Total	100	100%

From the above analysis, it is observed that out of 100 respondents interviewed, 5% prefer Plastic Packaging, 21% prefer Green Packaging, 68% prefer own bags and 6% prefer other packaging.

TABLE 7: SHOWING RESPONDENTS AWARENESS OF PLASTIC BAGS FOR PACKING AND CARRYING THE GOODS

Respondent awareness about most of the customers use plastic bags	No. of respondents	Percentage
Yes	83	83%
No	17	17%
Total	100	100%

Above table and graphs shows that majority of people i.e., 83% of the people aware about most of the customers using plastic bags, and remaining 17% are not aware.

TABLE 8: TABLE SHOWING REASONS FOR USING PLASTIC BAGS / PACKING MATERIAL

Reasons for using of plastic bags	No. of respondents	Percentage
Less price	19	19%
Convenience	25	25%
Availability	32	32%
Water proof	7	7%
Easy to dispose	3	3%
No, I don't use	14	14%
Total	100	100%

From the above analysis, it is understood that out of 100 persons interviewed, 19% were using plastic bags because of its less price, 25% for its convenience, 32% for the availability, 7% as its water proof, 3% as its easy to dispose and 14% were not using plastic bags.

TABLE 9: TABLE SHOWING AWARENESS OF THE PLASTIC CAUSING POLLUTION TO NATURE

Awareness about the plastic causes pollution to nature	No. of respondents	Percentage
Yes	97	97%
No	3	3%
Total	100	100%

Above analysis shows that majority of the people i.e. 97% aware about the plastic causes to pollution to the nature and remaining 3% were not aware.

TABLE 10: TABLE SHOWING TYPES OF POLLUTION MAY BE CAUSED BY USING PLASTIC BAGS

Types of pollution may be caused by using plastic bags	No. of respondents	Percentage
Air pollution	7	7%
Water pollution	9	9%
Land or soil pollution	32	32%
All the above	48	48%
Others	4	4%
Total	100	100%

From the above analysis, it is understood that out of 100 Respondents interviewed, 7% feel it causes Air pollution, 9% feels water pollution, 32% feels land/soil pollution, 48% feels all the pollutions above and remaining 4% feel no pollution is caused by usage of plastic bags.

TABLE 11: SHOWING HOW POLLUTION MAY CAUSE PROBLEMS TO THE GENERAL PUBLIC

Pollutions may cause problems to the general public	No. of respondents	Percentage
Health problems	31	31%
No greenery, no rains	12	12%
Environment pollution	54	54%
Others	3	3%
Total	100	100%

From the above table & graph, it can be opined that out of 100 Respondents interviewed, 31% feel it causes health problems, 12% feel lack of greenery/ rains, 54% feel Environment pollution and 3% feel other problems.

TABLE 12: SHOWING IN PRESENT SITUATION, RESPONDENT'S DECISION WHETHER PLASTIC BAGS ARE IDEAL

Decision about plastic bags are ideal	No. of respondents	Percentage
Accept	16	16%
Reject	84	84%
Total	100	100%

From the above analysis, it is understood that out of 100 Respondents interviewed, most of the respondents that is 84% feel that plastic bags are not ideal and remaining 16% of respondents accept that plastic bags are ideal.

TABLE 13: TABLE SHOWING CUSTOMERS, WHO ARE AWARE ABOUT THE GREEN OR ECO-FRIENDLY PACKING

Consumers awareness about green packing	No. of respondents	Percentage
Yes	72	72%
No	28	28%
Total	100	100%

From the above, it is understood that out of 100 customers interviewed, 72% were aware and remaining 28% were not aware about the green or Eco-friendly packing.

TABLE 14: TABLE SHOWING SOURCE OF KNOWLEDGE ABOUT THE GREEN PACKING

Source of knowledge about green packing	No. of respondents	Percentage
Media	60	60%
Friends & Families	23	23%
Shopkeepers	12	12%
Neighbors	5	5%
Total	100	100%

From the above Table and graph, it is observed that out of 100 persons interviewed, 60% knew about it through media, 23% through friends and families, 12% through shopkeepers and 5% through neighbors about source of knowledge of green packing.

TABLE 15: TABLE SHOWING PERSONS WHO BELIEVE THAT PLASTIC IS A MAJOR SOURCE OF POLLUTION

Plastic is a major source of pollution	No. of respondents	Percentage
Strongly agree	16	16%
Agree	16	16%
Neutral	19	19%
Disagree	23	23%
Strongly disagree	26	26%
Total	100	100%

From the above analysis, it is understood that out of 100 customers interviewed, 16% strongly agree the statement, 16% agree, 19% are natural, 23% disagree and remaining 26% strongly disagree that plastic is a major source of pollution.

TABLE 16: TABLE SHOWING CUSTOMERS PREFERENCE TOWARDS ALTERNATIVES TO PLASTIC PACKING

Alternatives to plastic packing material	No. of respondents	Percentage
Paper	37	37%
Jute bags	22	22%
Leaf packing material	12	12%
Biodegradable polymers	29	29%
Total	100	100%

From the above, it is observed that out of 100 persons interviewed, 37% feel paper can be alternative source for plastic packing material, 22% feel jute bags, 12% leaf packing material and 29% biodegradable polymers.

TABLE 17: SHOWING CUSTOMERS WHO ARE READY TO PAY HIGHER PRICE FOR GREEN PACKING

Customers who are ready to pay higher price for green packing	No. of Respondents	Percentage
Yes	36	36%
No	20	20%
May be	44	44%
Total	100	100%

Above analysis shows that out of 100 respondents interviewed 36% were ready to pay higher price for green packing, 20% were not ready to pay highest price and remaining 44% were not sure.

TABLE 18: SHOWING RESPONDENT'S EXTENT OF ADDITIONAL AMOUNT READY TO PAY FOR GREEN PACKING THAN PLASTIC PACKING

Customers are ready to pay higher price for green packing	No. of respondents	Percentage
Up to 5%	51	51%
Between 5%-10%	22	22%
than 10%	8	8%
price	19	19%
Total	100	100%

From the above Table & graph, it can be opined that out of 100 respondents, 51% are ready to pay up to 5% extra, 22% up to 5%-10%, 8% were ready to pay more than 10% and 19% were ready to pay any price for green packing.

TABLE 19: TABLE SHOWING ROLE OF VARIOUS ORGANIZATIONS IN REDUCING THE USE OF PLASTIC PACKING

Proactive in reducing use of plastic packing	No. of Respondents	percentage
Government	32	32%
Retailers	25	25%
FMCG manufactures	9	9%
NGO's	2	2%
Consumers	32	32%
Total	100	100%

From the above, it is understood that out of 100 respondents interviewed about who should be more pro active in reducing use of plastic packing, 32% said it is Governments responsibility, 25% were retailers, 9% FMCG manufactures, 2% were NGO's and 32% were consumers.

TABLE 20: CUSTOMERS ACCEPTANCE ABOUT GREEN PACKING AS THE BEST FORM OF PACKING

Customers acceptance about green packing is the major importance for packing	No. of Respondents	Percentage
Yes	94	94%
No	6	6%
Total	100	100%

From the above Table & Graph, it is observed that majority of the people that is 94% of the people feel green packing is the best form of packing and remaining 6% of the people deny it.

TABLE 21: SHOWING THE REASONS TO SELECT GREEN PACKING

Reason to select green packing	No. of Respondents	Percentage
Eco-friendly	62	62%
Biodegradable	25	25%
Any other	13	13%
Total	100	100%

From the above analysis, it can be interpreted that out of 100 persons interviewed about reasons to select green packing, 62% feel it is Eco-friendly, 25% feel its biodegradable and remaining 13% feel others.

SUGGESTIONS BY CUSTOMERS

This was open question and most of the respondents hesitated to answer this due to lack of time availability with them. However, few customers offered their suggestions, which are relevant and useful for this analysis. Therefore, I have summarized their suggestions as under:

1. Alternative Bags: Retailers must provide alternatives so that customers have a choice. Present rules in India do not allow supply of single use polyethylene carry bags of less than 35 microns.
2. Degradable bags: Some degradable bags are made partly or wholly of polyethylene. Only compostable biodegradable bags should be excluded from the suggested ban.
3. Ban on plastic bags: Lightweight plastic bags made of polyethylene polymer with a thickness of less than 35 microns (a micron is 1000th of a millimeter) should be banned. Supermarkets and take-away food outlets generally use these bags.
4. Government's pro-active role in reducing plastic bags: Indian government has already introduced environment protection act in 1986 and environment audit in 1992, the marketers have to realize that with increasing amount of global warming and environmental harm caused due to industrialization and economic development, the government is going to be even more strict with regards to the development which will cause a severe threat to the environment. The environmental harm which is mainly due to green house gas emissions has caused a severe threat to the climatic conditions and results of which can be seen in the form of droughts, scarcity of drinking water, floods ruining the agricultural produce etc. The Indian government has ratified the Kyoto protocol in august 2002 and will compel companies to account for the environmental damage caused due to business operations, and take stringent action against those organizations which cause harm to the environment.

FINDINGS

Following are the findings from the study made:

- Most of the respondents who filled the questionnaire are from 21-25 years.
- It is observed that most of the respondents who filled questionnaire are from male group.
- Most of the respondents who filled questionnaire are students.
- The respondents use plastic bags for convenience and easy availability. For this reason most of the customers having income below Rs.10000 are using plastic bags for their convenience.
- Almost all the consumers are educated; they know the effects of using plastic bags.
- It is observed that, for carrying the goods most of the customers prefer their own bags.
- It is understood that most of the customers accept that they are using plastic bags for packing and carrying the goods.
- Customers are using plastic bags because of its less price, Convenience, Availability, Water proof, Easy to dispose quality etc.
- It is observed that, most of the customers are aware that plastic causes pollution to nature.
- Most of the respondents accept that by using plastic bags different type of pollutions are caused. Like Air pollution, Water pollution, Land or Soil pollution etc.
- Customers accept that problems like, Health problems, No greenery/ Rains, Environmental pollution etc. are caused due to plastic use.
- Most of the Respondents feel plastics are ideal.

- It is observed that most of the respondents are aware about green packing.
- Customers specify their source of awareness about green packing though Media, Shopkeepers, Friends and families, Neighbors etc. But most of the customers through media only.
- It is observed that most of the customer disagrees about plastic packing as a major source of application.
- Most of the customers select different type of alternative in place of plastic packing material they are like paper bags, jute bags, packing material and Biodegradable plowman etc., finally paper bags are accepting by more customers.
- Most of the customers are ready to pay higher price for green packing because they feel that plastic causes pollution to nature.
- customers accept that green packing is best form of packing and carrying goods.

SUGGESTIONS

The researcher has made following findings for creating awareness and adopting various alternatives to discourage the customers from using plastic bags.

- Marketing should not neglect the economic aspect of marketing.
- Marketers need to understand the implications of green marketing.
- Customers are concerned about environmental issues and will pay a premium for products that are more eco-friendly. The marketers should enhance eco-friendly products performance and create awareness about it.
- To reduce use of plastic consumers, one should take initiative and should not depend on anybody else.

CONCLUSIONS

The popularity of green marketing has been increasing day by day in India as every person rich or poor is interested in quality of life.

Most of the educated customers know about green marketing and other marketing. Some people are interested in green marketing and other people are interested in other marketing. For example plastic bags, we know very well about plastic causes pollution to nature.

The study states that most of the customer knows that heavy plastic bags create problems, then also they are using plastic bags because of several reason like less price, convenience, availability water proof and easy to dispose. For plastic bags there are many alternative like paper bags, Jute bags, leaf packing material and Biodegradable polymer. But there alternatives are not available in time, there are not water proof and charge more price than plastic bags. Another things most of the educated customers understand the effects of problem created by heavy use of plastic packing, the effects of problem like different type of pollution, Health problem, No greenery/Rains etc., and another most important thing is it create problems like Global warning and depletion of ozone layer etc. Another thing is awareness among the educated customers about the use of plastic material. Most of the educated customers are aware but they are using plastic bags because of less price, availability etc. The customers opinion on the use of plastic bags for packing and carrying the goods was indifferent due to lack of time and interest to fill the questionnaire. However, few customers offered their suggestion, which are relevant and useful for analysis. The customer says that Ban of plastic bags is better to reduce pollution and problems related to it. Other customers suggested to use alternative bags like single use polyethylene carry bags of less than 35 microns, degradable bags.

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A STUDY ON HUMAN RESOURCE DEVELOPMENT CLIMATE WITH SPECIAL REFERENCE TO NATIONAL GEOGRAPHIC RESEARCH CENTRE (NGRI)

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ABSTRACT

HRD (Human Resource Development) Climate is a set of attributes which can be perceived about a particular organization and its subsystems, and the way it deal with their members and environment. It also depends on the perception and levels of satisfaction among the employees in an organization within a given climate. It is necessary to create an environment that creates interest and motivation among employees for better performance and creates opportunity for growth and success. It is being realized that an organization can have competitive advantage by leveraging its human resources through sound HRD practices. It's all about building three Cs—Competencies, Commitment and Culture. All the three are needed to make an organization function well. An optimum level of 'development climate' is essential for facilitating HRD in an organization. Organizations differ in the extent to which they possess a sound HRD climate. This project studies the degree of HRD climate at NGRI. The aim of the present study was to measure employees' perception of HRD practices and to examine the role of HRD practices on employees' development climate. A total of 100 employees belonging to different departments responded to a questionnaire which measured different variables and the results indicated that the employees' overall perception of the HRD climate at their organization was that an encouraging climate exists.

KEYWORDS

Commitment, Competencies, HRD Climate, Human Resource Development, NGRI.

INTRODUCTION

HRD stands for Human Resources Development in a business or an organization. Climate meant the atmosphere in the company, especially a supportive atmosphere that allows staff members to develop their skills for the benefit of the company. If we need to find a way to develop employees in order to become effective contributors to the goals of an organization, we need to have a clear view of what an effective contribution would look like. The use of personal capacities can be very helpful in describing the way in which an effective employee should operate and behave, but there can be no general prescription of an effective employee. Effectiveness will differ with organizational context, and on whose perspective we are adopting. The matter of what, finally, makes an effective employee is a combination of personality, natural capabilities, developed skills, experience and learning. The process of enhancing an employee's present and future effectiveness is called development. A short definition of HRD can be given as HRD is the process of helping people to acquire technical, managerial, behavioral skills and knowledge. The main motives of HRD Climate are Achievement, Influence, Control, Extension, Dependency and Affiliation. Important dimensions of HRD climate are Conflict and ambiguity, Job challenge, importance and variety, leader facilitation and support, workgroup cooperation, friendliness and warmth, professional and organizational spirit, job standards.

REVIEW OF LITERATURE

Desimone, Werner and Harris, 2002 mentioned that an organization's success is determined as much by the skill and motivation of its members as by almost any other factor. While this has always been true, the pace and volume of modern change is focusing attention on ways human resources development (HRD) activities can be used to ensure organizational members have what it takes to successfully meet their challenges.

Venkateswaran (1997) in a Note on Human Resource Development Climate, made a study based on the responses of 132 executives of a large PSU and concludes that early identification of human resource potential and development of their skill represent two major tasks of human resource development. This can be achieved only when a conducive HRD climate prevails. The study found the existence of favorable HRD climate in the organization.

Jain, Singhal, and Singh (1996) conducted a study, HRD Climate in Indian Industry, in two public sector organizations i.e. BHEL and NFL and concluded that the HRD climate is mainly a function of the effectiveness variables including individual efficiency, organisational efficiency and productivity, and the HRD variables.

Ajay solkhe and Dr.Nirmama Chaudhry in their paper "HRD Climate and Job satisfaction" says On account of satisfaction level of managers certain improvements derives the attention the organization needs to improve the working conditions, needs to revise the compensation packages as per the industry standards, career opportunities should be pointed out to employees ,company policies should be conveyed in a simplified manner and its interpretation should be checked through feedback mechanisms as the mean scores was low in these categories respectively including management policy on HRD, organization development, role analysis and training.

Dr. S. Saraswathi in her paper "Human Resources Development Climate: An Empirical Study" mentioned that the general climate, HRD Mechanisms and OCTAPAC culture are better in software organizations compared to manufacturing. From the comparative analysis, it is concluded that there is a significant difference in the HRD climate of software and manufacturing organizations. Based on the overall analysis it can be concluded that the good HRD climate was prevalent in the organizations surveyed. Thus, the extent of HRD climate prevailing in both the organizations seems to be different. For organizational and employees performance it is important to focus on various aspects of the HRD climate prevalent in the organization.

NEED FOR THE STUDY

The current study can help the organization to understand the Changes in economic policies, job requirements, Need for multi-skilled Human Resources, Technological advances, complexity in the organization and in Human Relations with the help of which an organization can plan their strategies to match with their future objectives.

OBJECTIVES OF THE STUDY

- To study the level of HRD climate prevailing in the Organization.
- To study the employees attitudes towards the organization.
- To study the HRD climate using various dimensions.
- To study the perceptions of employees across the organization on different dimensions of HRD climate.

RESEARCH METHODOLOGY

The survey was based on the questionnaire method and the survey was conducted by administering the questionnaire to a sample of 100 scientists across various departments in different functional areas. In the present study, descriptive method is used to study the prevailing HRD Climate. The stratified random sampling technique was adopted to collect data. Sample size consists of 100 respondents from different departments of the organization. For the purpose of the study, both primary and secondary data has been used. Simple percentage analysis and tabulation is used to analyze the data. The study is limited to NGRI, Hyderabad and not to other Research and Development companies.

ANALYSIS

TABLE 1: RESPONSE TO CLEAN AND WELL ORGANIZED WORKING ENVIRONMENT

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	75	75%
MODERATELY AGREE	15	15%
AGREE	-	-
MODERATELY DISAGREE	5	5%
STRONGLY DISAGREE	5	5%
TOTAL	100	100

INTERPRETATION: From the above table, it is observed that 75% of the employees feel that they have clean and well organized working environment, 15% agree moderately with this remaining 5% employees each moderately and strongly disagree to this.

TABLE 2: RESPONSE TO AVAILABILITY OF RESOURCES TO PERFORM JOB

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	45	45%
MODERATELY AGREE	5	5%
AGREE	25	25%
MODERATELY DISAGREE	10	10%
STRONGLY DISAGREE	15	15%
TOTAL	100	100

INTERPRETATION: From the above table, it is observed that 45% of the employees feel that they have the resources to perform their job effectively, 5% agree moderately, 25% employees agree to it, remaining moderately and strongly disagree to this 10% and 15% respectively.

TABLE 3: RESPONSE TO FAVOURABLE ENVIRONMENT FOR DEVELOPING NEW SKILLS AND KNOWLEDGE

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	40	40%
MODERATELY AGREE	15	15%
AGREE	35	35%
MODERATELY DISAGREE	5	5%
STRONGLY DISAGREE	5	5%
TOTAL	100	100

INTERPRETATION: From the above table, it is observed that 40% of the employees find the environment in the organization favorable for developing new skills and knowledge, 15% moderately agree, 35% agree to it, 5% of the employees each moderately and strongly disagree.

TABLE 4: RESPONSE TO DELEGATION OF AUTHORITY TO HANDLE HIGHER RESPONSIBILITIES

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	60	60%
MODERATELY AGREE	15	15%
AGREE	5	5%
MODERATELY DISAGREE	10	10%
STRONGLY DISAGREE	10	10%
TOTAL	100	100

INTERPRETATION: From the above table, it is observed that 60% of the employees found that delegation of authority helps them to handle higher responsibilities, 15% moderately agree and 5% agree, 10% of the employees each moderately and strongly disagree to this.

TABLE 5: RESPONSE TO JOB ROTATION OF EMPLOYEES TO FACILITATE EMPLOYEE DEVELOPMENT

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	40	40%
MODERATELY AGREE	20	20%
AGREE	-	-
MODERATELY DISAGREE	10	10%
STRONGLY DISAGREE	30	30%
TOTAL	100	100

INTERPRETATION: From the above table, it is observed that 40% of the employees find job rotation in the organization that facilitates employee development, 20% moderately agree. 10% of the employees moderately disagree and 30% employees strongly disagree.

TABLE 6: RESPONSE TO ADEQUATE INFORMATION TO EMPLOYEES ABOUT WHAT IS GOING ON IN THE ORGANIZATION

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	30	30%
MODERATELY AGREE	35	35%
AGREE	20	20%
MODERATELY DISAGREE	15	15%
STRONGLY DISAGREE	-	-
TOTAL	100	100

INTERPRETATION: From the above table it can be observed that, 30% of the employees strongly agree that the management keeps them informed about what is going on in the organization, 35% moderately agree, 20% agree to this. 15% moderately disagree and no employee is completely against this.

TABLE 7: RESPONSE TO EMPLOYEE PARTICIPATION IN DECISION MAKING

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	5	5%
MODERATELY AGREE	30	30%
AGREE	45	45%
MODERATELY DISAGREE	20	20%
STRONGLY DISAGREE	-	-
TOTAL	100	100

INTERPRETATION: From the above table it can be observed that, 5% of the employees strongly agree that they are invited to participate in decision making. 30% moderately agree and 45 % agree, 20% of the employees moderately disagree and none are completely against this.

TABLE 8: RESPONSE TO IMPORTANCE GIVEN TO EMPLOYEE SUGGESTIONS

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	5	5%
MODERATELY AGREE	25	25%
AGREE	50	50%
MODERATELY DISAGREE	20	20%
STRONGLY DISAGREE	-	-
TOTAL	100	100

INTERPRETATION: From the above table it can be observed that, 5%of the employees feel that management takes their suggestions seriously, 25% moderately agree, 50% agree remaining 20% employees feel their suggestions are not taken seriously.

TABLE 9: RESPONSE TO SPECIAL CARE TAKEN BY MANAGEMENT TO RECOGNISE EMPLOYEES' WORK

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	50	50%
MODERATELY AGREE	10	10%
AGREE	12	12%
MODERATELY DISAGREE	13	13%
STRONGLY DISAGREE	15	15%
TOTAL	100	100

INTERPRETATION: From the above table, it is observed that 50% of the employees strongly agree that they are recognized by the management for their work, 10% moderately agree and 12% agree, 13% moderately disagree and 15% strongly disagree to this.

TABLE 10: RESPONSE TO EMPLOYEE WILLINGNESS TO PUT IN EXTRA EFFORT

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	85	85%
MODERATELY AGREE	10	10%
AGREE	-	-
MODERATELY DISAGREE	-	-
STRONGLY DISAGREE	5	5%
TOTAL	100	100

INTERPRETATION: From the above table, it is observed that 85% of the employees are willing to put in extra effort when needed, 10% moderately agree and 5% of the employees are not willing to do so.

TABLE 11: RESPONSE TO EMPLOYEE LIKING AND PRIDE IN WORKING FOR THE COMPANY

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	85	85%
MODERATELY AGREE	5	5%
AGREE	-	-
MODERATELY DISAGREE	5	5%
STRONGLY DISAGREE	5	5%
TOTAL	100	100

INTERPRETATION: From the above table, it is observed that 85% of the employees like to work in the organization and are proud to say that, 5% moderately agree to this, other 5% each of the employees moderately and strongly disagree to this.

TABLE 12: PERCEPTION OF TEAM SPIRIT IN THE ORGANIZATION BY EMPLOYEES

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	35	35%
MODERATELY AGREE	20	20%
AGREE	30	30%
MODERATELY DISAGREE	5	5%
STRONGLY DISAGREE	10	10%
TOTAL	100	100

INTERPRETATION: From the above table, it can be observed that 35% of the employees find high team spirit in the organization, 20% moderately agree and 30% agree, 5% moderately disagree while the remaining 10% strongly disagree to high order team spirit in the organization.

TABLE 13: RESPONSE TO NEED BASED SUPPORT GIVEN BY TEAM MEMBERS

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	70	70%
MODERATELY AGREE	25	25%
AGREE	5	5%
MODERATELY DISAGREE	-	-
STRONGLY DISAGREE	-	-
TOTAL	100	100

INTERPRETATION: From the above table, it is observed that need based support is given by team members to 70% of the employees, 25% moderately agree and 5% agree to this.

TABLE 14: RESPONSE TO HELP/SUGGESTIONS GIVEN BY WORK GROUP WHEN NEEDED

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	70	70%
MODERATELY AGREE	5	5%
AGREE	25	25%
MODERATELY DISAGREE	-	-
STRONGLY DISAGREE	-	-
TOTAL	100	100

INTERPRETATION: From the above table it can be observed that, 70% of the employees strongly agree that they can ask others in their work group for help/suggestions, 5% moderately agree, 25% agree to it and no employee disagrees.

TABLE 15: RESPONSE TO PERCEPTION OF EMPLOYEES TOWARDS ALL DEPARTMENTS WORKING WELL TOGETHER

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	30	30%
MODERATELY AGREE	5	5%
AGREE	25	25%
MODERATELY DISAGREE	25	25%
STRONGLY DISAGREE	15	15%
TOTAL	100	100

INTERPRETATION: From the above table, it can be observed that 30% of the employees feel that all departments in the organization work well together, 5% moderately agree, 25% agree, 25% moderately disagree while the remaining 15% feel that all the departments do not work well together.

TABLE 16: RESPONSE TO EMPLOYEES TAKING UP RESPONSIBILITY FOR THEIR ACTS

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	5	5%
MODERATELY AGREE	25	25%
AGREE	45	45%
MODERATELY DISAGREE	15	15%
STRONGLY DISAGREE	10	10%
TOTAL	100	100

INTERPRETATION: From the table it can be observed that, 5% of the employees find that everyone takes responsibility for their acts in the organization, 25% moderately agree and 45% agree, 15% moderately disagree and 10% strongly disagree to it.

TABLE 17: RESPONSE TO UTILITY OF SKILLS AND ABILITIES IN CURRENT JOB

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	35	35%
MODERATELY AGREE	25	25%
AGREE	30	30%
MODERATELY DISAGREE	5	5%
STRONGLY DISAGREE	5	5%
TOTAL	100	100

INTERPRETATION: From the above table it can be observed that 35% of the employees feel their skills and abilities are fully utilized in their current job, 25% moderately agree and 30% agree, 5% each moderately and strongly disagree to this.

TABLE 18: RESPONSE TO OPPORTUNITY TO FURTHER DEVELOP SKILLS AND ABILITIES

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	50	50%
MODERATELY AGREE	15	15%
AGREE	35	35%
MODERATELY DISAGREE	-	-
STRONGLY DISAGREE	-	-
TOTAL	100	100

INTERPRETATION: From the above table it can be observed that, 50% of the employees have the opportunity to further develop their skills and abilities in the organization, 15% moderately agree and 35% agree to it. No employee disagrees to this.

TABLE 19: RESPONSE TO ABILITY TO HANDLE SIZE OF THE WORKLOAD GIVEN

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	60	60%
MODERATELY AGREE	30	30%
AGREE	5	5%
MODERATELY DISAGREE	-	-
STRONGLY DISAGREE	5	5%
TOTAL	100	100

INTERPRETATION: From the above table, it can be observed that 60% of the employees are able to handle the size of their workload, 30% moderately agree, 5% agree, the remaining 5% are not able to handle the size of their workload.

TABLE 20: RESPONSE TO ENCOURAGEMENT TO EMPLOYEES TO EXPERIMENT WITH NEW METHODS AND CREATIVE IDEAS

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	25	25%
MODERATELY AGREE	10	10%
AGREE	20	20%
MODERATELY DISAGREE	30	30%
STRONGLY DISAGREE	15	15%
TOTAL	100	100

INTERPRETATION: From the above table, it can be observed that 25% of the employees feel that they are encouraged to experiment and bring out their creativity in the organization while 10% moderately agree and 20% agree, 30% moderately disagree while the remaining 15% employees feel that they are not encouraged to experiment.

TABLE 21: RESPONSE TO EMPLOYEE TRAINING BASED ON THEIR NEEDS

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	50	50%
MODERATELY AGREE	5	5%
AGREE	15	15%
MODERATELY DISAGREE	-	-
STRONGLY DISAGREE	30	30%
TOTAL	100	100

INTERPRETATION: From the above table, it can be observed that 50% of the employees are trained in the organization based on genuine training needs, 5% moderately agree and 15% agree, remaining 30% strongly disagree with this.

TABLE 22: RESPONSE TO ORGANIZATION HELP IN CAREER DEVELOPMENT OF EMPLOYEE

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	55	55%
MODERATELY AGREE	10	10%
AGREE	20	20%
MODERATELY DISAGREE	10	10%
STRONGLY DISAGREE	5	5%
TOTAL	100	100

INTERPRETATION: From the above table, it can be observed that 55% of the employees feel that the organization helps them in career development, 10% moderately agree and 20% agree, 10% moderately disagree, while the remaining 5% do not find organization help in their career development.

TABLE 23: RESPONSE TO ACKNOWLEDGEMENT OF EMPLOYEE CONTRIBUTION BY THE ORGANIZATION

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	35	35%
MODERATELY AGREE	35	35%
AGREE	20	20%
MODERATELY DISAGREE	-	-
STRONGLY DISAGREE	10	10%
TOTAL	100	100

INTERPRETATION: From the above table, it can be observed that 35% of the employees feel that they are acknowledged for their work. 35% moderately agree and 20% agree to this. The remaining 10% employees do not find any acknowledgement for their work in the organization.

TABLE 24: RESPONSE TO PROMOTIONS BEING HANDLED FAIRLY IN THE ORGANIZATION

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	40	40%
MODERATELY AGREE	15	15%
AGREE	20	20%
MODERATELY DISAGREE	15	15%
STRONGLY DISAGREE	10	10%
TOTAL	100	100

INTERPRETATION: From the above table, it can be observed that 40% of the employees find promotions being handled fairly in the organization, 15% moderately agree and 20% agree, 15% moderately disagree, while the remaining 10% strongly disagree to it.

TABLE 25: RESPONSE TO PERFORMANCE APPRAISAL BASED ON OBJECTIVE ASSESSMENT AND ADEQUATE INFORMATION

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	20	20%
MODERATELY AGREE	30	30%
AGREE	30	30%
MODERATELY DISAGREE	15	15%
STRONGLY DISAGREE	5	5%
TOTAL	100	100

INTERPRETATION: From the above table it can be observed that 20% of the employees find performance appraisal being conducted based on proper assessment and adequate information. 30% moderately agree, 30% just agree, 15% moderately disagree and 5% strongly disagree to this.

TABLE 26: RESPONSE TO FEEDBACK GIVEN TO EMPLOYEES THAT HELPS IN CAREER DEVELOPMENT

RESPONSE	NUMBER OF RESPONDENTS	IN PERCENTAGE (%)
STRONGLY AGREE	25	25%
MODERATELY AGREE	40	40%
AGREE	15	15%
MODERATELY DISAGREE	10	10%
STRONGLY DISAGREE	10	10%
TOTAL	100	100

INTERPRETATION: From the above table, it can be observed that 25% of the employees feel that given feedback helps them in their career development, 40% moderately agree, 15% agree, remaining 10% each moderately and strongly disagree with it.

TABLE 27: RESPONSE TO WELFARE MEASURES PROVIDED IN THE ORGANIZATION

WELFARE MEASURES	STRONGLY AGREE	MODERATELY AGREE	AGREE	MODERATELY DISAGREE	STRONGLY DISAGREE
TRANSFER POLICY	0	15	30	30	25
PAY AND ALLOWANCE	60	40	0	0	0
ADVANCES GIVEN	25	65	5	5	0
CANTEEN FACILITY	20	55	0	15	10
TRANSPORT FACILITY	20	50	15	15	0
FIRST-AID	30	60	0	0	10

INTERPRETATION: After analysis, it was found that out of the total respondents, a majority of the respondents are satisfied with the facilities provided to them by the organization and most of them are especially satisfied with the pay and allowances, advances given, canteen facility, transport facility, and first aid facility.

FINDINGS

- At NGRI, employees are proud to work in their organization and are ready to put in extra effort to meet individual and organizational goals. Clean and well organized working environment favors development of new skills and knowledge of employees.
- The resources available at NGRI help employees perform their job efficiently and employees are able to handle the size of their workload. They feel their skills and abilities are fully utilized in their current job
- Employees find high team spirit in the organization and find their team members helpful. Few employees are of the opinion that all departments should try and work together in a more effective way.
- There is delegation of authority which helps the employees handle higher responsibilities. The Organization helps employees in their career development by practicing various procedures like job rotation and participative decision making.
- The management keeps the employees informed about the organization and are recognized and acknowledged by the management for their work
- Promotions are handled fairly in the organization. Performance appraisal is being conducted based on proper assessment and adequate information.
- Employees find training provided to them based on their training needs. A majority of the respondents are satisfied with the facilities provided to them by the organization and most of them are especially satisfied with the pay and allowances, advances given, canteen facility, transport facility, and first aid facilities.

CONCLUSIONS

The general picture emerging out of these findings indicate that overall a favorable climate exists in the organization. The organization ensures employee participation in decision making and should further work on getting more employees to participate. It is seen that information in the organization is shared across all levels.

Also the organization offers enough scope for personal and professional growth to the employees as they provide an opportunity to develop their skills and abilities and provide guidance in career development. But there is a need for improving co-ordination among the various departments in the organization as the employees feel that it is low. Communication and feedback within an organization act as a facilitating process for employees to develop themselves in the organization. The feedback mechanism in the organization could be handled with more care in accordance with the perception of employees. The employees' work is being recognized and appreciated by the management. It can be maintained in such a way that the employee's morale will improve.

A few measures can be taken to encourage team spirit further. The organization could try to make the HRD Climate more conducive to develop potential and competencies of the employees and provide opportunities for fulfillment for building a positive, motivating work culture which would ensure optimum utilization of the capabilities of the team members leading to self and organizational effectiveness.

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A STUDY ON CUSTOMER PERCEPTION ON MOBILE BANKING

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ABSTRACT

Mobile usage has seen an explosive growth in most of the Asian economies like India, China and Korea. The main reason that Mobile Banking scores over Internet Banking is that it enables 'Anywhere Anytime Banking. Customers don't need access to a computer terminal to access their bank accounts, now they can do so on-the-go while waiting for the bus to work, traveling or when they are waiting for their orders to come through in a restaurant. Mobile banking in India is set to explode - approximately 43 million urban Indians used their mobile phones to access banking services during quarter ending August, 2009, a reach of 15% among urban Indian mobile phone user. As per a survey made by Bangalore based research firm that tracks current and future mobile trends in India has revealed that the most popular mobile banking services used by consumers are Checking accounts, to view last three transactions, status of checks, payment reminders, to sent a request for new check book. The present study is done to know the awareness of mobile banking among banking customers and their perceptions on mobile banking. And the impact of mobile banking on customers. The research was conducted by taking 100 account holders of various banks.

KEYWORDS

Mobile banking, awareness, customer perception, impact on customers.

INTRODUCTION

The customer anytime can access to internet for Internet Banking if that facility is given by their banks. Customer's could check out their account details, get their bank statements, perform transactions like transferring money to other accounts and pay their bills sitting in the comfort of their homes and offices.

However the biggest limitation of Internet banking is the requirement of a PC with an Internet connection, not a big obstacle if we look at the US and the European countries, but definitely a big barrier if we consider most of the developing countries of Asia like China and India. Mobile banking addresses this fundamental limitation of Internet Banking, as it reduces the customer requirement to just a mobile phone. Mobile usage has seen an explosive growth in most of the Asian economies like India, China and Korea. The main reason that Mobile Banking scores over Internet Banking is that it enables 'Anywhere Anytime Banking'. Customers don't need access to a computer terminal to access their bank accounts, now they can do so on-the-go while waiting for the bus to work, traveling or when they are waiting for their orders to come through in a restaurant.

The scale at which Mobile banking has the potential to grow can be gauged by looking at the pace users are getting mobile in these big Asian economies. According to the Cellular Operators' Association of India (COAI) the mobile subscriber base in India hit 40.6 million in the August 2004. In September 2004 it added about 1.85 million more. The explosion as most analysts say, is yet to come as India has about one of the biggest untapped markets. China, which already witnessed the mobile boom, is expected to have about 300 million mobile users by the end of 2004. All of these countries have seen gradual roll-out of mobile banking mobile phones to pay bills in shops eServices, the most aggressive being Korea which is now witnessing the roll-out of some of the most advanced services.

DEFINITION OF MOBILE BANKING

Mobile banking (also known as M-Banking, banking, SMS Banking) is a term used for performing balance checks, account transactions, payments, credit applications and other banking transactions through a mobile device such as a mobile phone or Personal Digital Assistant (PDA). The earliest mobile banking services were offered over SMS. With the introduction of the first primitive smart phones with WAP support enabling the use of the mobile web in 1999, the first European banks started to offer mobile banking on this platform to their customers. Mobile banking has until recently (2010) most often been performed via SMS or the Mobile Web. Apple's initial success with phone and the rapid growth of phones based on Google's Android (operating system) have led to increasing use of special client programs, called apps, downloaded to the mobile device.

In one academic model mobile banking is defined as:

Mobile Banking refers to provision and a ailment of banking- and financial services with the help of mobile telecommunication devices. The scope of offered services may include facilities to conduct bank and stock market transactions, to administer accounts and to access customized information." According to this model Mobile Banking can be said to consist of three inter-related concepts:

- Mobile Accounting
- Mobile Brokerage
- Mobile Financial Information Services

Most services in the categories designated Accounting and Brokerage are transaction-based. The non-transaction-based services of an informational nature are however essential for conducting transactions - for instance, balance inquiries might be needed before committing a money remittance. The accounting and brokerage services are therefore offered invariably in combination with information services. Information services, on the other hand, may be offered as an independent module.

Mobile phone banking may also be used to help in business situations as well as finance.

The advent of the Internet has enabled new ways to conduct banking business, resulting in the creation of new institutions, such as online banks, online brokers and wealth managers. Such institutions still account for a tiny percentage of the industry.

Over the last few years, the mobile and wireless market has been one of the fastest growing markets in the world and it is still growing at a rapid pace. According to the GSM Association and Ovum, the number of mobile subscribers exceeded 2 billion in September 2005, and now (2009) exceeds 2.5 billion.

MOBILE BANKING IN INDIA

Tap a few buttons and check your account balance sitting in the comfort of your home or pay your credit card bill while you are commuting to work. The new age Indian customer wants these and even more - s/he wants "Anytime Banking Anywhere". Rapid strides in technological advancement in the telecom industry have made all this possible via the concept of mobile banking - a channel via which customers interact with banks using handheld devices. The number of wireless subscribers is more than 650 million in India as of July 2010 and the growth rate is pegged at a massive 18-19 million every month. This is a huge market and every bank worth its salt - be it in the private or public sector, offers mobile banking services such as:

- Update on account balance
- View last few transactions
- Request for check books
- Fund transfers

- Deposits in banks
- Make payments

COMMONLY PROVIDED MOBILE BANKING SERVICES ARE AS UNDER

ACCOUNT INFORMATION

1. Mini-statements and checking of account history
2. Alerts on account activity or passing of set thresholds
3. Monitoring of term deposits
4. Access to loan statements
5. Access to card statements
6. Mutual funds / equity statements
7. Insurance policy management
8. Pension plan management
9. Status on cheque, stop payment on cheque
10. Ordering cheque books
11. Balance checking in the account
12. Recent transactions
13. Due date of payment (functionality for stop, change and deleting of payments)
14. PIN provision, Change of PIN and reminder over the Internet
15. Blocking of (lost, stolen) cards

PAYMENTS, DEPOSITS, WITHDRAWALS, AND TRANSFERS:

1. Domestic and international fund transfers
2. Micro-payment handling
3. Mobile recharging
4. Commercial payment processing
5. Bill payment processing
6. Peer to Peer payments
7. Withdrawal at banking agent
8. Deposit at banking agent

ADVANTAGES OF MOBILE BANKING

The biggest advantage that mobile banking offers to banks is that it drastically cuts down the costs of providing service to the customers. For example an average teller or phone transaction costs about \$2.36 each, whereas an electronic transaction costs only about \$0.10 each. Additionally, this new channel gives the bank ability to cross-sell up-sell their other complex banking products and services such as vehicle loans, credit cards etc.

For service providers, Mobile banking offers the next surest way to achieve growth. Countries like Korea where mobile penetration is nearing saturation, mobile banking is helping service providers increase revenues from the now static subscriber base. Service providers are increasingly using the complexity of their supported mobile banking services to attract new customers and retain old ones. A very effective way of improving customer service could be to inform customers better.

Credit card fraud is one such area. A bank could, through the use of mobile technology, inform owners each time purchases above a certain value have been made on their card. This way the owner is always informed when their card is used, and how much money was taken for each transaction. Similarly, the bank could remind customers of outstanding loan repayment dates, dates for the payment of monthly installments or simply tell them that a bill has been presented and is up for payment. The customers can then check their balance on the phone and authorize the required amounts for payment.

CHALLENGES FOR MOBILE BANKING

Key challenges in developing a sophisticated mobile banking application are:

- **Hand set operability:**

There are a large number of different mobile phone devices and it is a big challenge for banks to offer mobile banking solution on any type of device. Some of these devices support Java ME and others support SIM Application Toolkit, a WAP browser, or only SMS.

- **Security:**

Security of financial transactions, being executed from some remote location and transmission of financial information over the air, are the most complicated challenges that need to be addressed jointly by mobile application developers, wireless network service providers and the banks' IT departments.

- **Scalability and reliability:**

Another challenge for the CIOs and CTOs of the banks is to scale-up the mobile banking infrastructure to handle exponential growth of the customer base. With mobile banking, the customer may be sitting in any part of the world (true anytime, anywhere banking) and hence banks need to ensure that the systems are up and running in a true 24 x 7 fashion. As customers will find mobile banking more and more useful, their expectations from the solution will increase. Banks unable to meet the performance and reliability expectations may lose customer confidence. There are systems such as Mobile Transaction Platform which allow quick and secure mobile enabling of various banking services. Recently in India there has been a phenomenal growth in the use of Mobile Banking applications, with leading banks adopting Mobile Transaction Platform and the Central Bank publishing guidelines for mobile banking operations.

- **Application distribution:**

Due to the nature of the connectivity between bank and its customers, it would be impractical to expect customers to regularly visit banks or connect to a web site for regular upgrade of their mobile banking application. It will be expected that the mobile application itself check the upgrades and updates and download necessary patches (so called "Over The Air" updates). However, there could be many issues to implement this approach such as upgrade / synchronization of other dependent components.

- **Personalization:**

It would be expected from the mobile application to support personalization such as :

1. Preferred Language
2. Date / Time format
3. Amount format
4. Default transactions
5. Standard Beneficiary list

- **Customer Protection Issues**

1. Any security procedure adopted by banks for authenticating users needs to be recognized by law as a substitute for signature. In India, the Information Technology Act, 2000, provides for a particular technology as a means of authenticating electronic record. Any other method used by banks for authentication is a source of legal risk. Customers must be made aware of the said legal risk prior to sign up.

2. Banks are required to maintain secrecy and confidentiality of customers' accounts. In the mobile banking scenario, the risk of banks not meeting the above obligation is high. Banks may be exposed to enhanced risk of liability to customers on account of breach of secrecy, denial of service etc., on account of hacking/ other technological failures. The banks should, therefore, institute adequate risk control measures to manage such risks.
3. As in an Internet banking scenario, in the mobile banking scenario too, there is very limited or no stop-payment privileges for mobile banking transactions since it becomes impossible for the banks to stop payment in spite of receipt of stop payment instruction as the transactions are completely instantaneous and are incapable of being reversed. Hence, banks offering mobile banking should notify the customers the timeframe and the circumstances in which any stop-payment instructions could be accepted.
4. The Consumer Protection Act, 1986 defines the rights of consumers in India and is applicable to banking services as well. Currently, the rights and liabilities of customers availing of mobile banking services are being determined by bilateral agreements between the banks and customers. Taking into account the risks arising out of unauthorized transfer through hacking, denial of service on account of technological failure etc. banks providing mobile banking would need to assess the liabilities arising out of such events and take appropriate counter measures like insuring themselves against such risks, as in the case with internet banking.
5. Bilateral contracts drawn up between the payee and payee's bank, the participating banks and service provider should clearly define the rights and obligations of each party.
6. Banks are required to make mandatory disclosures of risks, responsibilities and liabilities of the customers on their websites and/or through printed material.
7. The existing mechanism for handling customer complaints / grievances may be used for mobile banking transactions as well. However, in view of the fact that the technology is relatively new, banks should set up a help desk and disclose the details of the help desk and escalation procedure for lodging the complaints, on their websites. Such details should also be made available to the customer at the time of sign up.
8. In cases where the customer files a complaint with the bank disputing a transaction, it would be the responsibility of the service providing bank, to expeditiously redress the complaint. Banks may put in place procedures for addressing such customer grievances. The grievance handling procedure including the compensation policy should be disclosed.

REVIEW OF LITERATURE

- The scale at which Mobile banking has the potential to grow can be gauged by looking at the pace users are getting mobile in these big Asian economies. According to the Cellular Operators' Association of India (COAI) the mobile subscriber base in India hit 40.6 million in the August 2004. In September 2004 it added about 1.85 million more. The explosion as most analysts say, is yet to come as India has about one of the biggest untapped markets. China, which already witnessed the mobile boom, is expected to have about 300 million mobile users by the end of 2004.
- Most Popular Banking Service on Mobile: Checking account balances is the most popular banking service used by urban Indians with almost 40 million users followed by checking last three transactions, 28 million and status of cheques with 21 million users.

Usage	Unique Users (In millions)
Used mobile banking	43.70
Checking account balance	39.97
View last three transactions	28.15
Status of cheques	21.06
Payment reminders	20.92
Request a cheque book	19.11

Mobile banking is popular among the Rs.1 to 5 lakhs per year income group with almost 60% of mobile banking users falling in the income bracket, an indicator of adoption of this service by younger generation.

Most Popular Bank

ICICI bank maintains its position as country biggest private lender on mobile screen as well with 17.75 million users. HDFC account for second most subscribers with 9.1 million subscribers followed by State Bank of India with 6.13 million subscribers.

- **Mobile banking not yet popular in rural India** – In spite of efforts from different organizations, mobile banking has not succeeded in taking banking to the rural areas the way it is expected to.

There are many reasons for this –

- ✓ It is not feasible for all banks as the volume and value of transactions are very low.
- ✓ It is not only enough to have simplified offerings but also educate the prospective customers on the same and this is lacking.
- ✓ The banking agents have to be aware of products and services and also have enough incentives to get more customers.
- ✓ The important aspect here is that the concerned organizations are aware of the challenges and are working towards solutions. Once customers' concerns are addressed through education and they are assured that their money is in safe hands and they get good service, there will be no looking back for mobile banking in India.
- Chantal Tode, (2011)- Ms. Jennifer Canfield, financial services senior associate at Web traffic analysis service Compete Inc., Boston. said that" Increasing mobile banking fees would certainly slow consumer adoption of mobile banking services". Because mobile banking awareness, adoption, and intent to adopt are all low and because mobile banking has a high ROI, banks should focus on building awareness and encouraging adoption, not putting up more barriers. The current rate of adoption for mobile banking is low and any additional fees might scare away consumers who already are not sure if they need the service. According to Compete, 54 percent of bank account owners have used a mobile device to manage their checking and savings accounts in some way but only 11 percent of bank account owners have used remote check deposit.
- Rajnish Tiwari , Stephan Buse , Cornelius Herstatt , (2006)- Mobile Banking as Source of Revenue to banks-Mobile Banking can also serve as a source of revenue. Mobile services can be offered on a premium basis. The price, in this case, should be reasonable enough so that customers are willing to pay them but at the same time they should be – from a financial point of view – higher than the costs incurred by the bank.

Additional revenues can be generated in two ways:

- i) Offering innovative, premium services to existing customers;
 - ii) Attracting new customers by offering innovative services. Whereby new customers contribute to revenue generation not only by utilising mobile services but also by using other conventional distribution channels.
- Layla. Alsheikh and Jamil. Bojei (2012)- Mental accounting theory proposed by Thaler involves a process of coding, categorizing and evaluating the outcomes of the decisions. It explains the importance of transaction related attributes associated with customer decision making in the presence of risk and uncertainty. Online purchasing decisions and the adoption of other technological applications can be explained using this theory by examining customer behavior towards the value of such technologies . For users of mobile value added services, the value maximization might be their essential principle of decision-making. Mental accounting theory therefore is appropriate for the analysis of mobile banking services usage, as customers tend to make decisions based on multiple attributes. When a customer decides to avail a service such as mobile banking he goes through a mental process that considers the trade-off between what they get and what they give.
 - "Consumers and Mobile Financial Services", March 2012, - As of March 2011, nearly one out of every five Americans with both a bank account and a mobile phone has used their phone to view account balances, receive account alerts, and conduct banking with their financial institution in the past 90 days. Although mobile payments have been adopted more slowly by consumers in the U.S. than in many other countries, these services may become more popular over the coming years as the technology evolves and if the services become more widely accepted as a form of payment

- An annual global banking survey on “a new era of customer expectation-Rebuild brand perception, conducted by ERNST & YOUNG by taking more than 20,500 participants has revealed the following things for rebuilding the customer confidence they are:
 - ✓ **Brand enhancement programs:** All elements of the customer experience, at both the national and local level, need to be reassessed with continued investments made in customer charters and innovative approaches to marketing the bank’s ethos and service offerings.
 - ✓ **Personalizing banking:** Personalization is a vital element of a successful customer relationship and a cohesive approach to the development of tailored products and services will help to improve brand perception.
 - ✓ **Create brand ambassadors:** To ensure that the sales force represents the bank’s brand there needs to be a continued focus on transparent and sustainable incentive models and an adequate customer relationship model.
 - ✓ **Embrace online innovation:** Adopting a coherent social media approach will help improve brand perceptions and leverage the benefits of online advocacy.
- ARUN PRABHUDESAI (2012)

Mobile Banking has really caught up in India – according to recently conducted survey by ACI(for 4200 respondents in 14 countries) Worldwide, 76% of Indian mobile respondents used their mobiles for banking in last 6 months. This percentage is highest across the world. Comparatively, only 38% respondents from US, and 31% from UK used mobile banking in last 6 months. China, came in after India with 70% users using mobile banking followed by South Africa (61%). The global average for Mobile Banking adoption rate stands at 35%. India comes in 2nd in terms of making payments on mobile. 64% of the survey respondents from India used their mobile phones to make payment at least once in last 6 months, while Chinese led the pack with 66%. Surprisingly, only 30% of US respondents & 23% of UK respondents have made payments on mobile in last 6 months.

NEED OF THE STUDY

In the current busy life people do not have time to do their money transactions through banks by standing in a queue to deposit, payments, withdraw, transfer money from one account to another account, etc... .By recognizing the needs of the customers bank introduced alternative methods for customers to fulfill their needs related to bank transactions some of them are Internet banking and mobile banking .Internet banking requires a computer with internet connection with which from any place in the world with an internet connection by sitting in front of the system customer can complete his bank transactions. But there is a limitation for with Internet banking is that the computers are not mobile or a person cannot carry that with him and people may not have computer with them so to satisfy the needs of those customers’ banks have introduced mobile banking. Which is more convenient to handle, easy to hold and moreover these days it is difficult to identify people without holding mobile phone. The present study is taken up to study to what extent people are aware about mobile banking , for what purposes they are using mobile banking and to the perception of the customers on safety of the transactions with mobiles and their satisfaction levels on usage of mobile banking .

IMPORTANCE OF THE STUDY

Mobile banking through cell phone offers many advantages for customers as well as banks. Some of them are as follows:-

1. Mobile banking has an edge over internet banking. In case of online banking, an internet connection and a computer is must. This is a problem in developing countries. However, with mobile banking, connectivity is not a problem .Mobile connectivity in the remotest of places also where having an internet connection is a problem.
2. Making transactions or pay bills anytime. It saves a lot of time.
3. Mobile banking thorough cell phone is user friendly and the interface is also very simple. It also saves the record of any transactions made.
4. Cell phone banking is cost effective. Various banks provide this facility at a lower cost as compared to banking by self.
5. Banking through mobile reduces the risk of fraud as it get an SMS whenever there is an activity in customers’ account. This includes deposits, cash withdrawals, funds transfer etc. You will get a notice as soon as any amount is deducted or deposited in your account.
6. Banking through cell phone benefits the banks too. It cuts down on the cost of tele- banking and is more economical. It serves as a guide in order to help the banks improve their customer care services.
7. Banks can be in touch with their clients with mobile banking.
8. Banks can also promote and sell their products and services like credit cards, loans etc. to a specific group of customers.
9. Various banking services like Account Balance Enquiry, Credit/Debit Alerts, Bill Payment Alerts, Transaction History, Fund Transfer Facilities, and Minimum Balance Alerts etc. can be accessed from the mobile.
10. Money can be transferred instantly to another account in the same bank using mobile banking.

Mobile banking has become really popular owing to the convenience that it gives its customers. You can access your account, pay bills, and make cash transfers through cell phone banking. It offers many benefits over internet banking and banking in person. With the wide range of mobile connectivity, mobile banking through cell phone can be accessed by anyone. As there are many advantages through mobile banking to banks as well as to customers. The following study throws light on various aspects like things like to what extent people are aware about mobile banking and if they aware about mobile banking whether they are availing those services and to know the perception of the customers of mobile banking users and their satisfaction regarding the services availed by the customers.

STATEMENT OF PROBLEM

As there are many advantages through mobile banking compared with internet banking but the problem here it is that whether the customers of banks are aware about the mobile banking services provided by their respective banks, if they are aware to what extent the customers are availing those facilities and the type of services they are availing frequently. The customers’ perception towards the transaction security and the satisfaction levels of the mobile banking users. The following study concentrates on the above mentioned aspects.

OBJECTIVES

- To study briefly about Mobile Banking in India.
- To know the awareness of mobile banking among banking customers.
- To study the perception of customers on mobile banking.
- To study the impact of mobile banking on customer.

RESEARCH METHODOLOGY

The study is Descriptive in nature. The data is collected through primary and secondary sources.

Primary data:

The major source of primary data includes questionnaires distributed to 100 account holders of various banks.

Secondary data:

Secondary data is collected through websites, articles, newsletters, reports of survey conducted by various institutions.

Sample size: The size of the sample consists of 100 bank account holders. And the technique used for collecting the data is convenience sampling.

ANALYSIS OF THE DATA

TABLE 1: SHOWING GENDER OF THE RESPONDENTS

Gender	No. of respondents	percentage
Male	86	86
Female	14	14
Total	100	100

Inference: The above table shows that out of 100 Respondents, 86% are belong to the male category 14% are belong to the female category.

TABLE 2: SHOWING AGE GROUP OF RESPONDENTS

Age	No. Of Respondents	Percentage
Below 25yrs	71	71
25-35yrs	29	29
35-45yrs	0	0
45 yrs above	0	0
Total	100	100

From the above table it can be viewed that out 100 Respondents, 71% are below 25yrs, 29% are between age group of 25-30yrs. It can be concluded that most of the respondents who are using mobile banking are below 25 yrs age group.

TABLE 3: SHOWING THE OCCUPATION OF THE RESPONDENTS

Occupation	No. Of Respondents	Percentage
Student	77	77
Employee	12	12
Business	6	6
Others	5	5
Total	100	100

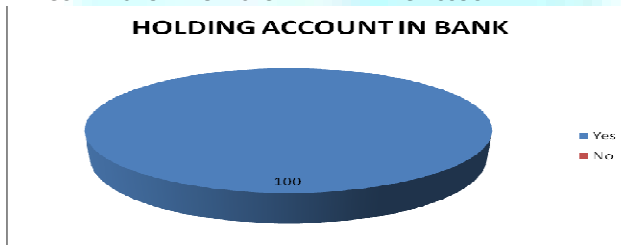
Out of 100 respondents ,77are students, 12are employees ,6 members businessmen ,5 members belongs to the group of others like home makers, retired people, etc.... Most of the respondents belongs to students and employee group.

TABLE 4: SHOWING MONTHLY INCOME OF RESPONDENTS

Monthly Income	No. of Respondents	percentage
Below10000	70	70
10001-20000	19	19
20001-30000	5	5
30001above	6	6
Total	100	100

70% Respondents are below Rs.10000/- income level, 19% are of income level batwenRs.10001-20000/- , 5% Respondents are having Rs. 20001-30000/- income and 6% are earning Rs.30001above income.

FIGURE 1: SHOWING RESPONDENT HAVING ACCOUNT IN A BANK HOLDING ACCOUNT IN BANK



All are holding bank account.

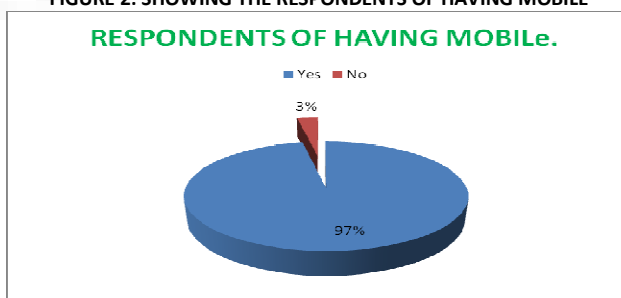
TABLE 5: SHOWING BANKS IN WHICH RESPONDENTS HAVING THEIR ACCOUNT

Response	No. of Respondents	Percentage
SBI	31	31
SBH	42	42
HDFC	3	3
ICICI	2	2
ANDHRA	32	32
Any other banks specify	7	7
Total	117	100

Out 100 Respondents.31% Respondents are having account in SBI, 42% Respondents are having account in SBH,3% Respondents are having account in HDFC,2%Respondents are having account in ICICI,32% Respondents are having account in ANDHRA,7% Respondents are having account in Any other banks.

*The total number of respondents are more than 100 as they chosen more than one options.

FIGURE 2: SHOWING THE RESPONDENTS OF HAVING MOBILE



Out of 100 respondents 97 are holding mobiles.

TABLE 6: SHOWING AWARENESS ABOUT MOBILE BANKING

Response	No. of Respondents	Percentage
Yes	74	74
No	26	26
Total	100	100

Out of 100 respondents, 74% respondents are aware about mobile banking.26% respondents are not aware about mobile banking.

TABLE 7: SHOWING PROVISION OF MOBILE BANKING SERVICES BY BANK

Response	No. of Respondents	Percentage
Yes	74	74
No	26	26
Total	100	100

Out of 100 respondents, 74% respondents said that their bank is providing mobile banking facility.26% respondents said that their bank is not providing mobile banking facility.

TABLE 8: SHOWING RESPONDENTS USING MOBILE BANK FACILITIES

Response	No. of Respondents	Percentage
Yes	74	100
No	0	0
Total	74	100.00

Out of 74 respondents whose banks are providing mobile banking facilities, 100 % respondents are using mobile banking facilities.

TABLE 9: SHOWING THE SERVICES PROVIDED BY BANKS

Response	No. of Respondents	Percentage
Account information	38	51
Payments	14	19
Deposits withdrawals& transfer	25	34
Investments	7	9
Any other specify	24	33

out 74 Respondents, 51%(38) said that their bank providing account information though mobile,19% (14) said that mobile payment services are provided by their bank.34% said that the following services are provided by their banks they are deposits, withdrawals and transfer though mobile. Very few i.e. 9%(7) said that Investment facility is provided by banks though mobile33% Respondents of the provided other services like taking order for issue of cheque books, proving information regarding balance in the account, and provides information of recent transactions made by the customers. Therefore, it can be concluded that most of the banks provide the facility of checking account history and deposits, withdrawals, and transfer of money from one account to another through mobile banking.

TABLE 10: SHOWING THE TYPES OF SERVICES AVAILED BY RESPONDENTS

Response	No. of Respondents	Percentage
Account Information	39	53
Payment	11	15
Deposits. Withdrawals &Transfer	42	56
Investments	3	4
Any other specify	5	7

From the above table it can be viewed that out 74 Respondents,53% are using mobile banking to know account information, 15% are using for payments, 56%(42) are using mobile banking for Deposits, Withdrawals &Transfer of money from one account to another account, 4% (3) using for investments and 5% respondents are using mobile banking for other facilities like for getting Mini-statements, to know the loan statements and card statements, to know the Status on cheque, and to stop payment on cheque etc...

It can be concluded that most of the respondents are using mobile banking for the purpose of deposits, withdrawals &transfer of money from one account to another account.

TABLE 11: SHOWING RESPONDENTS PREFERENCE ABOUT MOBILE BANKING SERVICES AMONG OTHERS SERVICES

Response	No. of Respondents	Percentage
Yes	89	89
No	11	11
Total	100	100

Out 100 respondents, 89 are preferring mobile banking as it is better service than any other services available, and 11 are not preferring mobile banking as better service.

TABLE 12: SHOWING THE REASONS FOR PREFERRING MOBILE BANKING

Response	No. of Respondents	Percentage
Time saving	64	71
Convenience	32	36
Easy to operate	15	17
Less cost	10	11
Any other specify	1	1

From the above table it can be viewed that out 89respondents,71%(64)said that they are preferring mobile banking as it is time saving activity, 36%preferred mobile banking as its is convenient than the other methods available,17%said it is easy to operate,11% said it carries less cost. With this it can be concluded that most of the respondents preferring mobile banking as it is time saving and convenient to do transactions.

TABLE 13: SHOWING RESPONDENTS OPINION REGARDING SAFETY OF TRANSACTIONS THROUGH MOBILE BANKING

Response	No. of Respondents	Percentage
Yes	86	86
No	14	14
Total	100	100

Out 100 respondents 86 expressed that transactions through mobile is safety and remaining 14 i.e. 14% said mobile banking is not a safe mode for banking transactions. With this statement it can be concluded that mobile banking is a safe mode for banking transactions.

TABLE 14: SHOWING THE REASONS FOR POSITIVE OPINION REGARDING SAFETY OF TRANSACTIONS

Response	No. of Respondents	Percentage
Password facility	42	49
Personal information can be kept safely	38	44
Any other specify	6	7
Total	86	100

Out of 86 respondents who said that mobile banking is safety specified the reasons they are, 49% said that mobile banking is safe as it has got password facility, 44% said that the personal information of the candidate is hidden, 7% i.e. 6 respondents said that if other reasons like SMS is sent to mobile as soon as the transactions takes place so, the account holder will be alert in case of misuse of the mobile.

TABLE 15: SHOWING THE RESPONSE FOR THE LEVEL OF MOBILE TRANSACTIONS ARE NOT SAFE

Response	No. of Respondents	Percentage
Security problems	14	100
Hacking	12	85
Ethical issues	6	43
Un authorized use of account when mobile phone is lost	7	50
Total	39	278

out 14 respondents who said the mobile banking is not safe specified the following reasons like 100% of the respondents said that security problems are the main reason for non security, 85% respondents specified hacking of mobile account passwords, 43% respondents are specified ethical issues, 50% respondents specified that mobile banking is not safe because un authorized people can access the mobile when it is lost. Here it can be concluded that all the respondents who said that mobile banking is is not a safety mode of transaction mentioned that many security problems are involved in usage of mobile banking. And the other problem is that hacking of mobile phone information.

TABLE 16: SHOWING THE RESPONDENTS OPINION REGARDING SATISFACTION WITH MOBILE BANKING SERVICES

Response	No. of respondents	Percentage
Yes	80	80
No	20	20
Total	100	100

Out 100 Respondents, 80% respondents said that they are satisfied with mobile banking services provided by their banks and rest of them are not satisfied. So, it is concluded that most of them are satisfied with use of mobile banking.

TABLE 17: SHOWING REASONS FOR SATISFACTION WITH MOBILE BANKING SERVICES

Response	No. of Respondents	Percentage
Time saving	47	59
Easy to operate	17	21
Less cost	16	20
Any time any where available	25	31
Total	105	131

Out 80 respondents who are satisfied with mobile banking facility specified the following reasons for their satisfaction, they are, 59% said that they are satisfied as it is time saving, 21% said it is easy to operate, 20% respondents said that it involves less cost, 31% respondents said that they are satisfied as banking transactions can be done through mobile at any time any where available,

*The total number of responses is more as respondents chosen more options.

TABLE 18: SHOWING THE REASONS FOR RESPONDENTS DISSATISFACTION

Response	No. of Respondents	Percentage
Not user friendly	9	45
Network problems	20	100
Fear of misusing of mobile banking	20	100
Any other specify	5	25
Total	54	270

Out 20 Respondents expressed dissatisfaction on mobile banking usage mentioned the following reasons, they are, 45% respondents said that it is not user friendly, all 20 respondents specified network problems and fear of misusing of mobile banking are major reasons for dissatisfaction, and 25%(5) respondents specified other reasons like not getting SMS at the time of transactions through mobiles and people believe in physical transactions than mobile banking as transactions do not take place in front of the customer and people do not have clear knowledge about the application of mobile banking transactions through mobiles.

*The total number of responses is more as respondents chosen more options.

FINDINGS AND CONCLUSIONS

- ✓ Out of 100 respondents, 86% i.e (86) are belong to male group and 14% belong to female group.
- ✓ 71% are below 25yrs, 29% are between age group of 25-30yrs. It can be concluded that most of the respondents who are using mobile banking are below 25 yrs age group.
- ✓ Out of 100 respondents ,77are students, 12are employees ,6 members businessmen ,5 members belongs to the group of others like home makers, retired people, etc.... Most of the respondents belongs to students and employee group.
- ✓ 70% Respondents are below Rs.10000/- income level, 19% are of income level batwenRs.10001-20000/- , 5% Respondents are having Rs. 20001-30000/- income and 6% are earning Rs.30001above income.
- ✓ All are holding bank account.
- ✓ Out 100 Respondents.31% Respondents are having account in SBI, 42% Respondents are having account in SBH, and 32% Respondents are having account in Andhra bank. Most of them i.e. 42 are having account in SBH and Andhra Bank.
- ✓ Out of 100 respondents 97 are holding mobiles.
- ✓ Out 100 respondents, 74% respondents are aware about mobile banking.26% respondents are not aware about mobile banking.
- ✓ Most of them (74) are aware about mobile banking.

- ✓ Out 100 respondents, 74% respondents said that their bank is providing mobile banking facility. 26% respondents said that their bank is not providing mobile banking facility.
- ✓ Out 74 Respondents, 51% (38) said that their bank providing account information through mobile, and 25 said that their banks provide deposits, withdrawals, and transfer of money from one account to another through mobile banking.
- ✓ Out of 74 respondents whose banks are providing mobile banking facilities, 100 % respondents are using mobile banking facilities
- ✓ Out 74 respondents, 56%(42) are using mobile banking for Deposits, Withdrawals & Transfer of money from one account to another account, and 53% are using mobile banking to know account information,
- ✓ Out 100 respondents, 89 are preferring mobile banking as it is better service than any other services available, and 11 are not preferring mobile banking as better service.
- ✓ Out 89 respondents, 71%(64) said that they are preferring mobile banking as it is time saving activity, 36% preferred mobile banking as it is convenient than the other methods available
- ✓ Out 100 respondents 86 expressed that transactions through mobile is safety
- ✓ Out of 86 respondents who said that mobile banking is safety specified the reasons they are, 49% (42) said that mobile banking is safe as it has got password facility, 44% (38) said that the personal information of the candidate is hidden.
- ✓ Out 14 respondents who said the mobile banking is not safe specified the following reasons like 100% of the respondents said that security problems are the main reason for non security, 85% respondents specified hacking of mobile account passwords
- ✓ Out 100 Respondents, 80% respondents said that they are satisfied with mobile banking services provided by their banks
- ✓ Out 80 respondents 59% (47) said that they are satisfied as it is time saving, 31% (25) respondents said that they are satisfied as banking transactions can be done through mobile at any time any where available.
- ✓ Out 20 Respondents expressed dissatisfaction on mobile banking usage mentioned the following reasons, that all 20 respondents specified network problems and fear of misusing of mobile banking are major reasons for dissatisfaction and some of the respondents specified other reasons like not getting SMS at the time of transactions through mobiles and people believe in physical transactions than mobile banking as transactions do not take place in front of the customer and people do not have clear knowledge about the application of mobile banking transactions through mobiles.

SUGGESTIONS

1. Before providing the mobile banking awareness among the customers is necessary, today there are millions of people are holding mobiles and are having account in the banks but, among them few are using mobile banking, this is because of lack of awareness about the utilization of mobiles. Therefore the first thing that banks need to do is that they need to aware public about the application of mobile banking then it will be cheaper for customers as well as for banks.
2. Awareness among rural customer who are account holders and using mobile phones is another important aspect on which banks need to concentrate. For that they need to explain advantages usage of mobiles for doing banking transactions.
3. The operating method should be easy and understandable to any one so, that a customer who is new to mobile banking can easily complete the transaction.
4. Mobile banking depends on network, if there is no proper network there is no use of mobile banking. So to develop the mobile banking there should be developing efficient network. Therefore banks need to concentrate on this also.
5. In mobile banking there are certain security problems like hacking of information and password affecting the usage of mobile banking, therefore banks need to maintain strong security so that customers can believe and use mobile banking for effective transactions.
6. By using the mobile banking customer receives alerts (SMS) any time anywhere and any place the he will get conformation of the transaction being processed, so this facility helps customers to deal with their transaction at any time and from any place which leads to benefit the customer as well as the bank. Therefore it is suggested to the banks that they need to provide the conformation of the transaction to customers on time.

CONCLUSION

Mobile banking is poised to become the big killer mobile application arena. However, Banks going mobile the first time need to tread the path cautiously. The biggest decision that banks need to make is the channel that they will support their services on. Mobile banking through an SMS based service would require the lowest amount of effort, in terms of cost and time, but will not be able to support the full breath of Transaction-based services. However, in markets like India where a bulk of the Mobile population users' phones can only support SMS based services, this might be the only option left. On the other hand a market heavily segmented by the type and complexity of mobile phone usage might be good place to roll of WAP based mobile applications. WAP based service can let go of the need to customize usability to the profile of each mobile phone, the trade-off being that it cannot take advantage of the full breadth of features that a mobile phone might offer. Mobile application standalone clients bring along the burden of supporting multiple Mobile device profiles. According to the Gartner Group, mobile banking services will have to support a minimum of 50 different device profiles in the near future.

However, currently the best user experience, depending on the capabilities of a mobile phone, is possible only by using standalone client. Mobile banking has the potential to do to the mobile phone what E-mail did to the Internet. Mobile Application based banking is poised to be a big m-commerce feature, and if South Korea's foray into mass mobile banking is an indication, mobile banking could well be the driving factor to increase sales of high-end mobile phones.

SCOPE FOR FURTHER RESEARCH

As this study is restricted to 100 respondents of bank account holders which can be increased and the present has concentrated on mobile banking users further the research can be extended by taking banks and their problems in provision of mobile banking services and Their further developments in mobile banking.

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COMPUTER WORLD: WITHOUT VIRUS

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ABSTRACT

Over a decade of work on the computer virus problem has resulted in a number of useful scientific and technological achievements. The study of biological epidemiology has been extended to help us understand when and why computer viruses spread. Techniques have been developed to help us estimate the safety and effectiveness of anti-virus technology before it is deployed. Technology for dealing with known viruses has been very successful, and is being extended to deal with previously unknown viruses automatically. Yet there are still important research problems, the solution to any of which significantly improves our ability to deal with the virus problems of the near future. The goal of this paper is to encourage clever people to work on these problems. Institutions so as to come to a point of setting protocols thus the varying goals and objectives converge to a focal point of matching final output. Aim of this work is to propose a system that is self sufficient and has each and everything a person may think of and nothing new need be installed on the home system so that a virus attack may never take place.

KEYWORDS

Trojans, Virus,, Virus Free World, Worms.

INTRODUCTION

Can we expect a virus free world? This question raises so many ideas and one of them is as under:

How a virus does enter our system? One of the answers may be that when we download an application that was not installed earlier or if we are looking for an update from a non reliable source we expect thousands of viruses or worms to chip in.

Some times it is inadvertently done and at others we are bound to take care of an urgent project and there is no time left for proper scanning and we are bound to take the calculated risk. Again, we may falter in the calculations and we lose the cause.

Taking care of such a situation, if at all, everything required by any person is available on a reliable resource then possibly; we may never face a challenge of a virus attacking our disk.

The proposed solution hereunder is as follows:

1. Remove any sort of hard disk at the user's premise.
2. Therefore no and nothing need be installed in the system.
3. Each and everything will be available online.
4. Just as we work on Google, we need only one such system that will allow us to access anything and everything.
5. Every thing will be available virus free and nothing new need be installed.

REVIEW OF LITERATURE

In 1983, Fred Cohen coined the term "computer virus", postulating a virus was "a program that can 'infect' other programs by modifying them to include a possibly evolved copy of it." Mr. Cohen expanded his definition a year later in his 1984 paper, "A Computer Virus", noting that "a virus can spread throughout a computer system or network using the authorizations of every user using it to infect their programs. Every program that gets infected may also act as a virus and thus the infection grows."

In 1988 the Internet was shut down by the "Morris Worm," a self-replicating program coded by Robert Tappan Morris of the Chaos Computer Club. It used send-mail and finger exploits to break into and propagate from one UNIX computer to another. By the time it had infected some 10% of the computers on the Internet, it was clogging essential Internet communications lines as the worm shipped around ever more copies of it. Yet many computer scientists say we shouldn't call the Morris Worm a computer virus.

Before the first computer virus was ever coded, in 1984, Dr. Fred Cohen wrote his doctoral thesis on the topic (published in his book "Computer Viruses," ASP Press, 1986). As a result, Cohen is credited by many with being the first to conceive of their existence. It is important to remember -- Cohen is AGAINST computer viruses. He didn't invent them, but was the first to prove they could be created, and to foresee the damage they could cause. Purists hold by the definition of virus that appeared in Cohen's doctoral thesis: a computer virus is code that, when active, attaches itself to other programs.

However, long before Dr. Cohen detailed the characteristics of viruses, mathematician John von Neumann proved that a Turing machine (a mathematical construct representing a single-processor computer) is capable of containing a "universal constructor" which, if provided with a program containing its own description, is able to reproduce itself. Von Neumann's "universal constructor" proof covers not only Cohen's definition of a computer virus, but also self-replicating programs such as the Morris Worm.

Using that explanation, we can see that viruses infect program files. However, viruses can also infect certain types of data files, specifically those types of data files that support executable content, for example, files created in Microsoft Office programs that rely on macros.

Compounding the definition difficulty, viruses also exist that demonstrate a similar ability to infect data files that don't typically support executable content - for example, Adobe PDF files, widely used for document sharing, and .JPG image files. However, in both cases, the respective virus has a dependency on an outside executable and thus neither virus can be considered more than a simple 'proof of concept'.

In other cases, the data files themselves may not be infect-able, but can allow for the introduction of viral code. Specifically, vulnerabilities in certain products can allow data files to be manipulated in such a way that it will cause the host program to become unstable, after which malicious code can be introduced to the system. These examples are given simply to note that viruses no longer relegate themselves to simply infecting program files, as was the case when Mr. Cohen first defined the term. Thus, to simplify and modernize, it can be safely stated that a virus infects other files, whether program or data.

In contrast to viruses, computer worms are malicious programs that copy themselves from system to system, rather than infiltrating legitimate files. For example, a mass-mailing email worm is a worm that sends copies of itself via email. A network worm makes copies of itself throughout a network; an Internet worm sends copies of itself via vulnerable computers on the Internet, and so on.

Trojans, another form of malware, are generally agreed upon as doing something other than the user expected, with that "something" defined as malicious. Most often, Trojans are associated with remote access programs that perform illicit operations such as password-stealing or which allow compromised machines to be used for targeted denial of service attacks. One of the more basic forms of a denial of service (DoS) attack involves flooding a target system with so much

data, traffic, or commands that it can no longer perform its core functions. When multiple machines are gathered together to launch such an attack, it is known as a distributed denial of service attack, or DDoS.

While purists draw a firm distinction between viruses, worms, and Trojans, others argue that it is merely a matter of semantics and give the virus moniker to all viruses, worms, and Trojans. To satisfy both parties, the term malware, a.k.a. malicious software, was coined to collectively describe viruses, worms, Trojans and all other forms of malicious code.

Malware can be defined as any program, file, or code that performs malicious actions on the target system without the user's express consent. This is in contrast to Sneakyware, which can best be described as any program, file, or code that the user agrees to run or install without realizing the full implications of that choice. One of the best examples of Sneakyware was Friendly Greetings, a greeting-card trick that exploited users' willingness to say yes without reading the licensing agreement. By doing so, they were blindly agreeing to allow the same email to be sent to all contacts listed in their address book.

IMPORTANCE OF THE STUDY

Over a decade of work on the computer virus problem has resulted in a number of useful scientific and technological achievements. The study of biological epidemiology has been extended to help us understand when and why computer viruses spread. Techniques have been developed to help us estimate the safety and effectiveness of anti-virus technology before it is deployed. Technology for dealing with known viruses has been very successful, and is being extended to deal with previously unknown viruses automatically. Yet there are still important research problems, the solution to any of which significantly improves our ability to deal with the virus problems of the near future. The goal of this paper is to encourage clever people to work on these problems. To this end, we examine several open research problems in the area of protection from computer viruses. For each problem, we review the work that has been done to date, and suggest possible approaches. There is clearly enough work, even in the near term, to keep researchers busy for quite a while. There is every reason to believe that, as software technology evolves over the next century or so, there will be plenty of important and interesting new problems that must be solved in this field.

As more viruses are written for new platforms, new heuristic detection techniques must be developed and deployed. But we often have no way of knowing, in advance, the extent to which these techniques will have problems with false positives and false negatives. That is, we don't know how well they will work or how many problems they will cause. We show that analytic techniques can be developed which estimate these characteristics and suggest how these might be developed for several classes of heuristics.

STATEMENT OF THE PROBLEM

We have a reasonable, qualitative understanding of the epidemiology of computer viruses, characterizing their spread in terms of birth rate, death rate, and the patterns of program transfer between computers. But a mystery remains. Evidence suggests that viruses are still relatively uncommon - that their prevalence has always been very low. But, according to our current theories, this can only happen if the birth rate of viruses is ever so slightly higher than their death rate, a coincidence too remarkable to believe. We discuss effects that might be responsible for this puzzling observation.

We are in the process of deploying digital immune system technology that finds new viruses, transmits them to an analysis center, analyzes them, and distributes cures worldwide, automatically, and very quickly. The current architecture for this system uses a centralized analysis center for a variety of good reasons. But a more distributed approach, perhaps even a massively distributed approach, has advantages as well. We outline the system issues that must be considered, and what simulation results would be useful, in understanding the tradeoffs.

There have been thankfully few instances of worms - freestanding virus-like programs that spread themselves and may never be present in the computers file system at all. Yet virtually all of our anti-virus technology relies on detecting and removing viruses from a file system. We discuss the new problems that worms engender, and suggest some of the new technology that may be needed to deal with them.

Current anti-virus technology is largely reactive, relying on finding a particular virus before being able to deal with it well. Modern programming environments can give rise to viruses that spread increasingly rapidly, and for which a reactive approach becomes ever more difficult. We review the history of pro-active approaches, showing why traditional access controls are basically useless here, and describe newer approaches that show promise.

OBJECTIVES

Over the past ten years, a single method of detecting computer viruses has nearly eclipsed all others: scanning for known viruses. Originally, a string of bytes was selected from some known virus, and the virus scanner looked for that string in files as a way of determining if that file was infected with that virus. Later, more complex techniques were developed which involved looking for various substrings in various parts of the file. But all of these techniques have one thing in common: they look for static characteristics of viruses that are already known. Main objective of this paper is to develop a virus free world using a technology which may be feasible to work with.

HYPOTHESES

Development of a new system containing each and everything that a user may wish to have without having any hard disk at the user's end so that nothing can be installed on user's system and everything he requires would be provided on the network in a virus free manner.

RESEARCH METHODOLOGY

The research methodology in this area would be EXPLORATORY. Exploratory research is a type of research conducted for a problem that has not been clearly defined. Exploratory research helps determine the best research design, data collection method and selection of subjects. It should draw definitive conclusions only with extreme caution. Given its fundamental nature, exploratory research often concludes that a perceived problem does not actually exist. Exploratory research often relies on secondary research such as reviewing available literature and/or data, or qualitative approaches such as informal discussions with consumers, employees, management or competitors, and more formal approaches through in-depth interviews, focus groups, projective methods, case studies or pilot studies. The Internet allows for research methods that are more interactive in nature. For example, RSS feeds efficiently supply researchers with up-to-date information; major search engine search results may be sent by email to researchers by services such as Google Alerts; comprehensive search results are tracked over lengthy periods of time by services such as Google Trends; and websites may be created to attract worldwide feedback on any subject.

CONCLUSION

With the help of modern connectivity systems already prevailing in the market and the technological knowledge available we may precede a step further and enhance the security against the viruses and worms. Though, the current paper talks about finding newer ways. It talks about removing the threat of viruses completely. It throws the light on the possible solution of eradicating any sort of hard disk at users' premises thus scoring a great chance of not letting any virus enter the system and sustain there. It talks about putting everything online where every aspect gets properly scanned and the threats get minimized.

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ASSIMILATION OF FUZZY LOGIC AND REPLACEMENT ALGORITHMS TO BROWSER WEB CACHING**K MURALIDHAR****RESEARCH SCHOLAR, SRI KRISHNADEVARAYA UNIVERSITY, ANANTAPUR &
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ANANTAPUR****ABSTRACT**

Web caching is a well-known strategy for improving performance of Web-based system by keeping web objects that are likely to be used in the near future close to the client. Most of the current Web browsers still employ traditional caching policies that are not efficient in web caching. This research proposes a splitting browser cache to two caches, instant cache and durable cache. Initially, a web object is stored in instant cache, and the web objects that are visited more than the pre-specified threshold value will be moved to durable cache. Other objects are removed by Least Recently Used (LRU) algorithm as instant cache is full. More significantly, when the durable cache saturates, a fuzzy system is employed in classifying each object stored in durable cache into either cacheable or uncacheable object. The old uncacheable objects are candidate for removing from the durable cache. By implementing this mechanism, the cache pollution can be mitigated and the cache space can be utilized effectively. Experimental results have revealed that the proposed approach can improve the performance up to 14.8% and 17.9% in terms of hit ratio (HR) compared to LRU and Least Frequently Used (LFU). In terms of byte hit ratio (BHR), the performance is improved up to 2.57%, compared to LRU and LFU.

KEYWORDS

FRA, Fuzzy logic, LFU, LRA, page replacement algorithm.

INTRODUCTION

One of the important means to improve the performance of Web service is to employ web caching mechanism. Web caching is a well-known strategy for improving performance of Web based system. The web caching caches popular objects at location close to the clients, so it is considered one of the effective solutions to avoid Web service bottleneck, reduce traffic over the Internet and improve scalability of the Web system[1]. The web caching is implemented at client, proxy server and original server [2]. However, the client-side caching (browser caching) is economical and effective way to improve the performance of the World Wide Web due to the nature of browser cache that is closer to the user [3,4].

Three important issues have profound impact on caching management namely: cache algorithm (passive caching and active caching), cache replacement and cache consistency. However, the cache replacement is the core or heart of the web caching; hence, the design of efficient cache replacement algorithms is crucial for caching mechanisms achievement [5]. In general, cache replacement algorithms are also called web caching algorithms [6].

Since the apportioned space to the client-side cache is limited, the space must be utilized judiciously [3]. The term "cache pollution" means that a cache contains objects that are not frequently used in the near future. This causes a reduction of the effective cache size and affects negatively on performance of the Web caching. Even if we can locate large space for the cache, this will be not helpful since the searching for object in large cache needs long response time and extra processing overhead. Therefore, not all Web objects are equally important or preferable to store in cache. The setback in Web caching consists of what Web objects should be cached and what Web objects should be replaced to make the best use of available cache space, improve Hit Rates, reduce network traffic, and alleviate loads on the original server.

Most web browsers still concern traditional caching policies [3, 4] that are not efficient in web caching [6]. These policies suffer from cache pollution problem either cold cache pollution like the least recently used (LRU) policy or hot cache pollution like the least frequently used (LFU) and SIZE policies [7] because these policies consider just one factor and ignore other factors that influence the efficiency the web caching. Consequently, designing a better-suited caching policy that would improve the performance of the web cache is still an incessant research [6, 8].

Many web cache replacement policies have been proposed attempting to get good performance [2, 9, 10]. However, combination of the factors that can influence the replacement process to get wise replacement decision is not easy task because one factor in a particular situation or environment is more important than others in other environments [2, 9]. In recent years, some researchers have been developed intelligent approaches that are smart and adaptive to web caching environment [2]. These include adoption of back-propagation neural network, fuzzy systems, evolutionary algorithms, etc. in web caching, especially in web cache replacement.

In this paper, the proposed approach grounds instant cache that receives the web objects from the Internet directly, while durable cache receives the web objects from the instant cache as these web objects visited more than pre-specified threshold value. Moreover, fuzzy system is employed to predict web objects that can be re-accessed later. Hence, unwanted objects are removed efficiency to make space of the new web objects.

LITERATURE REVIEW**RELATED WORKS ON WEB CACHING**

Web caching can be implemented at different levels, i.e., client, server, network. The web browser and the web server are responsible for caching at the client and at the server side, respectively. Proxy servers are used for caching at network level.

A proxy server acts as an intermediary between clients and web servers. Many organizations use proxy servers in front of their LANs to save network bandwidth and speedup web pages retrieval by serving the requests locally. Upon receiving requests obtaining by multiple clients, a proxy server checks its cache to see whether it can serve these requests without accessing the original web servers. In the case of a cache miss, that is, the requested page is not stored in the proxy cache or it has expired, the proxy server forwards the request to the web browser. Once the page is returned by the server, the proxy sends it back to the client and stores a copy in its local cache for future requests. If the cache is full, one or more pages have to be evicted to store the newly accessed page.

The efficiency and performance of proxy caches mainly depend on their design and management. Replacement policies play a key role for the effectiveness of caching. The goal of replacement policies is to make the best use of the available resources by dynamically selecting the pages to be cached or evicted.

Replacement policies have been extensively studied and many papers appeared in the literature. A few policies, e.g., Least Recently Used (LRU), Least Frequently Used (LFU), are direct extensions of the traditional replacement algorithms typical of the operating system domain. Other policies, e.g., Greedy Dual Size (GDS), have been explicitly designed for web environments.

Many generalizations of both traditional and web specific policies have been proposed. In [11], the LRU algorithm is generalized such as to take into account access costs and expiration times. A generalization of the GDS algorithm that incorporates short term temporal locality and long term popularity of web request streams is presented in [12]. In [13], randomized algorithms have been applied for approximating any existing web cache scheme. In [14], the replacement strategies are addressed in the framework of a model for optimizing the content of the web cache. The model is based on genetic algorithm or an evolutionary programming scheme.

Although there are many studies in web caching, but research on web caching is still fresh. This section presents some existing web caching techniques based on ANN or fuzzy logic.

In [15], ANN has been used for making cache replacement decision. An object is selected for replacement based on the rating returned by ANN. This method ignored latency time in replacement decision. Moreover, the objects with the same class are removed without any precedence between these objects. An integrated solution of ANN as caching decision policy and LRU technique as replacement policy for script data object has been proposed in [16]. However, the most important factor in web caching, i.e., recency factor, was ignored in caching decision. Both pre fetching policy and web cache replacement decision has been used in [17]. The most significant factors (recency and frequency) were ignored in web cache replacement decision. Moreover, applying ANN in all policies may cause extra overhead on server. ANN has also been used in [6] depending on syntactic features from HTML structure of the document and the HTTP responses of the server as inputs. However, this method ignored frequency factor in web cache replacement decision. On other hand, it hinged on some factors that do not affect on performance of the web caching.

Although the previous studies have shown that the ANNs can give good results with web caching, the ANNs have the following disadvantage: ANNs lack explanatory capabilities, the performance of ANNs relies on the optimal selection of the network topology and its parameters, ANNs learning process can be time consuming, and ANNs are also too dependent on the quality and amount of data available [18, 19, 20].

The last fifteen years have seen development of a number of novel caching algorithms that have attempted to combine recency and frequency. There is an association between recency and frequency; if a recently used page is likely to be used soon, then such a page will be used frequently. The least recently frequently used (LRFU) policy is one of them [21, 22].

The LFFU policy associates a value with each block. This value is called CRF (Combined recency and frequency) and quantifies the likelihood that the block will be referenced in the near future. This value is calculated according to a mathematical equation that is going to mix recency and frequency and comes to a single decision parameter.

Although there is a correlation between recency and frequency but, as experiences show, this correlation is not the same for all kind of workloads. So, describing this relation with an exact mathematical formula is impossible. In real world situations, it would often be more realistic to find viable compromises between these parameters. For many problems, it makes sense to partially consider each of them. One especially straightforward method to achieve this is the modeling of these parameters through fuzzy logic. Using fuzzy rules we can combine these parameters as they are connected in real worlds. This research shares consideration of frequency, recency, and size in replacement decision.

BROWSER WEB CACHING

Caches are found in browsers and in any of the web intermediate between the user agent and the original server. Typically, a cache is located in the browser and the proxy [18]. A browser cache (client-side cache) is located in client. If we examine the preferences dialog of any modern web browser (like Internet Explorer, Safari or Mozilla), we will probably notice a cache setting. Since most users visit the same web site often, it is beneficial for a browser to cache the most recent set of pages downloaded. In the presence of web browser cache, the users can interact not only with the web pages but also with the web browser itself via the use of the special buttons such as back, forward, refresh or via URL rewriting. On other hand, a proxy cache is located in proxy. It works on the same principle, but in a larger scale. The proxies serve hundreds or thousands of users in the same way.

As cache size is limited, a cache replacement policy is needed to handle the cache content. If the cache is full when an object needs to be stored, then the replacement policy will determine which object is to be evicted to allow space for the new object. The goal of the replacement policy is to make the best use of available cache space, to improve Hit Ratios, and to reduce loads on the original server. The simplest and most common cache management approach is LRU algorithm, which removes the least recently accessed objects until there is sufficient space for the new object. LRU is easy to implement and proficient for uniform size objects such as in the memory cache. However, since it does not consider the size or the download latency of objects, it does not perform well in web caching [6].

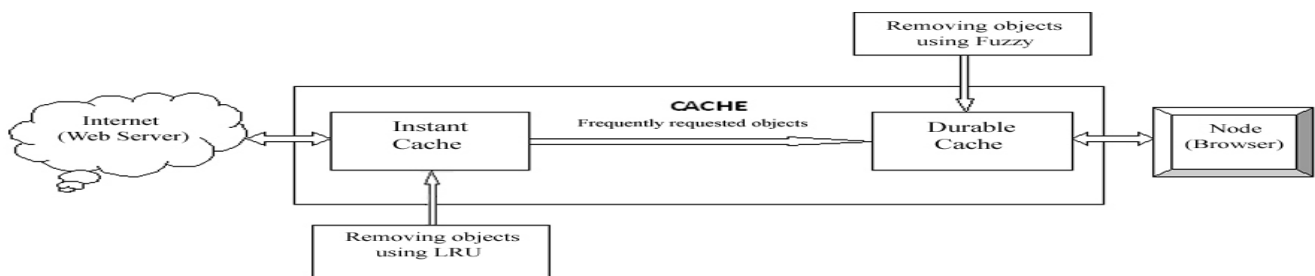
Most web browsers still concern traditional replacement policies [3, 4] that are not efficient in web caching [6]. In fact, there are few important factors of web objects that can influence the replacement policy [2, 9, 10]: recency, i.e., time of (since) the last reference to the object, frequency, i.e., number of the previous requests to the object, and size of the web object. These factors can be incorporated into the replacement decision. Most of the proposals in the literature use one or more of these factors. However, combination of these factors to get wise replacement decision for improving performance of web caching is not easy task because one factor in a particular situation or environment is more important than others in other environments [2, 9].

FRAMEWORK OF SMART BROWSER WEB CACHING SCHEME

FRAMEWORK

In this section, we present a framework of Smart Browser Web Caching Scheme. As shown in Fig. 1, the web cache is divided into instant cache that receives the web objects from the Internet directly, and durable cache that receives the web objects from the instant cache.

FIG. 1: A FRAMEWORK OF SMART BROWSER WEB CACHING SCHEME



When the user navigates specific web page, all web objects embedded in the page are stored in instant cache primarily. The web objects that visited more than once will be relocated to durable cache for longer caching but the other objects will be removed using LRU policy that removes the oldest object firstly. This will ensure that the preferred web objects are cached for longer time, while the bad objects are removed early to alleviate cache pollution and maximize the hit ratio. On the contrary, when the durable cache saturates, the Fuzzy system is employed in replacement process by classifying each object stored in durable cache to cacheable or uncacheable object. The old uncacheable objects are removed initially from the durable cache to make space for the incoming objects if all objects are classified as cacheable objects, then our approach will work like LRU policy.

The main feature of the proposed system is to be able to store ideal objects and remove unwanted objects early, which may alleviate cache pollution. Thus, cache space is used properly. The second feature of the proposed system is to be able to classify objects to either cacheable or uncacheable objects. Hence, the uncacheable objects are removed wisely when web cache is full. The proposed system is also adaptive and adjusts itself to a new environment. Lastly, the proposed system is very flexible and can be converted from a client cache to a proxy cache using minimum effort. The difference lies mainly in the data size at the server which is much bigger than the data size at the client.

FUZZY INFERENCE SYSTEM

Fuzzy logic is an extension of Boolean logic dealing with the concept of partial truth which denotes the extent to which a proposition is true. Whereas classical logic holds that everything can be expressed in binary terms (0 or 1, black or white, yes or no), fuzzy logic replaces Boolean truth values with a degree of truth. Degree of truth is often employed to capture the imprecise modes of reasoning that play an essential role in the human ability to make decisions in an environment of uncertainty and imprecision. Fuzzy Inference Systems (FIS) are conceptually very simple. They consist of an input, a processing and an output stage. The input stage maps the inputs, such as frequency of reference, recency of access, and so on, to the appropriate membership functions and truth values. The processing stage invokes each appropriate rule and generates a corresponding result. It then combines the results. Finally, the output stage converts the combined result back into a specific output value [23].

As discussed earlier the processing stage which is called inference engine is based on a collection of logic rules in the form of IF-THEN statements where IF part is called the “antecedent” and the THEN part is called the “consequent”. Typical fuzzy inference systems have dozens of rules. These rules are stored in a knowledgebase.

An inference engine tries to process the given inputs and produce an output by consulting an existing knowledgebase. The five steps toward a fuzzy inference are as follows:

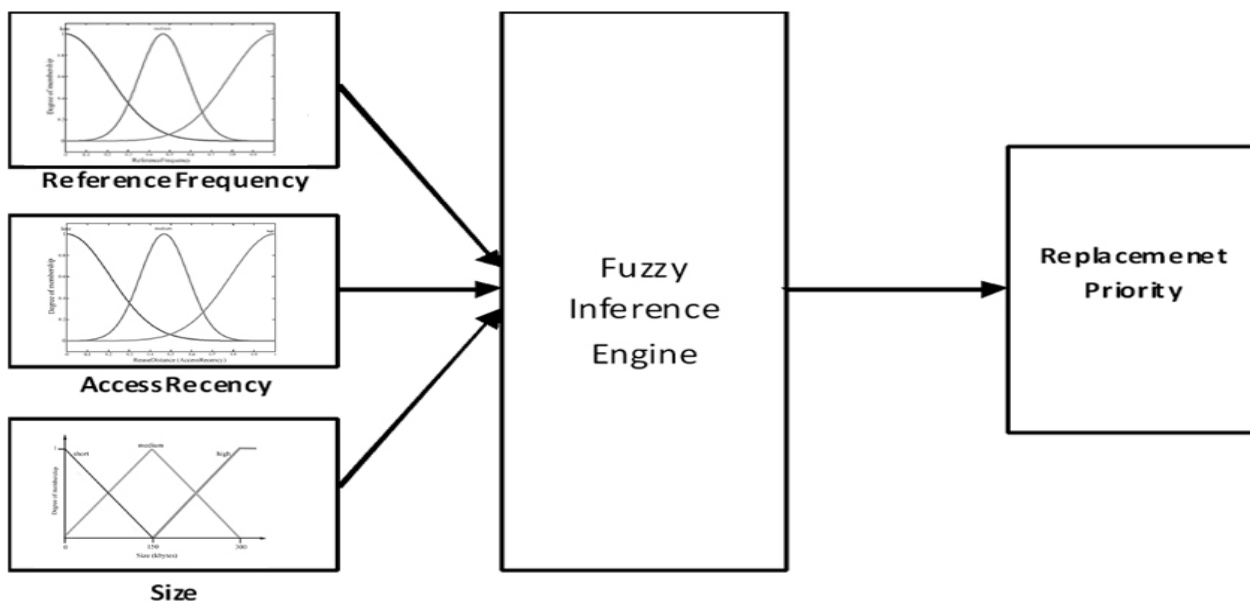
- Fuzzifying Inputs
- Applying Fuzzy Operators
- Applying Implication Methods
- Aggregating All Outputs
- Defuzzifying outputs

Fuzzifying the inputs is the act of determining the degree to which they belong to each of the appropriate fuzzy sets to which they belong to each of the appropriate fuzzy sets via membership functions. Once the inputs have been fuzzified, the degree to which each part of the antecedent has been satisfied for each rule is known. If the antecedent of a given rule has more than one part, the fuzzy operator is applied to obtain one value that represents the result of the antecedent for that rule. The implication function then modifies that output fuzzy set to the degree specified by the antecedent. Since decisions are based on the testing of all of the rules in an FIS, the results from each rule must be combined in order to make a decision. Aggregation is the process by which the fuzzy sets that represent the outputs of each rule are combined into a single fuzzy set. The input of the defuzzification process is the aggregated output fuzzy set and the output is a single value. This can be summarized as follows: mapping input characteristics to input membership functions, input membership function to rules, rules to a set of output characteristics, output characteristics to output membership functions, and the output membership function to a single-valued output.

THE PROPOSED MODEL FOR FUZZY INFERENCE SYSTEM

The block diagram of Fuzzy Inference system is presented in Figure 2.

FIG. 2: INFERENCE SYSTEM BLOCK DIAGRAM



In the proposed model, the input stage consists of three linguistic variables. The first one is the frequency of references. This parameter exploits the temporal locality of references. The second input variable is the recency of access i.e., time elapsed since last access. The last input variable is the size of the object. With the help of these three parameters this system is going to find out the replacement priority, which determines which page should be replaced.

The input variables mapped into the fuzzy sets as illustrated in Figures 3, 4, 5.

FIG. 3: FUZZY SETS CORRESPONDING TO FREQUENCY OF REFERENCES

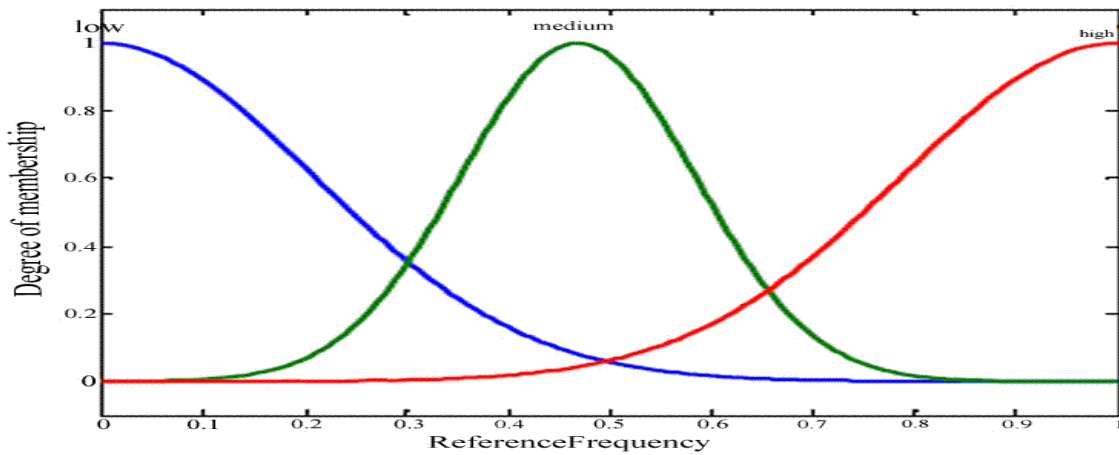


FIG 4: FUZZY SETS CORRESPONDING TO RECENCY OF ACCESS

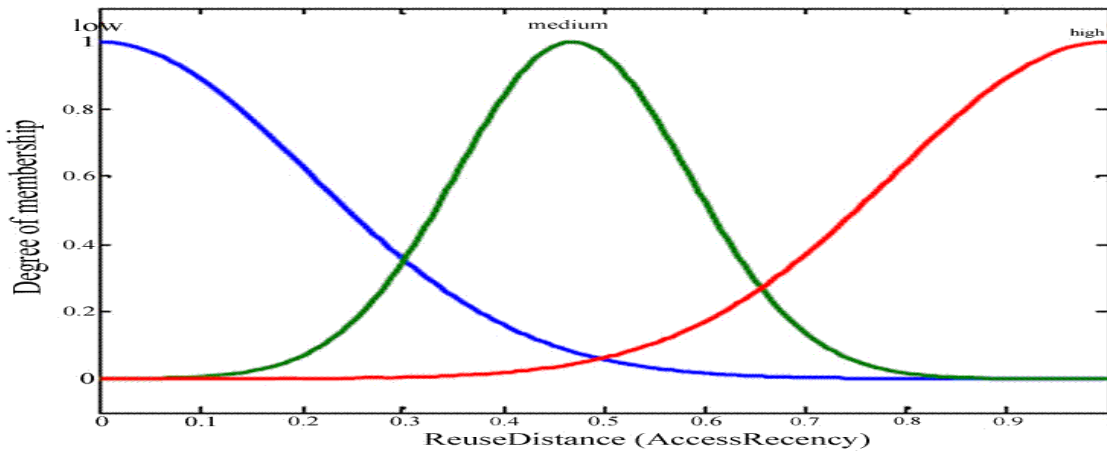
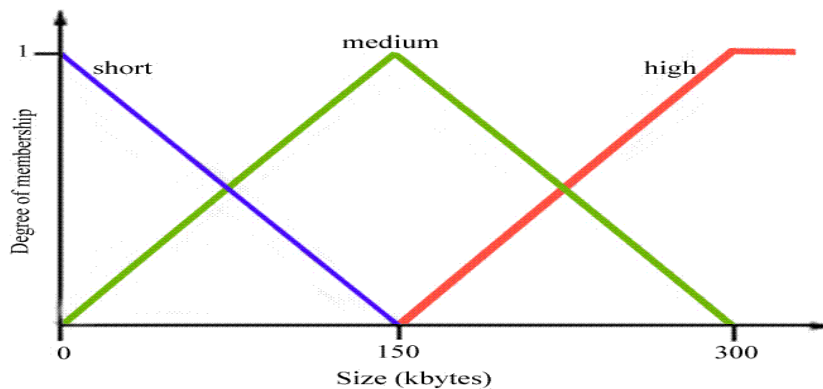


FIG. 5: FUZZY SETS CORRESPONDING TO SIZE



Fuzzy rules try to combine these parameters as they are connected in real world. Some of these rules are mentioned here.

FUZZY RULES

```

{
  If (size of the incoming object > size of free space in durable cache)
  If (ReferenceFrequency is High) and
  If (AccessRecency is Low) and
  If (Size is Short) then
    ReplacementPriority is Low
  If (ReferenceFrequency is Low) and
  If (AccessRecency is High) and
  If (Size is High) then
    ReplacementPriority is High
  If (ReferenceFrequency is Medium) and
  If (AccessRecency is Medium) and
  If (Size is Medium) then
    ReplacementPriority is Medium
}
    
```

In fuzzy inference system, the number of rules has a direct effect on its time complexity. So, having fewer rules may result in a better system performance.

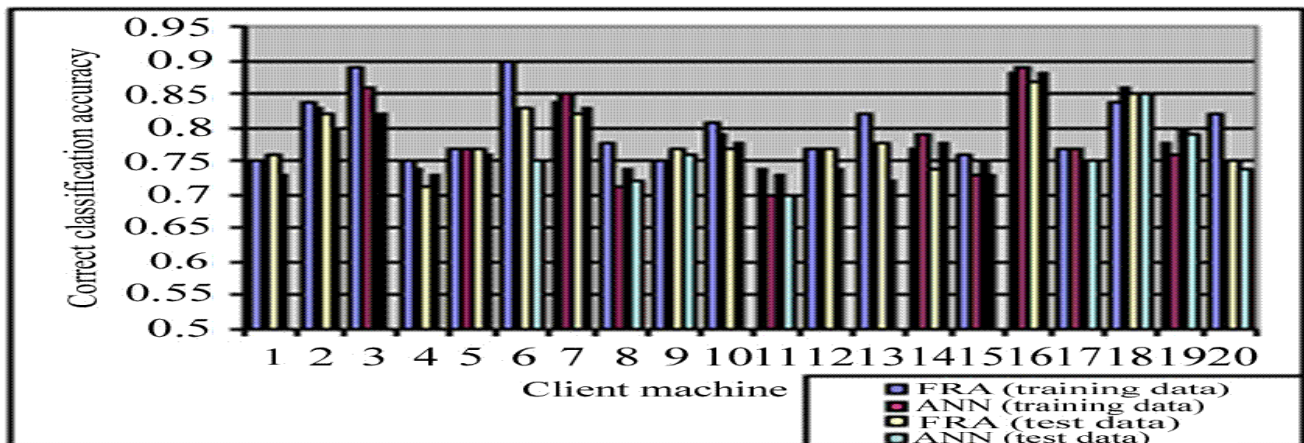
THE PROPOSED ALGORITHM (FRA)

1. For each used page P in Durable cache, feed its reference frequency, access recency and size. Consider the output as replacement priority of the page P.
2. Swap out the page with highest replacement priority.
3. If more than one page is having the highest priority then the page which is older is replaced.

PERFORMANCE EVALUATION

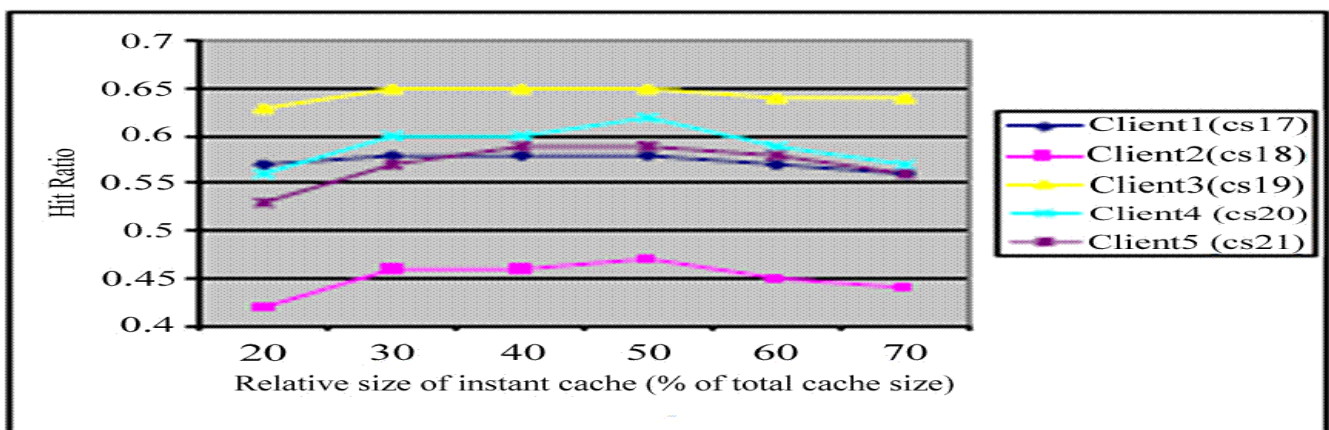
To evaluate the performance of the proposed method, trace driven simulations is developed in Java with various types of workloads. In the simulations, we compare our fuzzy algorithm with the LFU, LRU, and GDS replacement algorithms, as they represent a reference in the framework of web caching. Two performance metrics, Hit Ratio (HR) and Byte Hit Ratio (BHR) are used to evaluate the efficiency of the replacement algorithms. The Hit Ratio is a standard metrics in the cache domain that measures the fraction of requested pages retrieved in the cache. The Byte Hit Ratio is a metric specific for the web domain, which takes into account the non homogeneity of the sizes of web pages. It is a measure of the fraction of requested bytes retrieved directly from the cache. The following figure shows comparison of the proposed method (FRA) and ANN for 20 clients in both training and test data. As we can see FRA produce god classification accuracy. Both training and test data in most clients compared to ANN.

FIG. 6: COMPARISON OF THE CORRECT CLASSIFICATION ACCURACY FOR FRA AND ANN



In the proposed method, an obvious question would be the size of each cache. Many experiments were done to show the best size of each cache to ensure better performance. The simulation results of Hit Ratio of five clients with various sizes of instant cache are shown in figure 7.

FIG 7: HIT RATIO FOR DIFFERENT INSTANT CACHE SIZES

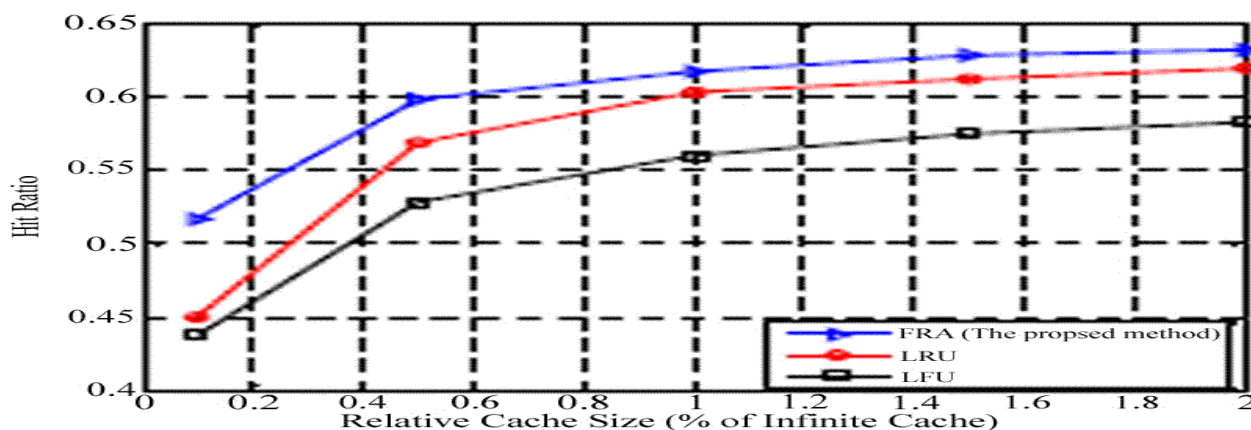


We can conclude that instant cache with size 40% and 50% of total cache size performed the best performance. Here the assumption is that the instant cache is 50% of the total cache size.

For each client, the maximum HR and BHR are calculated for a cache of infinite size. Then, the measures are calculated for a cache size 0.1%, 0.5%, 1%, 1.5% and 2% of the infinite cache size on the performance measures accordingly. The observed values of the measures are steady and close to maximum values after 2% of the infinite cache size in several policies.

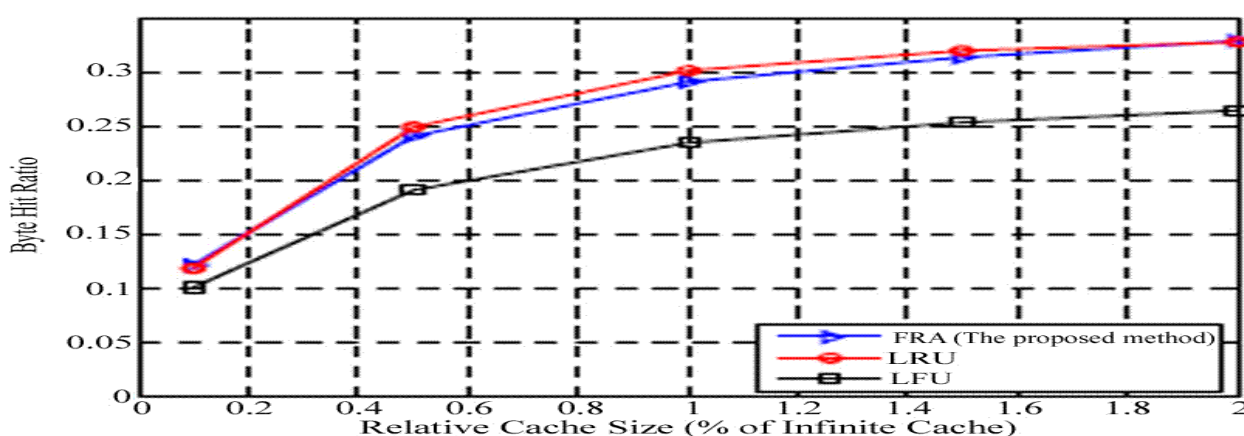
The performance of the proposed approach is compared to LRU and LFU policies that are the most common policies and form the basis for other web cache replacement algorithms [9]. Fig. 8, 9 show the comparisons of the average values of HR and BHR for twenty clients for the different policies with varying cache size. For the proposed method (FRA), HR and BHR include HR and BHR in both instant cache and durable cache.

FIG. 8: IMPACT OF CACHE SIZE ON HIT RATIO



As we can observe that the proposed method (FRA) has superior performance for HR compared to other policies in all conditions. This is mainly due to the capability of the proposed method in storing ideal objects that are important or preferable to the user. On the other hand BHR was the same or slightly worse than LRU.

FIG. 9: IMPACT OF CACHE SIZE ON BYTE HIT RATIO



CONCLUSION AND FUTURE WORKS

Web caching is one of the effective solutions to avoid Web service bottleneck, reduce traffic over the Internet and improve scalability of the Web System. Replacement policies play a key role for the effectiveness of web caching. This study proposed a new approach by splitting web browser cache to two caches, instant and durable cache, on a client computer for storing the ideal web objects and removing the unwanted objects in the cache for more effective usage. This study also described the use of fuzzy logic to improve durable cache replacement decisions. The choice of the pages to be evicted from the cache is based on qualitative reasoning that takes into account the page characteristics.

The experimental results show that this approach has better performance compared to the most common policies. More over, the results of simulations have shown that the fuzzy algorithm achieves good performance even for small cache size. This means that the fuzzy approach allows a dramatic savings of the disk space to be allocated for caching.

The future work will include more characteristics of pages such as freshness and consistency.

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AN APPROACH ON PREPROCESSING OF DATA STREAMS**AVINASH L. GOLANDE****STUDENT****DR. DY PATIL INSTITUTE OF ENGINEERING & TECHNOLOGY****PIMPRI****RAJESH D. BHARATI****ASST. PROFESSOR****DR. DY PATIL INSTITUTE OF ENGINEERING & TECHNOLOGY****PIMPRI****PRASHANT G AHIRE****ASST. PROFESSOR****PIMPRI CHINCHWAD COLLEGE OF ENGINEERING****PUNE****RAHUL A. PATIL****ASST. PROFESSOR****PIMPRI CHINCHWAD COLLEGE OF ENGINEERING****PUNE****ABSTRACT**

The recent advances in hardware and software have enabled the capture of different measurements of data in a wide range of fields. These measurements are generated continuously and in a very high fluctuating data rates. Examples include sensor networks, web logs, and computer network traffic. The storage, querying and mining of such data sets are highly computationally challenging tasks. Mining data streams is concerned with extracting knowledge structures represented in models and patterns in non stopping streams of information. The research in data stream mining has gained a high attraction due to the importance of its applications and the increasing generation of streaming information. Applications of data stream analysis can vary from critical scientific and astronomical applications to important business and financial ones. Algorithms, systems and frameworks that address streaming challenges have been developed over the past three years. In this review paper, we present the state of- the-art in this growing vital field.

KEYWORDS

component, data stream, VFDT.

INTRODUCTION

The intelligent data analysis has passed through a number of stages. Each stage addresses novel research issues that have arisen. Statistical exploratory data analysis represents the first stage. The goal was to explore the available data in order to test a specific hypothesis. With the advances in computing power, machine learning field has arisen. The objective is to find computationally efficient solutions to data analysis problems. Along with the progress in machine learning research, new data analysis problems have been addressed. Due to the increase in database sizes, new algorithms have been proposed to deal with the scalability issue. Moreover machine learning and statistical analysis techniques have been adopted and modified in order to address the problem of very large databases. Data mining is that interdisciplinary field of study that can extract models and patterns from large amounts of information stored in data repositories.

Recently, the data generation rates in some data sources become faster than ever before. This rapid generation of continuous streams of information has challenged our storage, computation and communication capabilities in computing systems. Systems, models and techniques have been proposed and developed over the past few years to address these challenges.

In this paper, we review the theoretical foundations of data stream analysis, mining data stream systems, techniques are critically reviewed. Finally, we outline and discuss research problems in streaming mining field of study. These research issues should be addressed in order to realize robust systems that are capable of fulfilling the needs of data stream mining applications. The paper is organized as follows. Section 2 presents the theoretical background of data stream analysis. In sections 3 and 4 mining data stream techniques and systems are reviewed respectively. Open and addressed research issues in this growing field are discussed in section 5. Finally section 6 summarizes this review paper. section 7 enlist the references.

THEORETICAL FOUNDATIONS

Research problems and challenges that have been arisen in mining data streams have its solutions using well established statistical and computational approaches. We can categorize these solutions to data-based and task-based ones. In data-based solutions, the idea is to examine only a subset of the whole dataset or to transform the data vertically or horizontally to an approximate smaller size data representation. At the other hand, in task-based solutions, techniques from computational theory have been adopted to achieve time and space efficient solutions. In this section we review these theoretical foundations

DATA-BASED TECHNIQUES

Data-based techniques refer to summarizing the whole dataset or choosing a subset of the incoming stream to be analyzed. Sampling, load shedding and sketching techniques represent the former one. Synopsis data structures and aggregation represent the later one. Here is an outline of the basics of these techniques with pointers to its applications in the context of data stream analysis.

Sampling : Sampling refers to the process of probabilistic choice of a data item to be processed or not.

Load Shedding: ItLoad shedding refers to the process of dropping a sequence of data streams.

Sketching: Sketching is the process of randomly project a subset of the features.

Synopsis Data Structures: Creating synopsis of data refers to the process of applying summarization techniques that are capable of summarizing the incoming stream for further analysis.

Aggregation: Aggregation is the process of computing statistical measures such as means and variance that summarize the incoming stream.

TASK-BASED TECHNIQUES

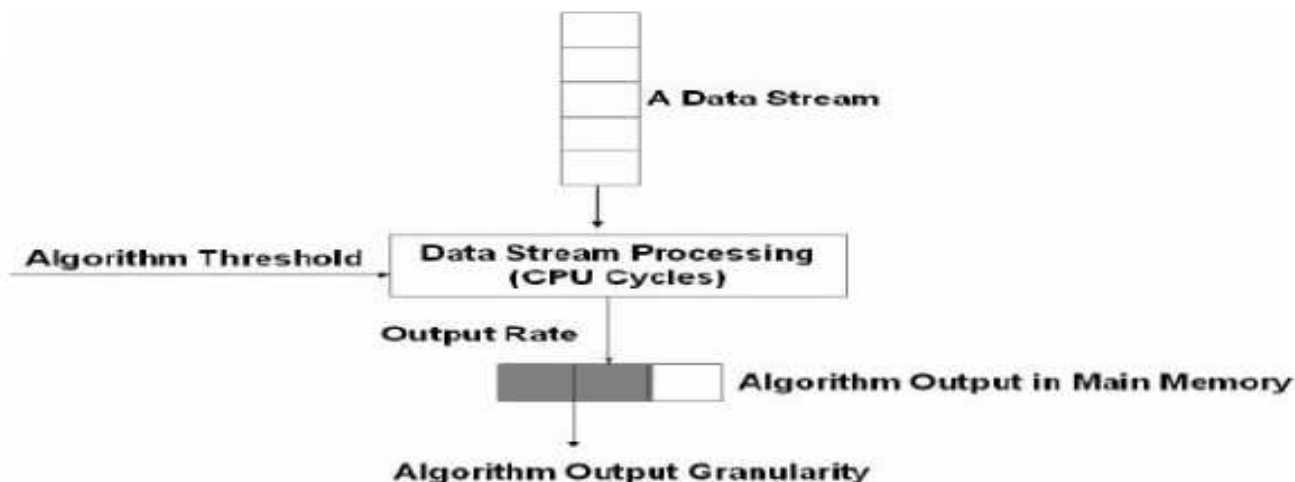
Task-based techniques are those methods that modify existing techniques or invent new ones in order to address the computational challenges of data stream processing. Approximation algorithms, sliding window and algorithm output granularity represent this category. In the following subsections, we examine each of these techniques and its application in the context of data stream analysis.

Approximation algorithms – they have their roots in algorithm design. It is concerned with design algorithms for computationally hard problems.

Sliding Window - The inspiration behind sliding window is that the user is more concerned with the analysis of most recent data streams.

Algorithm Output Granularity -The algorithm output granularity (AOG) introduces the first resource-aware data analysis approach that can cope with fluctuating very high data rates according to the available memory and the processing speed represented in time constraints.

FIG. 1: THE AOG ALGORITHM



MINING TECHNIQUES

Mining data streams has attracted the attention of data mining community for the last three years. Number of algorithms has been proposed for extracting knowledge from streaming information. In this section, we review clustering, classification, frequency counting and time series analysis techniques.

Clustering: Clustering can be considered the most important unsupervised learning problem; so, as every other problem of this kind, it deals with finding a structure in a collection of unlabeled data. A loose definition of clustering could be “the process of organizing objects into groups whose members are similar in some way”. A cluster is therefore a collection of objects which are “similar” between them and are “dissimilar” to the objects belonging to other clusters.

Classification: GEMM algorithm accepts a class of models and an incremental model maintenance algorithm for the unrestricted window option, and outputs a model maintenance algorithm for both window-independent and window dependent block selection sequence. Domingos et al. have developed VFDT. It is a decision tree learning systems based on Hoeffding trees.

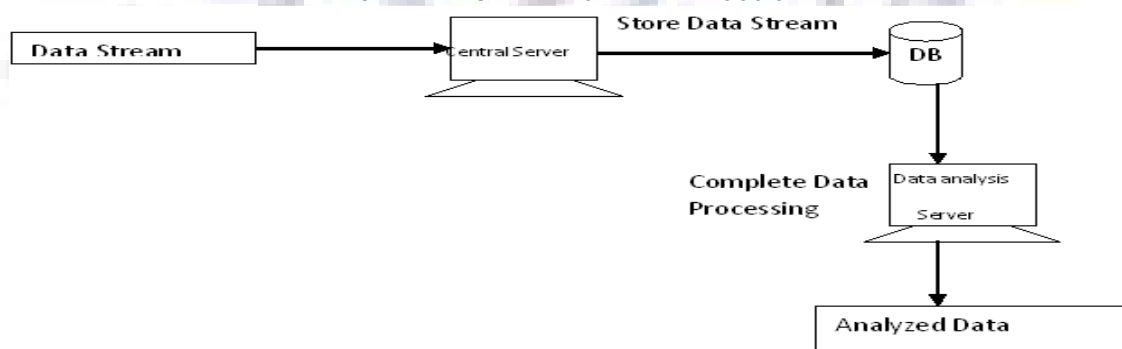
1. **FrequencyCounting:** Lightweight frequency counting LWF. It has the ability to find an approximate solution to the most frequent items in the incoming stream using adaptation and releasing the least frequent items regularly in order to count the more frequent ones.
2. **Time Series Analysis:** This representation allows dimensionality/numerosity reduction. They have demonstrated the applicability of the proposed representation by applying it to clustering, classification, indexing and anomaly detection. The approach has two main stages. The first one is the transformation of time series data to Piecewise Aggregate Approximation followed by transforming the output to discrete string symbols in the second stage

EXISTING SYSTEMS

In many scientific domains, especially those using sensors, the data is generated as a data stream, that is, the data arrives in sequential order in an infinitely long stream. As this data indicates the state of the system, we are interested in on-line, any-time algorithms which can analyze the data as it is being collected to determine if there are any anomalous events in the data.

Data stream mining is the process of extracting knowledge structure form continuous, rapid data records. Recent years, the researchers in data stream mining have received attention due to the importance of its applications and the increasing generation of streaming information. A variety of systems, models and technique have been proposed and developed to address the challenges in data stream mining.

FIG. 2: TRADITIONAL DATA STREAM ANALYSIS SYSTEM



Above fig. shows the existing data analysis processing system. In above system, data is analyzed statically. First, data stream from various sources are temporarily stored in central database server and then complete data is send to data analysis server, which perform all data-based technique on that data. After completing analyzing data is stored in another server.

RESEARCH ISSUES

Data stream mining is a stimulating field of study that has raised challenges and research issues to be addressed by the database and data mining communities. The following is a discussion of both addressed and open research issues. The following is a brief discussion of previously addressed issues is as follows:

1. Unbounded memory requirements due to the continuous flow of data streams.
2. Required result accuracy.
3. Transferring data mining results over a wireless network with a limited bandwidth.
4. Modeling changes of mining results over time.
5. Developing algorithms for mining results' changes
6. Visualization of data mining results on small screens of mobile devices.
7. Interactive mining environment to satisfy user requirements.
8. The integration between data stream management systems and the ubiquitous data stream.
9. Mining approaches.
10. The needs of real world applications.
11. Data stream pre-processing.
12. Model over fitting.
13. Data stream mining technology
14. The formalization of real-time accuracy evaluation.

RESULTS AND DISCUSSION

These techniques are used for reduction of large data set into small datasets. Sampling and sketching for the different data sets gives different output. For Ex: Given dataset consist of D records. If we implemented Sampling and Sketching on this dataset then it gives following output:

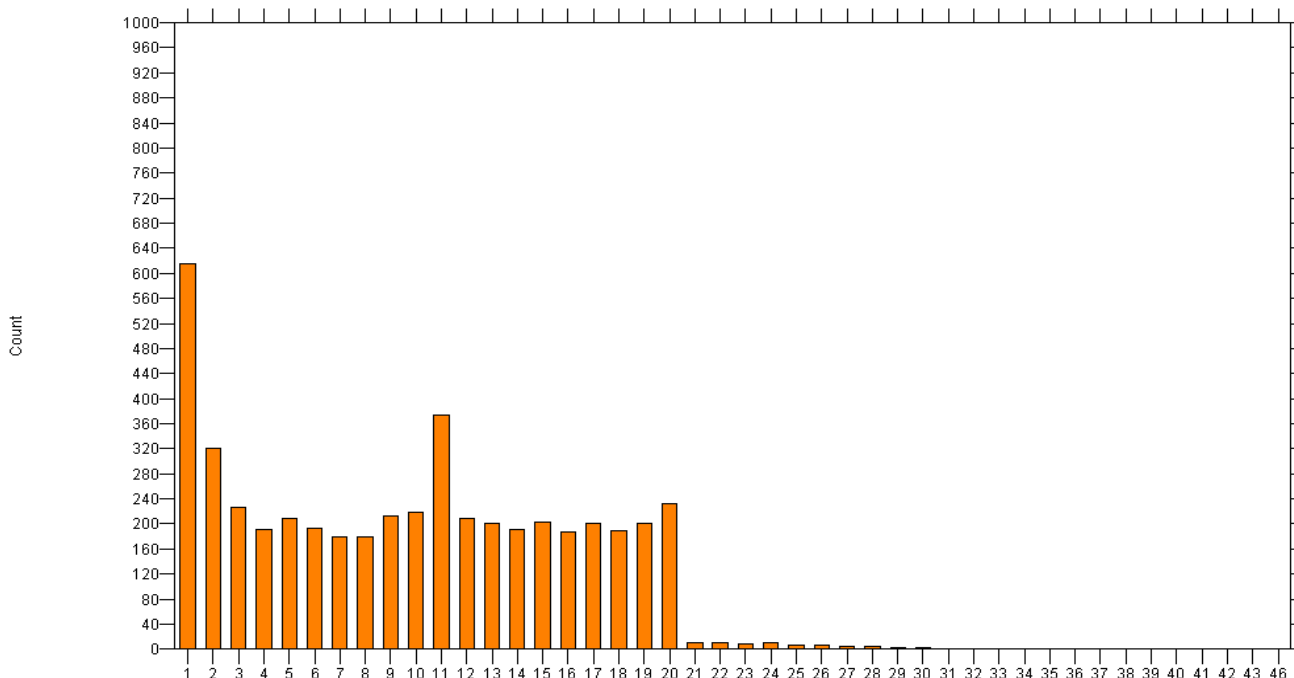
SAMPLING

- 1) **Nth Sampling:** In this method, we skipped number of record as per the value of N. If N is 'n' then output in record for above dataset is D/n. It means it will reduce the data (100-(D/n))%.
- 2) **Random Sampling:** In this method, we skipped number of record randomly. Random number is selected by this method and it will reduce the data It will skip the data on that random number. It will reduce the data approximately 50%. Reduction is depend upon the random number.
- 3) **Strata Sampling:** In this method, we skipped number of record depending upon the even and odd numbers. It generate random cluster and select even or odd cluster as per user decide. It will reduce the data approximately 60%.
- 4) **Biased-L2 Sampling:** In this method, we use sampling rate and penalty function. This penalty function is generated by random cluster. Penalty function reduces the constant number of record and useful for error reduction. It will reduce the data approximately 60%.

SKETCHING

Sketching is the process of randomly project a subset of the features. It is the process of vertically sample the incoming stream. Sketching has been applied in comparing different data streams and in aggregate queries. It gives the frequency of key attribute in whole data stream.

FIG. 3: HISTOGRAM FOR SKETCHING



We use KDD data set with 10000 records. Key attribute is srv_count. Graph shows the frequency of different values of server count (srv_count) for the given dataset.

CONCLUSIONS

The objective behind designing this tool was to make easy and familiar the concept of data analysis in data mining. We have successfully able to implement data based technique for data stream analysis. We have able to implement sampling, sketching and load shedding technique on data stream. In sampling, we have implemented four algorithms named Nth sampling, random sampling, Strata sampling and Deterministic Biased-L2 sampling. The main aim of our software is to analysis of data stream dynamically. When the data is dynamically analyzed then we don't need to store it in any intermediate server. We also increase the

efficiency of algorithms so that it will take less time to analyze the data. We use the queue which holds the 1000 records at a time. User can change the size of the queue.

SCOPE FOR FUTURE RESEARCH

We have successfully implemented two techniques of statistical model that is sampling and sketching. In future, user can implement remaining three techniques. We have implemented these techniques dynamically with higher efficiency.

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M-MRCA FIGHTER COMPETITION: INDIA'S ROAD IN SELECTING THE BEST IN ITS DEFENCE BUSINESS

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ABSTRACT

Eagle in the sky hunt the creatures of the ground, likewise aerial strikes in the battle field is the modern type of war fare the world witnessed in the recent era. The capacity of the aerial strikes makes the nation more powerful and helps the ground forces and the naval forces protect from the enemy attack, but the capacity of building the air ships are the toughest job. Hence procurement of the air ships may ease them; hence India has also put its step forward to purchase the air ships in a large quantity in the name of "Mother of all Defence Deal", the deal which has not yet done by any other nation.

KEYWORDS

M-MRCA, defence business.

INTRODUCTION

The air superiority in the war fare is the most important in any battle and importantly no one can touch you at the time of fight except by hostile interceptor fighter jet. Hence the roles of the fighter jet are extremely important. Even we can recollect the memory of the incident of the battle of Longewalla when an Indian fighter jets attached the Pakistani armoured vehicle and tanks and destroyed them in mass. Every stronger nation has this tactics of having the fighter jets but few can produce these fighter jets and sell it according to the diplomatic relation which the nation possess with the other nation. India is also one of the nations with other nation which had maintained the fighter aircraft for its defence. But the biggest problem of our air defence is that still we have not successfully built a multirole fighter jets. But having a good diplomatic bilateral relationship with Russia we have engaged in purchasing the fighter jets so far. At present Most of the IAF's 797 fighter jets are of soviet/Russian origin. These include the Mikoyan-gurevich MiG -21, MiG-27, MiG-29 as well as the Sukhoi Su-30MKI. Added to these, the Indian indigenous HAL Tejas (LCA), Anglo-French SEPECAT Jaguar and French Mirage 2000 aircraft, produced under license. But since the fighter jets has a life cycle of specific period it has to be decommission from the role which it had played and an upgraded modern fighter jet has to take place of the previous one. Hence now India is looking for the purchase of the aircrafts.

The Defence Ministry has allocated ₹ 62,000 crores for the purchase of these aircraft, making it India's single largest defence deal. This MRCA was greatly called as the "mother of all defence deal" in world. The MRCA tender was floated with the idea of filling the gap between its future Light Combat Aircraft and its in-service Su-30MKIs air superiority fighter. The contest featured six fighter aircraft: Boeing F/A-18E/F Super Hornet, Dassault Rafale, Eurofighter Typhoon, Lockheed Martin F-16 Fighting Falcon, Mikoyan MiG-35, and Saab JAS 39 Gripen.

REASONS FOR CALLING THIS BIGGEST DEAL**1. REPLACE THE AGING MIG 21**

In 1961, the Indian Air Force (IAF) opted to purchase the MiG-21 over several other Western competitors because the Soviet Union offered India full transfer of technology and rights for local assembly. In 1964, the MiG-21 became the first supersonic fighter jet to enter service with the IAF. Due to limited induction numbers and lack of pilot training, the IAF MiG-21 played a limited role in the Indo-Pakistani War of 1965. However, the IAF gained valuable experience while operating the MiG-21 for defensive sorties during the war. The positive feedback from IAF pilots during the 1965 war prompted India to place more orders for the fighter jet and also invest heavily in building the MiG-21's maintenance infrastructure and pilot training programs. By 1969, India had acquired more than 120 MiG-21s from the Soviet Union. On 29 February 2012 it was reported that India will phase out MIG-21s from 2014. Hence the decision of decommission of the MiG-21 has brought a gap in the run way of the air defence to determine which fighter jets would take place.

2. TEJAS DELAYED

The IAF planned to replace the MiG-21 fleet with the indigenously-built HAL Tejas (LCA) aircraft. Planned dates for the Tejas to enter service could not be met due to developmental delays and U.S. sanctions following the Pokhran II nuclear tests; these blocked the development of the FBW Flight Control System and the delivery of GE F404 engines — both crucial components of the aircraft. This meant that the IAF would have to take other steps to stem the decline in numbers. The Tejas first flew on 4 January 2001. Final tests were done in January 2011 and it is to enter operational service by 2013.

Hence to fill these gaps IAF projected a requirement for about 126 aircraft in 2001. Since there is a fall down in the strength of the Indian squadron from 45 to 39. There is an option for an additional 74 aircraft. Initial requirements appeared to be for a 20-ton class fighter aircraft with the Mirage 2000 as the strongest contender. However, the 20-ton MTOW limit requirement has reportedly been removed. Also, considering the delays in the bidding, it is very likely that the LCA would be ready for induction by then. The IAF then would require replacements for its frontline strike aircraft like the MiG-27 and Jaguar, which would be retiring by 2015.

India's future 5th -generation aircraft, namely, the Russo-Indian Sukhoi/HALFGFA and the indigenous Medium Combat Aircraft will not be ready before 2015. Thus, the MRCA tender is more likely to be a medium-weight aircraft (MTOW of 24 tons). This has led to a renaming of the competition as the Medium Multi-Role Combat Aircraft (MMRCA) tender.

CONTENDERS FOR THE MRCA

Six aircraft were bid for the order – the Swedish Saab Gripen, Eurofighter Typhoon, French Dassault Rafale, Russian Mikoyan MiG-35, and the American F-16IN and F/A-18IN Super Hornet ("IN" are the proposed Indian versions). Previously, Mikoyan and Dassault have been regular suppliers of aircraft for the Indian Air Force and in terms of transfers of technology, licensed production in India, personnel training, supply of spare parts, maintenance and upgrading. IAF pilots and technicians are familiar with earlier aircraft from those two aircraft manufacturers, and would need minimal retraining. Infrastructural and logistical support for maintenance and spares would also be easier for these aircraft compared to the unfamiliar Gripen, Typhoon, F-16 and F/A-18.

1. EUROFIGHTER TYPHOON

The Eurofighter Typhoon is a twin-engine multi-role canard-delta air superiority fighter Aircraft, designed and built by a consortium of European aerospace manufacturers through Eurofighter GmbH. Eurofighter is offering the Tranche-3 Typhoon for the Indian requirement, equipped with the CAESAR AESA radar. EADS has invited India to become a partner of the Eurofighter Typhoon programme if the Typhoon wins the contract, and will be given technological and development participation in future tranches of the Typhoon. Bernhard Gerwert, CEO of EADS Defence Department, elaborated that if India becomes the fifth partner of the Eurofighter programme, it will be able to manufacture assemblies for new Eurofighters.

In January 2010, EADS offered to include thrust vectoring nozzles (TVNs) with the Typhoon's Ej200 engines for India. Thrust vectoring will improve operational capabilities, and reduce fuel burn by up to 5% and increase thrust while supersonic cruising by 7%.



FIG 1: EUROFIGHTER TYPHOON

2. DASSAULT RAFALE

The Dassault Rafale is a French twin-engine delta-wing agile multi-role fighter aircraft designed and built by Dassault Aviation. The Rafale was brought in as the replacement for the Mirage 2000-5 that was originally a competitor for the tender, after the production lines for the Mirage closed down, as well as the entry of much more advanced aircraft into the competition. The Rafale has the advantage of being logistically and operationally similar to the Mirage 2000, which the IAF already operates and used with great success during the Kargil War. This would require fewer changes in the existing infrastructure of the IAF, which in turn will reduce cost. Moreover, being 100% French also provided Dassault a distinct edge over its competitors on the issue of technology transfer. Dassault claims that the Rafale has an advantage over many of the competitors because it is not subject to International Traffic in Arms Regulation (ITAR) restrictions.

While not included in the MRCA requirement, the French fighter has more configurations of potential interest for the IAF: a carrier-based version (the Rafale M) and a capability for nuclear strategic strike. Both of these particular versions are in use in the French Armed Forces. The French government has cleared full technology transfer of the Rafale to India, including that of the RBE-AA AESA radar which will be integrated into the Rafale by 2010 and also the transfer of software source code, which will allow Indian scientists to re-programme radar or any sensitive equipment if needed. Without the software source code, the IAF would have to specify mission parameters to foreign manufacturers to enable configuration of their radar, seriously compromising security in the process. Dassault has also offered to fit the GTX-35VS Kaveri engine into the Rafale, which if chosen, would greatly improve commonality with the HAL Tejas that will enter service into the IAF by 2010. On 31 January 2012 Rafale was declared the winner of the MMRCA competition, beating Eurofighter Typhoon on cost.



FIG 2: DASSAULT RAFALE

3. BOEING F/A-18E/F SUPER HORNET

The Boeing F/A-18E/F Super Hornet is a twin engine carrier based multirole fighter aircraft. The MMRCA contract represents a prime opportunity for U.S. defence companies to gain a foothold in the Indian defence market, which is estimated to be about US\$100 billion in the next 10 years. Initially, the Request for Information (RFI) was not issued to Boeing, which decided to field the Super Hornet. The U.S. Government allowed Boeing to participate in the RFI, and later gave permission for RFP (Request for Proposal) as well. However, any sale of aircraft would have to be approved by the U.S. congress. Initial reactions within the IAF were enthusiastic, although there were apprehensions of support issues in case of future sanctions. The US stated that there would have been some restrictions and pre-conditions for the purchase of the aircraft.

On 24 April 2008, Boeing (through the U.S. Embassy in New Delhi) submitted their 7000-page proposal to the Ministry of Defence, before the 28 April deadline for the submission for proposals. The Super Hornet variant being offered to India, the F/A-18IN, is based on the F/A-18E/F model flown by the U.S. Navy and currently being built for the Royal Australian Air Force (RAAF). Raytheon's APG-79 AESA radar was offered on the aircraft. There would have been limited Transfer of Technology on the radar, up to the level approved by the US Government. However, Raytheon stated that the level of TOT offered would be compliant with the RFP requirements. Delivery of the first F/A-18IN Super Hornets could have begun approximately 36 months after contract award.

Boeing proposed joint manufacture of the jets with Indian partners. It also planned to offset the cost by setting up a US\$100 million maintenance and training hub in Nagpur. This is the first time the Super Hornet has been offered for production in a foreign country. On 14 February 2008, Boeing and Tata Industries agreed to form a joint-venture company. The new entity formed in February 2008, will supply components for Boeing military aircraft, including the Super Hornet. In order to satisfy its offset requirements, Boeing has signed long-term partnership agreements with Hindustan Aeronautics Limited (HAL), Tata industries, and Larsen and Toubro.



FIG 3: BOEING F/A-18E/F SUPER HORNET

4. LOCKHEED MARTIN F-16IN SUPER VIPER (F-16 BLOCK 60)

India initially sent the RFI for F-16C/D Block 52+ configuration aircraft. On 17 January 2008, Lockheed Martin offered a customized version of the F-16, the **F-16IN Super Viper** for the Indian MMRCA contract. The F-16IN, which is similar to the F-16 Block 60, will be a 4.5 generation aircraft. Lockheed Martin has stated that it will be the most advanced F-16 variant developed. It will be more advanced than the F-16 Block 52s that the Pakistan Air Force has acquired.

Lockheed Martin described the F-16IN as "the most advanced and capable F-16 ever." Based closely on the F-16E/F Block 60 as supplied to the UAE, the features on the F-16IN include:

- Conformal Fuel Tanks (CFTs) – This will give the F-16IN a combat range of 1700 km with 1500 kg weapons load.
- Northrop Grumman AN/APG-80 AESA (active electronically scanned array) radar. This is the same radar in service on the F-16 Block 60s in service in UAE.
- General Electric F110-132A engine with 143 kN full reheat thrust with FADEC Controls.
- Electronic warfare suites and infra-red searching.
- Advanced all-colour glass cockpit.
- Helmet-mounted cueing system.

Lockheed Martin offered to sell India the F-35 Lightning II aircraft in the future, as replacements, if the F-16 was chosen. The capabilities of the F-16 appear to be similar to the Mirage 2000s that the IAF currently operates. The F-16 is also more prone to pilot errors than the Mirage 2000H, which would also work against the F-16.



FIG 4: LOCKHEED MARTIN F-16IN SUPER VIPER

5. MIKOYAN MiG-35

The **Mikoyan MiG-35** is the production version of the latest MiG-29 and incorporates mature development of the MiG-29M/M2 and MiG-29K/KUB technology, such as glass cockpit and fly-by-wire technology. The IAF already operates MiG-29s, and the Navy has ordered MiG-29K/KUBs for its INS Vikramaditya (formerly Admiral Gorshkov) and INS vikrant-class aircraft carriers.

Since the IAF already has maintenance and upgrade facilities for the MiG-29, this would mean that the fighter could be brought into service with a minimum of expenditure on infrastructure. A major advantage of MiG-35 is that Russia is committed to transfer the plane's technology, including the new advanced Zhuk radar-AE Active Electronically scanned Array radar, to India. In the past, Russia has provided customised versions of military equipment such as the Su-30MKI and continued to provide support for equipment during international sanctions. However, Russian product support, especially for the MiG-29 fleet has been inadequate. Additionally, buying the MiG-35 would mean an almost total dependence on a single supplier for India's entire fighter fleet. Recent Russian demands for renegotiation of earlier contracts, the sale of RD-93 engines (a variant of the Klimov RD-33 that powers the Indian MiG-29s) to Pakistan for its JF-17 Thunder aircraft and concurrently supplying combat aircraft to China has also caused concern in New Delhi.



FIG 5: MIKOYAN MiG-35

6. SAAB GRIPEN NG

The **Saab JAS 39 Gripen NG** is a fighter aircraft manufactured by the Swedish aerospace company Saab. The aircraft is in service with the Swedish, Czech, Hungarian, and the South African air forces. The Royal Thai Air force has also received the aircraft. The Gripen was one of the aircraft that the IAF sent the Request for Information. The Gripen participated at Aero India 2007, where one JAS 39C (single seater) and two JAS 39D (two-seater) variants were brought. Gripen International offered the Gripen IN, a version of the Gripen NG (Next Generation) for India's competition. The Gripen NG has increased fuel capacity, more powerful powerplant, higher payload, upgraded avionics and other improvements.



FIG 6: SAAB GRIPEN NG

COMPARISON OF THE AIRCRAFT

Aircraft:	Dassault Rafale	Eurofighter Typhoon	F-16 Super viper	F/A-18E/F super Hornet	JAS 39	MiG-35 Fulcrum
Country of origin:	France	German, Italy, Spain, UK	United states	United states	Sweden	Russia
Manufacturer:	Dassault aviation	Eurofighter GmbH	Lockheed Martin	Boeing Defence space and security	Saab	RAC-MiG
Length:	15.27 m (50.1 ft)	15.96 m (52 ft 5 in)	15.03 m (49 ft 3 in)	18.31 m (60 ft 1¼ in)	14.1 m (46 ft 3 in)	17.3 m (56 ft 9 in)
Wingspan	10.80 m (35.4 ft)	10.95 m (35 ft 11 in)	10.0 m (32 ft 8 in)	13.62 m (44 ft 8½ in)	8.4 m (27 ft 7 in)	12 m (39 ft 4 in)
Height:	5.34 m (17.4 ft)	5.28 m (17 ft 4 in)	5.09 m (16 ft 7 in)	4.88 m (16 ft)	4.5 m (14 ft 9 in)	4.7 m (15 ft 5 in)
Wing area:	45.7 m ² (492 ft ²)	50.0 m ² (538 ft ²)	27.9 m ² (300 ft ²)	46.5 m ² (500 ft ²)	30.0 m ² (323 ft ²)	38.0 m ² (409 ft ²)
Empty weight:	9,500 kg (20,940 lb)	11,000 kg (24,250 lb)	9,979 kg (22,000 lb)	14,552 kg (32,081 lb)	7,100 kg (15,650 lb)	11,000 kg (24,280 lb)
Maximum payload:	9,500 kg (21,000 lb)	7,500 kg (16,500 lb)	7,800 kg (17,200 lb)	8,050 kg (17,750 lb)	5,300 kg (11,680 lb)	6,500 kg (14,400 lb)
Maximum Takeoff Weight (MTOW):	24,500 kg (54,000 lb)	23,500 kg (51,800 lb)	21,800 kg (48,000 lb)	29,937 kg (66,000 lb)	14,300 kg (31,400 lb)	29,000 kg (63,900 lb)
Powerplant:	2× SNECMA M88-2	2× EUROJET EJ200	1× GE F110-132	2× GE F414-400	1× GE F414G	2× KLIMOV RD-33MK
Thrust:	50 kN each (11,250 lbf)	60 kN each (13,500 lbf)	84 kN (19,000 lbf)	62 kN each (14,000 lbf)	62.3 kN (14,000 lbf)	53 kN each (11,900 lbf)
• Dry thrust:						
• Afterburner thrust:	75 kN each (17,000 lbf)	90 kN each (20,250 lbf)	144 kN (32,500 lbf)	98 kN each (22,000 lbf)	98 kN (22,000 lbf)	88 kN each (19,840 lbf)
Fuel: • Internal	4,700 kg	4,996 kg	3,265 kg	F/A-18E: 6,780 kg, 5 tanks, total 7,381 kg	3,360 kg	4,800 kg
• External	7,500 kg		5,880 kg		3,800 kg	
External stations:**	14 (5 'wet')	13 (3 'wet')	11 (3 'wet')	11 (5 'wet')	10 (4 'wet')	9 (3 'wet')
Maximum speed:	Mach 1.8+ (Supercruise: Mach 1+)	Mach 2.0+ (Supercruise: Mach 1.2)	Mach 2.05 800 KCAS	Mach 1.8	Mach 2.0+ (Supercruise: Mach 1.2)	Mach 2.25 Mach 1.2
• At sea level						
Ferry range:	3,700+ km	3,790 km	4,220 km	3,054 km	2,500 km 4,075 km	2,000 km 3,000 km with 3 drop tanks
• Unrefueled:						
• Extl. tanks						
Combat radius:	1,800 km	1,390 km on air defence with 10-min loiter	550 km on a hi-lo-hi mission with six 1,000 lb (450 kg) bombs	722 km	1300 km with six AAMs + drop tanks, and 30 min on station	1000 km
Service ceiling:	17,000 m (56,000 ft)	19,812 m (65,000 ft)	18,000 m (60,000 ft)	15,000 m (50,000 ft)	15,240 m (50,000 ft)	17,500 m (57,400 ft)
Rate of climb:	305 m/s (60,000 ft/min)	315 m/s (62,000 ft/min)	254 m/s (50,000 ft/min)	228 m/s (44,882 ft/min)	N/A	330 m/s (65,000 ft/min)
Thrust/weight:	1.13	1.18	1.1	0.93	1.18	1.1
Thrust vectoring:	None	Thrust Vector upgrade has been offered	None	None	None	May be fitted with thrust vectoring
Runway needed:	400 metres (1,300 ft)	700 metres (2,300 ft)				
Unit cost:	US\$84.48 million €64 million	US\$108 million €80 million as of 2009	US\$50 million	US\$55 million as of 2011	US\$48 million	US\$38.5 million

Source: http://en.wikipedia.org/wiki/Indian_MRCA_competition

SHORTLISTING AND SELECTION OF THE AIRCRAFT

Recently two aircraft was shortlisted, they are Eurofighter Typhoon and Dassault Rafale. But the mother of India's defence deals, the Rs 62,000-crore contract for the medium multi-role combat aircraft (MMRCA) Rafale that was won by the French company Dassault Aviation, may become a bag of woes for the UPA government. Rafale bagged the deal because its competitor, Eurofighter Typhoon, was more expensive. The French jet was declared as L-1, the lowest bid, after the evaluation of the commercial bids made by the different companies. But highly placed sources said two senior officials of the defence ministry have questioned the methods adopted by the contract negotiation committee which concluded that Rafale was the lowest bidder. The two officials - additional financial advisor and a joint secretary in the ministry Prem Kumar Kataria, and finance manager (air) R.K. Arora - are members of the negotiation committee that comprises senior ministry officials and Indian Air Force (IAF) officers. The two officials noted that certain assumptions had been made about Rafale's bid to declare it as the lowest bidder, but no one had validated it. The officials initially refused to sign the minutes of the committee. They later signed after making their reservations known.

The defence ministry announced a formal request for proposal in 2007. First, the submitted proposals were technically evaluated to check for compliance with IAF's operational requirements. Then extensive field trials were conducted. Finally, the shortlisted vendors' commercial proposals were examined and compared. According to sources, while evaluating the commercial bids, a new system was followed that not only took into account the unit prices but also calculated the 'life cycle costs' - which takes into account the cost of maintenance and spares for the period, estimated at 40 years, the aircraft would remain operational.

CONCLUSION

Where there is a threat there will be an inner born defence, even the smallest country like Israel which is surrounded by the hostile nation, has established its own powerful defence. Hence India is also surrounded by the hostile nations like Pakistan and china and it is very necessary to look for the greater defence for its survival in the future and hence India is developing in all fields of land, water and air. The air is the one which India is deficient in and it has been recorded that the decrease in the squadron. And when it cannot produce its own jets then it has to purchase from the other nation. Hence the concept of bidding was brought and proved at one end that it can attract the world towards it and also can avoid purchasing from only one vendor.

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CONSUMER BUYING BEHAVIOR & CUSTOMER SATISFACTION LEVEL TOWARDS HERO MOTOCORP MOTORCYCLE: A CASE STUDY

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ABSTRACT

A customer is the most important Visitor on our premises. He is not dependent on us we are dependent on him. He is not an interruption on our work. He is the purpose of it. We are not doing him a Favor of by serving him. He is doing us a favor By giving us the opportunity to do so". The main aim of marketing is meet and satisfy target customers need and wants buyer behavior refers to peoples or organization conduct activities and together with the impact of various influence on them towards making decision on purchase of product and services in a market. The field of consumer behavior studies how individuals, groups and organization select, buy, use and despise of goods, service, ideas, experience to satisfy their needs and desires understanding consumer behavior and knowing customer are never simple. The wealth of products and service produced in a country make our economy strong. THE behavior of human being during the purchase is being termed as "Buyer Behavior". Customer says one thing but do another. They may not be in touch with their deeper motivations. They are responding to influences that change their mind at the last minute. A buyer makes take decision whether save or spend money. Satisfaction is a person's feelings of pleasure or disappointment resulting from comparing a product's perceived performance (or outcome) in relation to his or her expectation. As this definition makes clear, satisfaction is a function of perceived performance and expectation. If the performance falls short of expectations, the customer is dissatisfied. If the performance matches the expectations, the customer is satisfied. If the performance exceeds expectations, the customer is highly satisfied or delighted. Many companies are aiming for high satisfaction because customers who are just satisfied still find it easy to switch when a better offer comes along. Those who are highly satisfied are much less ready to switch. High satisfaction creates an emotional bond with the brand, not just a rational preference the result is high customer loyalty. Over 35 years ago, Peter Druker observed tha a company's first task is "to create customers" But today's customers face a vast array of product and brand choices, prices, and suppliers. How do customers make their choices? We believe that customers estimate which offer will deliver the most value. Customers are value maximizes, within the bounds of search costs and limited knowledge, mobility, and income.

KEYWORDS

Disposal, Dissatisfaction, Hero MotoCorp, Mass Media , Satisfaction.

INTRODUCTION

A customer is the most important Visitor on our premises. He is not dependent on us we are dependent on him. He is not an interruption on our work. He is the purpose of it. We are not doing him a Favor of by serving him. He is doing us a favor By giving us the opportunity to do so".

The main aim of marketing is meet and satisfy target customers need and wants buyer behavior refers to peoples or organization conduct activities and together with the impact of various influence on them towards making decision on purchase of product and services in a market. The field of consumer behavior studies how individuals, groups and organization select, buy, use and despise of goods, service, ideas, experience to satisfy their needs and desires understanding consumer behavior and knowing customer are never simple. The wealth of products and service produced in a country make our economy strong. THE behavior of human being during the purchase is being termed as "Buyer Behavior". Customer says one thing but do another. They may not be in touch with their deeper motivations. They are responding to influences that change their mind at the last minute. A buyer makes take decision whether save or spend money. **Satisfaction** is a person's feelings of pleasure or disappointment resulting from comparing a product's perceived performance (or outcome) in relation to his or her expectation. As this definition makes clear, satisfaction is a function of perceived performance and expectation. If the performance falls short of expectations, the customer is dissatisfied. If the performance matches the expectations, the customer is satisfied. If the performance exceeds expectations, the customer is highly satisfied or delighted. Many companies are aiming for high satisfaction because customers who are just satisfied still find it easy to switch when a better offer comes along. Those who are highly satisfied are much less ready to switch. High satisfaction creates an emotional bond with the brand, not just a rational preference the result is high customer loyalty. Over 35 years ago, Peter Druker observed tha a company's first task is "to create customers" But today's customers face a vast array of product and brand choices, prices, and suppliers. How do customers make their choices? We believe that customers estimate which offer will deliver the most value. Customers are value maximizes, within the bounds of search costs and limited knowledge, mobility, and income. They form an expectation of value and act on it. Whether or not the offer lives up to the value expectation affects both satisfaction and repurchase probability. Customer delivered value is the difference between total customer value and total customer cost. Total customer value is the bundle of benefit customers expect from a given product or service. Total customer cost is the bundle of costs customers expect to incur in evaluating, obtaining, using, and disposing of the product or service. Buyers operate under various constraints and occasionally make choices that give more weight their personal benefit than to the company's benefit. However, delivered value maximization is a useful framework that applies to many situations and yields rich insights. Here are its implications: First, the seller must assess the total customer value and total customer cost associated with each competitor's offer to know his or her own offer rates in the buyer's mind. Second, the seller who is at a delivered value disadvantage has two alternatives. The seller can try to increase total customer value or to decrease total customer cost. The former calls for strengthening or augmenting the offer's product, service, Personnel, and image benefits

DEFINITION OF BUYER BEHAVIOR

Buyer behavior is "all psychological, Social and physical behaviors of potential customers as they become aware of evaluate, purchase, consume and tell others about products and service.

CUSTOMER BUYING DECISION PROCESS

There are following five stages in consumer buying decision process.

1. Problem Identification

The buying process starts when the buyer recognizes a problem or need. The need can be triggered by internal or external stimuli. Marketers need to identify the circumstances that trigger a particular need. By gathering information from a number of consumers, Marketers can identify the most frequent stimuli that spark an interest in a product category. They can then develop marketing strategies that trigger consumer interest.

2. Information Search

The consumer tries to collect information regarding various products and service. Through gathering information, the consumer learns about competing brands and their features. Information may be collected from magazines, catalogues, retailers, friends, family members, business association, commercial, chamber of commerce, telephone directory, trade fair etc. Marketers should find out the source of information and their relative degree of importance to the consumers.

Personal Sources: Family, Friends, neighbor, as acquaintances.

Commercial Source: Advertising, sales persons, dealers, packaging, displays.

Public Sources: Mass media, consumer, rating organization.

Experimental Sources: Handling, Examine, using the product.

3. Evaluation of alternative

There is no single process used by all consumers by one consumer in all buying situations. There is several First, the consumer processes, some basic concepts are:

First, the consumer is trying to satisfy need.

Second, the consumer is looking for certain benefits from the product solutions.

The marketer must know which criteria the consumer will use in the purchase decision.

4. Choice of purchasing decision

From among the purchase of alternatives the consumer makes the solution. It may be to buy or not to buy. If the decision is to buy. The other additional decisions are:

Which type of bike he must buy?

From whom do you buy a bike?

How the payment to be made? And so on.

The marketer up to this stage has tried every means of influence the purchase behavior, but the choice is properly consumers. In the evaluation stage the consumer forms preferences among the brands in the choice set. The consumer may also form an intention to buy the most preferred brand.

5. Post Purchase Behavior

After purchase the product, the consumer will experience the same level of product. The marketer's job not end when the product is buying must monitor post-purchase satisfaction, post-purchase action, post purchase use and disposal.

❖ Post Purchase Satisfaction:

The customer, satisfaction is a function of closeness between the buyer, expectation and the products perceiver performance. The larger the gap between expectation and performance, the greater the consumer dissatisfaction.

❖ Post Purchase Action:

The consumer, satisfaction or dissatisfaction with the product influence subsequent behavior. If the consumer satisfied, he or she will exhibit a higher probability of purchasing the product again. Dissatisfaction consumer may abandon and return the product.

❖ Post-Purchase Use or Disposal:

The marketer should also monitor new buyers use and dispose of the product. If the consumer store the product in a close, the product is probably not very satisfying. If the consumer throws the product away, the marketer needs to know how they dispose of it: especially it can hurt the environment.

STATEMENT OF THE PROBLEM

The Uttar Kannada District has now on taking new phase in the development of transportation it is observed that any development of transport facilities provided. People feel it is very essential to remain very convenient with the transportation otherwise it find very difficult to coup with the time factor. On the other hand, Customer satisfaction has been gaining day by day by its own importance may be because of oriented marketing concept where customer is the king of the market. Consumer behaviour lies in the customer perception and his feedback governs on the entire market psychology, so motorcycle are essentials component of anybody life living style to gain the present transport phenomena.

SCOPE OF THE STUDY

The term consumer behaviour refers to the behaviour that consumer's display in searching for, purchasing, using, evaluating & disposing of products % services that they expect, will satisfy their needs. Consumers are highly complex individuals, subject to a variety of psychological & sociological needs apart from their survival needs. Needs 7 priorities of diff. Consumer segments differ drastically? Present day consumers have wide range of effort on the modes & means of transport.

OBJECTIVES OF THE STUDY

- ❖ To know consumer behaviour for purchase of two wheeler bike.
- ❖ To identify the factors which influences on consumer decision?
- ❖ To know which media play important role for purchasing bike.
- ❖ To study who is the decision maker in purchasing bike
- ❖ To study whether customers are satisfied with staff and services or not
- ❖ To identifying possible areas of Improvement.
- ❖ To offer suggestions for promotion & development of Hero MotoCorp MotorCycle.

RESEARCH METHODOLOGY

Both primary and secondary data was collected.

PRIMARY DATA

The study entitled "Consumer buying behaviour & customer satisfaction level towards Hero MotoCorp Motorcycle" is carried out in Uttar Kannada district. To gather relevant information, structured questionnaire were used for consumers.

➤ TYPES IF QUESTIONS

The types of questions asked during the study are "Straight Forward and Limited Probing"

Total No of Questions- 11

Total No of close ended questions- 09

Total no of open ended questions-2

THE SAMPLE

For the study purpose consumer is conducted. The sample size for consumers was 50. The study is conducted in Uttar Kannada district with special reference to Shree Balaji Motors Karwar. Personal Interview is taken as a tool for the contact method. In which the Personal Interview conducted with the customers of Uttar kannada District.

LIMITATIONS OF THE STUDY

Customers may not always follow what they have stated in their response. Thus the degree of reliability of responses cannot always be taken as accurate & sound. The study is constrained with certain limitations.

Limitations;

- Size of the sample is small.
- They study is limited to Uttar Kannada District.
- The period of study is limited.

CONSUMER BEHAVIOR ANALYSIS

The whole behavior of a person while making purchase and satisfied with feedback of product may be termed as customer satisfaction.. It is the attempt and prediction of human actions in buying role. In other words it is the process whereby individual divide weather what, when ho and from whom to purchase goods and services. Thus in consumer behavior of satisfaction we consider not only why, how and what people but other fact also such as where, how and under what circumstances the purchase are made. In this process the consumer deliberate within himself is finally get maximum utility. Customer behavior has assumed great importance in customer marketing, planning and management. Thus it may say that in the interest of effective and fruitful marketing decision, marketer must develop on understanding of the consumer satisfaction in the buying process and their union influencing the consumer behavior science.

TABLE 1: AGE WISE CLASSIFICATION

Age (In Year)	No of Respondents	Percentage
18-20	12	24
21-25	15	30
26-30	08	16
31-35	07	12
36-40	06	14
41-50	02	04
Total	50	100

Source; Field Survey

INTERPRETATION

Above chart clearly indicates are 24% (12) respondents in age group of 18-20, 30%(15) of respondents in age group of 21-25, 16%(8) respondents in age group of 26-30, 12%(6) respondents in age group of 31-35, 14%(7) and 45(02) respondents are come in 36-40and 41-50. Means the chart indicates that highest no of respondents purchasing motorcycles in the age between 21-25.

TABLE 2: AGE WISE CLASSIFICATION

Occupation	No of Respondents	Percentage
Agriculture	22	44
Student	10	20
Businessman	08	16
Serviceman	06	12
Others	04	08
Total	50	100

Source: Field Survey

INTERPRETAION

Above chart revealed that occupation wise classification of respondents. In that 22 respondents are belonging to a agriculture occupation out of 50 respondents. 10 are students, 08 respondents are businessman, 06 respondents are serviceman and 04 respondents are others.

TABLE 3: INCOME WISE CLASSIFICATION

Income Level	No of respondents	Percentage
<= 5000	25	50
5000-10000	10	20
10000-15000	08	16
15000- 20000	04	08
20000- Above	03	06
Total	50	100

Source: Field Survey

INTERPRETATION

Above chart shows that 50% of respondents are in <=5000 income level, second 20% of respondents are of 5000-10000 income level. 16% of respondents are of 10000-15000, 8% of respondents are of 15000-2000 and remain 6% of respondents are of above 20000 of income level.

TABLE 4- SOURCE OF INCOME

Source of Finance	By Cash	By Loan	Total
Agriculture	07	10	17
Student	06	07	13
Business	04	07	11
Professions	02	03	05
Others	01	03	04
Total	20	30	50

Source: Field Survey

INTERPRETATION

Above chart clearly examine that in Uttar Kannada district 30 respondents purchase a Hero Motocorp bike by loan. And 20 respondents purchase bike by cash out of total 50 respondents. Means it is clear that more no of people buying a bike by loan.

TABLE 5: MEDIA OF SOURCES

Sources	No of Respondents	Percentage
News Paper	06	12
T. V. Advertisement	07	14
Friends	13	26
Others	24	48
Total	50	100

Source: Field Survey

INTERPRETATION

Above table clearly elucidates that 48% respondents are come to know from the 'Other'. Then 26% respondents are come to know from the "Friends",14% and 12% respondents are come to know from the T. V Advertisement and News Paper.

TABLE 6: VIEW OF CUSTOMERS ABOUT "ADVERTISEMENT CREATES MORE AWARENESS OF SHOWROOM

Response	No of Respondents	Percentage
Yes	30	60
No	15	30
Can't say	05	10
Total	50	100

Source: Field Survey

INTERPRETATION

Above chart indicates that the majority of customer are agreed on the advertisement creates more advertisement of showroom and very few of customer are disagreed.

TABLE 7: WHO IS DECISION MAKER FOR PURCHASING A BIKE IN YOUR FAMILY?

Sources	No of respondents	Percentage
Father	25	50
Self	15	30
Mother	06	12
Others	04	08
Total	50	100

Source: Field Survey

INTERPRETATION

The above table clearly elucidates the 25 respondents take a decision by father, 15 respondents take decision by self for purchasing a bike. And 06 respondents take a decision by mother, 04 respondents take decision by others for purchasing a bike.

TABLE 8: RATING OF HERO MOTOCORP MOTORCYCLE

Weight Age	6	5	4	3	2	1	Total
Attributes	Excellent	Very Good	Good	Average	Poor	Very Poor	Total
Price	17	12	08	06	04	03	50
Less Maintenance	10	06	08	15	07	04	50
Style	15	13	10	06	04	02	50
Durability	07	12	10	16	03	02	50
Mileage	20	12	06	08	03	01	50
Easy driving	12	08	09	17	02	02	50
Brand Reputation	12	10	07	15	04	02	50
Colour	16	12	10	08	01	01	50
Pick Up	10	15	08	12	03	01	50
Total	116	100	76	106	31	16	445

Source: Field Survey

INTERPRETATION

The above chart clearly shows that more no of respondents give a more weight age to mileage, price and colour.

TABLE 09: RATING OF SHOWROOM ATTRIBUTES

Attributes	Excellent	Very Good	Good	Average	Poor	Total
Availability	15	12	09	08	06	50
After Sale Performance	08	17	12	08	05	50
Knowledge of Salesman	10	11	12	09	08	50
Service	13	08	14	10	05	50
Infrastructure	10	15	12	08	05	50
Total	56	63	59	43	29	250

Source: Field Survey

INTERPRETATION

Above chart clearly shows that 15 respondents out of 50 give Weight age on availability is excellent and second 17 respondents out of 50 give Weight age on after sale performance is very good, 12 respondents give weight age on knowledge of sales person is good , 14 respondents give weight age on service is good and 15 respondents give weight age on Infrastructure is very good.

TABLE 10: RATE THE FOLLOWING SCHEMES THAT ATTRACT YOU MOST

Attributes	Excellent	Very Good	Good	Average	Poor	Total
Festival Offer	20	11	08	07	04	50
Exchange Offer	08	08	12	08	04	50
Special Gift	10	09	15	10	06	50
Cash Discount	08	11	10	17	03	50
Anniversary Offer	08	06	05	10	21	50
Total	54	56	50	52	38	250

Source: Field Survey

INTERPRETATION

Above chart indicates that in festival offer 20 respondents out of 50 are give a excellent, then in exchange offer 18 respondents out of 50 are give very good rank, in special gift 15 respondents are give good rank, in cash discount 17 respondents are give average rank and in anniversary offer 21 respondents give a poor rank.

TABLE 11: RANKING OF ATTRIBUTES WHICH IMPORTANT IN PURCHASING HERO MOTOCORP BIKE

Attributes	1st	2nd	3rd	4th	5th	Total
Mileage	15	10	11	09	05	50
Available	07	11	18	08	06	50
Price	11	07	22	06	04	50
Pick Up	08	09	15	12	06	50
Colour	10	12	13	05	10	50
Total	51	54	79	40	31	250

Source: Field Survey

INTERPRETATION

Above graph clearly indicates that respondents give more importance to the mileage then after they give more importance to the price for purchasing motorcycle of Hero MotoCorp. Then respondents give a more importance to the colour for purchasing a bike. Finally respondents consider the pickup and availability.

FINDINGS

- In current market scenario, respondents give maximum no. of weight age to price then after they consider mileage and colours respectively.
- The study shows that more no. of respondents have connected as sources of income from agriculture.
- The study shows that 51 respondents are already user of Hero MotoCorp motorcycle. So Hero MotoCorp is popular automobile company in study region.
- The study shows that 24 respondents are already user of Hero MotoCorp Motorcycle. So Hero MotoCorp is popular automobile company in study region.
- The study shows that 23 respondents are come to know from "others" and 26 respondents are come to know from "friends" about Hero MotoCorp Bike.
- The study shows that 30 respondents are purchase Her Motocorp bike by loan and 20 respondents are purchase Hero MotoCorp bike by cash.
- The study shows that 15 respondents are give more points to Mileage.
- The Study clears that 25 respondents father take decision to purchase a bike and 15 respondents take a self decision to purchase bike.
- The Study clears that 15 respondents are give excellent rank to Availability of showroom, 17 respondents are give good rank to After Sale Performance of show room. And 13 respondents give a excellent rank to service of show room.
- The study shows that 20 respondents are give an excellent rank to Festival Offer and 21 respondents are give poor rank to the Anniversary Offer.

SUGGESTIONS

- Hero MotoCorp should introduce a low Price (25000 to 30000) moped
- For the promotion purpose Company makes road show that will increase the sales.
- Hero MotoCorp should increase in advertisement through T.V, Newspapers.
- The company should give more concentrate on the advertisement.
- Hero MotoCorp should expand target market like Introducing special scooters for women and also considering rural market related offers.
- Hero MotoCorp should work on sports and pickup bike.

CONCLUSION

Customer satisfaction is a major concern and aim for any business that hopes to achieve and maintain profitability and therefore remain a going concern for the foreseeable future. The customers are the most important element in a business and if they are not satisfied, they will move on and find somebody else to satisfy their needs. Change in the constant thing in life and the present changes in the globalised economy and changes in the life style of customers. The study reveals that in present market scenario customers give a more weight age to price and then after they consider mileage and colours respectively. And also study shows that customers have connected as a source of income from agriculture. But new products launched by Hero MotoCorp are mainly related to young generation.

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ENERGY CONSERVATION IN MANETS USING SCALABLE PROTOCOL

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ABSTRACT

Energy efficiency is the most challenging issue to be addressed by current and future mobile networks. Significant research effort has been placed recently in reducing the total energy consumption while maintaining or improving capacity either by introducing more efficient hardware components or by developing innovative software techniques. In this paper we investigate a novel networking paradigm to address the aforementioned problem. We devise a decentralized scalable algorithm for the proposed postponement schemes and show the superior performance of implementing schemes over the traditional mobile operation.

KEYWORDS

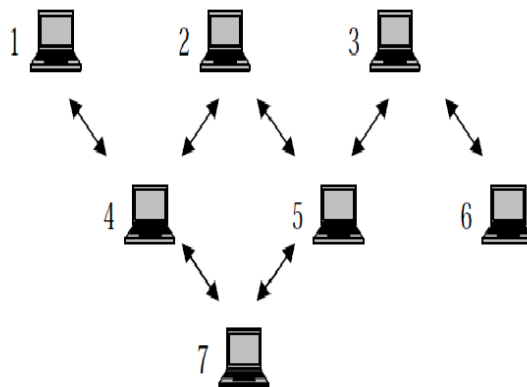
nodes; internet access; DSR protocol; scalable protocol; energy efficiency; routes handover.

I. INTRODUCTION

Nodes within an ad hoc network generally rely on batteries (or exhaustive energy sources) for power. Since these energy sources have a limited lifetime, power availability is one of the most important constraints for the operation of the ad hoc network. There are different sources of power consumption in a mobile node. Communication is one of the main sources of energy consumption. Since the rate of battery performance improvement is rather slow currently, and in the absence of breakthroughs in this field, other measures have to be taken to achieve the goal of getting more performance out of the currently available battery resources. Within this study, we focus our efforts on methods to reduce the power consumed in communications between ad hoc network nodes. Recently, mobile communications have flourished extensively with the technological advances made in areas of new portable devices and wireless communications. This has led to many advances in the area of mobile ad hoc networking. A mobile ad hoc network consists of mobile devices communicating with each other via wireless connections to both exchange information of mutual interest as well as to maintain the network connectivity in general. These devices are generally free to move about arbitrarily, and could be located on airplanes, in cars, with people, etc. We refer to these mobile devices as "network nodes" within this study. Therefore, an ad hoc network is generally considered an infrastructureless network that relies on its nodes to maintain its topology.

This implies that the different nodes are expected to perform, in addition to their normal function e.g. as a computing device, the routing function that is normally done by routers within the Internet infrastructure networks. The figure shows a network that consists of seven mobile nodes. The wireless links between the nodes that lie within range of each other are illustrated by bi-directional arrows. In this network, if node 1 needs to communicate with node 2, for example, it will need to do so via node 4, as one of the possible communication paths. If a node is within range of another node, for example nodes 4 and 7, they can communicate with each other directly. But, if node 7 decides to move out of range from node 4, this direct communication would no longer be possible and the two nodes would have to continue their communication via one or more other nodes.

FIGURE 1: A MOBILE AD HOC NETWORK



In this paper, we focus on ad hoc networks that conform to the following characteristics:

- The network nodes are using IP, the Internet Protocol
- The nodes could be far apart in such a way that not all of them are within range of each other
- The nodes are generally mobile and therefore two nodes that are within range
- The nodes are able to contribute to the topology maintenance operations of the network
- The network is generally bandwidth constrained as wireless links generally have lower capacity than wired links. This is a large factor of consideration in the design of the protocols that are used for the operation of these networks.
- The nodes generally possess a limited amount of battery energy.

There are numerous applications of the MANET technology. Here are some examples of their use:

- *Conferencing*: where a network infrastructure is missing while conference or meeting attendees still require exchanging emails and information regarding a certain project or task at hand.
- *Emergency Services*: for search and rescue missions, for example, where several emergency workers need to exchange information over a vast searching area with no existent network infrastructure.
- *Military Operations*: similar to the previous case, a group of military personnel may require exchanging operational information while in the field with no access to a friendly network infrastructure.
- *Sensor Networks*: in which a set of sensors with wireless transceivers can be randomly spread over an area for which terrain or environmental information gathering is needed. These sensors can cooperate in collecting and assembling this information for analysis purposes.
- *Wireless Mesh Networks*: A mesh network allows nodes or access points to communicate with other nodes without being routed through a central switch point, eliminating centralized failure, and providing self-healing and self organization. Intelligence is distributed from switches to access points by incorporating a grid-like topology. Network nodes act as routers. This type of networks can be used where wired LANs cannot be established easily, or where cost of establishing them is too high.

II. RELATED WORK

Nodes within an ad hoc network generally rely on batteries (or exhaustive energy sources) for power. Since these energy sources have a limited lifetime, power availability is one of the most important constraints for of the ad hoc network. There are different sources of power consumption in a mobile node. Communication is one of the main sources of energy consumption .Since the rate of battery performance improvement is rather slow currently, and in the absence of breakthroughs in this field, other measures have to be taken to achieve the goal of getting more performance out of the currently available battery resources. Within this study, we focus our efforts on methods to reduce the power consumed in communications between ad hoc network nodes.

As indicated in the discussion and results above, many routing algorithms have been created based on various strategies with no policy to address energy efficiency issues. We have seen some examples of these algorithms in which the nodes spend a large percentage of their energy in idle mode, which is considered a source of large energy waste. We have also seen that despite the existence of idle energy which, in a way, introduces a source of energy balance between network nodes, there still exists some imbalance between node energies. In order to address these issues, a different strategy that takes energy efficiency into consideration needs to be followed. The possibilities for this strategy range from creating new energy-efficient routing protocols to enhancing existing ones to become energy efficient. There have been several studies that explored this issue and we will be discussing some of these studies in the next chapter. Emerging from the discussions so far are the following main issues that we would like to address within the scope of this work:

A large amount of energy is wasted while the wireless interfaces of the mobile nodes are idle

Energy imbalance between network nodes

Existence of routing protocols with energy-inefficient characteristics

III. ENERGY MODELS

Following are the types of energy consumption that have been identified:

- Energy consumed while sending a packet
 - Energy consumed while receiving a packet
 - Energy consumed while in idle mode
 - Energy consumed while in sleep mode which occurs when the wireless interface of the mobile node is turned off
- It should be noted that the energy consumed during sending a packet is the largest source of energy consumption of all modes.

A. Energy consumption issues

To get an idea about the nature of some of the energy consumption issues that are encountered in ad hoc networks, we performed a comparison study of some popular ad hoc routing algorithms. These two algorithms use the shortest-path routing strategy and do not have an energy conservation technique. We demonstrate the difference between the algorithms in terms of their energy consumption. We used the ns2 simulator to conduct our investigation. We also used the wireless and mobility enhancements to ns2. We use a relatively high value for the maximum node speed and run simulations for different pause time values for this speed. Our goal is to examine and compare the energy consumption patterns at a mobility condition that would cause the topology to change relatively fast.

B. Energy Limitations

Generally speaking, nodes within ad hoc networks rely on limited energy sources, usually batteries, for their operation. While energy is consumed by different aspects of the functionality of a mobile node, we focus our attention in this study on those aspects that relate to communication between network nodes. Nodes consume energy when they transmit data to a desired destination, when they forward data while acting as intermediate nodes between source and destination nodes, or when they listen to a channel. Since nodes cannot operate without energy, and since energy in mobile nodes could be highly limited due to the generally limited battery power, this can be considered one of the most important limiting factors in operating an ad hoc network. Every time a node transmits, receives or listens to a communication medium, it consumes energy as will be explained in detail later in this thesis. This underscores the importance of energy conservation in connection to communications in ad hoc networks. This research focuses on creating an energy efficient technique that works in conjunction with existing ad hoc routing protocols.

IV. PROTOCOLS USED

A. Distance Source Routing Protocol

'Dynamic Source Routing' (DSR) is routing protocol for wireless mesh networks. It is similar to AODV in that it forms a route on-demand when a transmitting computer requests one. However, it uses source routing instead of relying on the routing table at each intermediate device.

Determining source routes requires accumulating the address of each device between the source and destination during route discovery. The accumulated path information is cached by nodes processing the route discovery packets. The learned paths are used to route packets. To accomplish source routing, the routed packets contain the address of each device the packet will traverse. This may result in high overhead for long paths or large addresses, like IPv6. To avoid using source routing, DSR optionally defines a flow id option that allows packets to be forwarded on a hop-by-hop basis.

This protocol is truly based on source routing whereby all the routing information is maintained (continually updated) at mobile nodes. It has only two major phases, which are Route Discovery and Route Maintenance. Route Reply would only be generated if the message has reached the intended destination node.

B. Ad hoc On Demand Vector

Ad hoc On-Demand Distance Vector (AODV) Routing is a routing protocol for mobile ad hoc networks (MANETs) and other wireless ad-hoc networks. It is jointly developed in Nokia Research Center, University of California, Santa Barbara and University of Cincinnati by C. Perkins, E. Belding-Royer and S. Das.

It is a reactive routing protocol, meaning that it establishes a route to a destination only on demand. In contrast, the most common routing protocols of the Internet are proactive, meaning they find routing paths independently of the usage of the paths. AODV is, as the name indicates, a distance-vector routing protocol. AODV avoids the counting-to-infinity problem of other distance-vector protocols by using sequence numbers on route updates, a technique pioneered by DSDV. AODV is capable of both unicast and multicast routing.

C. Scalable Protocol

It is a reactive routing protocol, meaning that it establishes a route to a destination only on demand. In contrast, the most common routing protocols of the Internet are proactive, meaning they find routing paths independently of the usage of the paths.

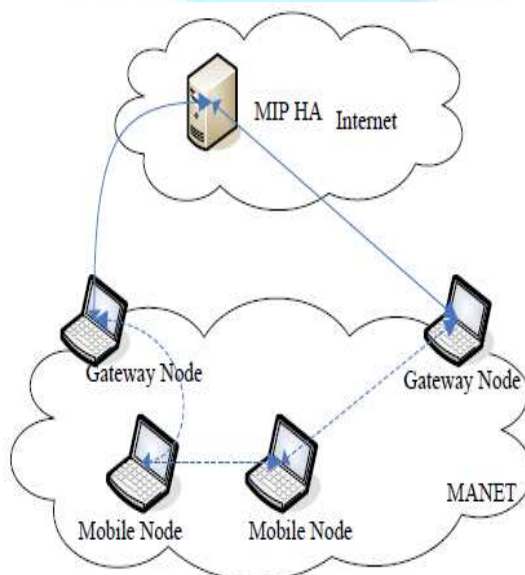
In the proposed protocol, the network is silent until a connection is needed. At that point the network node that needs a connection broadcasts a request for connection. Other nodes in the protocol forward this message, and record the node that they heard it from, creating an explosion of temporary routes back to the needy node. When a node receives such a message and already has a route to the desired node, it sends a message backwards through a temporary route to the requesting node. The needy node then begins using the route that has the least number of hops through other nodes. Unused entries in the routing tables are recycled after a time.

D. NS2

In communication and computer network research, **network simulation** is a technique where a program models the behavior of a network either by calculating the interaction between the different network entities (hosts/routers, data links, packets, etc) using mathematical formulas, or actually capturing and playing back observations from a production network. The behavior of the network and the various applications and services it supports can then be observed in a test lab; various attributes of the environment can also be modified in a controlled manner to assess how the network would behave under different conditions. When a simulation program is used in conjunction with live applications and services in order to observe end-to-end performance to the user desktop, this technique is also referred to as network emulation.

NS2 is a piece of software or hardware that predicts the behaviour of a network, without an actual network being present. NS2 is a software program that imitates the working of a computer network. In simulators, the computer network is typically modelled with devices, traffic etc and the performance is analysed. Typically, users can then customize the simulator to fulfill their specific analysis needs. Simulators typically come with support for the most popular protocols in use today, such as WLAN, Wi-Max, UDP, and TCP

FIGURE 2



V. ANALYSIS

In the due course of our research for the paper we came across the various prospects available for the further research in the field of ad-hoc networks. The problems like gateway discovery delay and lack of energy efficiency are all interdependent and can be overcome by little changes in the presently available protocols. Therefore, our focus is to create an algorithm that can be used in conjunction with existing routing protocols as opposed to replacing them. This algorithm will integrate with these protocols and complement their functionality from an energy-efficiency perspective. In order to address these issues, a different strategy that takes energy efficiency into consideration needs to be followed. The possibilities for this strategy range from creating new energy-efficient routing protocols to enhancing existing ones to become energy efficient.

It is evident that energy efficient schemes are of crucial importance in the context of ad hoc networks. Since the goal is to save energy, and since one of the main sources of unwanted energy consumption is idle energy, the need to eliminate or reduce this energy becomes one of the main targets of such schemes. This requires the energy efficient mechanism to introduce some arrangement that includes sleep periods of the network nodes' wireless interfaces to lower this unwanted source of energy consumption.

VI. CONCLUSION

With the help of the scalable protocol we will be able to overcome the battery efficiency issues and increase the battery life. Thus we will be able to reduce the energy consumption during the processing of Manets thereby making Manets friendlier for long term usage. By doing this we will be able to popularize Manets in areas where the need of a global network is compromised owing to the lack of energy resources. Recently, mobile ad hoc networks (MANET) and their applications have become quite popular with the proliferation of light-weight mobile devices that made it possible to communicate and perform many types of tasks while on the move. Many protocols have been developed to handle routing in ad hoc networks. Each of these protocols has been developed based on different design strategies with the purpose of obtaining the best possible performance and robust data delivery in an environment with potentially constantly changing topology. Many of these algorithms, however, have not considered one important aspect of the operation of this type of networks which is the generally limited amount of energy that is available to its nodes. This can be considered the most critical factor in the operation of these networks. In this thesis, we presented the main characteristics of the mobile ad hoc networks as well as the factors that affect their operation. Then, we described the energy efficiency issues that are encountered with this type of networks and supported this discussion with a case study. This case study showed that there exists a large amount of energy (more than 50% of the overall energy that is consumed in communication) that is wasted while the wireless interfaces of the network nodes are in idle mode. We then described some of the schemes that were devised to address energy efficiency issues in MANETs. We classified such schemes as routing and

non-routing energy-efficient schemes. According to this classification, the routing schemes are either energy-efficient routing algorithms or algorithms that directly influence the routing functionality of the routing protocol. The non-routing schemes, on the other hand, are those that do not directly affect the routing functionality of the routing protocol in use. We found from this survey that most of the routing-related energy efficient schemes focus mainly on energy balance between routes and do not take idle energy consumption into consideration. The non-routing energy-efficient schemes had various strategies for addressing the idle energy consumption. Most of these schemes, however, did not pay attention to energy fairness, and some of them have been designed based on rather unrealistic assumptions about network operation.

VII. ACKNOWLEDGEMENT

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THE CONCEPT OF EQUALITY: A BRIEF STUDY

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ABSTRACT

All human beings are equal according to the law of nature which desired that every man should be treated as equally as a human creature. Equality is considered synonymous with 'natural equality' which implies that all men are equal. Equality means equal concern and respect across differences. It implies the absence of arbitrary powers. The concept of equality is fundamentally a leveling process which implies the absence of special privileges and the presence of adequate opportunities. The concept of equality is dynamic in nature as it deals with different aspects of the society. Today, every modern political constitution has some notions of equality inscribed as a fundamental law. The object and significance of this paper is to analyse the concept of equality, how this concept developed, what are its various aspects and dimensions in the present scenario and the place of equality under the different constitutions of the world. This paper will prove to be helpful for those who want to study the concept of equality in a brief manner. For the purpose of this paper the doctrinal approach of research has been adopted and for this purpose various books, journals, articles and some websites have been consulted.

KEYWORDS

Demand and Struggle for equality, Dimensions of equality, Egalitarianism, Equality under different constitutions, Concept of equality.

INTRODUCTION

Of all the basic concept of social, economic, moral and political philosophy, none is more confusing and baffling than the concept of equality because it figures in all other concepts like justice, liberty, rights, property etc. During the last two thousand years, many dimension of the concept of equality have been elaborated by Greek, Stoics, Christian fathers who separately and collectively stressed on its one or the other aspect. The doctrine of legal equality goes back to the natural law doctrine of the Stoics which in the name of the universal reason, postulates equality of individuals, races and nations. This was accepted by Roman jurisprudence, though sometimes with a distinction between the law of nature which postulates absolute equality and the law of nation which recognizes slavery. Christian doctrine, too, is pledged to the fundamental equality of men but this fundamental equality is subordinated to the acceptance of the existing social order. Equality is essentially a modern and progressive concept and the value of equality can be taken as a criterion of radical social change. A feature of modern societies is that they are committed to the principle of equality and they no longer regard inequality as naturally justifiable or divinely ordained. Under the condition of modern state, it is 'inequality which requires justification and not equality'.

THE CONCEPT OF EQUALITY

So close is the involvement of the concept of equality with the theme of rights, liberty, fraternity, property and justice that it has become a 'multiple dimensional concept' so much so that "of all the basic concepts of social, moral and political philosophy, none is more intriguing and none is more baffling than it."¹ Realizing this difficulty, an eminent English political scientist like Laski has confessed that no idea is more difficult to be defined in the whole realm of political science than the concept of equality.

The idea of equality is closely related to the theory of natural right. The state of Nature, declared Locke, is "a state also of equality, wherein all the power and jurisdiction is reciprocal, no one having more than another, there being nothing more evident than creatures of the same species and rank, promiscuously born to all the same advantage of Nature, and the use of the same faculties should also be equal one amongst another, without subordination or subjection..."; And the law of Nature "teaches all mankind that being all equal and independent, no one ought to harm another in his life, health, liberty or possessions."²

The concept of equality has the different aspects which are as follows:

a. Equality-Fundamentally a Leveling Process

The Ideal equality is fundamentally a leveling process. J.A. Corry explains it in the following words "The idea of equality has insisted that men are politically equal, that all citizens are equally entitled to take part in political life to exercise the franchise. It has insisted that individual shall be equal before the law that when the general law confers rights or imposes duties, these rights and duties shall extend to all; or conversely that the law shall not confers special privileges on particular individuals or groups."³ Laski says undoubtedly it [equality] means that no men shall be placed in society that he can overreach his neighbor to the extent which constitutes a denial of the latter's citizenship.

¹ Frank Thakurdas: "In Defence of Social Equality", reproduced in *The Indian Journal of Political Science*, Vol.XXXVII, No.1, 1976, p.1

² John Lock: *Second Treatise of Civil Government*, Chap.II, pp.118-19.

³ J.A. Corry: *Democratic Government and Politics*, p.153.

b. Equality- Absence of Special Privileges

Equality also means that there should be no special privileges for any one. All barriers of birth, wealth, caste, creed and colour should be removed so that no one suffers from any kind of social or political disabilities. There should be no difference between a man and a man "whatever right's inhere in another by virtue of his being a citizen must inhere, and to the same extent in me also."⁴ It means that all individual are entitled to the enjoyment of all social and political privileges to which others are entitled. To refuse any one access to an office of the state is a denial freedom, because it causes frustration and ultimately leads to the loss of creative faculties.

c. Equality – Implies Presence of Opportunities

The presence of adequate opportunities is an essential prerequisite of equality by adequate opportunities we do not mean equal opportunities. All that is implied by adequate opportunities is that the state should provide suitable opportunities for all citizens without any discrimination for the full development of their intelligence. No person should be debarred from achieving the ambition of his life, if he possesses the requisite ability to and intelligence for that purpose. Therefore we can say that the principle of equality is attained if the state is able to create such conditions in which all have due opportunity to develop their ability and personality to their full stature.

Therefore, equality involves first of all absence of legal discrimination against any one individual, group, class or race. Secondly it implies equal claims to adequate opportunities for all and the recognition of the fact that no one, person or group may be sacrificed to another.

MEANING AND CONNOTATION OF THE TERM EQUALITY

The term 'equality' is understood in, many ways: it has several facets; it can not be described easily. Equality is great democratic ideal. Equality is considered synonymous with 'natural equality' which implies that all men are created equal and all should be entitled to identity of treatment. The protagonist of this view asserted that all men are born equal and nature has placed them to remain so.

According to *Oxford English Dictionary*, equality implies (a) the condition of having equal dignity, rank or privileges with others, (b) the condition of being equal in power, ability, achievement, or excellence, (c) fairness, impartiality, due proportion, proportionateness.

The 'representative thinker' of the social contract school held that the law of Nature "teaches all mankind that being all equal and independent, no one ought to harm another in his life, health, liberty or possessions."⁵

The Founding Fathers of the American revolution adopted a Declaration of Independence in 1776 that "... all men are created equal, that they are endowed by their Creator with certain unalienable rights." Likewise the National Assembly of France adopted the Declaration of the Rights of Man and Citizen in 1789 which reiterated that "all human beings are born free and equal in dignity and rights."⁶

Article 1 of Universal Declaration of Human rights, 1948 declares that "all human beings are born equal." And Article 17 of the same Declaration provides "equality before the law and without any discrimination equal protection of law."

Dr. Appadoria points out: "Nature has endowed men with different capacities and so long as they differ in their want, needs, and capacity in satisfying them, equality in its popular sense is inconceivable. Equality does not even imply identity of reward for effort. The statement that all man are equal is erroneous as that the surface of the earth is level."⁷

According to Sir Ernest Barker, the term equality means that equal condition should be guaranteed to each for making the best of himself. Accordingly it "means that whatever conditions are guaranteed to me, in the form of rights, shall also, in the same measure, be guaranteed to others, and that whatever rights are given to others shall also be given to me."⁸

DEMAND FOR EQUALITY

The demand of equality has always against the prevailing inequality of the times. The existence of social inequality is probably as old as human society and the debate about the nature and causes of inequality is an ancient topic of political philosophy. The medieval feudalism had legal privilege based upon status and birth which were supported by Christianity. In fact the pre-eighteenth century teachings argued that men were naturally unequal and that there was a natural human hierarchy. Different ideologies justified inequality on grounds of superior race, ancestry, age, sex, religion, military strength, culture, wealth and knowledge.

Under feudalism the society was divided into three estates: clergy, nobility and the common masses. The first two enjoyed all rights and the third state had only duties. During this period these social inequalities got legal recognition. Legal privileges meant only for clergy and the aristocracy was widely acclaimed. Even in modern societies there is a continuity of inequality despite the new ideology of equality as the basis of citizenship. Inequality in universal, endemic and resistant to social policies aimed at bringing about a substantial measure of equality.⁹

DEVELOPMENT- STRUGGLE FOR EQUALITY

In the history of western political ideas, the doctrine of equality is practically as old as it's opposite. After the death of Aristotle in 22BC the most prominent star of the Greek philosophy was Zeno who founded the stoic school and supported equality among men. The stoic philosophers gave the idea of universal brotherhood and they were opposed to slavery. The promulgation of the law of the people by the Roman Empire was another way in which the Romans attempted to give effect to the principle that all men are equal and as an extension to that they conferred citizenship both on the individuals and the entire communities.

The revolutions in Britain in 1649 and 1688, in USA in 1776 and in France in 1789 made right to equality by birth as their central plank. 'Men are born free and equal and they are free and equal in their rights'. By nature and before the law, all men are equal. During this phase the demand for equality coincided with the abolition of special privileges of the nobility and the achievement of political and legal equality with the nobility. It meant only juristic equality i.e. all men are born equal and they are equal before law.

The main precipitating cause for equality in the nineteenth century was undoubtedly economic. The economic and social dimensions of equality which emerged during this phase were the result of conflicts and struggles between the capitalist/industrial/feudal classes on the one hand and the workers and peasants on the other. The Laissez faire policy of the state in the economic affairs created wide economic disparities in the society. As a result along with legal equality, demand for economic and social equality was raised by liberal, socialist and Marxist writers alike such as J.S. Mill, T.H. Green, Babeuf, Karl Marx etc. Simultaneously, the demand of political equality also grew stronger. The reform Acts of 1832, 1876 and 1884 in Britain were steps towards political equality.

The Declaration of Human Rights in 1948 extended the recognition of equality and contributed to the eventual emergence of an international society based upon socio-economic equality.¹⁰

⁴ Harold Laski: Op. cit., pp. 154-55.

⁵ John Lock: *Second Treatise of Civil Government*, Chap.II, pp.18-19.

⁶ Benn and Peters: *Social Principles and the Democratic State*, p.107

⁷ A. Appadorai: *The Substance Of Politics*, p.93

⁸ Barker, *op. cit.*, p.151.

⁹ R.C.Vermani: *An Introduction to Political Theory*, p.239-40.

¹⁰ R.C.Vermani: *An Introduction to Political Theory*, p.241-43.

EGALITARIANISM- CONCEPT

Egalitarianism (from French *égal*, meaning "equal") is a trend of thought that favors equality of some sort among living entities. Egalitarian doctrines tend to maintain that all humans are equal in fundamental worth or social status. It is defined either as a political doctrine that all people should be treated as equals and have the same political, economic, social, and civil rights or as a social philosophy advocating the removal of economic inequalities among people or the decentralization of power. An egalitarian believes that equality reflects the natural state of humanity.

A democratic, universalistic, caring and aspirationally egalitarian society embraces everyone and accepts people for who they are. To penalize people for being who and what they are is profoundly disrespectful of the human personality and violatory of quality. Equality means equal concern and respect across difference. It does not presuppose the affirmation of self, not the denial of self. Equality therefore does not imply a levelling or homogenization of behavior or extolling one form as supreme and another as inferior, but an acknowledgement and acceptance of difference. At the very least, it affirms that difference should not be the basis exclusion marginalization and stigma. At best, it celebrates the vitality that difference brings to any society.¹¹

An understanding of the meaning of egalitarianism is necessary in order to grasp the correct nature of the ideal of equality. Here it means that equality is no substitute for uniformity. The earliest use of the term 'equal', still widely adopted in everyday language, was to refer to identical physical characteristics. In political theory, however, a clear distinction is made between equality and ideas such as 'uniformity', 'identity' and 'sameness'. The goal of egalitarians is to establish the legal, political or social condition in which people will be able to enjoy equally worthwhile and satisfying lives. Equality, in other words, is not about blanket uniformity, but rather is about 'leveling' those conditions of social existence which are thought to be crucial to human well-being.¹²

DIMENSIONS OF EQUALITY

The concept of equality is a 'multi-dimensional concept'. It has been changing with changing times. Accordingly, different writers too have been laying emphasis on its changing equality; Barker laid emphasis on legal and social dimensions of equality. In more recent times Laski also considered the political and economic dimensions of equality. We discuss below the more important and relevant dimensions of equality as follows-

- (a) **Natural Equality:** It implies that nature has made all men equal. In ancient times the Stoics of Greece and Roman thinkers like Cicero and Polybius insisted that all men were equal according to the law of nature. Marx desired that every man should be treated as equally as a human creator.
- (b) **Legal Equality:** The concept of legal equality is very old concept. The ancient Greeks spoke of isonomia or equality before the law as we understand it now. In the eighteenth century the demand for equality was raised to eliminate the legal privileges of the aristocratic and feudal classes. Equality, for the French revolutionaries really meant equality before the law, the same law for all and no privileged classes or individuals exempt from its provisions. Even today, equality before law is considered as an indispensable ingredient of the legal dimension of equality. Although 'equality before law' implies equality of rights and duties in law, it does not mean that all men and women ought to enjoy the same rights and duties. It is simply not possible because men differ in ability and capacity; and there is considerable specialization and division in function society. What 'legal equality' implies is that the law does not make a distinction between men either on the basis of their political opinions or religious beliefs or it is passed to benefits one class of people at the expense of another. Legal equality means that all citizens should be treated alike in the matter of possession of rights. Its basic, therefore, is egalitarian.
- (c) **Political Equality:** It connotes equal political rights to all the citizens; and equal voice in government and equal access to all offices of authority, provided the necessary qualification is fulfilled. In other words, political equality implies that all the citizens enjoy the same political rights the right to vote; the right to contest election; the rights to hold public office; and the right to criticize government without any distinction on the basis of caste, colour, sex, religion, language, etc. In short, it implies the prevalence of democracy and universal suffrage. As Cushman has said: "In practice the ideal of political equality has centered on universal suffrage and representative government modern democracy in short
- (d) **Social Equality:** In modern times the social dimension of equality has acquired much more importance than its purely legal or political interpretation. It is because of the realization that discrimination among people on the basis of caste, colour, language, sex, education or social status hinders the development of human personality. It is also realized that the social status hinders the development of human countries are fraught with dangerous consequence for humanity as a whole. Thus, the realization of 'social equality' is a cherished goal and ideal of the people. Social equality means that all citizens are equally tangible unit of society and no one is entitled to special privileges. It means equality of status and absence of class or social barriers and invidious social discrimination. It implies no distinction in the social status of people because of difference in race, colour, rank, class or caste, that is, exists no unnecessary social restraint which retards the growth of individual and the realization of his ambition of a good and happy life. Social equality exists when all have an equal opportunity to standing and develop the personality. How do we achieve 'social equality'? It is a very complex proposition. However, Bann and Peters opine the 'equality of opportunity' is an important element for the achievement of this ideal means that the least able and the most able are given an equal start in race for success. It means that each citizen must have equality of opportunity for the development of his personality.
- (e) **Economic Equality:** Economic equality is considered to be the hallmark of true democratic states in modern times. It is a prerequisite for the existence and enjoyment of other equalities legal political and social- in society. The talk of equality in country is meaningless if there is unjust and glaring inequality of the distribution of wealth income and wages: and the vast majority of people suffer from economic strains stresses and handicaps. Wealth provides all kinds of opportunities to those who own it. To make economic equality meaningful and a reality the state has to give it a prominent place in its priorities. Economic equality, generally speaking implies that 'economic cause' should not become a hindrance for the development of the personality of any individual in its varied aspects- moral, physical, intellectual- in society. Economic equality can exist, when all people have responsible economic opportunities to develop themselves. Adequate scope for employment reasonable wages, adequate leisure and other economic rights create economic equality.
- (f) **International Equality:** It means the extension of the principle of equality to the international sphere. All nation of the world should be treated equality irrespective of their demographic, geographical, economic or military composition. That is, the principle of internationalism requires that all nation of the world should be treated on identical terms whether they are big or small in terms of their size, location, resources, wealth military potential and the like. In economic terms its demand that the benefits of scientific and the technological achievement should be shared by all. In terms of humanism, it implies that traditional evils like those of slavery, forced, primitive backwardness and the like should be eradicated.

LASKI'S VIEW OF EQUALITY

To Laski, equality does not mean either 'absolute equality' or 'identity of treatment'. It also does not mean 'identity of reward' because human wants, needs and capacity differ. All that equality means is a certain leveling process. What is required is that there should be equality at minimum basis.

According to Laski, equality means that adequate opportunities for self development are provided to all in society. Adequate opportunities do not imply equal opportunities. What they do mean is that all those opportunities should be given to individuals which are considered to be essential for their growth and the absence of which results in frustration. It means that all the individuals must be guaranteed certain minimum rights. It is only when the urgent claims of all have been fulfilled that we may accept the particular claims of others. The differences in social and economic position of men can be accepted only after a minimum basis of civilisation is achieved by society as a whole. Everyone must have a basic minimum standard of living before the special requirements of others are provided for.

¹¹ Minister of Home Affairs and O'rs v. Faerie & Bonthus; Lesbian and Gay Equality Project and O'rs v. Minister of Home Affairs and O'rs (2005), Cases CCT 60/04, 10/05, per Sachs J, para 60.

¹² Andrew Heywood: *Political Theory: An Introduction*, p.285.

Laski opines that there can be no equality if there are special privileges for some in society. Every person must be treated as equality before law. There is no moral justification for the existence of any privileges based upon birth or property. Every individual must have equal opportunity for progress, growth and self development.¹³

THE MARXIST VIEW OF EQUALITY

The Marxist has not formulated any coherent concept of equality as such. Now here, Karl Marx or Frederic Engels have adequately explain the idea of equality there for, there view of 'equality are the outcome of the overall philosophy of Marxism-a scientific analysis of the existing *bourgeoisie* state and their goal of establishing a 'classless' and 'stateless' society.

The Marxist maintain that 'inequalities' in society emerged with the emergence of the 'concept of private property' which, in turn, is inextricably wound up with the concept of classes-the 'haves' and the 'have-nots', or the 'exploiters' and the 'exploited'. Presently these classes are the *bourgeoisie* and the *proletariat* or the capitalists and the worker. Also, the present capitalists state is a 'class state'- its laws and inequalities society. In other words, the existence of classes is *sine pro quid* for the existence of inequalities. Therefore, for the Marxist equality implies the abolition of classes. Engels says: "the real content of the proletarian demand for equality is the demand for the abolition of classes."¹⁴ And, it can only be achieved through revolution; the dictatorship of the proletariat; and the establishment of the communist society.

EQUALITY UNDER DIFFERENT CONSTITUTIONS

- a. **America:** The American Declaration of Independence (1776) says that "all men are created equal." The Fourteenth Amendment of the American Constitution guarantees "equal protection of laws" which means subjection to equal law, applying to all in the same circumstances without discrimination.
- b. **Switzerland:** Articles 7 to 40 of the Swiss Constitution deals with the fundamental rights of the citizens. Article 8 assures equality before law to the citizens. It guarantees equal treatment to all the citizens.
- c. **Canada:** The Constitution Act of 1982, made the most important contribution by adding a Charter of Rights and Freedom in the Canadian Constitution. It includes Equality Rights that there shall be no discrimination on ground of race, religion, ethnic or national origin, sex, age, or mental or physical disabilities.
- d. **Russia:** Article 2 of the Constitution of Russian Federation 1993, clearly lays down that human, their rights and freedom are of supreme value. Article 19 of the Constitution deals with 'right to equality' which provides that (1) All people are equal before law and in the court of law. (2) The State guarantees the equality of rights and liberties without any discrimination. (3) There is equality of rights and liberties between men and women.
- e. **Japan:** The Constitution of Japan provides the 'right to equality' which says that all the people are equal under the law and there shall be no discrimination in political, economic or social relations because of race, creed, sex, social status or family origin.
- f. **China:** In the People's Republic of China, all citizens are equal before law. Article 3 of the Constitution says: "The People's Republic of China is a single multi-national state." All the nations are equal. Under Article 10, women have equal rights in the possession and management of family property. Under Article 48, women in China enjoy parity with men in all fields- political, economic, cultural and family life. The principle of equal pay for equal work for both men and women is followed in China.
- g. **India:** Article, 14, 15, 16, 17, 18, 38 and 39 of the Indian constitution deals with the nation of equality. Article 14 embodies the general principle of equality before law and prohibits unreasonable discrimination between person. Article 14 declares that, "the state shall not deny to any person equality before the law or of India. Article 14 embodies the idea of equality expressed in the preamble of the constitution. The succeeding article; 15, 16, 17, 18, 38 and 39 lays down specific application of the general rules laid down in Article 14, Article 15 relates the prohibition of the discrimination on the ground of religion, race, caste, sex or place of birth. Article 16 guarantees the equality of opportunities in matters of public employment. Article 17 abolishes 'untouchability'. Article 18 abolishes 'titles'. Article 38 deals with the principles of policy to be followed by the state for securing social justice and Article 39 deals with the principles of policy to be followed by the state for securing economic justice.

The concept of equality as incorporated in Article 14 does not mean absolute equality among human beings which is physically not possible to achieve. It is a concept implying absence of any special privilege by reason of birth, caste, creed, religion, sex or the like in favour of any individual and also the equal subjection of all individuals and classes to the ordinary law or the land.

Dr. Jennings in Law of the Constitution says that equality before the law means "that among equals the law should be equal and should be equally administered" that the like should be treated alike. Article 14, therefore, says that the distinction should be made between similar and dissimilar i.e. equals should be treated equally and unequal unequally.

JUDICIAL RESPONSE

In *E.P. Royappa v. State of Tamil Nadu*,¹⁵ Bhagwati, J., delivering the judgement on behalf of himself, Chandrachud and Krishna Iyer, JJ. Propounded the new concept of equality in the following words- "equality is a dynamic concept with many aspects and dimensions and it cannot be 'cribbed, cabined and confined' within traditional and doctrinaire limits. Equality is antithesis to arbitrariness. In fact equality and arbitrariness are sworn enemies; one belong to rule of law in a republic while the other, to the whim and caprice of an absolute monarchy. Where an act is arbitrary, it is violative of Article 14."

In *Maneka Gandhi v. Union of India*¹⁶, Bhagwati, J., said- "equality is a dynamic concept with many aspects and dimensions and it cannot be imprisoned within traditional and doctrinaire limits. Article 14 strikes at arbitrariness in state action and ensures fairness and equality of treatment.

In *International Airport Authority case*,¹⁷ Bhagwati, J. reiterated the same principle in the following words- "It must..... therefore, now be taken to be well-settled that what Article 14 strikes at is arbitrariness because an action that is arbitrary, must necessarily involve negation of equality."

CONCLUSION

Democracy is founded on the principle that each individual has equal value. Treating some as automatically having less value than others not only causes pain and distress to that person but also violates his or her dignity as a human being. Equality is a great democratic ideal and is considered synonymous with 'natural equality' which implies that all men are equal. "What we really demand, when we say that all men are equal, is that none shall be held to have a claim to better treatment than another." The 'concept of equality' implies that *equals should be treated equally, and unequals unequally*, and the respect in which they are considered unequal must be relevant to the differences in treatment that are under specific consideration. If there is a norm that equal pay should be given for equal work, it is also needed that work done should be equally well.

The idea of equality is fundamentally a leveling process. It insists that individual shall be equal before law that when the general law confers rights and imposes duties, these rights and duties shall extend to all. The law shall not confer special privileges on particular individuals or groups which mean that the concept of equality implies the absence of special privileges. Equality does not mean identical treatment as there can be no similarity of treatment so long as men are different in their want, need, talent and capacity. Equality implies the presence of adequate opportunities; all that is implied by the term 'adequate opportunity' is that the state should provide suitable opportunities for all citizens without any discrimination for the full development of their intelligence. No person should

¹³ Harold Laski: *Op. cit.*, p.154.

¹⁴ L.Lenin: *Collective Works*, Vol.29. p. 358.

¹⁵ AIR 1974 SC 555

¹⁶ AIR 1978 SC 597

¹⁷ R.D.Shetty v. Airport Authority, AIR 1979 SC 1628

be debarred from achieving the ambition of his life, if he possesses the requisite ability to and intelligence for that purpose. Equality implies the absence of arbitrary power i.e. power must not be exercised arbitrarily.

Thus, the principle of equality means that whatever conditions are guaranteed to an individual, in the form of rights, shall also in the same measure, be guaranteed to others, and that whatever rights are given to others shall also be given to that individual.

G. Sartori, in his book Democratic Theory, has pointed out that, "equality has so many facets and so many implications that after we have examined it from all angles we are left with a feeling of not having really mastered it."

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A REVIEW OF EMPLOYEE TURNOVER OF TELECOM ENGINEERS DEPLOYED IN THE NETWORK OPERATING CENTRE

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ABSTRACT

This study stems from the need to identify the factors that will enable a telecom service organization to retain its key resources in the National Network Operating Centre (NNOC- Network Function) and thereby ensuring its uninterrupted support to the telecom network operations and maintenance. The objective of this research is to analyze the aspirations of telecom engineers and the cause and effect of attrition in the NNOC and suggesting suitable remedial measures. This primary research, spread over two months, is based on the analysis of data garnered from 100 employees working in the NNOC in a leading pan-India telecom player, using stratified random sampling technique and a non standard structured questionnaire. The hypotheses of this study were validated empirically using One-Sample Kolmogorov Smirnov test. The research findings indicate that attrition in the NNOC can be managed by balancing the needs of the business and career aspirations of engineers.

KEYWORDS

Attrition, Employee Turnover, Job hopping, NNOC.

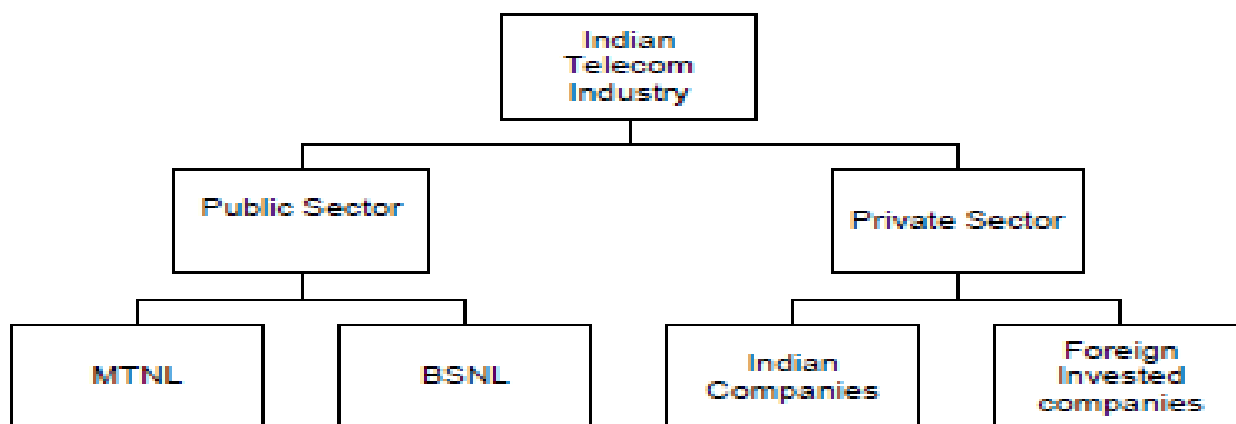
INTRODUCTION OF TELECOM INDUSTRY

The Indian telecom industry has seen tremendous growth in the last 10 years due to the liberal policies of the government and the extensive need for communication. A conducive business environment, favorable demographic outlook and the political stability enjoyed by the country have contributed to the growth of the industry. The rapid growth of the Indian Telecom Industry has significantly contributed to India's GDP. Retaining the best talent is emerging as a major focal area for organizations while managing a highly skilled workforce. The primary area of concern for this sector is the spiraling attrition rate that is currently hovering around the 25% mark. The Indian Telecommunications network is the third largest in the world and the second largest among the emerging economies of Asia. The telecom sector has been one of the fastest growing sectors in the Indian economy in the past 4 years. This has been witnessed due to strong competition that has brought down tariffs as well as simplification of policy environment that has promoted healthy competition among various players. The growth of the industry prompted the government to allow more players on the field leading to an intense price war in an attempt to garner market share. The total number of mobile subscribers is expected to breach the 800 million mark by the end of the year 2012 accounting for an overall teledensity of around 70%. **TRAI Annual Report. (2010-11)**. India is fast emerging as the telecom hub of the world in terms of the growing demand, size of demand and FDI inflows. The rapid growth of the Indian Telecom Industry has been contributing to India's GDP. With more and more players entering the industry, retaining the best talent is emerging as a major focal area for organizations in general and HR Managers in particular. Retention of employees remains a significant KRA of all Managers in an organization, owing to talent scarcity (*Indian Telecom Industry, 2011*).

CURRENT STRUCTURE OF THE INDIAN TELECOM INDUSTRY

Currently, both public and private sector players are actively catering to the rapidly growing telecommunication needs in India. Private participation is permitted in all segments, including ILD, DLD, basic cellular, internet, radio paging, et al. The broad structure of the telecom industry (in terms of service providers) is depicted in Figure 1 below (*Preethi Sundaram et al. , 2009*);

FIGURE 1: STRUCTURE OF INDIAN TELECOM INDUSTRY



SEGMENTS IN THE TELECOMMUNICATION INDUSTRY

The telecom services in India can be divided into two broad segments, wire line services and wireless services. The industry classification is as follows:

- Wire line services (Fixed line telephone and Broadband)
- Wireless service: [Mobile Phone - GSM (2G, 3G and 4G) and CDMA (1x and HSD – Wireless Data Cards)]
- Internet services

- Public Mobile Radio Trunked Services (PMRTS)
- Global Mobile Personal Communication by Satellite (GMPCS)
- Very Small Aperture Terminals (VSAT)
- Mobile Value Added Services

MAJOR FUNCTIONS AND DIVISIONS IN THE TELECOM SERVICE ORGANISATION

- Wireless Planning and Engineering
- Wireless and Wire line Projects
- Wire line Planning and Engineering
- Network Operations Centre(NNOC)
- Transport Planning and Engineering
- Network Field Operations and Maintenance
- Data Planning and Engineering
- Network Quality and Performance
- Fixed Access
- International Long Distance and National Long Distance operations
- Installation and Commissioning of Network Infrastructure

STRUCTURE, FUNCTIONS AND CAREER IN THE NETWORK OPERATING CENTRE

The management of the modern day state-of-the-art telecommunication networks mandates a centralized management setup that can monitor, configure and troubleshoot network entities on a 24 *7 basis. The nerve centre of the LEADING TELCO Network is the spectacular 110,000-sq ft national Network Operations Centre (NNOC). The concept of one control centre for an entire network was a unique and pioneering concept in telecom Network Management. The significance of a single NNOC is that all services, including billing, databases and customer relations, can be managed centrally. This approach substantially reduces the cost of network management.

The Pan India network telecom organization is a convergence ready broadband Pan-India network consisting of terrestrial fiber optic links, submarine and satellite links, with a scalable and restorable global Next Generation Network (NGN) footprint supported by the latest standards and technologies. The network functions are supported by an integrated business and operational support (BSS-OSS) systems facilitating the delivery of a complex suite of services with end-to-end connectivity. The technologies deployed include Synchronous Digital Hierarchy (SDH), Dense Wavelength Division Multiplexing (DWDM), Optical Transport Network (OTN), Microwave, VSAT on the transport domain, 2G to 3G, GSM to UMTS, CDMA to HSD in the Wireless domain, Switching to Routing, IP to MPLS, TDM to NGN Soft Switch, Utilities, OSS and many more. The services provided includes POTS, PRI, Leased line, VoIP, HSD, Video Calling, Ethernet Leased Lines, L3-VPN, Mobile TV, Mobile broadband on 3G, etc.

The service assurance and service fulfillment functions for the LEADING TELCO network are carried out from the two world class state-of-the-art 24x7 National Operating Centers (NOC) at Navi Mumbai and Hyderabad. Both Hyderabad and Mumbai NOC also act as back up for each other and support service assurance functions in case of any emergency at either of NOC. With 500 + seats in each shift, NOC is equipped with Network Management Systems (NMS) and Operational Support Systems (OSS) to carry out Fault management, Configuration Management, Accounting, Performance Management and Security Management (FCAPS) on all Network elements in a LEADING TELCO network. The Integrated Network Operations Centre is responsible for the constant monitoring and troubleshooting of network devices, from a multitude of vendors including Ciena, Lucent, Huawei, ZTE, Ericsson, NEC, Ceragon, Siemens, Celtra, Juniper, CISCO, Alcatel-Lucent, Atrica, UTStar and Telsima, to ensure round the clock management of the LEADING TELCO network. It specializes in technical issues relating to the network and guarantees a fast response time to all critical issues. Sophisticated alarm tools prioritize network related issues to ensure quick repair times. Scheduling of planned intervention and management of planned outages of the system, tending to basic daily network operation, fault handling and responding to customer queries are all tasks carried out by the NNOC teams. The NNOC ensures delivery of quality services to Customers; ensure efficient monitoring of network alarms, fault diagnosis and fault rectification within targeted Mean Time to Repair (MTTR) through a proactive response to the network incidents through Performance Monitoring.

The NNOC consists of the following functional blocks:

- Wireless NOC: Managing network elements serving mobile services
- Wire line NOC: Managing switch, Transport, Data, Wire-line Access, Fiber and Utility Network Elements
- Enterprise NOC: Interfacing, Communicating and Service Assurance of Enterprise Customers
- SOMG: Configuration and Provisioning Services on the Network Elements
- NMG: Manages all the NMS/PMS deployed in the NOC
- Performance Management: Taking care of Network and Services performance statistics, preventive actions as required

NNOC provides a challenging environment that fosters continuous learning, competency building and a progressive career in the telecom industry. A candidate can progress from the network surveillance function, to fault management, TAC (Technical Assistance Center) management and performance management in any of the following domains:

- Transport – Optical and Radio
- Data – Access, RDN (Reliance Data Network), MEN (Metro Ethernet Network)
- Switch and Adjunct
- Access Technologies
- Utilities

The role-career progression would be from an engineer to team lead, shift head, functional lead, technical manager in the domains mentioned above. The NNOC roles require candidates with good communication, inter-personal, analytical skills with sound conceptual knowledge and willingness to learn and adapt to the changing business landscape.

PERCEIVED CHALLENGES IN THE NNOC

- Time sensitivity - The KPI is to deliver quality results on time, hence there is a pressure to deliver always - "fire fighting mode"
- Increasing load - With increase in load observed over service and network layers, engineers get less time for skill set development in parallel domain.
- Shift Operation - Tendency to prefer general shift timing over A, B and C shifts
- Practical Exposure - Compared to planning and deployment, engineers from NNOC have less practical exposure to creation of network/services. Their role is to do assurance of the created infrastructure
- Routine operation- Not much of variety in day to day operations, unlike planning and deployment
- Dependency- On the Field unit is very high to deliver network KPIs, gap becomes evident in critical cases
- Escalation- After office hour escalations by customers / business are high on NNOC engineers
- Skills not matching the roles performed and hence the steep investment in training
- High attrition and consequently low productivity

- Impact on organization's performance - network performance owing to high turnover

The NNOC roles call for strong customer-facing skills, the ability to collect customer requirements and implement short- and long-term technical solutions. The positions required excellent proactive and day-to-day verbal and written communication skills with widely varying audiences. Fault management roles need to be adept in identifying gaps and/or persistent issues, proposing and implementing solutions to fill the gaps or to resolve the issues. Candidates need to possess the ability to thrive in an environment with rapidly shifting focuses and priorities, quickly learn new technologies, commitment to provide run-the-business and Tier 3/4 support for voice and collaboration solutions, and participate in on-call and/or 24x7 availability. They need to develop strong, proven fault and root cause analysis skills working in a global, distributed environment along with the strong vendor management skills.

Some of the key challenges of Engineers deployed in the NNOC are highlighted as under:

- Working in shifts
- Adapting the NNOC environment of fault, surveillance and performance management roles
- Balancing aspiration v/s role expectation
- Job repetitive, monotonous and chasing the field for closure network faults and fault management
- Raising trouble tickets and closure by continuous follow up with field engineers

PERCEIVED JOB OPPORTUNITIES FOR NNOC TELECOM ENGINEERS

With the mushrooming of the number of operators, we have witnessed significant growth in the infrastructure, subscriber base and the revenues over the past 5-8 years. There is a hiring spree, since the organizations had to quickly launch and roll out their services. Widespread job hopping for higher salary, bigger roles etc., was the buzz word until recently. Employee retention has become a very big challenge for the existing operators who have their operations running since 1996 or 2001. This steep growth compelled with the entry of new organizations in this space has created numerous job opportunities and the job hoppers had a free run by maximizing on the upward trends. With the entry of new operators, the existing skill shortage in the labor market resulted in steep increase in salaries to woo new employees or to hold on to existing ones. NNOC engineers are looking at planning, engineering, architecture and quality roles including roles in service assurance and service delivery in the network, in the competition companies to beat the monotony in the job and lack of growth. Alternatively, the telecom engineers are scouting for opportunities in the software organizations or with equipment manufacture or managed service operators in network management roles.

ATTRITION IN THE TELECOM INDUSTRY

The industry has been expanding and jobs mushrooming by the minute and hence it has all boiled down to attracting, managing and retention of talent. There is a scarcity of qualified and trained manpower to meet the growing needs. The Indian economy has been growing at a sturdy pace of 8% annually and has surely placed an enormous strain on the existing talent pool of various job opportunities. Conducive business environment, favorable demographic outlook and the political stability enjoyed by the country have contributed to the growth, resulting in the increase in job options. Shortage of skilled manpower has caused deep concerns in this space and with increasing workforce complexity the challenges have been mounting. The game changer, attrition, in an organization seems to decide outcomes. The changing paradigms, the cost of employee turnover, employee perspectives and new retention methodologies are worth studying for any practicing HR manager. Liberalization, Globalization and Privatization in the telecom space has provided job hoppers with multiple options. With more and more players at the marketplace, the pressure in terms of attracting and retaining the right talent is a challenge. The employment scenario is very promising and is creating employment opportunities and adding more and more people to its workforce. There is a huge demand for trained and qualified engineers and other professionals.

ATTRITION, EMPLOYEE TURNOVER AND JOB HOPPING

EMPLOYEE TURNOVER

Employee Turnover (ET) is defined as the ratio of the number of workers that had to be replaced in a given time period to the average number of workers. Attrition is the reduction in staff and employees in a company through normal means, such as retirement and resignation. Some of the significant aspects of ET are as listed below:

ET can be classified as:

- Voluntary Turnover- which is initiated at the choice of the employee
- Involuntary Turnover- where the employee has no choice in his/her termination (E.g. Long-term sickness, death or employer-initiated termination)

JOB HOPPING

A person changing jobs frequently is termed as a job hopper. Job hopping by employees has existed ever since the inception of the industry. An employee leaving an organization that did not meet his expectations when an alternative position became available in another organization was considered normal (**India Attrition Study, 2008**).

India is a country booming with youngsters who are ambitious, optimistic and hard-working. The country generating a large pool of engineers in electronics, communications and telecom after four years graduate program. Majority of the engineering students are keen to start their career in the industry after their graduation and prefer technology roles in the IT and Telecom sector. Bulk of the roles in the telecom service sector evolves around operations and maintenance or NNOC centric roles. However, close to 30% of the roles are available in the areas of planning, engineering, network architecture, quality and performance improvement. Today's engineering graduates are aspirational and are looking at accelerated growth prospects coupled with competitive compensation and adequate training and skill development. The current trends indicate that engineering students prefer IT roles when compared to Telecom industry operational roles and is a possible factor for high attrition rates in the NNOC and telecom industry. Managing employee turnover has thus become a major challenge for the Telecom industry, especially in India. This has led organizations to focus on methods and techniques to increase employee engagement and reduce attrition. It is now well understood by organizations that employee engagement is the force that drives performance outcomes.

CONSEQUENCES OF JOB HOPPING IN THE NNOC

Drop in productivity, increase in training costs, impact on work culture are a series of aspects associated with job hopping. No doubt job hopping has become the latest trend today, or a shortcut to success. The consequences of frequent job change are many, but the most affected area is loyalty with the organization. The consequences of job hopping by engineers in the NNOC are elaborated as under:

- Huge back log of trouble tickets not being closed impacting network performance
- Transfer of work load to other engineers resulting in long hours of work and burn out
- Delayed closure of network issues impacting network performance
- Inadequate support to the field on operation and maintenance issues
- Further trigger for attrition owing to instability
- Drop in customer satisfaction resulting in drop in revenues

Frequent movement of engineers has an impact on the continuity of business operations, productivity of employees, opportunity, hiring, training and induction costs etc. Whenever engineers in the NNOC leave an organization they carry with them the historical knowledge, functional and cultural knowledge of the organization, which takes a long time to replenish. Employee turnover in the NNOC surely impacts network service delivery. Employee turnover increases the payroll and retention costs and thereby impacting the profitability of organizations. Organization's growth and success would largely depend on stable,

motivated and highly engaged employees. Organizations with controlled attrition and employee turnover rates are normally more successful and consistent than the rest and hence this social phenomenon impacts the long-term interest of the employees, organizations and the society at large.

Higher pay and better employment prospects may be utmost for a person switching companies, but job-hopping can severely hamper career growth as well as wealth creation in long-term. The experts believe that sticking to the same company for more time, rather than aimlessly hopping jobs, can provide better learning and career momentum to young professionals. Job-hopping is taking place in the NNOC function owing to the following reasons some of which have been quoted below:

- Routine and Mundane work responsibilities
- 24/7 Shift working
- Follow up and chasing for closure of trouble tickets
- Rudimentary roles, job content and volume of activity
- Compensation and career prospects
- Job Stress
- Not much learning on the job
- No scope for accelerated growth

COSTS ATTRIBUTED TO ATTRITION IN THE NNOC

Attrition represents significant costs to Network operations and it seems to be one of those areas in which the management can make a difference and one that can be measured in quantifiable, financial terms against targets. Some of the costs attributed are listed below:

- Separation
- Recruitment
- Training
- On-boarding
- Drop in customer experience and revenue owing to stability of operations and maintenance
- Drop in network performance owing to delayed closure of trouble tickets, surveillance and performance management
- Loss of employee productivity
- Other administrative costs

REVIEW OF LITERATURE

The literature review enabled the researcher to study the phenomena of engineer's job hopping in the BPO and IT service help desk operations. These industry roles were some- what similar to the NNOC roles but from a different industry segment all together. There was virtually no research material available on the subject in libraries, digital libraries, books or journals which could have aided the researcher to study the trends with specific reference to the NNOC in the Telecom service industry.

Call centers and outsourcing have become the main components of globalization and is a result of unparalleled scientific and technological development throughout the world. Because of the vast employment opportunities provided by the Call Centers and Business Process Outsourcing (BPO), they are called the sunshine industries. Today India is the hub of BPO because of the availability of cheap and qualified workforce, state of the art technology, booming IT and telecommunication sectors and its unique geographical location. But the alarming rate of employee turnover in the Call Centers and other BPO sectors has become a stumbling block for the growth of this sector. In India, the average attrition rate in the BPO sector is approximately 30-35 percent (**Depak, Ramakrishna and Kripa, 2012**).

The greatest challenge for a Network Operations Center (NOC) is to balance the following three desired outcomes with respect to a communications network: the organization's mission, the support to the individuals, and network security. The fulcrum for this triangular shaped plate is that of a pinhead and these tasks are constantly outweighing each other. This paper is not intended to identify the perfect formula for this balance but only to show some real life concepts and solutions as well as some technical points. To manage all three outcomes requires a fair amount of knowledge, experience, and resiliency on the Network Operations Center Staff. This process involves the proper planning and configuration of resources, to include personnel, training, equipment, end-user awareness, and manageable policies. A working Network Operations Center (NOC) is a high speed, immediately responsive center that must operate in a proactive mode to be able to react to threats against the network at a moment's notice "Reaction" (**Peterson, 2001**).

Call centers are an increasingly important part of today's business world, employing millions of agents across the globe and serving as a primary customer-facing channel for firms in many different industries. Call centers have been a fertile area for operations management researchers in several domains, including forecasting, capacity planning, queuing, and personnel scheduling. In addition, as telecommunications and information technology have advanced over the past several years, the operational challenges faced by call center managers have become more complicated. Issues associated with human resources management, sales, and marketing have also become increasingly relevant to call center operations and associated academic research. This paper provides a survey of the recent literature on call center operations management. Along with traditional research areas, special attention to new management challenges that have been caused by emerging technologies, to behavioral issues associated with both call center agents and customers, and to the interface between call center operations and sales and marketing have been addressed. A handful of broad themes for future investigation are also listed along with several very specific research opportunities (**Zeynep Aksin, November-December 2007**).

The majority of IT organizations are under considerable pressure to evolve to a next generation Network Operations Center (NOC). For example, a survey of 176 IT professionals has uncovered the fact that over a quarter of NOCs do not meet their organization's current needs. In order to fulfill the current and emerging requirements, NOCs are being driven to do a better job of managing application performance, to implement more effective IT processes and to be able to troubleshoot performance problems faster.

While the survey results confirmed the conventional wisdom that a NOC is often stove-piped and reactionary, the results disputed the conventional wisdom that NOC personnel are focused largely on monitoring in general and that they spend the majority of their time on networking in particular. The survey results also showed that while the vast majority of NOCs are undergoing significant change, not all NOCs are starting at the same place in terms of the functionality that they currently provide. To be able to plan for the evolution of their company's NOC in this demanding yet uncertain environment, network professionals need an awareness of what their peers are doing to address the challenges they are facing, as well as an understanding of how well their efforts are succeeding (**Metzler, Dr. Jim, Ashton, Metzler & Associates, 2011**).

A well-organized IT infrastructure support system can help enterprises and service providers improve IT staff productivity and retention while simultaneously increasing uptime and providing a better end-user experience. The use of a tiered support structure containing a 24x7 Network Operations Center (NOC) can help IT Support Managers cost-effectively address their IT support needs by leveraging lower-cost first-level (Tier 1) support (**Rao, 2008**).

The movement and collaboration of information has never before been more important to the success of tactical missions. Advanced mobile and wireless networking technologies have the capability to put critical information at the fingertips of the operator, enabling tactical units to successfully carry out their missions. The increasing use of expeditionary and special operations forces in ad hoc, dynamic, and tactical environments poses a need for an adaptable, flexible, and responsive deployable network operations center (DNOC) to support their efforts. Whether co-located or virtual, the DNOC must support tactical units by supplying them with the right information, at the right time, and in the right format. This platform must also provide a rapid, reliable, and secure communications network so forces can collaborate in a manner which builds quality interaction and trust (**Alex Bordetsky, 2012**).

Network Operations Center (NOC) is one or more locations from which control is exercised over a computer, television broadcast, or telecommunications network. Large organizations may operate more than one NOC, either to manage different networks or to provide geographic redundancy in the event of one site being unavailable or offline.

NOCs are responsible for monitoring the telecommunication network for alarms or certain conditions that may require special attention to avoid impact on the network's performance. For example, in a telecommunications environment, NOCs are responsible for monitoring for power failures, communication line alarms (such as bit errors, framing errors, line coding errors, and circuits down) and other performance issues that may affect the network. NOCs analyse problems, perform troubleshooting, communicate with site technicians and other NOCs, and track problems through resolution. If necessary, NOCs escalate problems to the appropriate personnel. For severe conditions that are impossible to anticipate – such as a power failure or optical fiber cable cut – NOCs have procedures in place to immediately contact technicians to remedy the problem.

NOCs often escalate issues in a hierarchic manner, so if an issue is not resolved in a specific time frame, the next level is informed to speed up problem remediation. Many NOCs have multiple "tiers", which define how experienced/skilled a NOC technician is. A newly-hired NOC technician might be considered a "tier 1", whereas a technician that has been there for several years may be considered a "tier 3" or "tier 4". As such, some problems are escalated within a NOC before a site technician or other network engineer is contacted. Additionally, the NOC staff may perform extra duties; a network with equipment in public areas (such as a mobile network Base Transceiver Station) may be required to have a telephone number attached to the equipment for emergencies; as the NOC may be the only continuously staffed part of the business, these calls will often be answered there (Wikipedia).

RESEARCH METHODOLOGY

This research is a blend of theoretical and empirical work and is descriptive in nature and has been carried out with specific objectives resulting in definite conclusions. The sample was drawn from LEADING TELCO-Network National Operating Centre based out of Navi Mumbai and the disaster recovery operating centre at Hyderabad. The population is approximately 850 permanent employees {excludes associate employees, outsourced, managed services employees, consultants and retainers, trainees (GET's/MT's)} who are currently working in the target organizations. The research was conducted in two phases;

Exploratory phase: Referred various literature on the subject and the exit interview analysis of the employees who have quit the NNOC function over the last 3 years. Validation phase: During the validation phase the questionnaire was administered on the target sample and the research instrument adopted the Likert scale with a few close ended questions.

DATA COLLECTION AND ANALYSIS

A sample of from a universe of permanent employees was the size of the sample for the final research and a stratified sampling method was adopted. The stratified sampling method was followed as it would have more statistical efficiency. The questionnaires were administered personally and involved face to face interviews. The various tests and analysis performed with the raw data using SPSS (Statistical Package for Social Sciences) are as under:

- Cronbach's Alpha reliability tests
- Pearson's Correlation technique
- One-sample Kolmogorov – Smirnov test
- Comprehensive Comparative Analysis of demographic data

Non-Parametric tests have been used to validate the hypotheses. The findings of the research have been presented in the research report after statistical validation. Each query has generated responses leading to employees subscribing to certain views, which has resulted in conclusive empirical evidence in the area of research.

DATA ANALYSIS AND INTERPRETATION

The demographic details of the participants of the survey are depicted below in table 1:

TABLE 1: DEMOGRAPHIC PROFILE OF THE PARTICIPANTS OF THE SURVEY

Experience Band	No of Respondents	Age Band	No of Respondents	Qualification	No of Respondents
Years	Nos.	Years	Nos.	Degree	Nos.
1-2	18	22 – 26	38	Diploma	3
2-6	50	27 – 31	31	B Sc/ B Com	6
6-10	20	32 – 36	18	BE/ BTech	87
> 10	12	> 37	13	Masters	4
Total	100	Total	100	Total	100

TABLE 2: QUESTIONNAIRE RESPONSES – DESCRIPTIVE STATISTICS

	Q1	Q2	Q3	Q4	Q5	Q7	Q8	Q9	Q10	Q11	Q12	Q14	Q15	Q16	Q13 Reverse Coded
N	Valid	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mean	2.16	2.04	2.26	2.85	2.26	2.94	2.33	1.93	3.5	3.44	2.78	2.68	2.77	2.42	2.84
Std. Error of Mean	0.1	0.08	0.11	0.11	0.1	0.103	0.1	0.08	0.109	0.116	0.086	0.09	0.09	0.1	0.103
Median	2	2	2	3	2	3	2	2	4	4	3	3	3	2	3
Mode	2	2	2	2	2	2	2	2	4	4	2	3	2	2	2
Std. Deviation	0.95	0.84	1.07	1.095	0.99	1.033	0.99	0.81	1.087	1.157	0.86	0.89	0.93	0.96	1.032
Variance	0.9	0.71	1.14	1.199	0.98	1.067	0.97	0.65	1.182	1.34	0.739	0.79	0.87	0.91	1.065
Skewness	0.97	1.18	0.93	0.445	0.85	0.402	0.97	0.72	-0.34	-0.33	0.346	0.5	0.71	0.55	0.441
Std. Error of Skewness	0.24	0.24	0.24	0.241	0.24	0.241	0.24	0.24	0.241	0.241	0.241	0.24	0.24	0.24	0.241
Kurtosis	1.36	2.31	0.41	-0.71	0.43	-0.55	0.41	0.28	-0.54	-0.81	-0.43	0.43	0.09	0.19	-0.578
Std. Error of Kurtosis	0.48	0.48	0.48	0.478	0.48	0.478	0.48	0.48	0.478	0.478	0.478	0.48	0.48	0.48	0.478
Range	4	4	4	4	4	4	4	3	4	4	4	4	4	4	4
Percentiles	25	2	2	2	2	2	2	1	3	3	2	2	2	2	2
	50	2	2	2	3	2	3	2	4	4	3	3	3	2	3
	75	3	2	3	4	3	4	3	2	4	4	3	3	3	4

DATA INTERPRETATION

The descriptive statistics of the questionnaire responses is presented in the table 2. These include mean, standard deviation, skewness and kurtosis. Skewness is used for distribution analysis and is indicative of a sign of asymmetry and deviation from a normal distribution. Out of the 16 factors 14 indicate positive skewness while the remaining 2 factors are negatively skewed. Kurtosis is an indicator used in distribution analysis as a sign of flattening or "peakedness" of a distribution. Most of the factors have a Kurtosis > 3 which is indicative of a Leptokurtic distribution, sharper than a normal distribution, with values concentrated around the mean and thicker tails. This means high probability for extreme values.

QUESTIONNAIRE RELIABILITY

The cronbach alpha test was performed for testing the reliability of the research instrument. Post the reverse coding of Q13 the test was positive and the reliability was established.

The table 3 & 4 indicates that the reliability of the research instrument can be significantly improved by omitting Question 6 from the analysis. The recomputed reliability coefficient α is presented in the table below:

TABLE 3: CRONBACH ALPHA TEST

Reliability Statistics	
Cronbach's Alpha	N of Items
.726	15

TABLE 4: CRONBACH ALPHA TEST AFTER DELETION Q6

Item-Total Statistics				
Question	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q1	37.04	41.231	.234	.721
Q2	37.16	39.307	.473	.699
Q3	36.94	37.289	.502	.691
Q4	36.35	37.442	.474	.694
Q5	36.94	39.734	.342	.710
Q7	36.26	40.800	.237	.722
Q8	36.87	37.084	.578	.684
Q9	37.27	43.856	.045	.737
Q10	35.70	41.586	.158	.732
Q11	35.76	40.346	.225	.725
Q12	36.42	43.519	.065	.736
Q14	36.52	40.030	.372	.708
Q15	36.43	40.086	.343	.710
Q16	36.78	38.598	.462	.697
Q13 Reverse Coded	36.36	38.475	.426	.700

QUESTIONNAIRE RELIABILITY - INTERPRETATION

Cronbach's alpha reliability coefficient normally ranges between 0 and 1. The closer Cronbach's alpha coefficient is to 1.0 the greater the internal consistency of the items in the scale. The alpha coefficient for respondent data is 0.726 which indicates a high internal consistency of the scale items (**Cronbach Alpha, 2012**) (Refer Table 5).

TABLE 5: PEARSONS CORRELATION TEST

Questionnaire Data – Co-relational Analysis		Q1	Q2	Q3	Q4	Q5	Q7	Q8	Q9	Q10	Q11	Q12	Q14	Q15	Q16	Q13 Reverse Coded
Q1	Pearson Correlation	1	.283**	.088	.169	-.130	.246	-.014	.002	.049	.091	.204	.049	.145	.303**	.068
	Sig. (2-tailed)		.004	.385	.093	.196	.013	.892	.988	.629	.366	.042	.625	.151	.002	.504
	N	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Q2	Pearson Correlation	.283**	1	.472**	.270*	.242*	.096	.252*	-.041	.144	.086	.180	.153	.283**	.356**	.182
	Sig. (2-tailed)	.004		.000	.007	.015	.342	.011	.689	.153	.397	.073	.128	.004	.000	.070
	N	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Q3	Pearson Correlation	.088	.472**	1	.456**	.422**	.087	.435**	.010	.000	.029	.063	.259**	.193	.248*	.395**
	Sig. (2-tailed)	.385	.000		.000	.000	.387	.000	.925	1.000	.774	.535	.009	.055	.013	.000
	N	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Q4	Pearson Correlation	.169	.270**	.456**	1	.250*	.179	.393**	.057	-.013	.204	.008	-.019	.194	.370**	.399**
	Sig. (2-tailed)	.093	.007	.000		.012	.074	.000	.576	.900	.042	.941	.853	.053	.000	.000
	N	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Q5	Pearson Correlation	-.130	.242*	.422**	.250*	1	.075	.356**	.099	-.009	.049	-.063	.314**	.197*	.161	.229*
	Sig. (2-tailed)	.196	.015	.000	.012		.461	.000	.328	.926	.629	.536	.001	.050	.110	.022
	N	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Q7	Pearson Correlation	.246*	.096	.087	.179	.075	1	.178	.055	.099	.014	.110	.233*	-.067	.169	.086
	Sig. (2-tailed)	.013	.342	.387	.074	.461		.076	.584	.327	.891	.275	.020	.507	.093	.397
	N	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Q8	Pearson Correlation	-.014	.252*	.435**	.393*	.356**	.178	1	.106	.108	.252	-.033	.377**	.282*	.366**	.460**
	Sig. (2-tailed)	.892	.011	.000	.000	.000	.076		.296	.283	.011	.747	.000	.004	.000	.000
	N	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Q9	Pearson Correlation	.002	-.041	.010	.057	.099	.055	.106	1	.178	-.021	-.066	-.060	.019	-.119	.035
	Sig. (2-tailed)	.988	.689	.925	.576	.328	.584	.296		.076	.838	.514	.554	.854	.240	.730
	N	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Q10	Pearson Correlation	.049	.144	.000	-.013	-.009	.099	.108	.178	1	.096	-.032	.073	.245*	.078	.072
	Sig. (2-tailed)	.629	.153	1.000	.900	.926	.327	.283	.076		.340	.749	.468	.014	.442	.476
	N	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Q11	Pearson Correlation	.091	.086	.029	.204*	.049	.014	.252*	-.021	.096	1	.037	.139	.095	.215*	.161
	Sig. (2-tailed)	.366	.397	.774	.042	.629	.891	.011	.838	.340		.712	.169	.348	.032	.110
	N	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Q12	Pearson Correlation	.204*	.180	.063	.008	-.063	.110	-.033	-.066	-.032	.037	1	-.001	.176	.052	-.177
	Sig. (2-tailed)	.042	.073	.535	.941	.536	.275	.747	.514	.749	.712		.996	.080	.606	.079
	N	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Q14	Pearson Correlation	.049	.153	.259**	-.019	.314**	.233*	.377**	-.060	.073	.139	-.001	1	.277*	.256*	.297**
	Sig. (2-tailed)	.625	.128	.009	.853	.001	.020	.000	.554	.468	.169	.996		.005	.010	.003
	N	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Q15	Pearson Correlation	.145	.283**	.193	.194	.197*	-.067	.282**	.019	.245*	.095	.176	.277**	1	.087	.098
	Sig. (2-tailed)	.151	.004	.055	.053	.050	.507	.004	.854	.014	.348	.080	.005		.389	.332
	N	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Q16	Pearson Correlation	.303**	.356**	.248*	.370**	.161	.169	.366**	-.119	.078	.215	.052	.256*	.087	1	.315**
	Sig. (2-tailed)	.002	.000	.013	.000	.110	.093	.000	.240	.442	.032	.606	.010	.389		.001
	N	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Q13 Reverse Coded	Pearson Correlation	.068	.182	.395**	.399*	.229*	.086	.460**	.035	.072	.161	-.177	.297**	.098	.315**	1
	Sig. (2-tailed)	.504	.070	.000	.000	.022	.397	.000	.730	.476	.110	.079	.003	.332	.001	
	N	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

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

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

Table 6 represents the groups formed from the pool of questions for testing the hypothesis.

TABLE 6: DETAILS OF GROUPS

GROUP 1 (Q1, Q2, Q3)		Group 2 (Q4, Q5, Q8)		Group 3 (Q7, Q9, Q10, Q13, Q14, Q15)	
Reliability Statistics		Reliability Statistics		Reliability Statistics	
Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items
0.524	3	0.597	3	0.426	6

Questions which could not be grouped are: Q6, Q11, Q12 and Q16

HYPOTHESES

Hypothesis 1: The roles and career options in the NNOC do not excite engineers to pursue their careers in the long term

Hypothesis 2: The NNOC roles do not provide adequate opportunities for skill and knowledge development

Hypothesis3: Engineers prefer planning and engineering roles as against pursuing a career in the NNOC

HYPOTHESES TESTING

TABLE 7: ONE SAMPLE KOLMOGORV SMIRNOV TEST – HYPOTHESIS TESTING

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig.	Decision
1	The distribution of HYP1 is normal with mean 6.28 and standard deviation 5.37.	One-Sample Kolmogorov-Smirnov Test	.000	Reject the null hypothesis.
2	The distribution of HYP2 is normal with mean 7.02 and standard deviation 7.70.	One-Sample Kolmogorov-Smirnov Test	.000	Reject the null hypothesis.
3	The distribution of HYP3 is normal with mean 1.10 and standard deviation 0.30.	One-Sample Kolmogorov-Smirnov Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The table 7 shows that the null hypotheses have been rejected which leads to the following:

MAJOR FINDINGS

- The roles and career options in the NNOC does excite engineers to pursue their careers in the long term and hence the hypothesis is negated.
- The NNOC roles do provide good opportunities for skill and knowledge development and hence the hypothesis is negated
- Engineers prefer planning and engineering roles as against pursuing a career in NNOC and hence this hypothesis is validated

SUPPLEMENTARY FINDINGS

1. There is a positive co-relation between Q2 and Q3(Refer Table 5)

Candidates who were enthusiastic about NNOC roles and responsibilities at the time joining continued to maintain the optimism during their tenure with NNOC. They perceive that their qualifications, skill and career aspirations match with their current roles and responsibilities.

2. There is a positive co-relation between Q3 ,Q4, Q5, Q8 and Q13(Refer Table 5)

Candidates who perceived that their qualifications, skill and career aspirations match with their current roles and responsibilities reported that their training needs were fulfilled and could translate their learning to on-the-job experiences. There is also enough learning opportunities in the current role, scope for growth, career progression and preferred to pursue their career in the NNOC function.

3. There is a positive co-relation between Q4 and Q13(Refer Table 5)

Candidates who perceived that their training needs were identified and served also felt that there was scope for growth and career progression in NNOC.

4. There is a positive co-relation between Q8 and Q13, Q14 and Q15(Refer Table 5)

Candidates who reported that there are enormous learning opportunities in the current job/role also perceived further scope for growth and career progression in NNOC, multiple job opportunities outside NNOC and at the market place.

5. There is a positive co-relation between Q16, Q11 and Q13(Refer Table 5)

Candidates who preferred to pursue a career within the NNOC function perceived further scope for growth and career progression in NNOC, but strongly felt that their remuneration was not on par with their roles and responsibilities.

LIMITATIONS

This study is limited to the permanent employees of the NNOC and does not encompass the other functions of Network or other businesses or divisions in the telecom service organization.

Managed services operator employees, outsourced resources, consultants, trainees [Graduate Engineer Trainees (GET) or Management Trainees (MT)] or retainers have also been excluded from the study.

24x7 operations of the NNOC based in Navi Mumbai were only considered.

NNOC employees are not a full representation of the Network organization and resemble IT- BPO or IT service help desk organization. The lack of published literature on the attrition of NNOC employees or engineers working in similar roles was a challenge. Involuntary turnover or attrition was not considered part of this study or its impact on voluntary turnover. Host of other variables and factors that go into the decision of a job hopper might not have been covered owing to the magnitude of the social phenomenon, which could be part of the effort for future research. This study also does not cover the impact of non-work domain on job hopping.

DIRECTIONS FOR FUTURE RESEARCH

Similar studies could be undertaken for a larger audience i.e., covering the whole of the industry. Since bulk of the responses were gathered from participants of a Leading Telcom organization it would be relevant to cover all the NOC engineers working with other Telcos and managed network service providers for seeking a holistic picture and also for validation of this research findings.

ORGANIZATIONAL DIRECTIONS FOR FOCUSING ON RETENTION OF TELECOM ENGINEERS

At the conceptual level, job hopping of telecom engineers in the NNOC can be thought of a decision process that makes an engineer to voluntarily terminate his present employment in the NNOC with an organization to join another organization to pursue his career ambition. The decision process is conscious and is driven by the causes that reside in his personality and his membership of the present organization and the alternative avenues of employment that are available to him. The decision rests on the balancing act of values that an employee perceives that he stands to derive from the alternate organizational membership. The impetus for employee job hopping emanates from dissatisfaction with current position and eminent promise of a bright future elsewhere. The personality of an individual is a sum of his convictions, values, experience and expectations. It is reflected in the way he views his acts and of those around him in the work place. Innovation matters for the company and the world hence, it is important to promote innovation and be on the cutting edge of technology. Employees, customers and the organization will benefit from the strengths in leading- edge technology. Therefore it is important to offer engineers friendly work-life policies and support work-life balance and flexible work options, making it easier for engineers to balance their busy work with their personal lives. Telecom engineers must be provided job rotation in the areas of planning, engineering, architecture, quality and performance management periodically in addition to their operation and maintenance roles to keep them motivated to continue working longer and delivering superior performance. Organizations must create a performance-based culture that talented people find very attractive. Believing in empowering employees as partners to success, offering job enrichment and best workplace amenities adds value. Culture can be considered to be among innovations and hence organizations must strive to provide an environment that is stimulating with high levels of motivation, empowerment, and recognition. An organization must provide employees exposure to the latest technologies which offer immense scope for professional development and career growth, across technological and functional areas. Organizations must help employees remain committed by providing learning through a series of job rotation programs and on the job development. Career growth must always be encouraged and

employees must be given opportunities to challenge themselves through on the job learning and cross functional rotations. Organizations must also invest in a comprehensive market survey and data analysis to arrive at a competitive compensation structure. Provide competitive benefits and incentive packages for employees based on superior performance.

CONCLUSION

The data analysis and the tests enabled the researchers to establish that telecom organizations can take the essence of this empirical research work for strengthening their people practices in the NNOC. It is established from the research findings that the telecom engineers prefer NNOC roles and do see opportunity to learn grow in the NNOC environment in a telecom service organization. The real test of the information and knowledge provided through this research endeavor is in its end use for managing job hopping of telecom engineers. While the researcher has spared no efforts in making this study as authentic, elaborate and also relate to the industry – market trends, there could be further scope for extending the boundaries of the research.

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APPENDIX

APPENDIX 1 – QUESTIONNAIRE SURVEY – ROLE OF ENGINEERS IN THE NNOC AND REASONS FOR ATTRITION

Name:	Age and Qualification:
Title :	Function and Role:
Total Experience :	NNOC Experience :

Sr. No.	Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Did you opt for a career in the NNOC while joining RCOM?	0	0	0	0	0
2	Were you excited with the roles and responsibilities offered to you while joining the NNOC function?	0	0	0	0	0
3	Did your qualifications, skill and career aspirations match with the roles and responsibilities offered to you?	0	0	0	0	0
4	Were you provided adequate training and proper induction for performing your role?	0	0	0	0	0
5	Are you applying your previously acquired skills, knowledge and experience in the current role	0	0	0	0	0
6	The current job in the NNOC is monotonous, repetitive and stressful	0	0	0	0	0
7	I like to work in shifts	0	0	0	0	0
8	There are enormous learning opportunities in the current job/role	0	0	0	0	0
9	I prefer Planning, Engineering, Quality and Architecture roles in the Telecom Industry	0	0	0	0	0
10	I prefer field roles in the Network O and M function	0	0	0	0	0
11	I am paid adequately for the current roles and responsibilities	0	0	0	0	0
12	Owing to high attrition in my team I am forced to handle additional work load	0	0	0	0	0
13	There is very little scope for career advancement, growth and progression in the NNOC function	0	0	0	0	0
14	My NNOC experience has provided me multiple alternate job opportunities at the market place	0	0	0	0	0
15	Industry offers multiple opportunities of my choice outside the NNOC function	0	0	0	0	0
16	I would prefer to work and pursue my career in the NNOC function.	0	0	0	0	0

APPENDIX 2

Response	Q1. Did you opt for a career in NNOC while joining RCOM?	Wt average
Strongly Agree	24	24
Agree	46	92
Neutral	24	72
Disagree	2	8
Strongly Disagree	4	20
Total	100	2.16
Response	Q2. Were you excited with the roles and responsibilities offered to you while joining the NNOC function?	
Strongly Agree	23	23
Agree	58	116
Neutral	13	39
Disagree	4	16
Strongly Disagree	2	10
Total	100	2.04
Response	Q3. Did your qualifications, skill and career aspirations match with the roles & responsibilities offered to you?	
Strongly Agree	23	23
Agree	47	94
Neutral	16	48
Disagree	9	36
Strongly Disagree	5	25
Total	100	2.26
Response	Q4. Were you provided adequate training and proper induction for performing your role?	
Strongly Agree	6	6
Agree	41	82
Neutral	24	72
Disagree	20	80
Strongly Disagree	9	45
Total	100	2.85
Response	Q5. Are you applying your previously acquired skills, knowledge and experience in the current role	
Strongly Agree	20	20
Agree	50	100
Neutral	17	51
Disagree	10	40
Strongly Disagree	3	15
Total	100	2.26
Response	Q6. The current job in the NNOC is monotonous, repetitive and stressful	
Strongly Agree	12	12
Agree	33	66
Neutral	36	108
Disagree	17	68
Strongly Disagree	2	10
Total	100	2.64
Response	Q7. I like to work in shifts	
Strongly Agree	4	4
Agree	35	70
Neutral	33	99
Disagree	19	76
Strongly Disagree	9	45
Total	100	2.94
Response	Q8. There are enormous learning opportunities in the current job/role	
Strongly Agree	14	14
Agree	59	118
Neutral	10	30
Disagree	14	56
Strongly Disagree	3	15
Total	100	2.33
Response	Q9. I prefer planning , engineering, quality & architecture roles in the telecom industry	
Strongly Agree	31	31
Agree	50	100
Neutral	14	42
Disagree	5	20
Strongly Disagree	0	0
Total	100	1.93

Response	Q10. I prefer field roles in the Network O&M function	
Strongly Agree	4	4
Agree	14	28
Neutral	30	90
Disagree	32	128
Strongly Disagree	20	100
Total	100	3.5
Response	Q11. I am paid adequately for the current roles and responsibilities	
Strongly Agree	5	5
Agree	19	38
Neutral	23	69
Disagree	33	132
Strongly Disagree	20	100
Total	100	3.44
Response	Q12. Owing to high attrition in my team I am forced to handle additional work load	
Strongly Agree	3	3
Agree	39	78
Neutral	37	111
Disagree	19	76
Strongly Disagree	2	10
Total	100	2.78
Response	Q13. There is very little scope for career advancement, growth & progression in the NNOC function	
Strongly Agree	7	7
Agree	20	40
Neutral	28	84
Disagree	40	160
Strongly Disagree	5	25
Total	100	3.16
Response	Q14. My NNOC experience has provided me multiple alternate job opportunities at the market place	
Strongly Agree	6	6
Agree	38	76
Neutral	42	126
Disagree	10	40
Strongly Disagree	4	20
Total	100	2.68
Response	Q15. Industry offers multiple opportunities of my choice outside the NNOC function	
Strongly Agree	3	3
Agree	42	84
Neutral	36	108
Disagree	13	52
Strongly Disagree	6	30
Total	100	2.77
Response	Q16. I would prefer to work and pursue my career in the NNOC function.	
Strongly Agree	15	15
Agree	43	86
Neutral	30	90
Disagree	9	36
Strongly Disagree	3	15
Total	100	2.42

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