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RESEARCH METHODOLOGY

RESULTS & DISCUSSION

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APPENDIX/ANNEXURE

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INTERNATIONAL STUDENT COLLABORATION AND EXPERIENTIAL EXERCISE PROJECTS AS A PROFESSIONAL, INTER-PERSONAL AND INTER-INSTITUTIONAL NETWORKING PLATFORM

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ABSTRACT

This paper has the aim to analyze and to reflect on the experiential exercise from the point of views of instructor and students attending University Center of Economic and Managerial Sciences at University of Guadalajara and participating in the "X-Culture International Student Collaboration Project" as a professional, inter-personal and inter-institutional networking platform.

KEYWORDS

Experiential exercise projects, international student collaboration program, inter-institutional, networking, professional development, inter-personal.

JEL

I23, M16, M53, O43.

INTRODUCTION

There is a growing trend on an increasing number of international student collaboration agreements among institutions of higher education to promote educative exchange programs, internationalization of teaching, research, curricula, etc. Current literature on internationalization of student cooperation projects and international academic exchange fail to adequately address the local teaching and research dimensions, including the international and global academic activities of local institutions and agents. Institutional efforts to internationalize and play an important academic role at the global competitive dimension go beyond the overcoming the character of multiple local constraints. Global economic, social, political, cultural, and educational forces driven by information and communication technologies have an impact on higher education institutions and pulling them to become international and even global actors.

Neo-liberal economic policies emphasize the role of educative institutions in the economy by confronting states versus higher education institutions, and states versus markets. These economic policies are intended to reducing subsidization, shifting the costs to the consumers and market and to be accountable for institutional performance (Neave and Van Vught 1991). Neoliberal governments are structuring higher education systems and institutions into a more marketplace under the paradox of "steering from a distance" (Marginson 1997; Meek, Goedegebuure, Kivenen and Rinne, 1996) and increasing demands on accountability of higher education as "evaluative" states (Neave 1998).

Some local institutional structures may be more resistant to educative, science, technology, cultural, etc., policies dictated by global and international institutions. Institutional structures of education systems differ substantially across nations in several institutional features such as the educational decision-making powers and processes, resource allocation, incentives to different actors and agents, etc., which involve differences on educational student's performance, etc. Institutional features of the high education system influence the incentives of foreign students to determine the resources the students spend to achieve higher performance.

Differences in the institutional incentive structures determined by estimates of features in education systems at student-level strongly influence student performance (Woßmann, 2003). Differences in institutional incentive mechanisms may explain the international differences in international students' cognitive skills and thus, in students' performance. Other local institutional structures may have an influence on the design of international policies, providing local experiences and agency for adjusting structural adjustment policies.

Academic institutions are embedded in national state and marketplace systems. Nation states and institutions focused on the trend towards internationalization of higher education are committing resources and efforts to produce and distribute research and knowledge at the international level. To assess the institutional research and knowledge production capacities, one way is to compare the research infrastructure against national capital wealth. Internationalization of higher

education programs is related to the provision of funding to facilitate persons and institutions to engage in international academic and educative activities (Knight, 2004). Internationalization of higher education may reflect the institutional priorities of universities and academic organizations.

International student multidisciplinary collaboration is the key to solving many global problems related with business economics and management. At the international academic institutional level may be more interest in pursue financial purposes by recruiting fee-paying foreign students while at the national sector level the interest may be more emphasis on the cultural and social goals. Traditionally, international student collaboration programs at the inter-personal and inter- institutional levels are considered as strategies and policies designed and implemented either at home institution or at a host or exchange institution abroad.

The international higher education policies integrate and sustain the institutional vision and mission regarding the international orientation of student collaboration projects and exchange academic programs. Institutional vision, mission and cultures may result in aggressively competitive strategies to get better positioned in the global academic market combining international teaching, research and services' projects. It is assumed that the market is a terrain of natural private freedom functioning according to natural laws prior to the state that have shaped higher education institutions.

Also, traditionally, international student collaboration programs through academic and research projects may be considered as a contribution to the development and technical assistance work framed by nation-building efforts of a developing country. Institutions of higher education for nation-building purposes may be more oriented to receive foreign education programs and student collaboration projects from developed countries and are less interested in export academic programs. Teaching-focused and export-oriented institutions are revenue driven operating in the global market of higher education for business purposes catering at lower quality for lower cost. Quality of higher education is dependent on the overall perceptions on a specific national education system rather than specific academic institutions (OECD 2004, p. 266).

International education takes place in not single and unified global market but in several markets largely lying on local and regional boundaries around the world. International higher education and international student collaboration initiatives implemented in most national and even international universities and institutions provide students limited basic levels of international knowledge, skills and competencies. Higher education institutions play an important role in the production and distribution of scientific, technological and cultural knowledge.

Academic capitalism as a metaphor used to describe a trend towards standardization and normalization of global academic and educative institutions, faculty, professionals, programs, curricula, knowledge, internal management and governance, etc., while ignoring the local contributions. The management and control of universities and institutions of higher education regarding their function of training and developing professionals requires flexibility, high level of autonomy and institutional independence. This ideal status of academic and research institutions is in contradiction to global and international agencies´ recommendations regarding the dominant patterns on global accreditation and certification of international student collaboration projects and academic exchange programs.

INSTITUTIONAL CATEGORIZATION OF INTERNATIONAL STUDENT COLLABORATION PROJECTS

Global and international agencies' are influential spheres with capacities to establish some recommended patterns to guide the international advanced training and development of professionals. Institutional academic institutions of higher education and universities are categorized between elite-high status world class such as the Ivy League, intermediate level such as the Western European Universities and mass institutions such as more of the Asian Universities. Academic institutions located in the intermediate segments of higher education global market find some entry barriers to move upwards to higher segments.

Intermediate institutions hardly receive full recognition for the quality of their teaching and research. Some intermediate academic institutions are entrepreneurially oriented whether non-profit or for-profit, struggle to secure income by filling the available places, dedicating their efforts to teaching as the core business. Some international entrepreneurial academic institutions specialize in high levels of fee-paying foreign students based on massive hyper-marketing programs abroad to maximize institutional revenues and profits that are reinvested into more foreign business. The revenue driven international institutions of higher education are more mass and commercially oriented, teaching focused and less prestigious in research.

Teaching-oriented institutions as intermediate are perceived as low social status in their market position with low value access places. Some of the intermediate institutions do not have enough resources to get committed to research. Some intermediate teaching-focused institutions are for profit or public sector with strong commercial orientations and practices characterized by high value and resource scarcity. The high value position of any institutional higher education program is subject to limitations constraining the growth of institutions producing high value positional goods and services.

High status, world class and elite universities focused on status maximization while mass institutions are characterized by expansive place-filling. Elite English-speaking institutions are fully engaged and well positioned in the dominant dynamics of global competition to attract affluent and fee-paying students from emerging economies. Institutional academic and intellectual leadership at international and global levels follows from expensive faculty and researchers concentrated in scientific and technological areas of strength and well-funded infrastructure. International high value elite academic institutions are few and very limited in size and most of them are not interested in expanding enrollment of fee-paying students and optimizing research funding.

International institutions compete for international research funding targeting public and private projects, philanthropy, services, consultancy, patents, etc. Although there is not consistent relation between research and the quality of teaching (Terenzini and Pascarella, 1994) teaching-research nexus shapes the institutional culture of comprehensive research universities. Institutions of higher education are influenced by the national institutional culture and identities and economic, social and political structures. Institutional culture of more internationalized universities tends to be more autonomous and entrepreneurial oriented corporations driven by the global business systems. Changes in the institutional cultures are related to changes in economic globalization processes and global commercial competition.

In very competitive times signaled by an aggressive hyper-marketing of high quality international exchange academic and professional development programs and marked by cost-cutting and public funding reductions, it seems that only elite world class universities can be competitive in delivering educative, academic and research services. Marketing and media exposition of institutional international programs of higher education affects consumer awareness and creates a positional market (Geiger, 2004), high status, branding reputation and prestige rankings as measures of selectivity and costs. International institutions exercising branding reputation as a symbolic power limit the access to foreign students.

International elite universities and institutions of higher education compete for tuition revenues from undergraduate, graduate and post-graduate exchange academic, educative and professional development programs designed to meet the needs of international students. The tuition paid by international students may have an impact on institutional resource allocation and costs of services provided and influencing the educational processes. Academic institutions after gaining branding reputation and prestige increase their tuitions revenues to complement public funding for research and to be able to pay high-cost faculty.

To the rest universities around the world and internationally oriented, it is required to combine institutional and professional efforts to provide a competitive teaching and research. High research and teaching performing universities are the magnet to attract bright students, confirming the positive links between the quality of teaching and research is enhanced more by the status that by the professional performance en each domain. Status relationships between students, intimacy and pleasantness of intergroup interactions and working on common goals for the group as a whole are important elements (Amir, 1969).

However, it is not necessarily the case supported by the "X-Culture International Student Collaboration Project", an international business academic program lead by University of North Caroline, Greensboro. The Instructor's Handbook describes and details the project stating that "The purpose of the X-Culture project is two-fold: first, to enhance learning in International Business/Management and related courses; second, to provide a platform for high quality International Business research." (Taras, 2011, 5). According to this Handbook, the last term October – December 2011 semester, there were participating 145 student teams with a total number of 1,150 students from 26 universities and 22 countries.

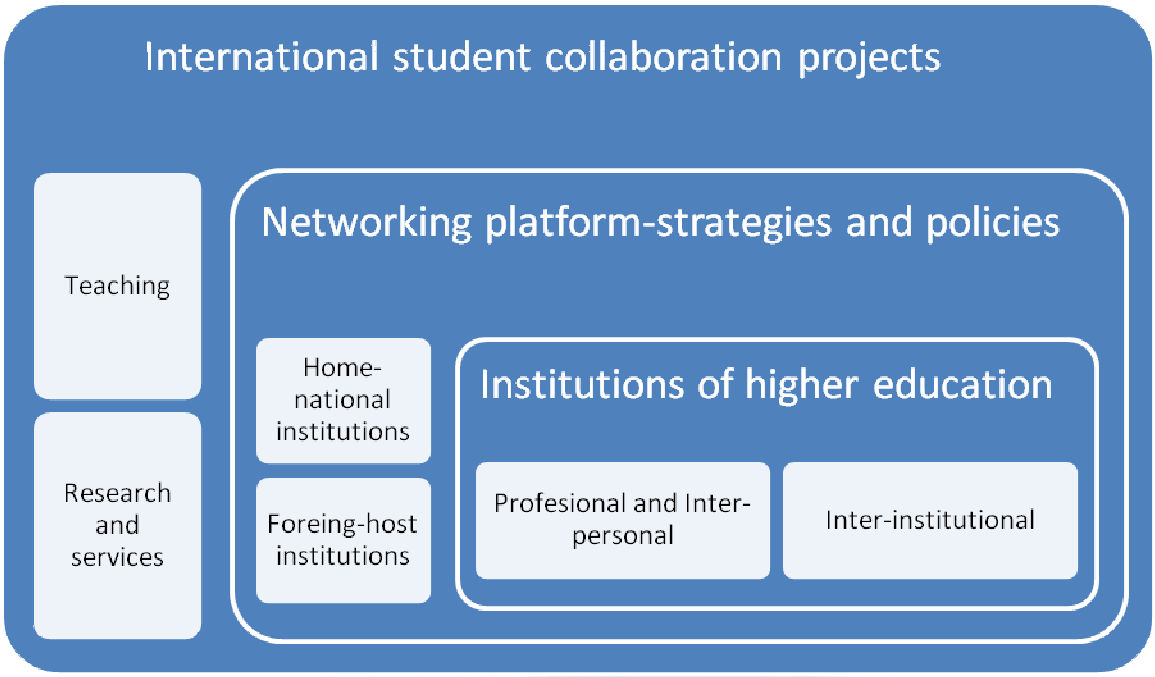
Nevertheless, for universities participating in high value international education exchange and student collaboration programs are required to maintain professional leadership. This paper has the aim to analyze and to reflect on the experiential exercise from the point of views of instructor and students attending University Center of Economic and Managerial Sciences at University of Guadalajara and participating in the "X-Culture International Student Collaboration Project" as a professional, inter-personal and inter-institutional networking platform.

ANALYTICAL MODEL FOR INTERNATIONAL STUDENT COLLABORATION

International student collaborations projects which implies studying, learning and training at universities other than the academic institution at which the student originally enrolled, has been for a long time an important element in academic professional education and development. Internationalization of higher education in general and international student collaboration programs have different interpretations depending of national and institutional culture, values, priorities, resources, policies, actions, etc. Internationalization process of higher education and academic exchange programs are characterized and categorized in relation of the approach taken to this interpretation.

To analyze in some detail the dynamic relationships involved in international student collaboration projects, the elements of the analytical model used are depicted ion the following figure 1.

FIGURE 1: ANALYTICAL MODEL TO SHOW THE ELEMENTS AND THEIR RELATIONSHIPS IN INTERNATIONAL STUDENT COLLABORATION PROJECTS



The process of internationalization is the institutional integration of an international dimension into teaching, learning, and service functions (Knight, 2004). Academic institutions in early stage of internationalization process may assess the opportunities, challenges and benefits to commit to different purposes of an international educative orientation and to establish international inter-institutional liaisons. The international orientation of an institutional academic level may be influenced by some important factors such as international policies orientation in higher education, organizational vision and mission, availability of resources, funding sources, faculty profile, etc.

Academic institutions may be motivated to become more international in order to achieve international recognition of high-quality branding reputation, as well as to generate more financial resources and sources of income by recruiting foreign fee-paying students. Institutional reputation of higher education programs is a positioned good (Hirsch, 1976) placed as a social status and better opportunities for students while teaching quality receives indifference. The motives to establish international inter-institutional linkages have different purposes for different academic institutions such as international student collaboration programs, joint teaching and research initiatives, academic mobility, curriculum development, publishing agreements, faculty training and development, etc.

One of the motives to internationalize university academic and research activities is an effort to enhance institutional revenues or high status position within the local higher education system. Motivations and forces driving internationalization of higher education programs vary from institution to institution and from country to country although the primary rationale may be the internationalization of research and knowledge production (Knight, 2004). Public non-profit educative institutions may have some income available to fund other activities, although Knight (2004) argues that the economic rationale is dependent on the commercialization and commoditization of cross-border delivery of education programs and services.

Academic institutions and countries may conceptualize and implement several approaches international student collaboration projects at the same time (Knight & de Wit, 1999). Some countries as well as some universities partially close the doors to international student collaboration, in part because of possible concerns about low academic level and the lack of adequate international supervision from the sponsoring institutions or simply by an ethnocentric orientation. Liu (1998) emphasizes de common ethnocentrism arguing that educational do not take account of the different contexts and traditions, adopting ideas and practices that maybe not be useful in their home environment (Liu 1998: 4).

Liu's contribution is to recognize the importance to develop appropriate pedagogies for the specific educational contexts and traditions rather than assuming that the Western pedagogies must be right for all (Holliday 1994; Kramsch and Sullivan 1996). The student's perceptions on nationality and ethnic status and his or her attitudes toward host country is referred as the "status-deprivation" hypothesis (Mishler, 1965), the "perceptual-reciprocity" hypothesis (Ibrahim, 1970) and "two way mirror" hypothesis (Davis 1971). Foreign student needs to attain adjustment as a national representative sensitive about his or her nationality and ethnic background (Bochner, 1972). Research on foreign student adjustment have been developed on a limited methods based mainly on questionnaires and checklists.

Evaluative perceptions, ethnocentric attitudes and stereotypes, status differentials, fear of rejection and the high level of anxiety and threat to self-esteem associated with intercultural interactions and encounters, among other factors, may inhibit social interactions with host cultures (Porter, 1972; Wedge, 1972). Cultures may differ in their level of stressful demands and psychological differentiation (Berry, 1975; Witkin & Berry, 1975) thus, can be hypothesized that students may better adjust when their interactions are with other individuals in cultures characterized by similar level of differentiation. Multiple host cultures (Klineberg & Hull, 1979) compare the adjustment of students from more than one host culture.

An international exchange program might have as outcomes the development of favorable and appreciation attitudes toward the host culture, although this goal may be simple, because the students may develop some differentiated images and not necessarily all positive attitudes (Heath, 1970). There is a reciprocal relationship between the nature of social interaction and a positive adjustment relationship whereby "social relations and adjustment reinforce each other, with social relations easing adjustment, and greater adjustment freeing the student to enter more fully into social relations" (Selltiz et al., 1963, p. 159). Increased social interaction relates to more favorable attitudes and better personal adjustments, supporting the modified culture contact hypothesis and the association hypothesis (Klineberg and Hull, 1979).

Empirical studies found support for the association hypothesis proving that increased social interactions among students with host nationals lead to improved adjustment and with more favorable attitudes toward the hosts (Chang, 1973). More superficial personal changes than changes in cultural values may be more

consistent outcomes of student adaptation (Klineberg & Hull, 1979). The amount of contacts and interactions between students are not very extensive (Klineberg & Hull, 1979) many students report wishing to have more interactions with host national (Hull, 1978) some students tend to wait for host cultures to initiate contact and interaction (Gezi, 1961).

Objective personal self-reliance and self-confidence, appreciation and more favorable attitudes toward the host country, a broader international mindedness, personal self-awareness, ethnocentrism reduced, etc., are some of the outcomes of successful student adaptation (Adler, 1975). Changes in personal self-reliance and self-awareness are more likely to be student outcomes than changes cultural value-based. Adaptation to the psychological and cultural interactions generally involves gradual adaptations to social interaction patterns, acceptance of individual differences and changes in personal culture identities. Empirical studies strongly support the relationship between accorded national status and attitudes toward host country for students from low status countries.

Studies aimed at determining the difficulties among students coming from different cultures with different levels of differentiation and autonomy to interact with each other. A student who would have less difficulties in adapting to other foreign participants is profiled as playing a role of universal communicator (Gardner, 1962) and multi-cultural (Adler, 1977) described and characterized as the student that has cultural sensitivity, pattern of identity and resiliency, that may help the participant to adjust and adapt to multiple cultures. Academic institutions may concentrate only at home their international programs on the cross-cultural and intercultural dimension and concentrating on teaching, research and services without getting involved on cross-border and mobility programs.

An ethical concern for the cross-cultural student exchange programs should be how much the participant should be encouraged to assimilate the new culture. Higginbotham (1979), Vontress (1976) and Wintrob (1976) argue that contacts with other cultures are one important qualification for cross-cultural interactions that may be able to develop strategies for adjustment to other new cultural environments. Cross-cultural experiences are more likely to increase interest and abilities in international issues and activities, to focus decision making and problem solving situations from multiple international perspectives. Sharing the distribution of teaching and research capacities underpinning personal and professional academic development programs among the participant universities and institutions of higher education, is the basic principle of this international student collaboration programs.

There are international professional associations and groups working and operating at global level and across national boundaries in international student collaboration projects in the field of international business-higher education programs. These international professional associations are supported by local professional associations and collectivities influencing professional practices and initiatives in higher education activities and competing in international student collaboration projects and academic programs. Belonging to a network or consortium of international universities, local institutions of higher education may develop academic relationships and agreements regarding the international student collaboration projects based on professional advanced training and development and the exchange of faculty, researchers and students.

Global flows of interactions and relationships for international exchange educative programs and international student collaboration projects between different individuals, institutions and nations may be sometimes two-way and other times uni-directional. An important function of international student collaboration projects supported by different types of organizational configurations of universities and institutions of higher education is to prepare the professionals, academics, scholars, scientists and teachers capable to transfer technological capabilities and scientific knowledge from developed countries to developing countries. However, international private higher education institutions either may have research capacity but others are mostly low performers teaching institutions.

Leading universities in developed nations are global players in their own right but in emerging countries are weak institutions that often lack the resources and the research capacity and technological infrastructure to move forward. A starting approach is the triangle heuristic model developed by Clark (1983), Becher and Kogan (1992), and Kogan and Hanney (2000), connects the actions of professional/collegial related to institutions of higher education systems, governmental and managerial related to national states and markets including the global market, are the factors framing the international student collaboration projects intersecting and emphasizing the simultaneity of local, national and global dimensions (Marginson and Rhoades, 2000).

Beyond the model of the triangle heuristic based on the interactions of the nation state and national markets regarding the national systems/institutions of higher education. To focus on an analysis on the collective action of specific organizations (Marginson and Rhoades, 2000:290) developed the hexagon agency heuristic model represented by the interrelationships among six variables, named as “global government and non-governmental agencies, human agency in global polities, global economic agencies and markets, human agency in global economies, global educational and professional agencies, and human agency in higher education". Nation states, markets, and institutions of higher education can be characterized in terms of global, international, national, regional, and local agency.

The Glonacal Agency Heuristic model provides an analytic mechanism to understand the interrelationships between polities, markets and professionals operating at local, national and global domains. Higher education institutions as agency coordinate relationships with markets and national governments. Global agency exercises influence on shaping national higher education strategies, policies and practices. National and institutional strategies and policies are designed to emphasize the priorities established in the strategic planning and to implement resources and efforts to achieve the goals of internationalization. Academic institutions entering into international and global competition require to design and implement strategic options for a development and growth more in line with the new self identities.

Policy analyses lack “very fine grained analyses” (Kogan, 1996, p. 397) of institutional change in the current academic practices (Teichler, 1993). Policy analysis in higher education turns on in favor of institutional autonomy and against regulation. Institutional policymakers require the development of frameworks to policy analysis of the different issues and features involves any international student collaboration project in order to design a consistent approach to the strategic planning efforts. A framework of economic and political rationales combines national and institutional levels as the driving forces of international programs in student collaboration and academic exchange.

The strategies at inter-institutional level of international student collaboration and exchange projects are referred to the orientation of institutional resources to promote and develop initiatives and programs. Night (2004) argues that the notion of organizational strategies needs to be broadening beyond the inter-institutional level to the higher education sector level by introducing policies and programs. National and international policies in education affect both the public and private education institutions, the commercially oriented new providers and should be addressed using a conceptual framework at the inter-institutional level. Policies are statements and directives that refer to priorities and plans related to the international dimension, including the institution’s mission statement, purpose, values, and functions.

Any institution of higher education has a mission or a purpose, functions and tasks including the delivery of teaching, research and services (Knight, 2004). Institutional policies may address specific issues of international student exchange programs and collaboration projects to be sustained and integrated into the organizational vision and mission. International education policies have implications for all types of academic and educative institutions, public and private, new providers for-profit, or nonprofit institutions, foundations, international agencies, etc.At the inter-institutional level, policies include statements, directives, and planning addressing the international implications on higher education. According to these concepts, international student collaborations policies may include a wide range of implications going from international linkages and partnerships, policies on study abroad, student support, curriculum, research, faculty development, etc.

In turn, higher education policies shape the core functions of universities and educative institutions regarding the academic and scientific training and development of professionals. The source of influence of international and global agencies and organizations lies in the exercise of different political and cultural capacities through several financial resources and control mechanisms to invest in certain international student collaboration projects and academic exchange mechanisms. Efficient institutional and organizational arrangements involving the right external control mechanisms might be designed to enhance international student performance and to inhibit moral hazard and opportunistic behaviors.

Support to this projects and programs aimed to enhance professional training and development is always subject to certain hegemonic conditions and policies in international higher education. International professional associations and international accrediting and certification bodies in professional education wield considerable influence on Mexican universities and institutions of higher education motivated by the desire to enable professionals to compete in international

labor markets dominated by foreign multinational firms. On a competitive international market of higher education, national systems and institutional programs are ranked by employers and students on the basis of branding reputation and field of study.

A constructivist approach to analyze the role of interaction-collaboration learning processes should consider that the tutor gradually must hand over control to the group of students (Rosenshine and Meister, 1994). Kneser, Pilkington and Treasure-Jones (2001) found that a tutor model some learning supportive roles and encourage students to take these roles. If the aim of the tutor is to devolve active roles to students but require feedback to facilitate learning strategies according to the profiles of the students and monitor balance of participation and advances. Students report an increased international understanding as a result of their participation, introducing international issues and considerations into their thinking.

Some aspects of the learning international environment consider that engaging students in active experimentation, interactive tasks and reflecting discussion lead to the development of independent thinking and reasoning (Cole and Wertsch, 1996). Factor affecting the interactions for learning are associated with class management. Students that take more roles and activities are more likely to succeed (Rosenshine and Meister, 1994). Some forms of productive interactions beneficial to collaborative learning experiences include: Articulation or self-explanation (Van Lehn, Jones & Chi 1992), transactive reasoning (Kruger, 1993), co-construction or negotiation (Baker, 1994), question asking (Graesser & Person, 1994), inquiring and explaining behavior from students (Pilkington & Parker-Jones, 1996), constructive conflict or argumentation (Kuhn, Shaw & Felton, 1997).

Joint problem-solving activities may be more adequate for small group peer collaboration and interactions. Small-group interactions for collaboration involve pre-training (Crook, 1994) to increase the frequency and quality of question asking (Mercer, Wegerif & Dawes, 1999). The smaller is the group greater problems may experience in co-ordinating group collaborations.

There are several empirical analyses conducted to investigate the impact, effects, challenges and consequences that international student collaboration projects and educative exchange programs may have on the professional and personal development. Using exchange structure analysis, Kneser, Pilkington and Treasure-Jones (2001) found that some active and passive patterns of exchange roles amongst participants are more frequently used in some students' protocols associated with the role of tutor. Messer and Wolter (2007) investigated the extent of an exchange semester affecting the professional career of university graduates finding a positive correlation based on the assumption that students participating in international educative exchange programs enhance quality of human capital and consequently better prospects in the labor market.

Students from English-language nations may benefit from the dominance of English. Most of the faculty, academic, research and scholar activities of institutions and universities are globally networked, although the weight of the international realm is more charged to those networks that use of English-language as the first language. This trend is significant for local and global professional development. However, despite it can be considered there is a global hierarchy, some experiential student exchange programs demonstrate that there is necessary to foster scholar and research collaboration and to non-commercial student exchange.

EXPERIENTIAL EXERCISE PROJECTS AS A PROFESSIONAL, INTER-PERSONAL AND INTER-INSTITUTIONAL NETWORKING PLATFORM

Participants in the course of International Business promoted by "X-Culture International Student Collaboration Project" consider the experience is relevant to their personal and professional development and value the benefits received from the academic exchange program and the challenges faced. Given the global increase in demand for international good quality higher education, there are new institutional providers of international academic and student collaboration projects with new types of instruction materials and delivery methods of education programs.

The process of internationalization of higher education in general and student collaboration projects in particular, are taking place at inter-personal and inter-institutional level more than a national level. National and inter-institutional levels may have linked and complementary rational purposes in the internationalization academic and educative processes. However, when this process is bottom-up it may be more possible that an institution pursue its own goals differing from the other institutions. The emphasis on a bottom-up inter-individuals and inter-institutional approach has some funding and policy implications for the internationalization process of any academic exchange program.

Arum and van de Water (1992) defined internationalization of higher education in relatively clear terms as a set of activities executed at inter-institutional level proposing that "the multiple activities, programs and services that fall within international studies, international educational exchange and technical cooperation" (Arum & van de Water, 1992, p. 202). Internationalization of higher education as an organizational approach is a process integrated and sustainable at inter-institutional level, defined by Knight (1994) as the "process of integrating an international and intercultural dimension into the teaching, research and service functions of the institution" (Knight, 1994, p. 7).

Soderqvist (2002) focuses on a holistic approach of the education change process from national to international institutions of higher education and management at the institutional level but leading to an international dimension in order to enhance the quality of teaching and learning desired competencies (Soderqvist, 2002, p. 29). However, Van derWende (1997) argues that the bottom-up approach based on inter-institutional interrelationships has several limitations without taking into consideration the globalization process and other external environmental variables of higher education. Internationalization of higher education is defined as "any systematic effort aimed at making higher education responsive to the requirements and challenges related to the globalization of societies, economy and labour markets" (Van derWende, 1997: p. 18).

International student collaboration projects may have limited applicability to individuals and institutions, although it is a process that has been taking place from bottom-up approach instead of a top-down approach, besides there is a dynamic interrelationship between both approaches (Knight, 2004). Internationalization of higher education at the national/sector/institutional levels is defined as "the process of integrating an international, intercultural or global dimension into the purpose, functions or delivery of post-secondary education. (Knight, 2003, p. 2). The inter-institutional level approach focuses to the purpose, function and delivery of international and cross-cultural higher education dimensions in general and student collaboration projects in particular.

Singh, Huang, & Thompson (1962) found differences between host and foreign students participating in international student collaboration projects. Foreign students when studying abroad have to face important problems, although financial problems appear to predominate (Klineberg & Hull, 1979). Van Hoof and Verbeeten (2005) report on decisions made by participants in student exchange programs on issues such as selection of institutions and programs, comparing options in home institutions and partner institutions abroad, relevance in studying in foreign academic institutions, etc. Foreign students selecting international institutional brands consider some key choice factors according to their perceptions on quality of education and the tendency to assimilate foreign institutions.

The main reasons students select a partner institution to study abroad reported by Van Hoof and Verbeeten (2005) is the availability of foreign academic institution as a partner, the country and the known people that attended. The academic interest in studying abroad was less important than the location of host institution and traveling around. The research conducted by Van Hoof and Verbeeten (2005) found that 59 percent felt that the level of difficulty of the academic program in a foreign host institution was the same or easier as compared to their home institution. Only 26.4% of the respondent students rated the exchange institution as better when compared the overall level of structure and organization with their home institution.

However, is very significant that 42.6% rated the host institution as worse than the home institution. Incoming students emphasized more the academic program and were impressed with the housing arrangements of their exchange institution. Regarding how relevant was the international experience, 58.1% of the students rated it as very relevant to their future job opportunities. Female students rated higher the level of personal care for their needs as a student at the exchange institution than males.

In the long term international student collaboration could change the terms of academic and research competition, given the strength of the professional, inter-personal and inter-institutional networking platform formed by the participating universities, scholars and students. Universities, institutions of research and higher education, international agencies, governmental agencies, foundations, professional associations and other academic organizations form networks aimed to deliver cross-border academic and educative services, international student collaboration projects, academic and educative exchange programs, etc.

A new type of international institutions have emerged as a commercial providers focusing on delivering education, teaching, training and other services across borders complementing with institutions of higher education. These providers vary among the different institutions and different nations. Types of local and

foreign academic and research partnerships and networks among institutions of higher education, research centers, scientific academies and bodies, local and foreign governmental agencies, foundations, etc. slightly differ in aims, resources, etc., thereby illustrating the creativity, innovation and diversity of new international student collaborations. The process of internationalization and globalization of higher education may reflect also the institutional diversity.

Networks of universities, institutions of research and higher education and other academic organizations may be self-accredited and self-appointing their faculty and academic members interested in improving international academic quality standards and achieving accreditation. International and governmental agencies related to higher education and universities network with each other at inter-institutional level, to policing and strategizing reforms to the global educative system in a more dynamic environment. Policy makers in higher education, who enact, design and implement higher education policies should have a clear nation's project and the role that universities and academic institutions play in training and developing professionals in a more global economy.

The international position of the role of national universities in academic training and development of professionals entering the global market signals the importance that nation states gives to higher education policies. Academic and research institutions of higher education are interested in engaging in cross-border academic markets. Research and academic collaboration programs at institutional-level involve organization strategies centered on scholars and students exchange programs. Policies and strategies focused on international student collaboration projects are designed and implemented by networks of institutions of higher education and agencies to meet their needs and strengths and to map their spheres, such as the academic freedom that according to Altbach (2001, p. 206) is not important issue in the international agenda.

Global and international academic agencies may exercise different spheres of influence, pressure and capacities of professional academic associations and groups in the global arena on the design and implementation of national higher education policies. However, it should be considered that there are some national professional academic associations and groups that although they accept the trend towards internationalization of education resist the imposition of international policies in higher education and define and advance academic freedom in the issue of international education agenda. An institutional network may advance initiatives on the global agenda as suggested by Altbach (2001) to promote and enhance international academic freedom among all the members at professional, inter-personal and inter-institutional levels and at the local, national and global spheres.

Tracking the resources, professional spheres and capabilities of universities' networks may be possible to identify the higher education strategies and policies that have more impact in successful professionals. Networks operating in several spheres, locally, nationally and globally may strategize the use of resources, capabilities, brand reputation, etc. Institutions of higher education with a strong international profile and orientation are more completive in achieving higher academic standards and outcomes. Mature institutions approach internationalization of higher education programs and projects develop strategic alliances to achieve specific outcomes and not as inactive paper-based arrangements (Knight, 2004).

Strategic alliances among institutions of higher education can be developed at both the national and inter-institutional as a means to achieving higher standards on academic, scientific research, technological, cultural, economic and financial objectives. Academic institutions are seeking out branding reputation by achieving international accreditation. Institution building combining both, national and institutional levels of higher education as well as institutional international branding and profile are driving forces to enhance internationalization of student collaboration projects and academic exchange programs. Institutional academic strong reputation and status are capable to develop a global branding and to be internationally accredited and certified as the competitive advantage in a more competitive international environment.

Institutions that have achieved already this status compete for a global market share. Foreign academic institutions and new providers are competing for a larger share in the global market for-profit education by recruiting the most brilliant and fee-paying international students. Individuals making choices to enter an international student collaboration program see higher education as a competitive market focusing more on institutional reputation (James, Baldwin, and McInnis, 1999. p.xvi). Students from different cultures may have different impacts on the degree to which they experience some problems (Hull, 1978).

A national culture centered on a more internal control and responsibility for choice and decision making (Sundberg, 1976; Vontress, 1976) may be less appropriate for more group-centered cultures where the external orientation is more valued and accepted as good personal adjustment (Sue, 1978). Cross-cultural research on international student collaboration projects indicates the importance of some aspects of descriptions of culture shocks and student maladjustment which not necessarily is conceptually and experientially equivalent cross-culturally (Marsella, 1980). Foreign students may suffer from culture-based adjustment problems (Klein et al., 1971) aggravated by the stress of new psychological and cultural experience (Zurin &Rubin, 1967).

Differences in adjustment of students from different nationalities are referred as cultural distance, assuming that adjustment is more difficult for students from cultures that are very from host culture (David, 1971). Also favorability of attitudes toward the host culture may be highly differentiated (Mishler, 1965). Students from the host culture may perceive foreign students in terms of cultural and ethnic identity in cross-national interactions (Bochner and Perks, 1971). Instructors abroad may also share some elements considered conducive to adjustment including academic status, values and goals, performance of common tasks (Gullahorn & Gullahorn, 1960).

International differences in educational student's performance encompass the institutional resource endowments and structure system. International differences in student-level estimations on performance may be more attributed to institutional differences than to resource differences. International differences in both family background and academic institutions are related to international differences in student performance more than institutional resource endowment (Woßmann, 2003). There is scarce evidence of institutional effects on educational performance although the institutional system may have substantial effects on schooling systems. Institutions and institutional structures are viewed as exogenous variables to justify estimations in students' educational performance levels.

Differences on institutional variables have effects are substantial individually and have an impact on student performance. The institutional and organizational arrangements of the different higher education schooling systems are part of these international differences are related to student performance. Institutional and organizational arrangements may be related to national culture characteristics. National schooling systems have different institutional variables affecting the student performance. The analysis of a student's performance is determined by individual influences that are restrained to the institutional system determinants and not controlled by the macro education production functions (Bishop, 1997).

Participants of international student collaborations projects are always concerned about how to adjust to a new culture, institution, language and subjects (Clyne & Rizvi, 1998). A strong stream of research questions preconceptions and explore the nature and extent of cultural influences on learning at the international dimension. There are some common preconceptions about foreign students that do not reflect what they really want and their differences in cultural learning attitudes (Littewood, 2000). The international academic experience has personal and professional consequences for participants, students and teachers placing the experiential exercise projects in a broader perspective.

It is encouraging to witness the increased use being given to academic internationalization programs and projects, meaning the international research, academic and scholar activities for the knowledge, experiences, skills and abilities exchange between students, teachers and researchers. International student collaboration projects include the growing tendency toward global cross-border and cross-cultural development projects involving training and exchange of teaching learning materials and processes, curriculum, etc.

There has been a steady growth of international students seeking to participate in exchange programs and study abroad. When deciding on an exchange program to study abroad are influenced by some important factors which include reputation of universities, affordability for paying for the cost of tuition fees, the marketing of academic programs abroad, psychological and cross-cultural adjustment of foreign students to host cultures, the impact on professional development, etc. The literature on the impact on professional development is far less extensive than the impact on choosing study destination. A qualified university academic program is directly related to professional development and career opportunities. The reputation of an academic program includes recognition of the awarded degree.

Internationalization of academic activities at institutional level involves the strategic use of networks and institutional linkages to implement academic development projects. The aim of these international academic programs and projects usually is to obtain desired outcomes on the participants such as developing a more professional profile and competencies, more in accordance with the internationalization and globalization processes. Academic

internationalization also is related to the cross-borders delivery and exchange of education programs and projects through a variety of institutional arrangements and using several information and communication technologies, pedagogy and educative resources, etc.

Public and private national academic institutions are moving forward internationally beyond traditional approaches to strategize more entrepreneurial and business oriented approaches by implementing new organizational configurations and arrangements to recruit fee-paying foreign students. High value global entrepreneurial education is provided by academic competitive institutions positioned in the global market of higher education and in international business. Some of these new organizational configurations are the formation of networks, consortiums, franchises, strategic alliances, satellite campuses abroad, etc. Some other academic internationalization projects are the outcome of international linkages, strategic alliances, partnerships, research initiatives and projects, branch campuses, franchises, etc.

Universities, institutions of higher education and other providers of international student collaboration programs may establish a network of partners abroad to share and complement educative resources, to undertake common efforts and make them more efficient, and create international academic reputation for their own programs and for the network consortium. One immediate outcome of the academic network is to place and give position for competitive advantage to all the members sharing the international student collaboration project.

The development of networks structured by universities, research centers, institutions of higher education, academic organizations, etc., is a trend in internationalization of student collaboration projects. Development of strategic alliances to create a network for international student collaboration projects is a mean to achieving academic, research, educative, scientific and technological exchange programs. Networks, as an organizational form, may design and implement strategic objectives and policies despite the difficulties emerging from complexities and difficulties of managing educative and academic international agreements among so diversity of cultures and education systems.

In a global academic competition environment, more open networks of universities and institutions offering international student collaboration projects have facilitated the emergence of a rapid development of an academic and educative world-wide market. The emergence of this international educative market has facilitated the positioning of some programs more focused on research capabilities than in teaching capabilities. International academic institutional vertical segmentation is the outcome of positioning a market share in a competitive oligopoly market. The market-oriented universities and institutions of higher education operating as a network in market-based economic systems, the most competitive winner-take-all markets may contribute to broaden their network and spread across the global market.

International higher education programs facing the challenges of global competition should be designed as a more complex world-wide organizational arrangement to facilitate and provide support for global flows of scientific, technological and cultural knowledge, cross-borders encounters among scholars, researchers and students in an open academic information and communication environment. Publishing in academic and scientific reviews and journals enable scholars to establish inter-personal and inter-institutional contacts and relationships through international research networks.

The networking arrangement should be designed in such a way that may avoid uneven patterns characterized by uneven patterns of hierarchical or autonomous relationships and communicative interactions. International high student scores compete for entry to prestigious academic institutions driving the reproduction of hierarchical relationships that match the dynamics of global competitiveness. Student competition is intense for entry to elite academic institutions and if prestige and branding reputation is sustained, more potential students will try to be admitted.

Any exchange network analysis to study international student collaboration projects may identify the agencies and institutions that are the core and those at the periphery or semi-periphery yielding universities' place and position in an international network's stratification system (Chen and Barnett, 2000). Inter-institutional networking may be dominated by structural uneven information and communications flows and linkages established by global competition and global business communication systems originated in American universities (Castells 2001).

Also, the network as an organizational form allows the members to share resources among them operating at the same time globally and locally, to have more inter-personal and inter-institutional dealings to adapt higher education projects to specific variables shaping the local environment. Students who have taken courses designed for international students have revealed that they faced initial difficulties in adapting to the program, such as the language and difference in expectations, stereotypes, etc.

Leading universities and institutions of higher education structured in a network arrangement are more visible delivering high quality educative services with highly qualified academic and scientific staff from across the global market. This academic institutions and universities exercise their academic status by limiting the access of foreign students to the educative programs and by establishing entry barriers to the international academic and student collaboration network.

LESSONS TO BE LEARN

There is increasing tendency to recognize the need for further development of international student collaboration projects introducing new types of different institutional arrangements to form global networks of corporate universities, professional associations, foundations and organizations. The recognition of this need is demanding for a better understanding of the skills and competences needed for personal and professional development in a global environment. Also, this need is demanding further development of cross-border and cross-cultural exchange of academic and educative programs.

Students taking the international educative and academic exchange program promoted by "X-Culture International Student Collaboration Project" and after they have already completed professional education, they have more probabilities to raise professional and personal development expectations. In this sense the international student collaboration project represents a plus added value to their career development and performance. An analysis of the impact of international student collaboration program conducted with the aim to get a broader perspective of the potential professional benefits after graduation, confirms the research findings of Teichler (1996) Teichler & Maiworm (1994) and Teichler & Jahr (2001).

Any academic institution motivated to play internationally in the great leagues should design strategic planning and articulate explicitly the rationales in its vision, mission, motives, values, strategies, policies, projects, programs and outcomes. There are also some implications to be considered with the increasing of academic and student mobility for personal, professional and institutional recognition of academic credentials. Also it is important to assess the role other institutions besides the academic play to support internationalization of higher education such as the accreditation and certification agencies, quality assurance organizations, etc.

There are some arguments to explain why prestigious high valued universities cannot meet the potential demand for educative services for professional development without killing their raison d'etre. One of these arguments sustains that to create and maintain high status profession it should be kept limited the number of new entries into a limited number of high valued academic institutions within international organizational configurations, networks and partnerships. Our position is just the opposite.

There is an increasing demand for high quality professional training and development that cannot be meeting by local universities due to the scarcity of resources. Hard-to-enter institutions reproduce scarcity and hierarchy in an unequal distribution of professional and social opportunities framed by the already legitimized dynamics of global competitiveness (Teese 2000). This situation leads to advanced students who are more capable and have more resources to queue jump by accessing international programs managed by different organizational arrangements. It seems very clear from this experiential international student collaboration that it is legitimate for the participants to have an advantage in their personal and professional career when compared to other non participant students.

Individuals, inter-personal, professional, and inter-institutional academic relationships and exchanges may be integrated and engaged on collective action to fashion the academic discourses, to design and pursue the agendas, to formulate and implement the policy analysis, to develop the strategic planning, to legitimate decisions and governance mechanisms, to manage and control resources and outcomes regarding the international student collaboration projects and academic exchange programs.

Educative and academic institutions are facing specific challenges and opportunities regarding the internationalization of academic programs and international student collaboration projects. Still remain some challenges of facing the form to establish equity and an equitable balance between national students

participating in such a dynamic international student collaboration project by having access to professional development programs offshore and high demand institutions and courses.

Operating and managing international students' collaboration projects in the organizational forms of international partnerships and networks require many agreements on arrangements, such as who is going to charge the tuition fees and what mechanisms, which is going to test and award qualifications and what mechanisms for accrediting and recognizing degrees, etc. The entry to international market of higher education of new providers of education programs and services are changing the rules of the game from traditional academic exchange programs to more customized delivery international projects teaching, research, learning and services.

One risk local universities in emerging nations face when participating in these international exchange academic programs and international student collaboration projects is that may be neo-colonized by the 'brain drain' of brilliant faculty and advanced students engaged in foreign research agendas of leading international institutions (Marginson and Sawir 2005). As the economic globalization processes and the model of integral competition advances, educative and academic institutions as nations face international inequalities and unevenness. Some lower level academic institutions in economic competition environment and their struggle for budget and revenues for survival are experiencing a race to the bottom.

A larger network platform of personal, professional and institutional contacts in the specialized academic field may foster more extensive experiential projects enhancing human capital development. As an increasing number of educative and academic institutions mandate an international experience in international student collaboration and exchange programs to students, it is required more qualitative and quantitative research to improve qualifications and validation of academic programs.

Future research may involve the study of factors influencing the individual, institutional and national decisions to participate in international student collaboration projects. It is also important to understand the motivations that the different stakeholders of higher education institutions have to influence national policy aiming to internationalize the academic programs, student collaboration projects and other educative exchanges. To address the long-term perspective, both the institutional and sector levels of international higher education exchange programs and international student collaboration projects have implications, challenges, impacts and consequences that require more research, assessments, evaluation, policy analysis, etc. It is required further research on realities, practices and responses of local academic institutions and the need to become more internationalized.

Further research needs to be conducted to explore of local demands and different variations within national contexts, and the ways in which local institutions of higher education extend to international and global markets their academic and research activities beyond national boundaries. It is also necessary to study local academic institutions and actors extending their activities across the borders to the international and global stages.

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AN EMPIRICAL STUDY ON MARKETING OF GADWAL SARIS IN INDIA

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ABSTRACT

Handloom forms a precious part of Indian culture and economy. It is the 2nd largest employment provider next to agriculture. With the changes in tastes and preferences of customers, handloom products have to be marketed in such a way so that their survival and existence is ensured. Past literature has highlighted the grim status of weavers in handloom industry and their socio-economic conditions. Mass marketing is one of the reasons for it. Hence the profit is very low and sometimes it does not even cover the basic expenses involved, thus resulting in frustration, depression and suicides of weavers. The reasons might be that they are not able to anticipate, cope and adapt to the changes present in internal and external environment. Nevertheless, they cannot afford to be ignorant about customers' tastes and preferences as competition from domestic and international market is quite high. It is right time to change the way the product is being made and marketed. In order to understand and find out the reasons for the gap between the final product and customers' expectations, a primary research has been conducted in Mahabubnagar, Andhra Pradesh to know customer's perception and satisfaction level for gadwal saris for 50 respondents selected through purposive sampling method. The study reveals that existing customers are very much satisfied with the product (sari). This indicates that market can be expanded only by increasing the size of the market by attracting new customers. In this regard, present study devised and proposed a marketing mix for gadwal product to combat marketing related issues.

KEYWORDS
Gadwal sari, Handloom, Marketing mix.

INTRODUCTION

Importance of handloom sector can be very well appreciated by the fact that not only it is 2nd largest employment provider next to agriculture but also an integral part of Indian culture. The sector has 23.77 lakh handlooms and provides employment to 43.31lakh persons. Several others are involved directly or indirectly in the supply/value chain. Inspite of its inevitable presence, the sector is overwhelmed with diverse problems, such as, out of date technology, unorganized production system, low productivity, insufficient working capital, conservative product range, ineffective marketing links, overall sluggish production and sales. Besides this, there is hovering competition from power-looms and mill sector (annual report 2010, Ministry of textiles).

Due to these lingering and hovering problems, the weavers are badly affected. They are not only financially drained but also mentally harassed. When the future looks so gloomy where is the source of light? Economic and social conditions of weavers can only be handled properly when they get the right share of their hard-work. Middlemen and master weavers enjoy the cake leaving behind the crumbs for weavers. The plight of the weavers can be managed by creating and increasing the demand of handloom products. One of the ways to achieve this goal is to examine the market conditions and suggest some strategy to make handloom products desirable for customers. The idea is to increase the size of the market by escalating the demand so that some benefit is filtered to weavers. Customer satisfaction is very important in this regard. Merchandising and effective marketing are also central to propel the growth of market. Main emphasis should be on increasing the market base without jeopardising the quality of the product and customer satisfaction levels.

LITERATURE REVIEW

There is a positive effect of perceived quality on customer satisfaction (Rust and Oliver 1994). Research findings of Caruana (2002) and Tsiotsou (2006) states that there is positive and direct effect of product quality on customer satisfaction. Consumer perception and satisfaction is very much dependant on the product quality. It can be expected that greater the perceived quality of a product, greater will be the customer satisfaction. Thus, it can be deduced that the perceived quality of gadwal saris will affect the customer satisfaction level. Hence, quality of gadwal saris should not be tampered for short term profits; rather the product should be marketed in such a way that it reflects the ethos of its existence.

Westbrook and Oliver (1991) define customer satisfaction as a mental state where the customers compare and contrast the results of their expectations from pre-purchase expectations and post purchase performance perceptions. Several studies have also focused and linked customer satisfaction with repurchase intentions. There is a positive association between customer satisfaction and intentions to purchase again from the supplier who was involved in the initial level of satisfaction (Anderson & Sullivan 1993, Bloemer & Kasper 1994, Jones & Sasser 1995, Macintosh & Lockshin 1997). Hence it is important to retain existing customers and also to market the product in such a way that they buy the product frequently.

Against this background, it is very important to have a suitable marketing mix so as to cater to the needs and preferences of customers. Marketing mix concept was first introduced by McCarthy in 1964 and is referred to as 4Ps which defines marketing mix as a tool to translate marketing planning into practice. Though Borden (1965) claims to be the first one to use the term and his marketing mix elements were namely product planning; pricing; branding; channels of

distribution; personal selling; advertising; promotions; packaging; display; servicing; physical handling; and fact finding and analysis. Frey (1961) further suggested that marketing variables can be divided into two parts as offering and methods and tools. Later the 4Ps of marketing concept was found to be insufficient to cover all the aspects of product (Van Waterschoot & Van den Bulte, 1992:91), hence 7Ps was introduced by Booms and Bitner (in Zeithmal & Britner, 2003) which includes packaging, positioning and people.

In the light of the above discussions, the marketing mix for gadwal saris need to be considered and revived so that the product attains greater acceptance and wider reach. It should alleviate demand for the product. The first and the foremost step in this direction are to find out customer perception and satisfaction level for gadwal saris. It will be also suitable to find out reasons for small market share for gadwal saris. In this backdrop, primary data was collected to know the satisfaction level for gadwal saris in Mahabubnagar, A.P and further to bridge the gap between the demand and supply, a marketing mix model has been proposed. The following objectives have been prepared to meet the need of the study.

OBJECTIVES

The specific objectives of the proposed study are:–

(a) To study the general perception and satisfaction level of existing customers buying gadwal saris.
(b) To examine the reasons for lower level of demand for gadwal saris.
(c) To propose right marketing mix for gadwal saris to compete in the prevalent market conditions.
(d) To give recommendations and suggestions for increasing the size of the market for gadwal saris.

The primary data about customers' general perception and satisfaction level has been collected which is discussed in the following section.

DATA ANALYSIS AND FINDINGS

METHODOLOGY

The data required for the study has been collected through questionnaire and personal interviews. Dichotomous, multiple choice and open ended questions were used to get maximum information from the sample. Simple percentages were calculated to assess the meaningful inferences.

FINDINGS

1. The age group of the respondents varies from 20-50 year. 18 percent of the respondents were between 20-30 years, 25 percent were from 30-40 years and 7percent from 40-50 years. The categorization has been done so as to cover all the cross section of the society who wear sari and have knowledge about the current tastes and preferences (Table-1, Appendix). Younger generation also has been tapped so as to know whether they are having favourable attitude towards gadwal saris.
2. Table-2 (appendix) refers to the occupational status of the respondents. 60 percent of the respondents were employed and 40 percent were housewives. The sample consisted of both working and non working women, so that it can reflect the perception of both the groups.
3. Income level of working women were diverse. Out of 30, 40 percent were earning upto Rs. 10,000, 37 percent were earning between Rs.10, 000-20,000 and 7 percent were earning Rs. 20,000 and above. The samples consist of all women who can buy any range of gadwal saris (Table-3, Appendix).
4. Frequency of purchase of saris by existing customers seems to be very favourable, as out of 50, 30 percent buy saris every 3 to 6 months. 28 percent purchase every 1 to 3 months and another set of 10 percent purchase 6-9 months. Gadwal saris are bought for some occasions and ceremonial functions (Table-4, Appendix).
5. Table 5(Appendix) refers to the preference of women regarding their choice for the type of sari. About 34 percent out of 50 respondents prefer fancy sari followed by silk (20 percent) and cotton sari (14 percent). Respondents prefer fancy saris. This shows that they are looking for a change in the product. They will prefer to buy new fashioned gadwal cloth rather than traditional design with no major changes.
6. Table 6 (Appendix) clearly indicates that within the silk source market, gadwal saris has good demand. This clearly shows that customers are willing to buy the core product of gadwal.
7. Table-7(Appendix) indicates that customers prefer to buy in a shop rather than approach weavers/master weavers directly. Hence modern retail outlets are preferred outlets for gadwal than traditional outlets. More than 70 percent prefer wholesalers and retailers as place of purchase.
8. Different factors are highlighted by respondents when buying silk saris. Most of them (54 percent) prefer the saris because of its grand look. Hence consumers like the basic product but they are looking for variety (Table 8, Appendix).
9. More than 75 percent of respondents perceive gadwal sari as a very good product. 22 percent of the respondents' opinion is between average and good. Hence perception about consumer is very positive and it reveals that demand can be further alleviated by aggressive marketing strategies (Table-9, Appendix).
10. More than 60 percent are satisfied with the price of gadwal sari. It seems that price is not a barrier for consumers; they prefer variety and quality product rather than go for cheap cloth with lower prices (Table-10, Appendix).
11. About 48 percent could tell all the varieties of gadwal sari which is quite less considering the fact that the sample was taken from a place which is inherently famous for gadwal saris. It is evident that there is lack of information about the product and hence promotional strategies should focus this issue to combat fewer sales (Table 11, Appendix).
12. More than 60 percent of the respondents were aware of different shades of gadwal saris which highlights the knowledge of the product. This can be attributed to the fact that the sample has been selected where gadwal saris are popular. The need is to generate same interest and knowledge for potential customers (Table 12, Appendix).
13. More than 82 percent of the respondents stated that the colour combination of the gadwal sari is appreciable. Hence if the product is suitably marketed, the potential customers will also prefer these saris due to their grandeur looks.
14. More than 70 percent of respondents stated that quality of gadwal saris is good which indicates that core product of gadwal is highly appreciated and there is no doubt about its perceived quality.
15. More than 80 percent of respondents were of the opinion that gadwal saris can be worn in parties or special occasions. As we know that India is the land of festivals. In any part of our country, there are always marriages, special occasions and festivals in line. Hence the need is to fine tune the core product of gadwal with the occasion and festive mood of the potential customers (Table 15, Appendix).

Primary data highlighted the level of satisfaction and perception for gadwal saris. Consumer goes through a decision making process to buy a product. At this stage it is important to understand the buying behaviour of customers for handloom saris. The information obtained from primary data will help in bringing changes in the present marketing mix for gadwal sari so as to cater to wider market domestically or internationally.

CONSUMER BUYING BEHAVIOUR

Consumer behaviour research is the scientific study of the processes consumers use to select, secure, use and dispose of products and services that satisfy their needs. Knowledge of consumer behaviour directly affects marketing strategy (Anderson *et al*, 2005). In order to satisfy needs of customers, marketing strategies must incorporate knowledge of consumer behaviour into every facet of a strategic marketing plan (Solomon, 2002). Consumer behaviour has been legitimized in marketing for it provides the conceptual framework and strategic thinking for carrying out successful segmentation of markets (Schiffman and Kanuk 2000).

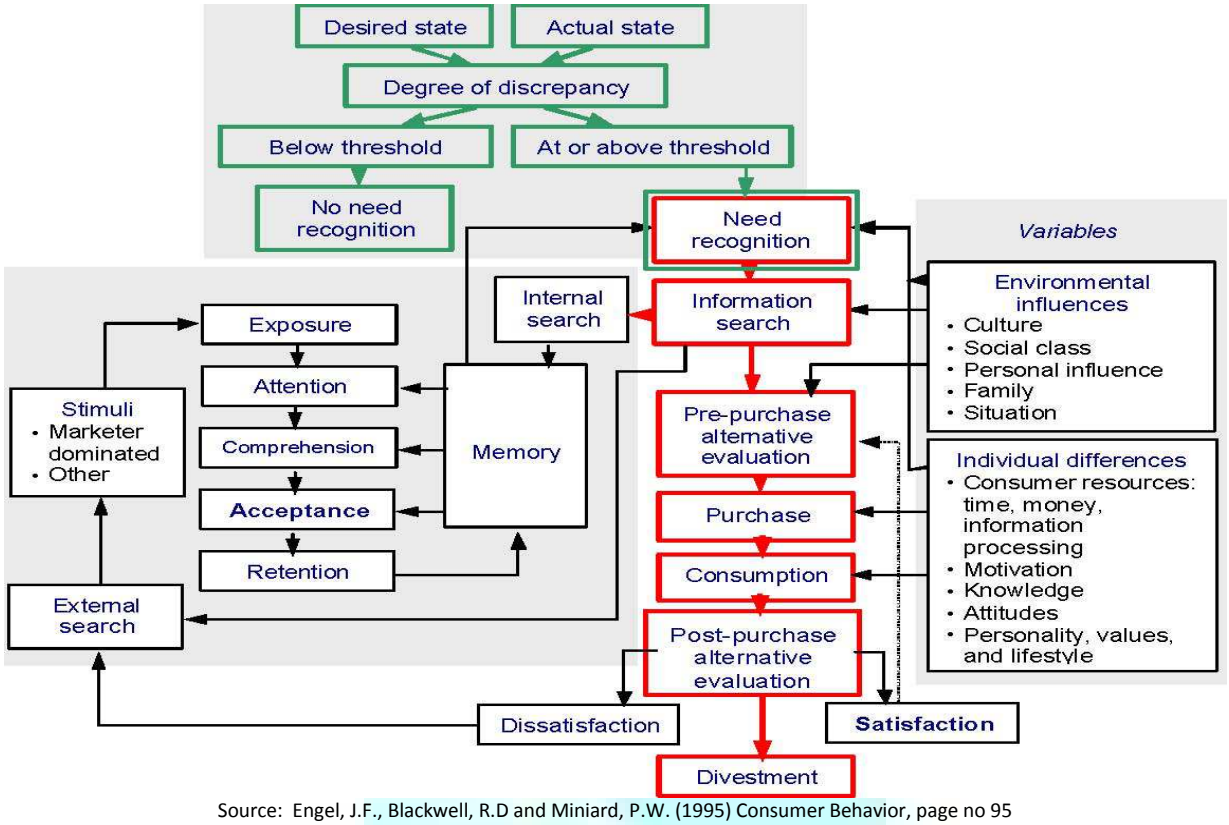
SUPERIMPOSING THE MODEL OF CONSUMER BUYING BEHAVIOUR FOR GADWAL SARIS

According to the model of Engel and Blackwell (1995), the consumer decision-making process comprises a need-satisfying behaviour and a wide range of motivating and influencing factors. The following figure-1 is showing various steps in decision making process:

1. Need recognition – realisation of the difference between desired situation and the current situation that serves as a trigger for the entire consumption process. However, to trigger the action, the need should be considered as important and the need satisfaction should be within a person's resources (e.g. time, money, etc.).

Gadwal saris can be worn on several occasions; hence there is always a possibility to buy a sari on ceremonies, marriage or small get together. The idea is to generate need for purchasing gadwal saris. The weavers can focus on producing so many varieties and colour combinations so as to suit every event and family occasions. For younger generation the need can be generated if gadwal designs are imprinted on jeans tops, suits, skirts and wrap ups.

FIGURE-1: STEPS OF CONSUMER BUYING BEHAVIOUR



Source: Engel, J.F., Blackwell, R.D and Miniard, P.W. (1995) Consumer Behavior, page no 95

2. **Search for information** - search for data relevant for the purchasing decision, both from internal sources (one's memory) and/or external sources.

In case of gadwal sari, the personality, resources and reference groups play important role. Word of mouth can play a very significant marketing tool, as satisfied customer will tell others to buy gadwal saris. Internal as well external sources are very important aspect for purchasing saris. Experience and positive influence of family and friends play a crucial role. Websites with good designs, colour combinations and other features of saris can dissipate information to far flung customers.

3. Pre-purchase alternative evaluation - assessment of available choices that can fulfill the realised need by evaluating benefits they may deliver and reduction of the number of options to the one (or several) preferred. Furthermore, studies report that well- informed customers are willing to pay more for the quality brand than were lower-knowledge customers (Cordell 1997).

An important part of the pre-purchase alternative evaluation is acceptance - whether the consumer accepts and believes the information provided and trusts the sources of that information. The quality and attractiveness of the sari should be highlighted in such a way that when a customer is analyzing different options it considers purchase of gadwal sari/material.

4. **Purchase** - acquirement of the chosen option of product or service.

Purchasing and selecting sari should be very pleasant and conducive. Sales person should be friendly and ready to give suggestions. Samples of gadwal weavers' sari cloth can be offered. The information and photographs of models wearing different saris and variations should be displayed at every important places like cash counters, help desk, cloth counters etc.

5. **Consumption** - utilisation of the procured option.

Customers' database can be managed and their feedback regarding sari and its design can be obtained which can further give inputs to the weavers about the most popular colour design, or motif.

6. **Post-purchase alternative re-evaluation** - assessment of whether or not and to what degree the consumption of the alternative produced satisfaction.

Any kind of dissatisfaction like colour fade, poor quality of yarn etc should be minimized. The price of the product should justify the quality given to the customers. Hence lesser the complaints of gadwal saris, the more positive feedback will be obtained.

7. Divestment - disposal of the unconsumed product or its remnant. Divestment became a focus of customer research relatively recently because of growing environmental concerns.

Gadwal saris do not have any environmental hazards as they are made of natural fibers (cotton and silk).

There is an earnest need to redefine the marketing mix of the gadwal saris as it is evident from the primary data that core product of gadwal product is well accepted and price is not a barrier. Consumers are looking out for more varieties and changes in the designs. There is a need to diversify the product so as to reach customers of different segments. This will not only promote the product but its widespread applicability will help weavers to sustain and share large profit margins. The changes in the marketing mix will give consumers the liberty to experiment and buy product in various ways. It will also be able to get into north Indian market.

PROPOSED MARKETING MIX FOR GADWAL SARIS

It is very important to know about our market and customers' buying behavior. What we were producing and selling till date does not guarantee the same pattern of buying behaviour in future. Some of the ways in which market information can be gathered is:

- through trade fairs and exhibitions
- Customers' feedback and suggestions

- exchanging information with other trading houses
- Gathering information from trade magazines, newspapers and government bulletins.

With the help of updated market information there is reduction of risk, updated information about customers, new competitors and general market conditions. All these information will help in analyzing the marketing mix and few changes can guide the weavers and different centers in allocating limited resources in each element efficiently so as to get maximum benefit and customer satisfaction. The following is the proposed changes in the elements of marketing mix:

PRODUCT

The main purpose for market research and marketing mix is to find out what to produce and in what quantity. In handloom industry the demand is depended on the end customers and supply is dependent on the weavers' ability to make the product in faster time. The product has to go into number of phases like wrapping, weaving, processing, finishing, stitching, value addition and packaging. It is better that marketing center takes care of all the production under one roof and give its inputs at each stage depending upon the fashion, new trends and demands of the customers. It will help in making product more competitive and suitable with respect to the changing tastes of the market. Product mix needs to be changed by introducing diversified products with different utilities.

PRICE

According to the primary data, the customers do not have any apprehensions about the price of the gadwal sari. The only concern which has to be looked upon is that no unfair deals and differentiation in prices are encouraged. Also, we can very well appreciate that cost minimization at each step is the survival technique for weavers. Pricing strategy should be such that it reflects the product differentiation. Survey results have shown that affordability is not a problem but price should commensurate with the quality and variety offered.

PROMOTION

Integrated communication can be used for this element, as it is very effective for our product. The most influential strategy could be that a celebrity adorning gadwal sari, as they are very powerful in influencing public opinion. Celebrities can be selected on the basis of their popularity and acceptability. Consumer personal reference marketing can be used where a customer publicises a brand by accepting the product and spreading the trend by word of mouth. The product has to be promoted in such a way that it differentiate itself from its competitors right from the stage it enters the market. Advertisement in different media can be given, stressing about the good quality of product. Focus can also be made on varieties of product offered, environmental friendly product, comfort and the awareness of handloom products. Special offers and discounts in festive season is a good way of pushing product at the right time. Consumers remember the product for a longer time if it gets associated with some positive incidence in life like marriage, birthdays, anniversaries etc.

PLACE

Place of distribution is very important in creating a right marketing mix. Customers feel the ambience and surroundings first then look for product. Store, hypermarkets, emporium etc should have elegant atmosphere emphasizing the handloom culture and depicting current trends. The value chain should be analysed holistically. Sometimes in national and international exhibitions, depicting a scenario with villages and weavers doing their work gives a very beautiful environment and feeling of our culture. Export markets, trade fairs and huge hypermarkets can be tapped to place the product.

The discussions have highlighted some of the pertinent steps which can be taken to help gadwal saris attain a prominent market share and get their rightful place in the eyes of customers and market. The following recommendations envisaged the untapped potential of gadwal saris which will retain the loyal customers and at the same time attract new ones.

RECOMMENDATIONS

DIVERSIFICATION OF THE PRODUCT

As it is quite evident that the market in North and South India is flooded by various varieties of saris coming from across India, the competition is very fierce. Gadwal saris are not only competing with other states' products but also foreign products which are flooding the market. It is high time that product diversification should be adopted rather than waiting for the art to get extinct, due to lack of funds, poor socio economic conditions of weavers. There are numerous ways to add variety and still preserve art. Few of the suggestions are discussed below:

- Gadwal art can be reflected on a silk cloth which can be tailored for cushion covers, table cloth etc.
- Various notebooks, folders, organisers' covers can be made from gadwal gadwal sari, giving it a grand and splendid look. It will be ideal gift for business purposes. Tourists like the items which reflect the culture of India.
- Saris can be customised to make suits, wrap around, abaya, and strollers to suit the younger generation and to look trendy.
- Wall paintings can be canvassed with vibrant colours and unique designs.
- Hand purses, jewellery boxes etc. can have the feel of silk and gadwal design to look it more grand and ravishing.

POTENTIAL MARKET FOR PRODUCTS

It is very important to have a marketing center for gadwal saris which can look for domestic and international markets. As the competition is becoming fierce day by day, it is very difficult to maintain or increase the market share. The centre should organise exhibitions, Haat and melas to promote gadwal saris all over India. Also it should look for foreign markets where similar products with some modifications can be introduced. The customer base consisting of NRIs and NREs can also be tapped as they always want to be in touch with the home country. Workshops and seminars can be conducted and this will help in having buyers, media persons, opinion makers as well as general public to participate and it is cost effective.

MARKETING AND ADVERTISING

The organizations that are developing the new and innovative items are required to give publicity at the international level in order to explore the possibility to market their items. Effective and well-designed publicity drive creates awareness amongst the potential buyers.

Products range being offered by India and also help in dissemination of National policies and information on other issues like Social Environmental, working condition to educate buyers and consumers. It is, therefore, proposed to launch a systematic publicity campaign through audiovisual/ printed publicity by making video film preparing posters, catalogues, folders, brochures on Indian Handicraft/Carpet, Road Shows, Catalogue Shows, fashion shows, live demonstration by crafts persons and such other methods as will create positive image of Indian Handicrafts in the foreign markets. With the view to market their products the organizations may like to participate in various international exhibitions/fairs, Buyer Seller Meets etc., display their items in reputed departmental stores. In order to create awareness about Indian Culture at the international level it is also necessary to depute crafts persons for live demonstration during the international fair/exhibition/Buyer Seller Meet and to organize the cultural exchange programme between various countries.

The market is a dynamic place and situation is ever changing in terms of the potentiality, taste, fashion and International focus. With the increased international competition, market trends are changing and market segments are becoming more and more country specific as well as product focused. Even with in a country different types of stores (Mega departmental stores, specialized stores etc.) are growing in large numbers. Simultaneously, the number of fairs and exhibitions being organized in India and Abroad are growing. It is necessary for all organizations engaged in export of handicrafts to compete and continuously have an up dated market intelligence to be successful in their objective in this competitive international market. In order to meet with the challenges and opportunities organizations are required to participate in fair and exhibitions, conduct market studies etc.

LIMITATIONS

The limitation of the study is that it is based on a micro study which has been generalized to devise a marketing plan. The large customer base can be approached to better understand the expectations and perceptions of customers.

FUTURE RESEARCH DIRECTIONS

The complex buying behaviour of customers for handloom product and more specifically for gadwal saris can be studied nationwide and data can be analysed further with statistical packages to understand and further add to the knowledge and information about market and customers.

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APPENDIX

The following tables represent the demographic profile of 50 respondents and their opinion about gadwal saris.

TABLE - 1: AGE OF THE RESPONDENTS

Particulars	No of the respondents
20-30 years	18
31-40 years	25
41-50 years	07
Total	50

Source: field survey

TABLE - 2: OCCUPATION OF THE RESPONDENTS

S. No.	Particulars	No. of respondents	Percent
1	Working Women	30	60
2	Non Working Women	20	40
Total		50	100

Source: field survey

TABLE - 3: INCOME LEVEL OF WORKING WOMEN

S. No.	Particulars	No. of respondents	Percent
1	0-10,000	12	40
2	10,000-20,000	11	37
3	20,000 & above	7	23
Total		30	100

Source: field survey

TABLE - 4: FREQUENCY OF PURCHASE OF SARIS

S. No.	Particulars	No. of respondents	Percent
1	Below one month	2	4
2	1-3 month	14	28
3	3-6 month	15	30
4	6-9 month	5	10
5	Once in a year	14	28
Total		50	100

Source: field survey

TABLE - 5: PREFERENCES FOR DIFFERENT TYPES OF SARIS

S. No.	Particulars	No. of respondents	Percent
1	Silk Saris	10	20
2	Fancy Saris	17	34
3	Cotton Saris	14	28
4	Work Saris	09	18
Total		50	100

Source: field survey

TABLE - 6: PREFERENCE FOR DIFFERENT TYPES OF SILK SARI

S. No.	Particulars	No. of respondents	Percent
1	Gadwal	33	66
2	Benaras	02	04
3	Kanchi	06	12
4	Venkatagiri	04	08
5	Pocham palli	05	10
Total		50	100

Source: field survey

TABLE - 7: PLACE OF PURCHASE

S. No.	Particulars	No. of respondents	Percent
1	Directly from the producer	09	18
2	Whole seller	18	36
3	Retailer	17	34
4	Master weaver	06	12
Total		50	100

Source: field survey

TABLE - 8: FACTORS INFLUENCING THE PURCHASE DECISION

S. No.	Particulars	No. of respondents	Percent
1	Price	03	06
2	Design	06	12
3	Colour	06	12
4	Grand look	27	54
5	All the above	08	16
Total		50	100

Source: field survey

TABLE - 9: PERCEIVED OPINION ABOUT GADWAL SARIS

S. No.	Particulars	No. of respondents	Percent
1	Excellent	24	48
2	Very good	13	26
3	Good	08	16
4	Average	03	06
5	Poor	02	04
Total		50	100

Source: field survey

TABLE - 10: OPINION ABOUT PRICE OF GADWALL SARIS AS COMPARED TO OTHER SARIS

S. No.	Particulars	No. of respondents	Percent
1	Fully satisfied	13	26
2	Satisfied	30	60
3	Not satisfied	04	08
4	Not at all satisfied	03	06
Total		50	100

Source: field survey

TABLE - 11: NUMBER OF VARIETIES FOUND AMONG GADWAL SARIS

S. No.	Particulars	No. of respondents	Percent
1	1	03	06
2	2	05	10
3	3	14	28
4	4	04	08
5	More than 4	24	48
Total		50	100

Source: field survey

TABLE - 12: NUMBER OF COLOUR SHADES OF GADWAL SARIS

S. No.	Particulars	No. of respondents	Percent
1	1	02	04
2	2	03	06
3	3	10	20
4	4	02	04
5	More than 4	33	66
Total		50	100

Source: field survey

TABLE - 13: COLOUR COMBINATION OF GADWAL SARIS

S. No.	Particulars	No. of respondents	Percent
1	Excellent	17	34
2	Very good	12	24
3	Good	12	24
4	Average	04	08
5	Poor	05	10
Total		50	100

Source: field survey

TABLE - 14: QUALITY OF GADWAL SARI

S. No.	Particulars	No. of respondents	Percent
1	Excellent	21	42
2	Very good	16	32
3	Good	09	18
4	Average	02	04
5	Poor	02	04
Total		50	100

Source: field survey

TABLE - 15: OPINION REGARDING THE SUITABILITY OF GADWAL SARIS FOR PARTIES AND SPECIAL OCCASIONS

S. No.	Particulars	No. of respondents	Percent
1	Yes	42	84
2	No	08	16
Total		50	100

Source: field survey

TABLE - 16: OPINION REGARDING PRICES

S. No.	Particulars	No. of respondents	Percent
1	Very expensive	02	04
2	Expensive	16	32
3	Affordable	28	56
4	Cheap	02	04
5	Very cheap	02	04
Total		50	100

Source: field survey

TABLE - 17: ATTRACTIVE ASPECTS OF GADWAL SARIS

S. No.	Particulars	No. of respondents	Percent
1	Affordability	03	06
2	Grand look	30	60
3	Many varieties	08	16
4	Many to maintain	07	14
5	All	02	04
Total		50	100

Source: field survey

TABLE - 18: OPINION REGARDING PUBLICITY AND ADVERTISING FOR GADWAL SARIS

S. No.	Particulars	No. of respondents	Percent
1	Excellent	06	12
2	Very good	15	30
3	Good	18	36
4	Average	04	08
5	Poor	07	14
Total		50	100

Source: field survey

TABLE - 19: PRICE RANGE SUITABLE FOR DIFFERENT CUSTOMER GROUPS

S. No.	Particulars	No. of respondents	Percent
1	I don't think so	03	06
2	Partly disagree	05	16
3	No idea	03	06
4	Partly agree	14	28
5	Yes they are available	25	50
Total		50	100

Source: field survey

TABLE - 20: RANKING OF GADWAL SARIS

S. No.	Particulars	No. of respondents	Percent
1	Excellent	17	34
2	Very good	19	38
3	Good	09	18
4	Average	02	04
5	Poor	03	06
Total		50	100

Source: field survey

IDENTIFYING THE FACTORS EFFECTIVE ON ORGANIZATIONAL INNOVATION IN SERVICES

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ABSTRACT

In market economy, development and introducing new services are essential for an organization's survival. Today, the service organizations find themselves facing various competitive pressures. Currently, the development and efficiency of such organizations rely on new services development. Due to extensive competitions, the organizations are forced to rapidly expand the new services. Usually, this increases the uncertainty and risks related to the new services. Therefore, it is necessary for the managers to have sufficient information on success and failure of new service projects. The combination of required organizational factors effective on performance of the new services is also essential. The main objective of this paper is to identify the factors effective on services innovations in ministry of labor. In fact, this paper intends to investigate how to promote the service innovation and what are the effective organizational factors on it. The research is considerable from this perspective that by identifying the effective organizational factors on service innovation, proper policies could be made in order to guide the improvement in the service innovation. Therefore, it is attempted, by obtaining models from previous researches, to create a proper basic framework to perform this research. In this research, in order to study the effective organizational factors on service innovation, the previous literatures were used. Then, based on information obtained from the case study and interviews, the research's framework was extracted. The questionnaires were created based on this framework. Finally, the analysis of the acquired data signified that the aspects of the effective organizational factors are categorized into technical development, new products development, organizational structure, organizational competence development, and technical chain combination. 8 factors in technical development aspect, 6 factors in development of new products aspect, 7 factors in organizational structure aspect, 3 factors in development of organizational competence, and 6 factors in technical chain combination factor were extracted from the interviews and the previous researches. In the research's quantitative stage, a statistical population consisted of managers and employees of the case study were considered and the simple random sampling method was used for sampling. Also, in this stage, the questionnaires were used as the data collection tool and the research's validity was measured by the experts in the qualitative stage, and the questionnaire's reliability was approved through Cronbach's alpha of 0.82. The factor analysis was applied in this stage for the data analysis.

KEYWORDS
Effective Organizational Factors, Service Innovation, Ministry of Cooperatives, Labor and Social Welfare.

INTRODUCTION

The organizations should consistently adapt themselves with changes occuring in their environment and catch up with them. An organization should not change its status occasionally, but must consider that the change phenomenon is permanent and should change continuously and consistently. The current organizations should move along the path of innovation and change, and this should not be performed in order to increase their prosperity and success, but this process ensures their survival in the competitive world (Lusch and Vargo, 2006).

Learning and innovation are substantial needs of organizations which seek survival and effectiveness, and several organizations are extensively looking for innovative methods and approaches to improve effectiveness, efficiency, and flexibility (Paulson, 2006).

The boundary between tangible and intangible products is increasingly vanishing. Day after day, for most products, it is getting harder to distinguish whether it is a commodity or service. Most considerations related to new product development and innovation, whether the final consequence is tangible (e.g. commodities) or intangible (e.g. service), are identical. Schiirr (2008) describes the innovation process in services section as "the learning process and the non-systematic search". However, it seems that most companies engaged with manufacturing of tangible products have already officialized the product development processes.

According to the investigations carried out in 2000 on 700 American companies, the results show that about one third of these organizations' profit is due to the new services they provided, while it was one fifth in 1985 investigations. Considering these issues, the new service development process management also needs applying new managing approaches (Tidd and Hull, 2003).

These changes indicate a process at the verge of the new service emergence, the signs of which are as follows:

Competitive advantage: The service development for companies and individuals has become the competitive advantage's determining factor.

Strategic problem: Services innovation has turned into a strategic problem for companies.

Increasing activity: The amount of new services introduction doubles every 5 years. Reducing the period of services introduction is consisted of reducing the time of services introduction and increasing the amount of services development.

Each organization's special conditions: Each organization must implement a proper services innovation program, by considering endogenous and exogenous special conditions.

Consistent improvement: The consistent improvement of activities and services innovation performance is an essential issue (Akmavi, 2005).

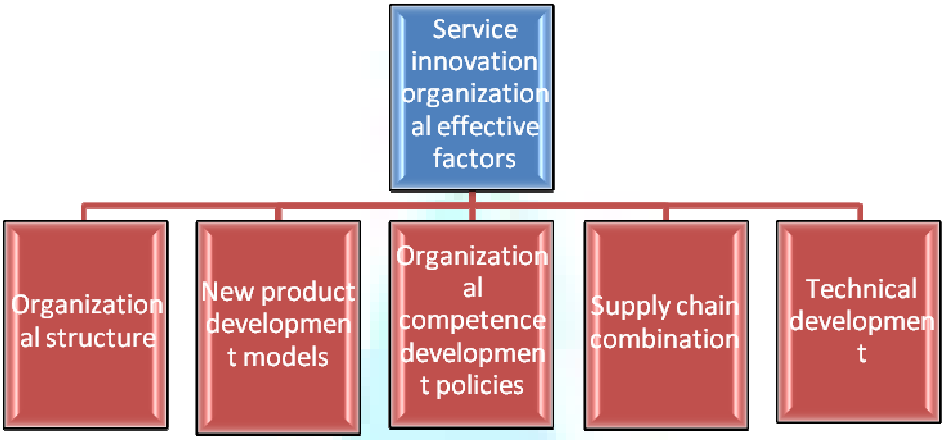
The question that this paper is looking for its answer is that what are the effective organizational factors on services innovation in ministry of labor and social affairs and how is their effect?

LITERATURE REVIEW

Research's theoretical framework

In this research, in order to create a proper theoretical framework, the Leonard et al. (2007) classification including five main topics (strategic, organizational, technical, planning, control, and operational) which mostly cover the effective factors of this field, was used. The reason to choose this framework was its generality in employing all the expected variables of the past literatures.

FIGURE 1 – RESEARCH'S CONCEPTUAL MODEL



Research's background

The innovation is a management system emphasizes on the organization's purpose, looks for exceptional opportunities and determines whether they are suitable for the organization's strategic path, identifies the success criteria, and also looks for new opportunities (Blazevic et al., 2003). The organizational innovation is described in literatures carried out on changing and innovation as "a single-aspect event that signifies the company's tendency towards creating and implementing different innovations, such as technological, executive, product, and process (Munoz, 2008).

It is mandatory for the managers and employees to be aware of the innovation and creativity so that they could enter to the job and activity area by possessing the required and new knowledge and it is in this area that they would play an effective role in purposes realization and organization's progress, through being creative. The innovation is essential for every organization's survival and as the time goes by, the uncreative organizations would disappear, and although such organizations might be successful in a period of their life in an operation they are engaged in, in the end they would have no choice but to shut down or to change their system. In organic organizations, an innovative and creative process, which runs in an upward path, will be enhanced and approved.

Different studies performed on services innovation field define the service innovation organizational main effective factors (Oldenboom and Abratt, 2000). Some of these factors are as follows: service innovation structured process (transparent strategy, strategies, operational programs, etc.), determined purposes, service definition, long-term perspective (to have future programs), powerful leaders, to perceive the environment, senior management support, customer participation in the process, and paying attention to him/her, as well as the team. The team must have a common and transparent perspective (Lusch and Vargo, 2006).

The organizational characteristics which are mentioned in the topic's literature include: new service innovation projects organizing method, project's organizational structure, the mergedness level of two sections of marketing and R&D, and personal characteristics of key individual who are engaged in new services innovation activities (Reamer and Icerman, 2003).

Lovelock and Wirtz (2004) mention some of the services performance factors. Although this study concentrates on new services development processes and do not directly point out the success or failure of the services, the obtained results provide an interesting viewpoint on aspects effective on new services success. They found that relationships are the key point in new services development in order to avoid work mistakes among line personnel.

Paulson (2006) published an article titled "a model for new service development in tourism different services". The purpose of this paper was to create an NSD model to aid individuals active in tourism industry in order to perceive the complexities of new service development. They presented four major steps for new service development: detecting new opportunities, defining the service notion, defining the service system, and introducing the service to the market. The first step, namely detecting new opportunities, includes the strategic purposes factors and the informal manufacturing of purposes. The second step, defining the service notion, contains the ideas screening factors, clarifying the notion elements, and adjusting and formulation scenarios. The factors of the third step, defining the service system, include processes, participants, and physical facilities. The final step's factors, introducing the service to the market, include process's final revision, training, and the trial run.

Ragot (1994) conducted two case studies in this field on Swedish communication industry. It was found that different qualitative factors are applied in development process. Reliability, commitment to service, service distinct notion.

Drew (1994a) evaluated the innovation activities in service organizations based on a field study of 44 banks and financial institutes in Canada. The main identified obstacles for innovation are a decentralized strategy, lack of investment, increasing bureaucracy, economical conditions, and industry laws. Proper management information systems, employment of new employees, change in job description, and bonus systems have the most contribution to innovation. Management and marketing are the main stimuli of innovation. Almost all organizations adopt a team approach, employ product champion, and apply project management methods. They have a medium application of strategic links in innovation and planning progress to increase their future application.

Easingwood (1986) showed by research that service properties are effective on new products development. The simultaneity of production and consumption is effective on new product idea production and new products evaluation. Also, the need to participate personnel in the NPD process was emphasized. The intangibility leads to customers' reliance on the organization's image; therefore, organizations should pay more and precise attention to the image of their new product's introduction. Usually, the screening of new products has been informal and the trial marketing has rarely been carried out. This is because: most new products are copied and speed of utmost importance, they are usually provided to complete the product's line and therefore profit is not the main purpose, the experiencing cost is not lesser than entering cost. The new services evaluation presents difficulties due to the problems in determining the common providing systems costs.

Atuahene-Gima (1996a) named the major factors in new services as existence of a human resources strategy in product development and cooperation/teamwork during development process. The other important factors are success in entering to market skill and marketing synergy. For services, application of new technologies is also important while for products, the technology synergy is more important.

The Schirr's (2008) study, "new services innovation: the user's role in the process" was a proof for the fundamental data theory derived from De Brentani's studies. Two of the substantial questions of this study are as follows: how do new services develop? What is the role of customers' interference in new services development? The summary of the research's findings are is the proof of the following hypotheses: the application of customers' interference methods to predict the success of more innovative NSD's is more effective than application of market research limited tools. The NSD attempts are more successful when the process is more formal but more flexible and more iterated.

A model consisted of (1) customer-oriented and forward organizational culture, (2) market research methods, and (3) formal and repeatable NSD processes, guarantee the NSD's success.

Munoz (2008) in a research conducted on mobile operators industry identified a set of success factors in new services delivery development process. Two endogenous success factors and four exogenous factors were introduced, and in order to complete it, five success measures were determined.

Edvardson et al. (2005) in a study called challenges in service development and creating value by services identified the challenges and success factors on new service development. Their primary emphasis was on challenges in new business field. The field in which the services and new technologies competition puts pressure on companies and market in order to develop new services which can create value for customers. Then they concentrated on creating values which are suitable for customers.

Martin and Horne (1993) in their paper called "service innovation: successful vs. unsuccessful organizations", showed that the success rate of unsuccessful organizations is less than 49 percents. This study asked participants to explain their approaches to new service development. The successful organizations plan their new services closer to their current portfolio and allow their champion product to manage the first phase of product entering to the market. However, there is no difference between the amount of strategic planning behind processes and using an official process. Generally, the service organizations are weak in this domain. Additionally, it was signified that the competitive motives are extensively effective in idea creation.

RESEARCH METHOLOGY

The present research is considered a practical research. The data is gathered through combinational research method. In the qualitative stage we will examine the qualitative data collection in the case study. In the quantitative stage the survey method is used.

STATISTICAL POPULATION

In the qualitative stage of the research, the statistical population is experts in the innovation and organization. Expert in this research is defined Innovation in management consulting services have, in service innovation andentrepreneurship are related to organizational research. The statistical population in the quantitative stage includes managers and employee of ministry.

SAMPLING METHOD

In the **qualitative** method the sampling was limited. It was done to the saturation level; a list of experts was prepared by the researchers, then the respondents were called and they were informed about the meeting subject. Then, meetings were held at their offices and interviews were done. Finally 18 individuals cooperated in the research and the data for research was gathered.

In the quantitative stage, since the employees and business managers were limited, the statistical sample was calculated and gathered according the sample volume estimation in unlimited population. A hundred and fifty individuals responded. Measurement error ***(ε)***in the formula which shows the precision of the estimation is 8% and certainity level 0.95%. To maximize the sample volume, p and q values were assumed 0.5. This way, the questionnaires were distributed among the respondents and finally 137 questionairres were gathered (return rate, 91%).

SAMPLING METHOD

In the **qualitative** method, sampling was targeted (purposeful); the list for all experts was prepared and the respondents were told about meeting time and subject. The sampling method in the quantitative stage was random.

DATA COLLECTION METHODS

In the qualitative stage, authentic journals and library studies were used for data collection. Also, half-structured interviews with experts about organizational factors affecting the service innovation were done to collect data. As multiple validation resources, documents related to innovation services were reviewed. In the quantitative stage, data was gathered with the help of interviews done with the managers and employees. Measurement scale in the questionnaire was the five scale Lickert questionnaire ranging from "Completely disagree" to "Completely agree".

System's validity and reliability measurement method:

In the qualitative stage, the research's repeatability or reliability increases by data and methods documentation while plan's implementation and by using qualitative standard methods. The system's validity is determined through service innovation experts counseling. In the quantitative stage of the study, in order to measure the measurement tool reliability, the Cronbach's alpha method was applied. As it is shown in table (1), the Cronbach's alpha value for technical development components was 0.96 (very good), for product development components was 0.84 (very good), for technical chain combination components was 0.76 (medium), and for competence development policies components was 0.70 (medium). Also it should be mentioned that the questionnaire's validity was measured by experts during the qualitative stage.

TABLE 1 – QUESTIONNAIRE'S CRONBACH'S ALPHA VALUES

Scale	Number of questions	Cronbach's alpha coefficient
Technical development components	8	0.96
New product development components	6	0.80
Organizational structure components	7	0.84
Supply chain combination components	5	0.76
Competence development policies components	3	0.7

DATA ANALYSIS (RESEARCH'S FINDINGS)

Data analysis of the qualitative stage was performed in form of open and axial codings. Some codes, or notions and concepts as in this research, were directly extracted from interviews and others were researcher-designed, based on concepts derived from theoretical basics review and service innovation literature's observations, experiences, and findings documentations (pre- or researcher-designed codes), and the participants viewpoints were introduced as current concepts for representation. Therefore, the subjective classes were chosen based on the described theoretical framework, and after data classification and management, the verbal propositions were collected in five default theoretical framework's components. It is worthy to mention that due to article space limitations, these propositions and their components are not presented.

TABLE 2 – ORGANIZATIONAL COMPONENTS EFFECTIVE ON SERVICES INNOVATION (TOPICS, ASPECTS) (RESEARCHER-DESIGNED)

Topics	Aspects
Organizational structure	Management support
	Personnel independence
	Organization's social capital
	Human capital (people qualified to perform tasks)
	Organizational concepts
	Available time
	Organizational culture
Supply chain combination	Suppliers and customers interference in R&D projects
	Turning the organization into a network of customers coalitions
	Suppliers and rivals
	The organization's geographical cover by customers
	The number of rivals providing the service
	Number of suppliers
	Employees and managers traffic among customers
Technical development	Employees and managers capabilities relevance to the company's current technology
	The amount of changing company's activity processes to maximize the success of a new technology
	The amount of performance and marketing knowledge changes with technology change
	Organization's structure change status in some of organization's technological changes
	The strong and stable role of product's supporters in innovation process
	The role of supporting senior manager' services in an organization
	The stable role of product's supporters in an organization
	The amount of personnel's awareness of the substantial and stable role of product's supporters in innovation process
Competence development policies	The amount of senior managers discussion and analysis on how to adapt the organization's axial capabilities with market needs
	The number of created innovations based on the organization's axial capabilities
	The personnel and managers knowledge about the organization's axial capabilities
New product development	Using market researches in sample product evaluation
	Concentrating new product ideas on the companies competences
	Informal relations during work process
	The ability to track new product information
	Sharing knowledge inside the team
	Using market researches for leading R&D plans
	To have a plan for new product development

In the topics' qualitative section, the aspects and components of the organizational effective factors on service innovation in ministry of labor were extracted. These results were used as the inputs for future analyses which is a proof for the extracted factors of this stage. Based on qualitative stage results, the research's conceptual pattern was approved as show in figure 1.

According to the research's conceptual pattern, five hypotheses were formed as following which were examined through confirmatory factor analysis, the results of which are reported in the next section:

Hypothesis title: The technical development factors are effective on the service innovation in ministry of labor and social affairs. The investigated variables are as follows:

Employees and managers capabilities relevance to the company's current technology, the amount of changing company's activity processes to maximize the success of a new technology, the amount of performance and marketing knowledge changes with technology change, organization's structure change status in some of organization's technological changes, the strong and stable role of product's supporters in innovation process, the role of supporting senior manager' services in an organization, the stable role of product's supporters in an organization, the amount of personnel's awareness of the substantial and stable role of product's supporters in innovation process.

Hypothesis title: Do the supply chain combination factors have effect on the service innovation of the ministry of labor and social affairs? The investigated variables are as follows:

Suppliers and customers interference in R&D projects, turning the organization into a network of customers coalitions, suppliers and rivals, the organization's geographical cover by customers, the number of rivals providing the service, number of suppliers, employees and managers traffic among customers.

Hypothesis title: Do the organizational competences development policies factors have effect on the service innovation of the ministry of labor and social affairs? The investigated variables are as follows:

The amount of senior managers' discussion and analysis on how to adapt the organization's axial capabilities with market needs, the number of created innovations based on the organization axial capabilities, the personnel and managers knowledge about the organization's axial capabilities.

Hypothesis title: Do the new product development models factors have effect on the service innovation of the ministry of labor and social affairs? The investigated variables are as follows:

Using market researches in sample product evaluation, concentrating new product ideas on the companies' competences, informal relations during work process, the ability to track new product information, sharing knowledge inside the team, using market researches for leading R&D plans, to have a plan for new product development.

Hypothesis title: Do the organizational structure factors have effect on the service innovation of the ministry of labor and social affairs? The investigated variables are as follows:

Management support, personnel independence, organization's social capital, human capital (people qualified to perform tasks), organizational concepts, available time, organizational culture.

Quantitative method:

As it is shown in the table, all the fit indices approve the pattern. Generally, if the GFI value is equal or higher than 0.98, it would be the sign of pattern's proper fit. On the other hand, RMSEA must be lesser than 0.05 and its confidence interval must not be very large, which in this pattern is about 0.035. Also, the values for NFI, CFI, and RFI which are larger than 0.9 represent the pattern's section satisfactory level. The ratio of chi-squared to degree of freedom, as the most important index for pattern's fit determination, was less than 2 and equal to 1.57, which is in a suitable domain.

TABLE 3 – PATTERN'S FIT CRITERIA

Criteria	Acceptable limit	The earned score
Ratio of chi-squared to degree of freedom	Less than 2	
Root Mean Square Error of Approximation	Less than 0.05	
Goodness of Fit Index (GFI)	Larger than 0.98	
Comparative Fit Index (CFI)	Less than 0.9	
Relative Fit Index (RFI)	Larger than 0.9	

After rationally proving the pattern's fit using the data, the significance of pattern's components and the relations between them was evaluated. All of these parameters indicate the simultaneous effectiveness degree of each observer and hidden parameter in the general pattern. Generally, the hidden parameters (the detected factors in the qualitative research) define 89% of the service innovation dependant variable variance. That is, by using this pattern, 89% of the organizational effective factors on the service innovation which were in ministry of labor, were identified and 11% of the effective factors were not identified.

DISCUSSION AND CONCLUSION

This research is consistent with the Munoz's (2008) research in which it was concluded that technical and expert resources in fields combination are effective on solution optimization for new services in form of cost/efficiency. The technical skills and specialty in IT equipments and systems have simplified the new service combination and have reduced the time of entering to the market.

Also these results confirm the Jong and Vemeulen (2003) results that examined the existing literatures on service innovation and identified 5 success determining factors classes in service innovation.

Also the results of Schirr (2008), Edvardson et al. (2005), Atuahene-Gima (1996a), and Abratt and Oldenboom (2000) are confirmed. By confirming the research's conceptual model, the organizational factors effective on service innovation are identified as: new product development, organizational competence development policies, organization's technical development, organizational structure, and also the emphasis on technical chain combination in organizations, which considering it in form of a concept has a significant effect on service innovation development.

SUGGESTIONS

Finally, the following suggestions are presented in order to develop and deepening this section of knowledge:

SUGGESTIONS FOR FUTURE RESEARCHERS

1. Performing explorative researches by using other qualitative research approaches;
2. Performing case study in other service organizations;
3. Implementing the results obtained from the current study on non-governmental organizations (NGO's) and governmental organizations and performing their comparative study.

SUGGESTIONS FOR POLICY-MAKERS

In addition to the mentioned suggestions, finally, some application suggestions for managers and policy-makers of ministry of labor are presented as follows:

1. Enhancing these aspects and criteria in organizational domains and organization's active units;
2. Supporting the service innovation systems and attempting to deploy this system in order to strengthen the organizational entrepreneurship;
3. Eliminating the negative environment related to innovations and explaining the key points of service innovation and presenting integrated programs in order to enhance the services and performed innovations;
4. Supporting the creative and managers and employees in order to utilize the long-term positive results;
5. Explaining the service innovation aspects by indicating the successful examples of service innovation throughout the world and encouraging managers to employ this pattern.

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THE EFFECT OF INDIVIDUALITY AND POWER DISTANCE ON INCOME SMOOTHING

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ABSTRACT

In this study, the effect of cultural components on income smoothing possibility is investigated. The cultural components are selected according to the Hofstede model which includes individuality and power distance. Furthermore, the income smoothing is measured using IKAL model and income-to-sales coefficient of variations for net income and gross profit levels. The statistical population of this research consists of the companies registered in Tehran Stock Exchange (TSE) and another sample including 72 companies which were selected via systematic random sampling. The statistical methods used in this investigation are linear regression and F-test. Confidence level was considered as 90% and the research period is from 2006 - 2010. The study findings confirm the significant relationship of individuality and power distance components with income smoothing in net and gross income levels. This relationship is direct and positive and also the relationship intensity of cultural components with income-to-sales coefficient of variations for net income level is slightly higher than gross income level. Moreover, in larger companies, the income smoothing was higher, and also the employees' concerns in such companies were the possibility of participation in company's management and social responsibility.

KEYWORDS
Income Smoothing, Individuality, Power Distance.

INTRODUCTION

Increasing the awareness about environmental factors' role in forming accounting procedures and systems is an important achievement of the researches on accounting. These achievements have led to more serious attempts in identifying relative environmental factors and how they affect accounting. In these researches, culture is considered as one of the important environmental factors and effective on the nations' accounting systems. This attitude is based on this general reasoning that accounting is a social-technical activity (Thaghafi, 2010).

In this connection, several researches have been carried out in different countries into the effect of culture on the accountants' behavior. The Hofstede's definition of culture has been considered in all these researches. According to his definition, the culture could be investigated by five elements. These elements include the current power distance in the society, avoiding uncertainty about future, the level of individuality, the level of masculinity of the individuals' long-term and short-term views (Hofstede, translated by Farhangi et al., 2007).

REVIEW OF LITERATURE

Hofstede investigated in his research on the employees of IBM in 50 different countries including 116000 people on the difference of culture in various countries which included individuality, power distance, avoiding ambiguity and masculinity. Iran was ranked 29 in power distance, 43 in masculinity, 59 in avoiding ambiguity and 41 in individuality perspectives (Hofstede, 2002).

Hofstede, Van Deusen, Muller, and Charles claimed that people's sensitivity to risk is high in eastern cultures. Also, other observations show that group and collectivist cultures are more tolerant to risk than individual cultures (Hofstede, 2002).Hu, Kung and Yu found that income manipulation by companies' managers depends on value systems (culture) and structural aspects (legal environment) of the country under study (Hu, 2008).Baharmoghaddam and Hassani identified significant relationships among operational cash flow, inventory changes, and earnings management in companies registered in Tehran Stock Exchange (Bahar Moghddam, 2010).

Molanazari and Karimizand showed by their investigation that a strong and invert correlation exists between the size of corporation and income smoothing (Mola nazari, 2007).Thaghafi and Rezazadeh (2000) examined the cultural context of accountants' professional behaviors. In this study, the Hofstede's model and variables about culture from some aspects including effectiveness on the accountants' behavior in conservatism, secrecy and information disclosure were investigated (Thaghafi, 2003).Thaghafi and Baharmoghaddam studied the effective stimuli on the earnings management in stock exchange companies and came across some evidences concerning the relationships between ownership structure, block stocks, managers' compensations, audit firms quality, companies' growth, size of corporation as well as financial structure with the level of earnings management (Thaghafi, 2006).Roya'e and Abdoli found no significant and important relationship between cultural components and earnings management. In fact, by including the type of company variable, whether public or private, the relationships between dependent and independent variables were slightly modified (Roay'e and Abdoli, 2009).

Ahmed Seleim and Nick Bontis,(2009) investigate the relationship between the GLOBE (Global Leadership and Organizational Behavior Effectiveness) project national cultural dimensions of values and practices and the Corruption Perception Index (CPI). Their results provide empirical support for the influence of uncertainty avoidance values, human orientation practices, and individual collectivism practices on the level of corruption after controlling for economic and human development, which, in turn, adds to the efforts to build a general theory of the culture perspective of corruption.

Marshall and et al.(2006) investigates whether national culture influences perceptions of the acceptability of earnings management. Participants from eight countries evaluated 13vignettes describing various earnings management practices . Results demonstrate considerable variation in perceptions across nations to the earnings management scenarios, providing strong evidence that the practice of earnings management was not perceived similarly in all countries. Using Hofstede's (1991) cultural indices, we find that the differences in aggregate perceptions across countries were not closely associated with any of the cultural dimensions examined. They, find that perceptions of earnings manipulations involving the timing of operating decisions were associated with both the Power Distance Index and the Masculinity Index.

Deresender and et al ,2007 finds a significant influence of both cultural measures. In line with Licht et al. (2004), who argue that individualistic societies may be less susceptible to corruption, we find that countries scoring high on individualism tend to have lower levels of earnings management. In addition, we find that

egalitarianism, defined as a society's cultural orientation with respect to intolerance for abuses of market and political power, is negatively related with earnings management. Our results are robust to different specifications and controls.

IMPORTANCE OF RESEARCH

The importance of executing this research is that it investigates the impact of cultural and behavioral components on financial performance of companies and despite other researches, its focus is not one-dimensional merely on financial figures. As the effect of cultural factors on financial performance in different studies confirms the meaningful relationship between them, therefore, we have investigated the issue in Iran in this study.

STATEMENT OF PROBLEM

The research questions are: Can cultural components express and explain income figures manipulation and smoothing? Does the existence of the morale of individuality (individualism) in companies result in possibility and probability of more income manipulation? Will the existence of high power distance in companies cause the probability of income figures smoothing to become more?

OBJECTIVES

Explanation of the relationship and the impact of the level of individualism in companies with the amount of income figures manipulation and smoothing at different levels in the accepted companies in Tehran stock exchange

Explanation of the relationship and the impact of the amount of power distance in companies with the amount of income figures manipulation and smoothing at different levels in the accepted companies in Tehran stock exchange

HYPOTHESES

1. There is a significant and direct relationship between income smoothing and power distance index.
2. There is a significant and direct relationship between income smoothing and individuality index.

RESEARCH METHODOLOGY

This study is an analytical-descriptive one and since it has utilized previous data, it is also an ex post facto study.

STATISTICAL POPULATION

The research's statistical population consists of the companies registered in Tehran Stock Exchange, which should include the following terms and conditions:
They should be included in the list of the companies registered in TSE during the research's period, i.e. 2006 – 2010.
They should not be of investment and broking companies.
Their fiscal year should end by the mid-March.

VARIABLES MEASUREMENT METHOD

INCOME SMOOTHING

In order to measure this variable for each company, a model which is based on the coefficient of variations – IKAL Model – was used. In this model, the variance of income variations to the variance of sales variations was calculated (Zhiang Yan, 2007).
The income smoothing index calculation method is as follows:

$$CY = CVincome_{it} / CVsales_{it} \quad (1)$$

Where $CVincome_{it}$ is the coefficient of the dispersion of income variations in the company i during the t period, and
$CVsales_{it}$ is the coefficient of the dispersion of sales variations in the company i during the t period.
The variance for income and sales variations is calculated according to the five-year figures of each company. These calculations for each company are performed in two levels of gross income and net income.

POWER DISTANCE

This index is obtained using the scores given to the each company's employees selected choices in the first three questions of the questionnaire, which are related to the management style in each company. In fact, prior to designing these questions, four management styles from autocratic to fully-cooperative, were described to each respondent. The following diagram presents the questions by which the power distance in each company could be measured:

TABLE 1: QUESTIONS RELATED TO THE MEASUREMENT OF THE POWER DISTANCE

Question 1 – What type of the above-described decision-makings are you interested in, for your top manager?
Question 2 – Which of these four types of decision-making is similar to your top manager's?
Question 3 – How many times have your colleagues hidden their disagreement with their manager's decision?

POWER DISTANCE INDEX FORMULA

The average score of the third question **+** the total percentage of the second question's choices 1 and 2 **–** the percentage of the first question's choice 3
The answers to these questions are collected through sending written questionnaire to the statistical population and also through face-to-face visits. This questionnaire was previously used by Thaghafi, Rezazadeh, Abdoli, and Roya'e in their accounting Ph.D. thesis. Therefore, it enjoys high validity and reliability.
The power distance index was calculated for each company in the same manner.

INDIVIDUALITY

In order to measure this variable, 14 questions (presented in the written questionnaire) related to the career goals of an ideal job were used. For eliminating the effects of optimism in answering the questions (answering positively to the questions disregarding their content), the answers were firstly standardized. During the standardization process, all answers would be stated as a distance from their common average and based on common standard deviations. Then, the factors derived from the employees standardized answers were analyzed using the factor analysis statistical technique. Firstly, the primary results of factor analysis were obtained, which indicated two effective factors and another not so much important one. Due to the fact that the primary results of each factor analysis do not generally enjoy high interpretation capability, the factors are rotated to obtain two related factors in terms of the correlation level with each career goals. Then, both factors extracted by the factor analysis as well as the correlation coefficient of each career goal with factors are examined by the help of theoretical principles and the main research literature and the basis for determining each individuality and masculinity indices.
The following table shows the factors effective on measuring the individuality variable:

TABLE 2: FACTORS RELATED TO THE MEASUREMENT OF INDIVIDUALITY VARIABLE

Career Goals Presented in the Questionnaire	Symbol
Personal satisfaction in performing the job	A1
To provide a desirable dwelling for family	A2
Possibility of achieving higher income	A3
Good work relationship among the colleagues	A4
To create educational opportunity in order to improve skills or to learn new skills	A5
To enjoy employment benefits	A6
To expect to be appreciated whenever doing a job properly	A7
The existence of proper physical conditions at work environment (Air-conditioning, light, etc.)	A8
Considerable latitude in applying one's desired viewpoints	A9
Job security to cooperate with the company as long as you desire	A10
Grounds for job advances	A11
The possibility to establish proper working relationship with the direct supervisor	A12
The possibility to take advantage of one's own skills and capabilities	A13
To specify an advisable and desirable time to spend with the family	A14

Theses coefficients are obtained considering the importance attached by the respondents to each of the career goals. In other words, these coefficients are the resultant of the viewpoints of the employees in the companies under study on individualism or collectivism components. In order to measure the individuality variable according to the theoretical principles and career goals presented in the above table, symbols A1, A2, A3, A4, A5, A6, A7, A8 and A10 were taken into account, considered by the statistical population as the indicators of the individuality concept. Therefore, the standard deviation of employees' responses in each company to every question (mentioned career goals) were calculated using the Microsoft Excel's spreadsheet, and then the standard deviation of these questions were considered as the individuality index. The average of these figures is the same expected index.

RESULTS & DISCUSSION

The descriptive statistics results indicate that companies with larger size believe that the latitude is more important than any other factors in applying one's views. Moreover, they think that the grounds for job advances are also important. However, in smaller companies, work environmental conditions and the possibility to achieve higher income are considered as important. Additionally, in large companies, the difference between net incomes with gross incomes is about 25%, while it is around 10% in smaller companies; that is, the share of general, administrative and welfare expenses in small companies is small and the management of such companies do not pay much attention to the financial aids of personnel, administrative, and work environment. The average power distance index in small companies is bigger than large companies, i.e. the management of large companies is cooperative while in smaller companies, it is more autocratic.

The results of hypotheses analysis for net income level are presented in the following table:

TABLE 3: THE STATISTICAL RESULTS OF THE RELATIONSHIP BETWEEN NET INCOME (FROM TAXES) AND CULTURAL COMPONENTS

Results	F	Sign	Durbin -Watson	St.eror	R^2 adj	R^2	Variables
confirm	**2.201**	**0.077**	**1.85**	**0.200**	**0.293**	**0.418**	Power distance
confirm	**2.382**	**0.046**	**1.87**	**0.200**	**0.312**	**0515**	Individuality

As shown in the above table, the relationship between income smoothing and individuality is confirmed at 90% confidence level. The F statistics also confirms such relationship. The individuality relationship intensity indicates that around 30% of the variations could be explained by cultural components. Consequently, in the companies where the power distance and individuality is high, the income smoothing may be also high.

TABLE 4: THE STATISTICAL RESULTS OF THE RELATIONSHIP BETWEEN GROSS INCOME (FROM TAXES) AND CULTURAL COMPONENTS

Results	F	Sign	Durbin -Watson	St.eror	R^2 adj	R^2	Variables
confirm	2.011	0.073	2.159	0.176	0.194	0.321	Power distance
confirm	2.483	0.088	2.118	0.176	0.196	0.298	Individuality

As shown in the above table, the relationship between the income smoothing and individuality is confirmed at 90% confidence level. However, the intensity of individuality relationship and power distance at the gross income level is lower than the net income level. The F statistics also confirms such relationship. Thus, in the companies where the income smoothing has performed, the power distance and individuality governing such companies are effective on its occurrence and could explain about 25% of the variations.

CONCLUSIONS

Based on the theoretical principles and research literature, it is expected that there would be positive and significant relationship between the management behavior and cultural components in regard to financial reporting. It is while in the environments with high power distance, where the responsibility is in low levels, the cases of non-observance of legal and accounting standards and income manipulation could be high. Inversely, lower power distance and more sense of responsibility in the individuals may lead to lower possibility of income manipulation by them. The statistical test results of the first hypothesis confirm such achievement in the statistical population. Furthermore, based on the statistical results, the relationship between both net and gross incomes levels with the power distance is approved, and the relationship intensity of the net income is more than the gross income. This result could be due to closeness of gross income to sales figures and its effect on the dependant variable ratio and the possibility of manipulating the mentioned figures. Therefore, in companies where income manipulation is higher, the power distance would be higher and this could be some more in larger companies. In the smaller companies, the possibility of income manipulation is decreased due to more vicinity of the owners and the managers and also consistent presence of ownership in the company. Meanwhile, in order to improve the personnel efficiency, their standpoints would be used and the moral hazards related to the agency theory would not be also proposed.

Based on the second research hypothesis and according to the theoretical principles, there should be a direct and significant relationship between income smoothing and individuality. That is, the more the individuality, disregarding others' opinions and lack of cooperation with others, the more the possibility of income manipulation, because the others are not included in determining, measuring, and classification of the accounting and financial figures. The result of the statistical test for the research's first hypothesis confirms a significant relationship between them; in the companies with higher income manipulation, the individuality level would be also higher, and there would be seen less cooperation by the employees. In fact, this is higher in larger companies which could be due to further distance between ownership and management and the agency theory as well as the role of managers' performance moral hazards. In smaller companies, due to more supervision by the owners on the managers' performance, the possibility of income manipulation and reporting them with bias would be decreased.

SCOPE FOR FURTHER RESEARCH

1. In future studies, the impact of some components such as avoid uncertainty, long/ short view horizon of individuals and also masculinity on the amount of income figures manipulation be investigated at different levels.
2. Income figures manipulation issue be measured with contribution of other models apart from IKAL model
3. The impact of the type of ownership (state and private) on income figures manipulation be investigated

RECOMMENDATIONS

Considering that there is an approved presence of income manipulation in gross income level, the designers of Iranian accounting standards should pay attention to this issue and reconsider the standards in calculating the cost price of the goods.

With regard to more intense effect of cultural components resulted by income manipulation in larger companies, the owners of larger companies should show greater sensitivity to this issue and ask it from the managers.

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MANAGEMENT OF ELECTRICITY POWER SUPPLY IN DELTA AND EDO STATES OF NIGERIA: PROBLEMS AND PROSPECTS

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ABSTRACT

The objective of this paper is to examine the problems and prospects of electricity power supply in Delta and Edo States. To achieve this goal, a sample of 120 respondents was interviewed by the researcher and field data collectors. The data presentation tools were tables, simple bar charts, histogram, pie - chart and percentages. It was found out that poor funding, lack of maintenance culture, use of obsolete equipments, lack of spare parts and inadequate trained manpower constitutes the problems of the organization and no serious adequate plans have been put in place to address these problems. Based on the aforementioned, it was therefore recommended that PHCN's equipments should be upgraded, government should adequately fund the organization, and management should develop a vibrant maintenance culture and employ adequate and well trained staff.

KEYWORDS
Management, Electricity, Power, Supply and Nigeria.

INTRODUCTION

Generally, organizations exist to attain a specific goal or goals with some available resources at its disposal. The efficient and effective utilization of its resources to produce goods and services goes a long way to demonstrate the management's ability to accomplish organizational goals (Jones, 2003). However, the inability of an organization to judiciously manage its resources effectively means it has failed as an entity and cannot meet the challenge of providing goods and services to its consumers.

In recent years, electricity "Supply has become very significant owing to the seeming indispensable role played by electricity in every aspect of our daily *lives.* Absence of electricity for long periods, causes discomfort and hampers productivity. It is also a known fact that electricity consumption has become a parameter by which the standard of living as well as the level of industrialization of nations is measured (Mahammed, 2005). The federal government of Nigeria in 1998 mandated the Power Holding Company of Nigeria (PHCN) to generate, transmit and distribution power to Nigerians. The question now, is has the organization been effective in carrying out its mandate of generating power for the consumers? If not, what are the problems militating against its inability to successfully carry out this mandate and how can these problems be addressed? This is the task this study hopes to investigate. To achieve this objective, the paper has therefore been sectionalized into five parts which include the introduction which has already been discussed.

LITERATURE REVIEW

PHCN IN PERSPECTIVE

The first electric power plant built in Nigeria was located in Lagos. It was built in 1898 and was managed by Public Works Department (PWD). NEPA, otherwise known as Power Holding Company of Nigeria (PHCN) in its present form came into being in 1972, with a mandate to *develop* and maintain an efficient, co - ordinated and reliable power supply in the country. In 1973, only eight (8) of the present 36 States in Nigeria were directly connected to the National Grid. Today all states but one are fed from the National (Hamzat, 2005). PHCN'S system consist of ten (10) power stations (7 Thermal and 3 Hydro), with a total installed capacity of about 6000 Megawatts (6000MW) interconnected by net work of 500 kilometers (KM) of 330 Kilovolt (330KV) and 6000 KM of 132KV transmission lines. Transmission of bulk power to major load centers is by means of 24 numbers 330KV and 92 numbers 132KV substations from which the voltage is further transformed to 33KV, 11 KV, 6.6KV 3.3KV for distribution at 240 volts and 415 volts. (Hamzat, 2005).

In March 2000, the president of the federal Republic of Nigeria took charge of affairs of PHCN and set up a nine (9) Man Technical Board with full Executive powers. The mandate of the Board is to ensure uninterrupted power supply by December 31, 2001. The board reports directly to the President and also has additional mandate to generate 4000MW by December 31, 2001. Part of the Board's mandate is to restructure PHCN to meet present day realities and to encourage private sector participation in the industry. In line with this mandate, the Board has proposed the break - up of the utility into its functional parts of Generation, Transmission and Distribution and the eventual introduction of separate single buyer to perform centralized bulk power trading. By this process, all elements will be subject to competition, while maintaining the same ownership. The operation of each of these elements will be put into the hands of separate management structures. These de - segregated entities while being managed independently may not be legally separated companies. This structural model is transitory and loosely patterned after expected privatization model (Mahammed, 2005).

POWER STATIONS

A good plant mix to provide for contingencies cannot be overemphasized for stability and security of power supply. Nigeria is blessed with abundant energy resources for the production of electricity. What is required is the investment to harness these resources to establish a strong and reliable power supply system. PHCN operates the following power stations.

Table 1 shows the power stations and their source of fuel.

TABLE 1: POWER STATION AND THEIR SOURCE OF FUEL

Hydro	Steam	Gas	Ago
Kainji	Egbin	Sape/e	Ijora
Jebba	Sapele	Afan	
Shiroro		Delta	

Source: From PHCN Review, 2009

Kainji, Jebba and Shiroro power stations use water for the generation of Electricity, Egbin and SapeJe are using steam while Sapele, Afam and Delta power stations are using gas. Ijora power station is run on diesel oil. Sapele has two stations; one runs on gas while the other uses steam for electricity generator.

Table 2 shows the installed, available and written - off capacities of the stations.

TABLE 2: INSTALLED AND WRITTEN - OFF CAPACITIES OF THE STATION

	Installed Capacity (MW)	Available Capacity (WIW)	Written off Capacity (MW)
Thermal	3976	1538	376
Hydro	1900	1550	100
Total	5876	3088	476

Source: PHCN Review (2009)

In table 2, we can see that the total installed capacity of both the hydro and steam stations is 5876 mega watts (MW). The available generation capacity is 3088 MW, while the capacity of written off or scrapped units is 476 MW.

The effective installed capacity is 5400 MW (5876 - 476 = 5400) made up of plants which are over 15 years on the average and require rehabilitation and repairs to sustain adequate and reliable generation capacity. Currently, 39% of annual energy is generated by hydro while 61 % is from thermal (PHCN, 2005).

FUTURE PROSPECTS FOR POWER GENERATION

In order to meet the social, economic and technological demands of the 22nd century, it is imperative to boost electricity consumption in Nigeria.

Table 3 below compares the present power supply situation and the projections of the vision 2010 committee and additional power stations are to be built to meet the projected power demands of Nigerians.

TABLE 3: POWER SUPPLY PROJECTIONS

Year	Per Capacity Consumption (KWHR)	Installed Capacity (MW)	Peak Demand (MW)
1998	116	5400	2470
2010	1100	25090	19307

Source: PHCN Review (2009)

TRANSMISSION STATION

In the area of transmission of generated electricity, Omoigui and Komolafe (2000) have conducted extensive studies titled, 'Focus on the evaluation of electricity demand and availability of generating and transmission facilities in Nigeria'. Th.e study discovered that PHCN do not transmit enough generated power supply to the Nigerian consumers.

Presently, there are twenty - four (24) 330KV transformer/switching substations and ninety - two (92) 132KV transformer switching substation in the country. These substations are located over the entire 923768 square kilometers (krrr') area that makes up Nigeria to supply the power requirements of each load center. In addition there are about thirty - nine (39) 330KV overhead transmission lines stretching a total of about 4, 970 kilometers to link the twenty four (24) 330KV substations. There are one hundred and nine (109) 132KV overhead transmission lines stretching total of about 4841 kilometers to link the ninety two (92) 132KV substations in various parts of the country (Omoigui and Komolafe, 2000). Primary distribution networks emanate from these substations. The sub - transmission scheme in the country is mostly radial, providing a single power flow route to consumers. Thus while commenting on the impact of transmission mode on electricity supply, Omoigui: and Komolafe posited that: "owing to the predominantly radial configuration of transmission lines, any slight changes in the operating point of any of the major plants can initiate disturbances which may lead to system collapse" (Omoigui and Komolafe: 2000:233). Their premise is based on the knowledge and acceptance of fact that due to the enormous size of the country the transmission lines are several kilometers long and sometimes stretch over swamp or wide rivers and thick forests, all of which constitute hidden and real hazards that can interrupt the smooth transmission of electricity to the consumers. Also concentration of industries in the country is predominately one - sided thus resulting in overstressing of the lines and equipments of PHCN on one end while the other end experiences less stress. This results in dynamically unstable equilibrium power system network.

DISTRIBUTION NETWORK

The distribution network has experienced very rapid growth especially with progressive rural electrification policy of the Federal Government. Most urban centers are developing very fast and power demand is on the increase. In terms of efficient and adequate supply however, numerous problems hinder the performance of PHCN. This aspect of the discourse is the core issue around which this research study resolves. Caven (1998), opined that residential areas in some cities have suddenly been transformed into commercial centers thereby overloading the existing power supply facilities. The high cost of distribution materials has limited the ability of the Authority to cope as most urban planning and developments are carried out without prior information to the Authority to plan and provide the requisite electricity supply information.

CONSTRAINTS OF PHCN

Caven and some other authors have carried out detailed studies of the problems that militated against the smooth supply of PHCN. Some identified points include:-

1. Delayed rehabilitation of plants and power supply equipment
2. Lack of spare parts; and
3. Absolete equipment, (Caven, 1998).

Consequently, enormous amount of foreign exchange is required to rehabilitate and repair plants as well as provide running spares for scheduled maintenance. Rising inflation and scarcity of foreign exchange (largely as a result of stiff exchange policy) constituted nightmare to PHCN (Caven, 1998).

TABLE 4: INVESTMENT/EXPENDITURE PROFILE

S/No	Material	Present Cost N	Cost 6 year Ago N
1.	Concrete Pole (28ft)	5,500.00	1000.00
2.	30Ampere 11/0.415KVXlpe cable	1,002,017.00	388,000.00
3.	A cable drum of 150mm^2	280,00.00	31,000.0
4	200KVA33/0.415KV transformer	1,024,147.00	110,000.00

Table 4 above shows a clear picture of the inflationary trend in the country as it affects electricity supply materials. While addressing these problems, Shomolu (1996) made the following succinct observation:

“A power system needs to pay attention to the life expectancy of its component plant and major accessories. In the case of PHCN, virtually every plant it has now, was ordered and built between 1965 and 1990. The concern here is that the bulk of the equipment may also need to be replaced within a few years of one another and this may pose fund problems”. (Shomolu 1996:160).

Shomolu goes further to list the various factors that affects the life expectancy of various equipment used in power systems. Some of these factors are:

1. The physical environment;
2. The load to which it is subjected;
3. The frequency and duration of faults to which it is subjected;

4. The quality and competence of maintenance personnel;
5. The availability of spare parts;
6. The manufacturing standard and its specific rating; and ingenuity and resourcefulness of the maintenance personnel (Shomolu, 1994).

Thus a piece of equipment may have varied life span depending on the interplay and manipulation of the above factors. In a bid to further give details of the points raised here, Shomolu (1994) outlined the life expectancy period of some power supply equipment. Table 5 below describes the life expectancy period of some equipment.

TABLE 5: LIFE EXPECTANCY TABLE

SINo	Equipment	Life Expectancy
1.	Power transformer	50
2.	Grounding transformer	25
3.	Distribution transformer	25
4.	Circuit breakers	25
5.	Transformer line tower	50
6.	Current transformer (CTS)	30
7.	Potential transformer (PTS)	30
8.	Capacitor banks	10
9.	Protective relays	20
10.	System control and Data Acquisition (SCADA	10

Table 5 shows the life expectancy of various electric power supply equipment. It can be seen that transformers and transmission line towers have a life expectancy of 50 years while capacitor banks and SCADA have 10 years life.

The inadequate and erratic gas supply to the thermal stations is a second major constraint that hampers electricity generation with a resultant effect of massive load shedding on the electricity users. The thermal power stations located in Afam, Delta and Sapele are most severally affected by this problem, and they are closest to the natural resources of gas in Nigeria. At Delta power station the generation capacity fluctuates from 150MW to 350MW because of the gas supply limitation whereas the plant availability exceeds 450MW on the average (caven, 1998). In a related development, it is pertinent to mention that the availability of the hydro plants has been good but the constraints in hydro power generation mainly concerns the water in the reservoirs which is seasonal and dependents on natural rainfall. Over - use of the hydro plants to meet the National Power demand as a result of the short fall in generation from thermal stations, usually results in the depletion of the hydro reservoirs.

A third major issue in the aspect of supply of electricity is that of transmission and distribution. This aspect plays a vital role, as it is the one that directly impacts on the individual consumers of electricity. A lot of expansion of the supply has been carried out but this has not been matched by corresponding expansion of transmission and distribution network. The result of this has been the occurrence of multiple overloaded subsystems. The planned transmission and distribution network expansion projects are just being executed by the technical board appointed by the President. Furthermore the 330KV and 132KV transmission lines in the National grid are mostly radial and very long. Consequently, this results in a situation which Caven described thus: "voltage Control and security of the power supply become problematic during faults or system disturbances" (Caven: 1998:41).

The fourth major hindrance to the supply of electricity has been the problem of overloaded power transformers in the grid substations and 80%of which are overloaded. This results in frequent power outages, low current output and consistent resources to load shedding. Other general constraints affecting system operation and electricity supply are lack of effective communication systems. The activities of vandals or unpatriotic acts of saboteurs who vandalize power supply facilities give PHCN a lot of concern. Also the problem of weather which manifests in the form of harmattan dust that clog or block the air intake filters of gas turbines and the inadequacy of staff welfare and development scheme put in place by the authority also ad0versely affect power supply.

METHODOLOGY, FINDINGS AND ANALYSIS OF STUDY

The methodology adopted for this study shall now be discussed. It will be followed by findings and analysis of data, while conclusion and recommendations will end the paper.

METHODOLOGY

The research design chosen in this study is a survey in which the researcher did not have control of the independent variables affecting electricity supply in Nigeria because they have already occurred and they could not be manipulated by the researcher. A sample of 120 respondents were personally interviewed by the researcher and assisted by field data collectors. The data presentation tools are tables, simple bar, charts, histogram and pie chart. The analysis tools are percentages, theoretical analysis and the chi - squared test for testing the three hypotheses.

RESULTS AND ANALYSIS OF FINDINGS

In this section, the results and analysis of the discussed. The data is to be presented by means of tables and pie chart to make them amenable for further analysis. According to (Mills and other 1996) analysis is the act of noting relationships of a variable with similar attributes and also dividing the units into their parts.

Yomere and Agbonifoh (1999) have observed that the main aim of any research undertaking is to characterize and describe the population by summarizing the data obtained from the samples studied. Data becomes more meaningful and useful after it has been analysed.

Table 6 below shows the summary of the personal data of the 120 respondents

TABLE 6: THE SUMMARY OF THE PERSONAL DATA OF THE 120 RESPONDENTS

1	**SEX**	**FREQUENCY**	
	Male	90	
	Female	30	
	Total	**120**	
2	Married Status	Frequency	
	Married	68	
	Single	40	
	Divorced	5	
	Separated	7	
	Total	**120**	
3	Age	Frequency	
	Less than 20 yrs	15	
	21 - 30 years	20	
	31 - 40 years	30	
	41 - 50 years	40	
	51 -60 years	10	
	Above 60 years	5	
	Total	**120**	
4	Highest Education Qualification		Degree subtended
	Senior Secondary Certificate (SSCE/GCE	20 15	60 45
	Royal Society of Art (RSA)	5	15
	Trade, Certificate	10	30
	N. C. E.	25	75
	Diploma	13	39
	HND	10	30
	First Degree	15	45
	2na Degree	5	15
	M. I. E. E.	2	6
	Total	**120**	**360**

Source: Author's Fieldwork, 2008

From table 6 above, it is shown that out of the 120 respondents, 90 are males while 30 of them are females. For the marital status of the 120 respondents there are married, single, divorced and separated, have frequencies of 68, 40, 5 and 7 respectively. For the ages of the 120 respondents they are; less than 20 years i.e 21 - 30 years, 31 - 40 years, 41 - 50 years and 51 - 60 years with frequencies of 15,20,30,40,10 and 5 respectively. For the highest educational qualifications, there are SSCE, SSCE/GCE, RSA, Trade certificate, NCE, Diploma, HND, First Degree, Second Degree and MIE with frequencies of 20, 15, 5, 10, 25, 13, 10, 15,5 and 2 respectively.

FIGURE 1: THE PIE CHART OF THE DATA ON THE HIGHEST EDUCATIONAL QUALIFICATIONS OF THE 120 RESPONDENTS

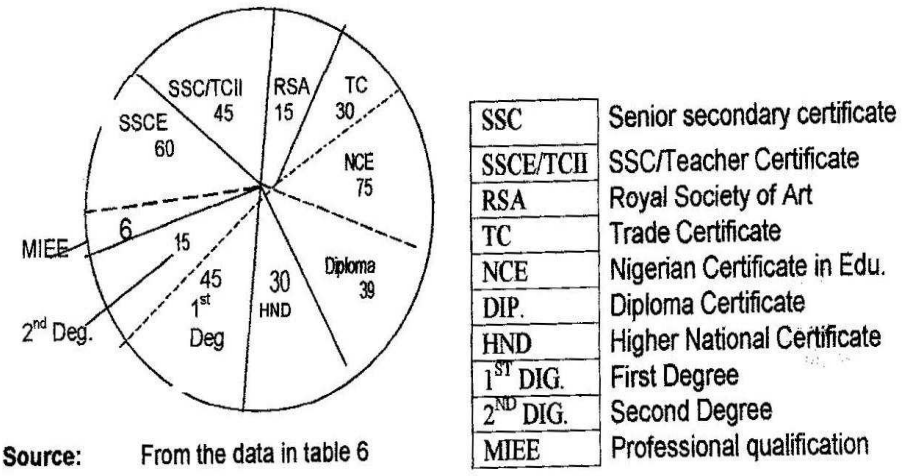

Figure 1 above, shows that the qualifications are Senior Secondary Certificate (SSC), SSC?TCII,RSA, Trade Certificate, NCE, Diploma, HND, First Degree, Second Degree and Professional qualification (MIEE), and they are represented in their various degrees as follows: 60^0, 45^0, 15^0, 30^0, 75^0, 39^0, 30^0, 45^0, 15^0, 6^0 respectively.

PERCENTAGE ANALYSIS

Table 7 below shows the percentage analysis of the responses to the Yes or No question.

TABLE 7: THE PERCENTAGE ANALYSIS OF THE YES OR NO QUESTIONS

S/	Qualification	Yes in No.	%	No. in Number	%	Total in No %	Total in %
1.	Can you say that electric supply in your area is effective	30	25	90	75	120	100
2.	Can you say that absence of adequate maintenance culture can cause (1) above?	95	97.17	25	20.83	120	100
3.	Do you think that inadequate funding could cause question (1)	105	87.5	15	12.5	120	100
4.	Is there prompt replacement of defective power supply facility in your areas?	40	33.33	80	66.67	120	100
5.	Can you say that non reinforcement of power supply facilities for frequent power outage	80	66.67	40	33.34	120	100
6.	Can you say that unemployment is high in your area?	70	58.33	50	41.67	120	100
7.	Can you say that high rate of unemployment is due to ineffective power supply?	50	41.67	70	58.33	120	100
8.	Can you say that communication system in your area is effective	40	33.33	80	66.07	120	100
9.	Do you think constant power failure affects development?	90	75	30	25	120	100
10.	Do you believe that frequent power outages adversely affect small scale industries.	75	62.5	45	37.5	120	100
11.	Do you believe that obsolete equipment contributes to power interruptions	60	50	60	50	120	100

Source: Author's Fieldwork, 2005.

Table 7 above shows the responses to the "yes" or "No" questions in absolute numbers and in percentage of the total. The 120 respondents are asked whether they could say that electric supply in their areas was effective and 30 others said "Yes" while 90 making 75% said "No". They were asked whether they could say that the absence of adequate maintenance culture could be responsible for the ineffectiveness of power supply and 95 out of the 120 making 79.17% said "yes" while 25 of which make up 20.83 said "No". The respondents were asked whether they thought inadequate funding could cause the ineffectiveness and 105 out of the 120 which make up 87.5% said "yes" while 15 made up of 12.5% said "no". The 120 respondents were asked whether there was prompt replacement of power supply facility in their area and 40 of them which make up 33.33% said "yes" while 80 others of 66.76% said "no".

The respondents were asked whether they could say that non reinforcement of power supply facility were responsible for frequent power outage and 80 of them making 66.67 said "yes" while 40 of them said "no". They are asked whether they could say that unemployment was high in their area and 70 of respondents made up of 58.33% said "yes" while 50 others making 41.67% said "no".

They were also asked whether the high rate of unemployment was due to the ineffectiveness of power supply and 50 of the respondents making 41.67% of them said "Yes" while 70 of them making 58.33% of them said "No". The 120 respondents were asked whether they could say that the communication system in their area was effective and 40 of them making 33.33% said "Yes" while 80 others making 66.67% said "No".

The 120 respondents were asked whether they thought that constant power failure affected development and 90 of them which constitutes 75% said "Yes" while 30 others which make up 25% said" No".

The respondents were asked whether they believed that frequent power outages adversely affected small scale industries and 75% of them which make up 62.5% said" Yes" while 75 others which constitutes 37.5% said "No".

Lastly, the respondents were asked whether they believed that obsolete equipment contributed to power interruptions and 60 of the respondents which constitute 50% said "Yes" while the remaining 50% of the respondents said "No".

CONCLUSION AND RECOMMENDATIONS

This study examined the problems and prospects of electricity supply in Nigeria with Delta and Edo States in focus. It was observed that PHCN's performance is constrained with a lot of problems which include lack of spare parts, obsolete equipments, poor maintenance culture, poor funding and Edo States is very bright if the problems identified earlier are fully addressed.

In view of the above, the following recommendations will be advanced:

i. PHCN'S equipments should be upgraded to be able to meet up with the demands of its numerous customers for better service.

ii. The Federal government should pump more funds into PHCN to enable them buy these equipments. Although the federal government has been doing something in this direction, but they should do more.

iii. PHCN'S management should develop a maintenance culture whereby they check on their equipments more regularly rather than waiting for the equipments to finally breakdown before they find a solution.

iv. Lastly, PHCN'S management is advised to employ and train more staff in order to be able to deal with the challenge of providing quality service to its numerous customers.

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EMOTIONAL INTELLIGENCE AND ITS IMPACT ON TASK PERFORMANCE AND CONTEXTUAL PERFORMANCE

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ABSTRACT

The purpose of this study was to investigate the impact of Emotional Intelligence of managers on Task Performance and Contextual Performance of non - managerial employees of the banking sector in Sri Lanka. The sample consisted of 100 managers and 400 non - managerial employees randomly selected from Systemically Important Banks. Two set of questionnaires were administered among managers and non - managerial employees. The collected data were analyzed using regression analysis and correlation coefficient. The results of the study indicated that Emotional Intelligence had significant positive relationship with Task Performance and Contextual Performance. The utility of Emotional Intelligence in improving Task Performance and Contextual Performance was discussed. It was recommended that Emotional Intelligence of the managers should be enhanced to improve the Task Performance and Contextual Performance of the non - managerial employees.

KEYWORDS

Emotional Intelligence, Contextual Performance, Task Performance.

INTRODUCTION

Economy or production process largely depends upon how efficiently the financial sector in general and the banks in particular perform the basic functions of financial transformations. In a country like Sri Lanka, this factor assumes further significance (Fernando, 2004). The financial performance of the banking sector directly affects to the other industrial and service sectors of the economy. The success of the banking sector as a service organization largely depends on the customer satisfaction. The banks as the service providers are required to be adaptive towards the demands and behaviors of the customers, it is basically Emotional Intelligence that helps managers in responding effectively towards the customer needs. The learning and practice of these skills help improving the performance of service providers and thus increasing customer satisfaction. By using Emotional intelligence, organizations can have increased knowledge about customers and greater ability for recognizing and regulating the quality of service according to the desires of customers (Naeem et al., 2008). On the other hand, the performance of its staff has a great impact on customer satisfaction and ultimately they affect to achieve sustainable superior performance. The leadership effectiveness and the performance of the non - managerial employees are very important factors in satisfying customers. Goleman (1995) argues that leaders with greater EI will be more effective leaders. George (2000) suggests that EI plays an important role in leadership effectiveness in generating employee performance and consequently organizational performance. According to Carmeli (2003) the emotional intelligent leaders can enhance the job performance of their employees.

Traditionally, Job Performance was evaluated in terms of the proficiency with which as individual carried out the tasks that were specified in their job description. According to Borman & Motowidlo (1993) traditionally performance has been conceptualized in terms of the execution and completion of well-defined task. However, the changing nature of work and organizations has challenged traditional view of Job Performance. In a recent review of Job Performance, several taxonomies that have been developed to explore the domain of Job Performance. One of the fundamental distinctions made in these taxonomies is between in role performance or behavior that is directly related to the job tasks or requirements and extra role performance, or behaviors that is not directly related to the job, but contributes to organizational outcomes (Shaffer and Shaffer, 2005). Borman and Motowidlo (1993) divided the performance domain into Task and Contextual Performance, which distinguishes between behaviors that are directly related to the job and behavior that contribute to organizational outcomes in ways that are not related to core job functions.

One of the criticisms of Goleman (1995, 1998) is that manager's high Emotional Intelligence (EI) Competencies are likely to provide their organizations with a unique contribution but it has not been yet received much empirical attention and support particularly with regard to various important work outcomes. Carmeli (2003) indicates that managers who are high in EI are expected to attain higher achievements in both the workplace and their personal life, and to contribute significantly to the performance of their organization. She further explains that EI Competency has the potential to improve performance on both personal and organizational levels, but the researchers are still only in the initial phase of understanding the extent to which members with high EI would be more value assets than less EI members of their organization. Cherniss (2000) supports for this idea and states "It is more useful and interesting to consider how important it is for effective performance at work."

Despite these theoretical links there has been relatively little empirical research examining the relationship between EI and Task Performance (TP) and Contextual Performance (CP). According to Carmeli (2003) there have been relatively few empirical studies on EI especially in Asia. Goleman (1998) states the importance of EI competencies in his article, titled "What makes a leader?" as "When I calculated the ratio of technical skills, IQ and EI as ingredients of excellent performance, EI was twice as important as the other for jobs at all levels……." EI is the most important competency that leaders have to consider so as to improve the Job Performance of their employees. Although the concept of EI is emerged in 1990, the researches on this field are very few in Sri Lanka.

IMPORTANCE OF THE STUDY

This study may be the first research study on the impact of EI competencies of managers on non - managerial employees' TP and CP in the banking sector in Sri Lanka. This study will help to get a better understanding of EI and its relationship to TP and CP in the banking sector in Sri Lanka. It can address the gaps currently existing in the literature especially in Sri Lanka and provide a more informed link between theory and practice. This understanding can also better inform practitioners for their leadership development programs and staffing within the banking sector and other organizations. Furthermore, the results of this study will greatly contribute those researchers who are interested in similar topics.

PROBLEM STATEMENT

In order to improve the job performance of the employees, the managers have to identify the factors affecting to job performance and their impact. In reviewing the literature, lots of researches have identified different factors affecting to different dimensions of job performance. Among them, the research literature suggested that the importance of leaders' EI as the most influential factor which shapes the employees' TP and CP. Anyway, there were no researches between EI and TP and CP in the banking sector in Sri Lanka. Thus, this issue may serve as a good research gap for investigation. Therefore, the problem addressed in this study is to investigate how and in what ways does EI of managers affect on TP and CP of non - managerial Employees in the banking sector in Sri Lanka.

OBJECTIVES OF THE STUDY

The main objective of this research is to investigate the impact of EI of managers on TP and CP of non- managerial employees in the banking sector in Sri Lanka. The specific objectives are;

1. To investigate the impact of EI of managers on TP of non – managerial employees in the banking sector
2. To investigate the impact of EI of managers on CP of non – managerial employees in the banking sector
3. To identify the effect of each dimension of EI of managers on TP and CP of non- managerial employees

REVIEW OF LITERATURE

EMOTIONAL INTELLIGENCE

Two psychologists Peter Salovey and John Mayer first introduced Emotional Intelligence in 1990.They developed the ability model of Emotional Intelligence. They defined Emotional Intelligence as "the ability to perceive, appraise and express emotions accurately and adaptively; the ability to understand emotions and emotional knowledge; the ability to access and generate feeling where they facilitate cognitive activities and adaptive actions; and the ability to regulate emotions in oneself and others"(Mayer et al.,2004).

In 1995, Daniel Goleman opened the eyes of the world about the concept of Emotional Intelligence. He defined Emotional Intelligence under the trait perspectives or mixed model as "one's ability to motivate oneself and persist in the face of frustration; to control impulses and delay gratification; to regulate one's moods and keep distress from swamping the ability to think; to empathize and to hope. In 1997, Goleman redefined Emotional Intelligence as words "the capacity for recognizing our own feelings and those of others for motivating ourselves and for successfully managing emotions in ourselves and in our relationship with others" (Dulewicz and Higgs, 2000).

Goleman's model of Emotional Intelligence introduced in 1998 outlined five main Emotional Intelligence construct and twenty-five competencies. Goleman and Boyatzis (2000) introduced four dimensions of Emotional Intelligence with twenty competencies instead of five dimensions of Emotional Intelligence with twenty-five competencies.

TASK PERFORMANCE AND CONTEXTUAL PERFORMANCE

Borman and Motowidlo (1993, 1997) described a two-factor theory of job performance in which most jobs consist of TP and CP. They defined TP as the behavior that is directly linked with completion of the job. When employees use technical skills and knowledge to produce goods or services through the organization's core technical processes, or when they accomplished specialized tasks that support these core functions, they are engaging in TP. Task related behaviors contribute to the technical core of the organization. Behaviour in the domain of TP is usually recognized as a formal requirement of an individuals' job. Job description often explicitly stipulates that the job holders must perform these activities.

Borman and Motowidlo (1993) defined CP as an individual's performance, which maintain and enhances an organization's social network and the psychological climate that supports technical tasks. CP is comprised of interpersonal behaviors or actions that benefit the organization. Furthermore, they explained that CP includes activities that may not represent formal work tasks although they still make an important contribution to the effectiveness of an organization. This type of performance is often not written in a job description but it is considered to be an important component of Job Performance. CP is behavior that contributes to the culture and climate of the organization. It is the context within which transformation and maintenance activities are carried out. CP consist the behavior of volunteering for extra work, persisting with enthusiasm, helping and cooperating with others, following rules and procedures and supporting or defending the organization (Motowidlo and Schmit, 1999). Borman (1983), define CP as behaviors that shape the organizational, social and psychological context that serve as catalyst for task activities and processes.

HYPOTHESES

EMOTIONAL INTELLIGENCE AND TASK PERFORMANCE

Goleman defined EI as "a learned capability based on EI that result in outstanding performance at work". In other words it is an ability to recognize, understand and use emotional information about oneself or others that leads to or causes effective or superior performance. Goleman (2001) provided a wide array of reasons for the positive link between EI and individual work success. Schutte, Schuettpelz, and Malouff (2001) found differences among individuals who were given moderate as well as very difficult problems to solve. Individuals with high EI were more successful than individuals with low EI at solving more numerous problems and in completing their cognitive tasks.

Some studies suggest that EI and Job Performance are positively related. These studies found that EI predict the performance of undergraduate students on a single task (Lam and Kirby, 2002), the class room performance of managers and professional (Sue-Chan and Latham, 2004), sales performance (Wong & Law, 2002) and supervisory rating of Job Performance (Slaski and Cartwright, 2002). Another study found that the EI of teams of students predicts the performance of these teams at the initial stage of a project (Jordan et al., 2002). In the job of medium complexity (Sales, Clerk, Mechanics), a top performer is 12 times more productive than those at the bottom and 85% more productive than an average performer. In the most complex jobs (Insurance sales people, accounts managers) a top performer is 127% more productive than an average performer (Hunter, Schmidt and Judiesch, 1990). Competency research in over 200 companies and organizations worldwide suggest that about one third of this difference is due to technical skills and cognitive ability while two third is due to emotional competence (Goleman, 1998). In top leadership positions, over four fifths of the difference is due to emotional competence.

At a financial services company emotional self awareness proved crucial in financial planners' Job Performance (Goleman,1998).Among several hundred managers from twelve different organizations, accurate self assessment was the hallmark of superior performance (Boyatzis,1982).The positive impact of the self confidence competence on performance has been shown in a variety of studies. Among supervisors, managers, and executives, have a high degree of self confidence distinguish the best from the average performers (Boyatzis, 1982). A recent meta-analysis found that "EI measures have an operational validity of .24, .10, and .24 for predicting performance in employment, academic, and life setting," respectively (Van Rooy & Viswesvaran, 2004).Hence, the following hypothesis is suggested:

H1: There is a positive relationship between Emotional Intelligence and Task Performance.

EMOTIONAL INTELLIGENCE AND CONTEXTUAL PERFORMANCE

Research on the relationship between EI and CP has received, thus far, little attention. (Carmeli & Josman 2006) The limited researches that exist offer some support for this relationship. Employees who display genuine concern about their co-workers problems should build stronger relationship than employees whose concern seems less genuine. Individuals with high EI and low cognitive intelligence may employ their abilities to manage emotions and develop good social relationship (Wong and Law, 2002). Good social relationships may also compel employees to engage in OCB, the form of CP frequently to benefit close colleagues. According to Licia (2003), EI was positively correlated with CP. In a study of 134 adolescents in a military training camp setting, Charbonneau and Nicol (2002) found a positive correlation between EI and both altruism and compliance of the CP. Carmeli and Colakoglu (2005) showed the moderating effect of EI on the relationship between affective commitment and altruism.

EI may enhance altruistic behavior as it enables employees to recognize and understand their coworkers' feelings; they subsequently respond more appropriately than do employees with low EI, due to their ability to shift easily from negative to positive moods (Abraham, 1999). Equipped with the abilities to understand, regulate, and alter the affective reactions of others (Salovey & Mayer, 1990), Emotionally Intelligent individuals are better prepared to perceive the need for help (Abraham, 1999) and offer their coworkers more empathic responses to both personal and work-related problems(Carmeli & Josman,2006). On the basis of the above facts, the following hypothesis is suggested:

H2: There is a positive relationship between Emotional Intelligence and Contextual Performance.

RESEARCH METHODOLOGY

DATA COLLECTION AND PARTICIPANTS

The sample for this study was randomly selected 100 managers and randomly selected 400 non - managerial employees employed in Systemically Important Banks in Sri Lanka. Two set of questionnaires were developed as one for managers and the other for non - managerial employees. The researcher personally administered the questionnaires to the managers and non - managerial employees visiting different Systemically Important Bank branches which were

convenience to the researcher. Researcher personally explained to the respondents the confidentiality of their information and asked them to put their questionnaires into the envelope which was provided with the questionnaire and fix it. Questionnaires were administered among 120 managers and 480 non-managerial employees working in Systemically Important Banks. The response rate was 83 percent.

Thirty of the respondent managers were women; 90 were married. Their average age and tenure in the organization were 43.96 years (*SD* = 8.35) and 20.03 (*SD* = 6.27), respectively. Twenty two managers held a bachelor's degree, whereas seven held a master's degree or higher. Two hundred and eight of the respondent non - managerial employees were women; Two hundred and thirty six were married. Their average age and tenure in the organization were 33.57 years (*SD* = 9.77) and 11.70 (*SD* = 8.02), respectively.

DEPENDENT VARIABLES

Two dimensions of job performance were assessed: TP and CP. TP was evaluated by a scale developed by the researcher after correctly identifying the relevant dimensions and indicators.(Table 01) This measure contains three items that were assessed on a five-point scale (ranging from 1 = strongly disagree, to 5 = strongly agree). CP was measured using five items scale developed by the researcher. These items were assessed on a 5-point scale, ranging from 1 (strongly disagree) to 5 (strongly agree). When developing these two questionnaires, Motowidlo and Van Scotter's (1994) 15 items scale of OCB and Task and Overall Performance scale of Borman, and Ackerman (1994) were considered. The content validity of these instruments was secured by including the questions for each dimension of the variables. The instruments possess high test retest reliability (0.78 -0.96) as there is a significant high correlation between the responses of the two administrations. The Cronbach Coefficient Alpha was 0.87. That means each item is correlated with other item across the entire sample and the internal consistency reliability is satisfactory.

TABLE 1: DIMENSIONS AND INDICATORS FOR TASK AND CONTEXTUAL PERFORMANCE

Dimensions	Indicators
Task Performance	Task proficiency
	Efficiency
	Communication
Contextual Performance	Volunteering to carry out task activities
	Persisting with extra effort
	Helping and cooperating with others
	Following organizational rules and procedures
	Endorsing, supporting organizational procedures

INDEPENDENT VARIABLE

The EI questionnaire measures the level of EI of the Managers using four dimensions and twenty sub-dimensions (Table 02) originally operationalized by Daniel Goleman. The researcher modified this questionnaire including seventy questions so as to secure the content validity of the instrument. Test retest reliability and the Cronbach Coefficient Alpha were 0.66 – 0.95 and 0.89 respectively.

RESULTS AND DISCUSSION

RESULTS

Table 03 reports the correlation coefficients of each variables used in the analysis. The results show that the correlation between EI and TP was significant and positive ($r = .42$, $p<0.01$). The correlation between EI and CP was significant and strong positive($r = .65$, $p<0.01$). The researcher further investigated the relationship between four elements of EI and two aspects of Job Performance. The data indicated that the relationship management is significantly and positively related to both Task ($r = .52$, $p< .01$) and Contextual($r = .70$, $p< .01$) Performance. The findings also showed that social awareness is significantly and positively related to both Task($r = .54$, $p< .01$) and Contextual($r = .69$, $p< .01$) Performance. The relationship between self management and TP is significant and weak positive($r = .24$, $p< .01$) and the relationship between self management and CP shows similar result($r = .32$, $p< .01$). Finally, the results indicate that self awareness is significantly and positively related to CP($r = .21$, $p< .01$) but not to TP($r = .04$, $p> .01$). These findings generally support the research hypotheses, which posited a positive relationship between EI and TP and CP.

TABLE 02: DIMENSIONS AND INDICATORS FOR EMOTIONAL INTELLIGENCE

Dimensions	Indicators
Self Awareness	Emotional self awareness
	Accurate self management
	Self confidence
Self Management	Self control
	Trustworthiness
	Conscientiousness
	Adaptability
	Achievement drive
	Initiative
Social Awareness	Empathy
	Service orientation
	Organizational awareness
Relationship Management	Developing others
	Influence
	Communication
	Conflict management
	Leadership
	Change Catalyst
	Building bonds
	Teamwork and collaboration

The results of the model I in the table 04 reveals that there is a positive and significant relationship between EI and TP ($\beta = .37$, $p < .01$).Furthermore, R square for the model I represents that EI has ability to explain 13.7% variance of dependent variable (TP). F value (15.515) suggests that there is a significant linear relationship between EI and TP. Therefore, these results supported for H1.Model 2 support for H2, which postulated a positive and significant relationship between EI and CP ($\beta = .53$, $p < .01$).According to the statistics of table 04, R square for CP is 0.289. Thus there is a statistical evidence to clam that about 28.9% of the variance in the CP has been significantly explained by the EI. F value (39.753) represents that there is significant linear relationship between EI and CP.

TABLE 3: CORRELATION COEFFICIENT BETWEEN INDEPENDENT AND DEPENDENT VARIABLES

	Contextual Performance	Task Performance
Self Awareness	.21(**)	.04
Self Management	.32(**)	.24(**)
Social Awareness	.54(**)	.69(**)
Relationship Management	.70(**)	.52(**)
Emotional Intelligence	.65(**)	.42(**)

** p<.01

TABLE 4: RESULTS OF REGRESSION ANALYSIS

	Model 1 Task Performance	Model 2 Contextual Performance
Emotional intelligence β	.370**	.537**
R square	.137	.289
Overall F	15.515**	39.753**

** p<.01

DISCUSSION

The main objective of this study was to examine the impact of EI on TP and CP in the banking sector in Sri Lanka. The test results show that the managers' EI was positively and significantly related to TP and CP of the non - managerial employees. The finding of this research has supported the definition of Golemen. He (1998) defined EI as a learned capability based on EI that result in outstanding performance at work. Furthermore, he explained EI is an ability to recognize, understand and use emotional information about oneself or others that leads to effective or superior performance.

The impact of the four branches of EI on TP and CP was assessed to provide a more specific examination of EI on performance. The data shows that the relationship management was the most influencing factor in improving TP and CP. However, the impact of this factor was stronger on CP than the TP. In this study relationship management was conceptualized as the ability to inspire, influences, and develops others while managing conflicts. The second most influencing factor was social awareness. It is the ability to sense, understand and react to others' emotions while comprehending social networks. Goleman (2008) categorized these two factors under the social competence. This may indicate that emotionally intelligent managers will be better facilitators of relationships. Improving social competences are especially importance for managers in an organization to enhance the Task and CP among their employees. Self awareness and self management, the personal competence according to Goleman has not much influenced on TP and CP of the non - managerial employees comparing with the social competencies. The correlation supported that self management component, however, was important in enhancing both task and CP. The results indicated that self awareness is significantly and positively related to CP but not to TP.

CONCLUSION

The findings of this research has highlighted that the importance of EI Leadership on the improvement of the TP and CP and ultimately, that leads to the organizational success. The importance of EI Leadership has not limited to a particular organization. It is equally important for any types of organizations in the economy. The banking sector, the dominant sector in the economy plays a very positive and important role in the overall economic development of the country. Therefore, the EI Leadership is essential for the banking sector than the other sectors.

RECOMMENDATION AND SUGGESTION

The findings of this study clearly explain the importance of EI leadership to enhance the TP and CP of the non – managerial employees. Therefore all the corporate leaders and managers need to concentrate about this concept. When they train the managers, it is very important to implement effective EI training as a part of their overall training. One is not born with EI. It is a set of personal and social skills that are improved through practice and discipline. EI can be learned, but the process is not easy, it takes time and commitment.

The traditional recruitment of management trainees put more emphasis places on Intelligent Quotient (IQ) measures than the EI measures. In 1998, Goleman pointed out that IQ and technical skills are important, but EI is the sine qua non of leadership, Furthermore, he explained when calculating the ratio of technical skills, IQ and EI as ingredients of excellent performance, EI proved to be twice as important as the others for job at all levels. The higher rank of a person considered being a start performer, the more EI capabilities showed up as the reason for his or her effectiveness. Therefore, the researcher suggests that the banks need to rethink about the recruitment strategies that go beyond merely assessing IQ measures and technical skills in recruiting new managers. The recruitment board needs to test their EI competencies. Selecting managers who have high EI have a positive impact on the extent to which an organization succeeds in retaining its most critical workforce. EI plays an important part in every aspect of peoples' lives. Having a high EI may help to develop stable and trusting relationships, understand others better, and interpret actions of others more clearly. Therefore, the awareness programme on EI is also needed for each and every employee in the banking sector.

Job Performance was appraised in terms of the execution and completion of well defined task in the banking sector, like the other sectors in Sri Lanka. But the CP which is not directly related to job is also important in evaluating the Job Performance. It enhances the organization's social network and the psychological climate that support technical task. Therefore the decision makers need to consider the contextual behaviors of the employees when they evaluate the performance of the non-managerial employees.

LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

The results of this study must be considered in the context of several limitations. The first has to do with its generalizability as the data collection was confined to systemically important banks. Second limitation was to rely on self reported data. The levels of EI of the managers, the levels TP and CP of the non - managerial employees were measured according to the respondents' own attitudes. Finally, the difficulty of exploring the psychological factors like EI and CP through the structured questionnaire was another limitation of this study.

The present study has been provided many potential paths for future researchers. In this study EI and Task and CP were the major variable of interest. However, exploration of how EI regulates other areas in organization and life may be fruitful. For example, the question of how EI affects leadership styles, Job satisfaction, organizational commitment, Job involvement, withdrawal intention, turnover, family conflict, stress, personality types etc. The research study attempted to demonstrate the direct relationship between EI and each dependent variable. The further researches would be advantages to explore potential moderators for these connections. For example, how the relationship between EI and CP is to be moderated by emotional labour. This research focused only the banking sector. but other researchers can expand the sample to the other service organizations or different organizations in Sri Lanka.

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THE RELATIONS BETWEEN CASH MANAGEMENT POLICIES AND PROFITABILITY OF SMEs IN KANO

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ABSTRACT

Cash flow management is not a passive outcome of Small and Medium Enterprises (SMEs); rather cash needs to be actively tracked, chased and captured; it requires access to reliable data. The ability to manage cash cycles emerged among the top issues affecting the SMEs. The importance of cash flow planning and management and the criteria and approaches to be adopted for the same in a SME is echoed in recent times. Most SMEs do not growth to their maturity stage due to inappropriate cash management policies. These unsuitable cash management policies are expected to have negative correlation with the profit margins of SMEs and invariably their profitability. This paper investigates into the relationship between cash management practices and profitability of SMEs in Kano. A survey of the managers and or owners of SMEs was made to generate data and the Somers' d analytical technique was used to measure the relation between the two variables. The result shows that there is negative insignificant relation between cash management practices and the profitability of Kano SMEs. This is as a result of the higher number of days in the cash conversion cycle of the SMEs. A well made cash flow management plan, if used by the SME as a tool for cash flow monitoring, squeezing days in receivables and stretching days in payables may relate positively and increase the profit margins and controls in the SME through enhanced productivity.

KEYWORDS

cash management, profitability, SMEs, Kano.

INTRODUCTION

Cash is the most liquid of assets and it represents the lifeblood for growth and investment. In order to generate cash, firms must efficiently and effectively manage the activities that provide cash. These activities include billing customers as quickly as possible, disbursing payments only when they come due, collecting cash on overdue accounts, and investing idle cash. Therefore, managing cash flow involves several objectives: accelerating cash inflows wherever possible, delaying cash outflows until they come due, investing surplus cash to earn a rate of return, borrowing cash at the best possible terms, maintaining an optimal level of cash that is neither excessive nor deficient. For cash flow timeline, the shorter cash conversion the better for the Small and Medium Scale Enterprises (SMEs). The way of achieving this is by looking at all the parts of cash flow policies and understanding the relations between them. Thus, it is the managerial decisions that cause changes in the timeline. Improvements can be made by speeding up the collection process and delaying the payment process (Maness & Zietlow, 2005). There is a growing awareness that cash is an asset that must be used wisely or else it will become a liability or brings the continuity of an enterprise to an end or adversely affects the profitability.

This modern philosophy places an increasing emphasis on the maintenance of an optimal cash balance with the prime focus on cash management. Improving a company's cash management can result in better profit margins and higher turnover ratio which in turn can lead to higher profitability. Making a profit is nice but cash flow management is necessary. Cash management is the key to business success. New businesses are often caught short of cash right off the mark while existing ones can find ways to survive if they can find ways to generate cash. Cash is the single most important element of survival for a small business. The major problem confronting small businesses is their inability to control cash (Larsson & Hammarlund, 2005). Managers can create value by reducing their firm's number of days of accounts receivables and inventories. Similarly reducing the cash conversion cycle also enhances the firm's profitability (Teruel and Solan, 2005). Just like an individual, companies need a cash cushion to rely on. This gives them security in unstable times. It also gives them an opportunity to take advantage of strategic investments or take advantage of opportunities to reduce costs. SMEs need to focus on the concept of free cash in order to establish that cash cushion. The failure of small businesses could inevitably be related to poor or careless financial management and particularly, internal problems relating to cash flow management among inventory control and inadequate capital. Cash management includes the different items within this area as: payables systems, receivables system, management of liquid funds, currency management and risks, short term financing, accounts payables and accounts receivables. Cash management is one part of working capital management and usually concerns the different processes and procedures of handling a company's liquidity and the monitoring and planning of it. It is noted that there is a dearth of empirical researches on small business relating to cash management practices of SMEs in Kano.

The importance of promoting SMEs as the basis of economic growth is obvious by the programmes established by Governments of Nigeria to support the growth of SMEs. Several Micro Finance Lending Institutions and Community Banks were established to supply cash needs of SMEs in order to remain in business. An efficient cash flow management system is often termed as the nervous system of effective Financial Management. It plays a key role and helps to demonstrate that the SME is profitable. The need for funds and the cash generation capability of the business model emerges from the need for cash flow planning. This paper examines the relations between cash management policies and the profitability SMEs in Kano state of Nigeria. The next part of the paper is on the review of literature; followed by the methodology; then the discussions of results and; the conclusions.

REVIEW OF LITERATURE

CONCEPT OF CASH MANAGEMENT

Cash management can be seen from two different perspectives: basic cash management and advanced cash management. Specifically, treasury management handles basic cash management at SMEs, and one of its main functions is to establish the optimum cash level so that payments can be made and received as necessary for the proper operation of the business. The second concept includes not only treasury management per se but also other tasks such as treasury forecasting, negotiation and establishment of relationships with financial institutions and financial risk management (Maseda et al, 2008). Cash management involves the development of administrative techniques conductive to optimizing the level of disposable assets to be maintained by a company (Myers & Mjluf, 1984 and Harford, 1999). To prevent breaks or gaps in the trading cycle due to lack of cash, administrators must calculate the cash amount best suited to their level of activity, plan the timing of the relevant payments and collections and draw up a policy of investment in asset with high liquidity that can be converted to cash at a low transactional cost to serve as support for the treasury funds maintained by the company (Kamath et at 1985, Srinivasan, 1974). In simple term, cash management is the cash payment and collection management and liquidity management which have now taken on a broader perspective that includes the planning of disposable treasury assets and their subsequent monitoring, a strategy for investing surpluses to obtained maximum profitability and finance deficits with minimum costs (Kirman, 1977; Driscoll, 1983; Driscoll, 1983 and Masson et al, 1995). Thus, cash management brings together actions concern with cash payment and collection management and liquidity management, which involves acquisition and disposable of treasury assets and their subsequent monitoring, a strategy for investing surpluses of cash for maximum profitability and financing deficits at minimum costs.

EFFECT OF CASH MANAGEMENT OF THE PROFITABILITY OF SMES

Drever (2003) explores issues relating to cash flow management for SMEs and discovered that there is need for improve cash flow management practices in order to enhance the profitability of Australian SMEs and found that there is still limited research in the area of cash flow management practices in Australia. Similarly, Garcia-Teruel and Martinez-Solano (2007) provide empirical evidence about the effects of working capital management on the profitability of a

sampled Spanish SMEs. The results showed that managers can create value by reducing their inventories and the number of days for which their accounts are outstanding. Moreover, shortening the cash conversion cycle also improves the firm's profitability. Masoud and Mbega (2009) explore the effect of working capital management on profit and the trend of SMEs working capital management practices. The results showed a significant negative linear relationship between the measures of working capital management and profitability. Descriptive findings of working capital management indicate that there is poor working capital management as required by conventional practices.

Similarly, Banos-Caballero, García-Teruel and Martínez-Solano (2011) analyze the relation between working capital management and profitability for SMEs by controlling for unobservable heterogeneity and possible endogeneity. Unlike previous studies, they examine a non-linear relation between these two variables. Their results show that there is a non-monotonic (concave) relationship between working capital level and firm profitability, which indicates that SMEs have an optimal working capital level that maximizes their profitability. In addition, a robustness check of their results confirms that firms' profitability decreases as they move away from their optimal level. It could be observed form the review that studies from Nigeria and especially, Kano State are limited. This study contributes to literature on the relations between cash management practices and the profitability of SMEs in Kano.

METHODOLOGY

The data for this study was collected from a questionnaire survey made on the owners/managers of SMEs in Kano state regarding the relations of cash management policies and profitability. A sampled of 120 SMEs were drawn from the manufacturers of plastic and the manufactures groundnut oil located at Sharada, Dawakin Dakata and Katsina Road industrial estates of Kano. To test the null hypothesis that the cash management practices of SMEs in Kana are not significantly related to their profitability, the study deployed a non parametric technique of Somers' d (Israel, 2008) for analysis of the relations between the two variables. To find the extent of relations Somers'd will be:

$$\frac{Ns - Nd}{Ns - Nd - Ty}$$

Ns = Number of Concordant pairs, Nd = Number of Discordant pairs and Ty = Number of pairs of observations tied on the dependent variable, profitability of the SMEs. The statistical significance of the calculated Somers' d is given by:

$$z = d / \frac{\sqrt{9nk^2(r-1)(r+1)}}{9nk^2(r-1)}$$

Where n = number of observations, k = number of columns and, r = number of rows.

RESULTS AND DISCUSSIONS

One of the objectives of establishing Small businesses is to survival and the profit motive which is best achieved through enhanced productivity. Cash is seen as the life blood of every business and therefore, its management becomes requisite for profit generation. However the productivity of an enterprise may fluctuate from time to time and these fluctuations may be attributed to the nature of its cash management, thus the need for enhanced management strategies to curtail these adverse effects. In this study, a survey is made on SMEs in Kano to ascertain the relationship of cash management practices and their profitability. Inappropriate cash management strategies will adversely affect turnover which will in turn contrast the profit margin and invariably affects the profitability of the enterprises. An analysis of the responses in Table 1 showed that more than half of the rated responses, 53.21 per cent, could not decide on the relations between cash management practices of SMEs in Kano and their profitability. About one third of the respondents, 36.67 per cent, are of the opinion that cash management practices are positive associated with the profitability of SMEs in Kano while 10.11 per cent believed that cash management practice and profitability of SMEs are negatively correlated. These responses are subjected to Somers' d rank test to determine the statistical level of the association between two variables and its significance.

TABLE 1: PROFITABILITY AND CASH MANAGEMENT PRACTICES OF SMEs

Effects of Profitability	Managing Receipts	Managing Payments	Managing Surplus	Total
Positive	86	119	125	**330**
Neutral	194	143	142	**479**
Negative	20	38	33	**91**
Total	**300**	**300**	**300**	**900**

Source: Field Survey, 2010

TABLE 2: COMPUTATION OF SOMERS' D VALUE

Ty	Row 1	86(119+125) + 119(125)	35,859
	Row 2	194(143+142 + 143(142)	75,596
	Row 3	20(38+33) + 38(33)	2,674
			114,129
Ns		356(86) + 119(175) + 194(71) + 143(33)	65,215
Nd		125(395) + 119(214) + 142(58) + 143(20)	85,936
Somers' d			-0.078113396
Sig			0.1536

Source: Author's Computations

An analysis of Table 2 shows a Somers'd value of minus 0.078, an approximate value of negative 8 per cent, which indicates a negative relationship between cash management practices and profitability of SMEs in Kano. This result implies that the cash management practices of the Kano SMEs are adversely r to their related profitability. The statistical significance of the calculated Somers'd value is 0.1536 which is greater the 0.05. Thus, the null hypothesis could not be rejected. Hence, it is infer that the cash management practices of Kano SMEs are not significantly associated to their profitability. This result implies the need for adequate operational cash management practices that is capable of relating positively and significantly to the profitability of the SMEs.

Certainly, profits are a critically important indicator of success; SMEs are in business to make a profit at what they do. However, it should be taken that the most fundamental to the success of the businesses of SMEs is appropriate cash policies. If the cash inflows exceed the cash outflows, SMEs can continue operations and therefore make some profits otherwise runs out of cash and grinds to a halt. Even if the imbalance is only for a short period, it can spell disaster. Cash management, controlling the cash flow, is vital to the continuity and profitability of SMEs.

CONCLUSION

Conclusively, it could be said that the cash management policies of the surveyed SMEs in Kano state of Nigeria is adversely relating, though not significantly, to their profitability. SMEs are especially vulnerable to cash flow problems since they tend to operate with inadequate cash reserves or none at all, and worse, tend to miss the implications of a negative cash flow until it's too late. Cash flow forecasts are an effective management tool for SMEs. The forecast will provide relevant information to SMEs executives to assist in proactive management to enhance SMEs profitability. Management can re-plan and re-allocate resources across the SMEs units to meet SMEs targets and regularly review the performance of each SMEs unit in accordance with these targets. Forecasting is always a

challenge, however, the key to monitoring and managing these cash flows is to ensure that there is always a reasonable buffer between what flows in and what must flow out.

However, there are no defined rules in cash flow planning and management. The process needs to be fine tuned based on the nature of business and the industry conditions. However, the following could help in planning and monitoring effective cash management: cash flow forecast periods should be long enough to spot potential problems but short enough to be realistic on sales and debt collections; rolling forecasts should be prepared and re-calculated weekly or monthly and; it should involve a cross functional team; sales, production planning, stores, purchase and others as relevant, with the finance department acting as the focal point. A well prepared cash flow plan, if used by the SMEs as a tool for cash flow monitoring, ensures sustained and steady productivity and controls in the SMEs and invariably enhances profitability.

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ACCELERATED LEARNING SOLUTIONS (ALS) – A MODEL FOR LEARNING ON THE JOB & PRODUCTIVITY ENHANCEMENT OF FRESH ENGINEERING GRADUATES THROUGH TITP (TELECOM INDUSTRY TRAINING AND PLACEMENT)

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ABSTRACT

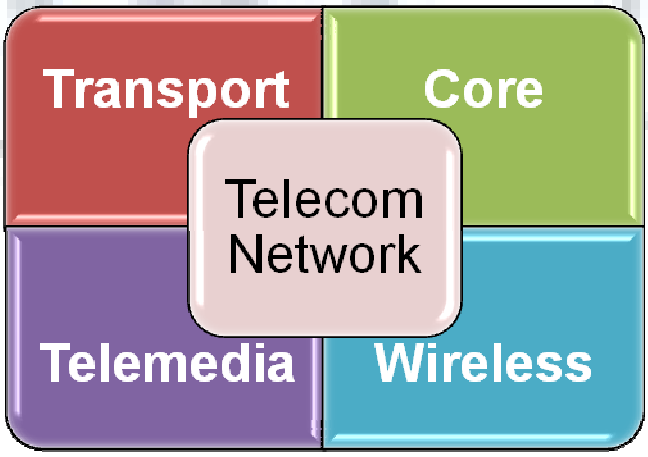
Two decades of economic liberalization has helped in creating a large number of employment opportunities in the Indian industry. The number of engineers graduating each year in India is almost twice that of the US and a little less than twice the number of individuals graduating as engineers across Europe. It is heartening to note that India has one of the world's largest and most qualified pools of technical manpower. The proliferation of professional colleges is the catalyst for this trend. This has resulted in a quantum jump in the number of engineers being churned out of our academic institutions. However the lack of 'Job ready' skills in the university curriculum coupled with the assessment system of majority of the colleges, with high weightages on theoretical competencies, instead of practical know-how is definitely causing a major concern for the industry. The gap between eligibility and employability is almost 75% in the long run the gap will create a major bottleneck in India's economic growth. The Network Learning Center of a leading telecom player has bridged this knowledge gap and accelerated the learning curve of fresh engineering graduates by deploying a blended learning solution. The Telecom Industry Training & Placement program for fresh engineering graduate spread over 12 months guides, moulds and prepares them for challenging opportunities in the telecom services domain. This paper presents the Accelerated Learning Solutions (ALS) framework developed by NLC and empirically validates the model through primary research data garnered over a period of three years.

KEYWORDS
Accelerated Learning Solution, Learning & Development, Mentoring, On-the-job training, Self Learning.

1.0 INTRODUCTION

The Indian Telecommunication network is the third largest in the world and the second largest among the emerging economies of Asia.. The Indian telecom industry has witnessed tremendous growth in the last 10 years due to the liberal policies of the government and the extensive need for communication. With over 865 million mobile phone users & 100 million Internet users, Indian Telecom Industry is the fastest growing market in the world. The rapid strides in the telecom sector have been facilitated by policies (NTP 94, 99 & 2011) of the Government that provide easy market access for telecom equipment and a fair regulatory framework for offering telecom services to the Indian consumers at affordable prices. The modern day telecom network is a convergence ready broadband network, spread over large geographical area through terrestrial, submarine and satellite links, with a scalable and restorable global NGN footprint, MPLS enabled CORE data network, certified MEN network (e.g. MEF forum), integrated BSS-OSS to support complex suite of services with end-to-end connectivity provided over fiber. The network is generally organized around four major domains as highlighted in the figure 1 below.

FIGURE 1 – TELECOM NETWORK – PRIMARY DOMAINS



The technologies deployed include Plesiochronous Digital Hierarchy (PDH), Synchronous Digital Hierarchy (SDH), Dense Wavelength Division Multiplexing (DWDM), Optical Transport Network (OTN), Microwave, VSAT and Optical Burst Switching (OBS) 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. In order to manage these network elements Network Management Systems (NMS) as well as Element Management Systems (EMS) are deployed.

Network Learning & Development function is generally tasked with the responsibility of ensuring the readiness of the organizational manpower to quickly adapt to the technological advancements, in consonance with the business requirements while maintaining high learning standards. The Network Learning Center (NLC), an ISO 9001:2008 certified entity of a leading integrated telecom player, was established in the year 2002 with an expectation to build a world class learning facility that could take care of the technology training demands of the present and the future. Over the past nine years NLC has trained & certified more than 32,000 employees through instructor led trainings through contact as well as distance learning programs. In addition over 61,000 employees were certified using proprietary self learning methodologies. The NLC portfolio comprises of over 220 Instructor Led Training (ILT) courses and 92 Self Learning Modules (SLM) on cutting edge telecom equipment, technologies and services in the domains and functions listed in the previous section. The NLC lead trainers (Subject Matter Experts – SME) are functionally aligned to the domain experts. This liaison ensures the learning function is aligned to the business and reflects the ground realities. Courses are designed & developed based on identified needs by the lead trainers and the functional experts. The NLC takes care of the technology and product requirements of the network group.

2.0 RESEARCH PROBLEM

The Shortage of talent in the telecom domain is one of the main impediments for further growth and development in this sector. The Indian economy grew more than 8% on average over the past 5 years, including the year of the unprecedented financial crisis in 2009. The higher education system has responded to the increased demand for technical manpower by massively expanding the output of engineers graduating annually. The number of students enrolled in engineering colleges has increased 800 percent during the span 1998 to 2008. (MHRD 2009). This quantitative expansion is widely perceived to have led to an average decline in the quality of the students entering the engineering colleges, the quality of teaching staff and consequently, the quality of the graduating engineers (Jha et al. 2009). The challenge is to create a knowledge pool and secure the future of the budding engineers by imparting skills that are required by the industry. With more and more players entering the industry, the competition in terms of attracting and retaining the talent is also increasing. The key problems that form the basis of this research study can be summarized as under:

1. The telecom sector has a huge demand for trained and qualified engineers.
2. With Attrition rates of 25 to 30 percent, the role of HR in this sector is to accelerate the learning curve of fresh engineering graduates and bridge the skill gap thereby meeting the industry & organizations demand for skilled, trained and experienced manpower.

3.0 LITERATURE SURVEY

The literature survey focused on works relevant to organizational learning. The major works listed in this section are the ones that have influenced the NLC training model.

RESEARCH PAPER [1]

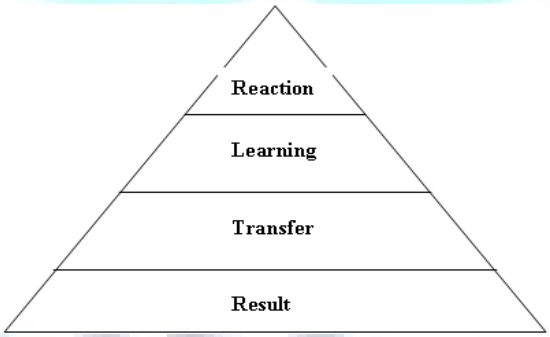
Combs et al (2006), "How Much Do High-Performance Work Practices Matter? A Meta-Analysis of their Effects on Organizational Performance"

The above research includes data from a survey of more than 19,000 organizations and establishes the linkage between organizational learning and organizational performance. The impact of vertical alignment of HR practices and their support to strategic business objectives and work context were enumerated as a part of the study. The employee (especially fresh recruits) engagement activities, like mentoring, initiated by the NLC are in consonance with the above studies.

MODEL [2] - KIRKPATRICK MODEL (1994)

Kirkpatrick Model is the most widely used model for organizational learning and evaluation. Kirkpatrick's four levels are designed as a sequence of steps to evaluate training programs. As one proceeds through each of the levels, the evaluation becomes more difficult, requires more time and provides more information. The model is depicted in the figure 2 below:

FIGURE 2 - KIRKPATRICK MODEL



The four levels of Kirkpatrick's evaluation model essentially measure:

1. REACTION

It indicates the feedback of the participants with regard to the coverage, deliverability, content, presentation and duration of the program.

2. LEARNING

The purpose of this stage is to obtain information on the quantam of learning by the trainees. Getting feedback in an organized manner helps in correct and valuable evaluation.

3. TRANSFER

Transfer measures changes in on-the-job behavior. It is very important to give time to learners to reflect on their learning at their work place.

4. RESULTS

Evaluation at this level consists of an attempt to measure trainees on the job productivity and effectiveness.

JOURNAL [3]

Mark Huselid, The Impact of Human Resource Management Practices on Turnover, Productivity, and Corporate Financial Performance, April 5, 1995, Academy of Management Journal, Vol. 38, No. 3, pp. 635-672, 1995

This study comprehensively examined the linkages between systems of High Performance Work Practices and organizational performance. The results based on a national sample of nearly one thousand firms indicate that these practices have an economically and statistically significant impact on both intermediate outcomes (turnover and productivity) and short- and long-term measures of corporate financial performance. The support for the predictions that the impact of High Performance Work Practices is in part contingent on their interrelationships and links with competitive strategy was limited. The major conclusions of the study were:

1. Systems of High Performance Work Practices (HPWPs) will decrease turnover and increase productivity and performance
2. Turnover and productivity will mediate the relationship between HPWPs and performance
3. Complementarities or synergies among HPWPs
4. Alignment between HPWPs and competitive strategy will reduce turnover and improve productivity and performance.

SURVEY [4]

Skill shortage remains one of the major constraints to continued growth of the Indian economy. This employer survey seeks to address this knowledge-gap by answering three questions:

(i) Which skills do employers consider important when hiring new engineering graduates?
(ii) How satisfied are employers with the skills of engineering graduates?
(iii) In which important skills are the engineers falling short?

The results confirm the widespread dissatisfaction with the current engineering graduates—64 percent of employers not satisfied with the quality of the new hires. The factor analysis of the data collected reveals that employers perceive Soft Skills (Core Employability Skills and Communication Skills) to be very important. Skill gaps are particularly severe in the higher-order thinking skills ranked according to Bloom's taxonomy. In contrast, communication in english has the smallest skill gap, but remains one of the most sought after skills by the employers. Although employers across India require the same set of soft skills, the demand for professional skills differ greatly based on economic sectors, geographic regions and organizational size. The key recommendations of the survey for engineering education institutions are as listed below:

1. Improve technology skill sets of graduate engineers
2. Provide soft skill training to students
3. Refocus the assessments, teaching-learning process, and curricula away from lower-order thinking skills, such as remembering and understanding, toward higher-order skills, such as analyzing and solving engineering problems, as well as creativity
4. Interact more with employers to understand the particular demand for skills in that region and sector.

4.0 ALS - TELECOM INDUSTRY TRAINING AND PLACEMENT

The Telecom industry training and placement program based on the ALS framework (figure 3), emphasizes on getting fresh engineering graduates quickly on-boarded and productive in a live telecom network, so as to ensure Operations, Maintenance, & Provisioning of network functionalities meet business Key performance Indices (KPI) and customer expectations. The ALS program accelerates the learning curve of fresh engineering graduates by engaging them to learn, develop and enhance their on-the-job productivity and performance by a combination of:

- Instructor led Classroom & Distance Learning – Induction Training Program
- On-line Interactive Self Learning Modules (i.SLM) – Blended Self Learning
- On-the-job Mentoring - Effective Decision Making & Problem Solving Skills
- Cross Functional training & Job rotation - Job Enrichment
- Project Presentation, Certifications, Quizzes, Workshops, Seminars & Conclaves – Talent Development & Competency Building

FIGURE 3 – ALS TRAINING MODEL

4.1 INDUCTION PROGRAM

The eight week induction program initiates the fresh engineering graduates to the organization and prepares them for their new role by providing required training, tools and**.** The program presents an opportunity for fresh recruits to understand the organization's expectations from their job function. The program is conducted by NLC trainers who are functionally aligned and provide the recruits with insights to design, development and functioning of modern telecom networks. The induction program helps in developing:

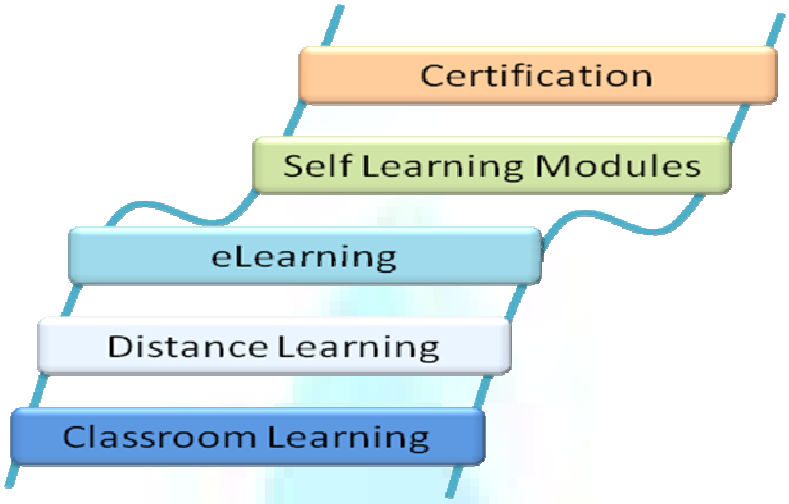
- Technology, Concepts & its practical application within the Network
- Understanding of the modern day telecom network architecture, products and their functionalities
- Trainings on soft skills to enhance communication skills, time management skills, team building & interpersonal skills
- Exposure to integrated technology labs for equipment and management systems hands-on practice
- Troubleshooting & problem solving skills on live network
- Network Provisioning and operation & maintenance skills for Fault surveillance and performance management of live telecom networks
- Understanding ground realities through field visits
- Training on occupational safety and preventive measures while working on the network.

The NLC trainers take responsibility of the new recruits and educate them on the organizational mission, vision, culture and policies besides developing key skills and competencies that are required to work on the functional domains of modern telecom networks. On successful completion they are certified to be placed on the Network roles with clear-cut KRA's and deliverables. They are periodically brought back to the classroom for advanced functional trainings and SLM certifications.

4.2 BLENDED SELF LEARNING [5]

NLC has trained & certified employees through instructor led trainings (ILT) as well as distance learning (DL) programs. Using the experiences as well as the feedback gained during these years, NLC has developed a Blended Learning Model that meets the training requirements as well as the challenges posed to the telecom industry. The model is depicted in the figure 4 below:

FIGURE 4 –BLENDED LEARNING MODEL



The model uses a mix of conventional instructor led training (ILT), direct as well as over audio/video conference, for theory as well as product and services hands-on, supplemented by Self Learning Modules (SLM's). All the modules include an evaluation mechanism to validate employee learning. Depending upon the role and function every employee has to undergo certain mandatory trainings as well as optional voluntary self learning. A competency chart lists down the desired skill sets corresponding to role, function and domain. It is mandatory for the employee to get certified in all the listed skill sets. This is in tune with the organizational mantra "Voluntary Self Learning & Mandatory Certification".

SELF LEARNING MODULES

SLM's are learning solutions designed for participants to facilitate anywhere, anytime and on demand learning. SLMs are animated audio-video presentations that offer a flexible learning option to employees. SLM duration is typically between 30 minutes to 60 minutes and is based on generic topics ranging from technology or product overview to specialized topics including Operation & Maintenance of telecom equipments, demonstration of maintenance activities etc. An advanced version of an SLM, Interactive SLM (i.SLM) simulates live scenarios thereby offering real time experience to the learners. These modules help an employee optimize their time spent in learning and contribute to improved productivity and operating efficiency.

INTERACTIVE SLM (*i*SLM)

Online integrated interactive self learning activities are designed to simulate classroom ILT experience. *i*SLM (Interactive Self Learning Module) are a series of interactive, self-paced learning modules delivered completely online. They are a convenient, flexible and cost-effective way to train new employees, or to increase the skill levels of existing staff. It is intended for engineers working at Network Operation Center (NOC), system operators, network administrators, field staff, installation and commissioning to manage, maintain and monitor telecom network. The blended learning method ensures that organizational employees learn, maintain, and upgrade skills required for better on-the-job performance & provide them with the competitive edge needed to meet business goals.

4.3 Mentoring – Driving Employee Talent Development

Mentoring fosters a work culture that is marked by positive energy, team work, performance ethics that translates into enhanced productivity of graduate engineering trainees. The mentor is a trusted and experienced advisor who achieves a one-to-one developmental relationship as "friend, philosopher, guide" and moulds the fresh engineering recruits into dynamic telecom professionals.. The key benefits of the mentoring program are:

- Ongoing support and on-the-job encouragement
- Enhanced Productivity & Quality of Service
- Knowledge, Performance & Skills Improvement
- Effective Decision-making & Problem-solving skills
- Encouragement & Motivation to face organizational challenges
- Career Opportunities & Advancement
- Greater Confidence & Well being

4.4 JOB ENRICHMENT

Job enrichment is primarily through on-the-job training and job rotation of fresh recruits across the four primary network domains.

ON –THE- JOB- TRAINING

This process involves assignment of specific tasks to the fresh engineering recruits that is evaluated by a 4-tier hierarchy comprising of the immediate supervisor, department head, mentor and HR. The tasks are assigned in such a manner that it facilitates hands-on learning, in line with the job function and organizational requirements. Effective monitoring is done based on the hierarchical model; the key parameters evaluated include technical knowledge, communication skills, analytical skills, team work, psycho-motor skills and achievement of KRAs. The trainings are in the areas of fault management, surveillance and trouble ticket management, service order management, network planning & engineering and operations & maintenance of

- Optical Fiber Cable and Utilities
- MSC, BSC and BTS of CDMA, GSM & 3G Network
- Routers and Switches of Data Networks
- PDH and SDH Transport Network equipment
- Microwave, Satellite & Wi-Max equipment

JOB ROTATION & ENRICHMENT – MULTI SKILLING

ALS contributes to the multi-skilled development of engineering graduates through a job rotation policy. This ensures that the employees are rotated in the four major network technology domains during their training, thereby, enabling them to acquire cross functional skills and end-to-end problem solving and troubleshooting skills which are required to place them in their area of interest.

4.5 TALENT DEVELOPMENT & COMPETENCY BUILDING

Each trainee will be assigned a project in their area of work by the department head in consultation with the mentors. The project would encompass the study of existing/future technologies and their application in the telecom or a study of existing network issues and their solutions. NLC evaluates the project report in consultation with reporting manager, functional head and HR head. There are two projects assigned to the recruits during their training period.

ONLINE QUIZZES (QUIZ@THON)

In addition to the regular training and self learning activities, NLC in conjunction with SMEs conducts quizzes in general areas of interest and work-job areas to ascertain the general awareness levels of the fresh recruits.

5.0 RESEARCH METHODOLOGY

This section outlines the methodology adopted for this research.

5.1 RESEARCH OBJECTIVES

1. The primary objective of this research is to validate the efficacy of the ALS model in the telecom service industry.
2. The secondary objective is to establish the knowledge gap between fresh college recruits and private sector telecom industries.
3. Generate a talent pool of highly skilled and domain specific manpower to cater to the telecom industry demands.

5.2 HYPOTHESIS

H1: ALS Model is effective in inducting fresh graduates into the highly competitive telecom industry environment.

H2: There exists a significant gap in the skill levels of engineering college pass outs and the telecom industry demands.

5.3 SAMPLING DESIGN

A stratified random sampling technique was adopted for the purpose of this study. The study included the analysis of the recruitment of graduate engineers during the period 2009-2011. The performance of the recruits during the period 2009-2011 was also collected to analyze the efficacy of the ALS model. The sample size of 280 was used for this study.

5.4 DATA COLLECTION

This paper is based on primary research data collected by the NLC. The paper analyzes the performance of 240 fresh engineering recruits during the period 2009 to 2011. This period corresponds to period of active involvement of NLC in the recruitment process. For assessing the employee recruitment data a sample of 40 candidates from the total number of 280 was chosen. The employee performance was captured from the online Employee Performance Management System (PMS).

5.5 DATA ANALYSIS, INTERPRETATION AND HYPOTHESIS TESTING

The data collected was subjected to standard statistical analysis to ensure their validity. A single tail ANOVA-test was used to verify the hypothesis.

The table 2 below lists the performance analysis of the fresh graduates recruited during the period 2008 – 2009. The performance analysis is based on data corresponding to the same period.

TABLE 1 – PERFORMANCE ANALYSIS OF FRESH RECRUITS

Performance Analysis - Fresh recruits						
	PMS 08-09		PMS 09-10		PMS 10-11	
PMS Rating (1=Poor,5= Excellent)	Percentage	Count	Percentage	Count	Percentage	Count
5	4%	3	16%	13	39%	31
4	11%	9	48%	38	34%	27
3	85%	68	31%	25	27%	22
2	0%	0	5%	4	0%	0
1	0%	0	0%	0	0%	0

The above table conclusively establishes the efficacy of the induction program and its positive influence on the performance of fresh engineering graduates. The Anova of the summary data results in a 'p' value of nearly zero, validating hypothesis H1. It can be thus inferred that the ALS model provided in accelerating the learning curve resulting in fresh engineering graduates being assigned predictive roles in a very short span of time

The table 3 below presents the recruitment statistics of a sample of 40 fresh engineers out of totoal population of 280, corresponding to the period 2009 – 2011:

TABLE 2 – RECRUITMENT STATISTICS – FRESH ENGINEERING GRADUATES

Fresh Recruitment Stats - Sample - 2009 to 2011		
Scores	Percentage	Count
70-80	5%	2
80-90	32%	13
90-100	52%	21
100-110	7.50%	3
>110	2.50%	1

From the above table it is evident that only 4 candidates out of 40 samples (10%) have obtained a consolidated score of over 100 out of 150, in the multiple staged recruitment process. A score of 100 and above is indicative of skills that can be readily used by organizations. Only 25 out of 40 candidate obtained 60% and above in the recruitment process – the minimum cutoff for recruitment. This indicated a wide disparity in university curriculum and telecom industry requirements. The Anova of the summary recruitment table returned a 'p' value of zero validating the hypothesis H2.

5.6 RESEARCH LIMITATIONS

This research was based on the recruitment and performance data of fresh engineering graduates placed in fault management, performance management and provisioning functions. The model needs to be tested with similar data of lateral hires as well as employees with an experience ranging from 3 to 5 years in network planning & engineering and O&M functions.

6.0 KEY FINDINGS & CONCLUSION

1. Accelerated learning solution has succeeded in bridging the industry-academic skill gap and improved the performance of the fresh graduates. This has been possible by developing curriculum tailor made to industry requirements.
2. The TITP program based on the ALS model has been able to enhance the skill sets as well as the productivity levels of fresh engineering graduates bringing them at par with experienced employees of 3-5 years in similar roles.
3. The TITP program assures a stream of trained manpower to meet the ever growing demand of organizations in the telecom industry.
4. Universities/Engineering Colleges need to radically alter their curriculum structure, delivery and assessment mechanism models to meet industry demands. The present curriculum focuses on developing lower-order thinking skills, such as remembering and understanding. The focus of the colleges/universities should be on developing higher-order skills, such as analyzing and solving engineering problems while creating an environment that fosters creativity in field operations.
5. The result of this research confirms the industry assessment that the individuals graduating from engineering colleges do not possess the skills relevant to their operational requirements.

6. There is a need for a common industry-academia forum to work out interventions that create a win-win situation for all the concerned stakeholders – Universities, Colleges, Organizations, Faculties as well as students.

7.0 SCOPE FOR FURTHER STUDY

1. The ALS model needs to be validated using data from organizations across the telecom industry.
2. The model should be tested based on the skill and performance assessments of lateral hires as well as employees with 5-8 years experience.
3. This research was based on the recruitment and performance data of fresh engineering graduates placed in fault management, performance management and provisioning functions. The model needs to be tested with similar data of lateral hires as well as experienced employees in network planning & engineering and O&M functions.

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APPENDIX

TABLE 4 – DESCRIPTIVE STATISTICS – PERFORMANCE DATA

	PMS 08-09	*PMS 09-10*	*PMS 10-11*
Mean	3.1875	3.75	4.1125
Standard Error	0.053644841	0.088052056	0.090696583
Median	3	4	4
Mode	3	4	5
Standard Deviation	0.479814046	0.787561531	0.811214904
Sample Variance	0.230221519	0.620253165	0.65806962
Kurtosis	6.257588516	-0.372812527	-1.447937958
Skewness	2.614128416	-0.159465251	-0.210602125
Range	2	3	2
Minimum	3	2	3
Maximum	5	5	5
Sum	255	300	329
Count	80	80	80
Largest(1)	5	5	5
Smallest(1)	3	2	3
Confidence Level(95.0%)	0.106777384	0.17526323	0.180527031

TABLE 5 – ANOVA – PERFORMANCE DATA

Anova: Single Factor						
SUMMARY						
Groups	*Count*	*Sum*	*Average*	*Variance*		
PMS 08-09	80	255	3.1875	0.230222		
PMS 09-10	80	300	3.75	0.620253		
PMS 10-11	80	329	4.1125	0.65807		
ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	34.75833	2	17.37917	34.56146	6.75E-14	3.03392
Within Groups	119.175	237	0.502848			
Total	153.9333	239				

TABLE 6 – DESCRIPTIVE STATISTICS – RECRUITMENT DATA

	MAT Score	TAT Score	GD Score	Total	PI Score	G.Total
Mean	33.475	29	15.075	77.55	13.625	91.175
Standard Error	0.714311126	0.535891302	0.149303941	1.009537848	0.491840473	1.192867424
Median	33	29	15	77	14	91
Mode	33	28	15	78	15	91
Standard Deviation	4.517700232	3.389274183	0.944281032	6.384877968	3.110672283	7.544356016
Sample Variance	20.40961538	11.48717949	0.891666667	40.76666667	9.676282051	56.91730769
Kurtosis	-0.80198368	0.952291065	1.286672444	1.795581704	1.077571452	0.729281924
Skewness	0.076239815	1.048198342	0.99882181	1.10019528	0.519779961	0.664096761
Range	16	13	4	30	15	33
Minimum	26	25	14	66	8	78
Maximum	42	38	18	96	23	111
Sum	1339	1160	603	3102	545	3647
Count	40	40	40	40	40	40
Largest(1)	42	38	18	96	23	111
Smallest(1)	26	25	14	66	8	78
Confidence Level(95.0%)	1.444830615	1.08394246	0.301995722	2.04198302	0.99484125	2.412802086

TABLE 7 – ANOVA – RECRUITMENT DATA

Anova: Single Factor						
SUMMARY						
Groups	*Count*	*Sum*	*Average*	*Variance*		
Total (125)	40	3102	77.55	40.76667		
PI Score (25)	40	545	13.625	9.676282		
ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	81728.11	1	81728.11	3240.418	2.72E-65	3.963472
Within Groups	1967.275	78	25.22147			
Total	83695.39	79				

RURAL E-BANKING: A TECHNICAL FRAMEWORK USING MOBILE TERMINALS

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ABSTRACT

For betterment of rural India, there is a need of secure and contented financial services. Current bank branch network is not able to reach these areas and even if they try to do so, it will cost more for both bank (for setting up a branch) and customer (for accessing services; e.g. travel and queuing time). Branchless banking has potential to achieve this target in limited budget but current structure of branchless banking also needs some improvement to enhance security and avoid fraudulence activities. To attain this objective a framework is offered where branch less banking is provided through Wi-Fi enabled mobile terminal, local villager/Agent and bank. Together they will act as a virtual branch which further connects over internet with customer database of main stream banking system such as SBI, PNB, and BOI etc. In this scenario agent authentication is done through VPN token and for villager smart card is used. At the end of every transaction printed slips with all necessary details are taken for legality of transaction and saved in database for records keeping audit trail as well. It is a simple and secure that uses m-banking, i-banking and can be easily understood by unsophisticated and non technical villagers.

KEYWORDS
Rural banking, e-banking, VPN Token, Smart Cards, Mobile Terminals, Banking Correspondent, Branchless Banking.

INTRODUCTION

Banking is always important to our society but in last few decades' Indian banking has seen major transitions from traditional physical financial structure to e-banking, i-banking and m-banking by using technology to provide better services. These services have become popular in metros and major cities in India but in rural India still old methods like operating account through local branch are used. Rural people living in the village are forced to avoid it or have to travel to the city for using these banking facilities. Although for uplift of rural banking structure and provide more facilities to rural India Finance Minister Pranab Mukherjee had said in his Budget speech that all villages with a population in excess of 2,000 would get banking facilities by March 2012. (Hindustan Times, 2010). Placing a Brick and Mortar branch in every village will be highly time consuming and need huge investment in terms of infrastructure and technology. We know computerization is expensive and need huge investment in software, hardware and maintenance. Moreover like west, India is also at high risk of computer crime, so security also needs high investment.

For rural India to make such facilities useful, we need to give an IT infrastructure where initial cost of setting up the framework is not very high and technology awareness is not a major hurdle to use these facilities. In last three decades, RBI and Govt. of India have taken mutual steps for universal access of financial services. One such initiative is branchless banking. Branchless banking is a concept of providing banking services outside the conventional bank branches by either using information and communication technology services or third party organizations (Sharma, Subramanian and Shasha, 2009). Branchless banking has following characteristics (Gautham and Ignacio. 2008) (i) Mobile Phone and Payment cards are used for recording transaction and communication with banks. (ii) Third party or agents act as middle man between bank and villager and handle cash for withdrawal and deposit. (iii) Minimal banking services (deposit and withdrawal) are offered. Branchless banking is available in bank based and non bank based models. In bank based model, every customer has direct relationship with prudentially licensed and supervised financial institution but the same direct relationship is not required in non bank based model Only bank based models are permitted in India (CGAP, 2010). Branchless banking channels include (*i*) ATMs, (*ii*) electronic banking based on the Internet, (*iii*) banking correspondents and banking facilitators, and (*iv*) mobile banking (CGAP, 2010). In the current scenario a resident of the village who has sufficient liquidity and phone act as bank agent and called as shopkeeper. Others in village perform transactions (withdrawals and deposit) with him (Kumar and Gupta, 2009). As everything is in hand of shopkeeper and no security or authorization procedures are used so possibilities of fraud are legion and villagers don't trust these shopkeepers. To match the simplicity of farmer and ensure security, we have developed a protocol framework where a banking correspondent or third party agent authorized through VPN token will act as a branch of bank in several villages Villagers' use a smart card with biometric details for identification

This paper is organized as follows: **Section 2** Listed findings from existing literature **Section 3** defines problem in existing system **Section 4** illustrates System Architecture and Components of the framework. **Section 5** explains working of framework. **Section 6** explains security feature of proposed system. **Section 7** explains conclusion and future work and **Section 8** list references that are related to this research work.

REVIEW OF EXISTING LITERATURE

In order to write the proposed framework, existing literature of current topic is studied and few findings of this review are as follows: Traditional banking in rural areas does not work well (Gautham, 2006). Recent literature address key issues about e-banking are: customer acceptance and satisfaction, privacy concerns, profitability, operational risks, and competition from non-banking institutions (Boss *et al.*, 2000). Now a day's traditional banking has taken a turn to e-banking, m-banking and i-banking. American bankers are first few in international banking to launch e-banking in early 1992 (American Banker, 2000). Empirical studies from the consumer side of e-banking have been reported recently, such as one focusing on the quality of customers on the utilization of current e-banking services (Hitt and Frei, 2002). One more empirical study is completed through web based survey shows there is huge potential for small and local community bank to improve their e-banking services. Majority of those small local community banks (about 57%) have a low e-banking customer rate of less than 30%, and only few banks (about 7%) have a 60% or higher of their current customers using their e-banking services. While a third (36%) has only 30% to 60% of their customers using e-banking services and none has a proportion over 80%. (Yang, Whitefield and Boehme, 2007).

Major risks associated with i-banking are checking identity and authorization of person performing the transactions online. So financial institutions using i-banking require to identify types and levels of risk associated and need multifactor authentication , layered security or other controls reasonably calculated to mitigate those risks (Federal Financial Institutions Examination Council , 2005). In a country like India customers are reluctant to join online services that contain little risks, so banks should concern security and privacy issues while designing a website for account operations (Dixit and Dutta, 2010).

The Report of the Committee on Financial Inclusion (2007) reveals that, despite a large banking system and cooperative credit network, many poor households in India lack access to financial services (CGAP, 2010). About 80% of India population lives in rural area and don't have good banking facilities. So, Financial Infrastructure of rural India needs support of Branchless banking to get achieves maximum aim in limited budget (Sharma, Subramanian and Shasha, 2009). A survey conducted in Brazil shows that around 90% of those surveyed used agents to pay their bills. Also, around 78% of the financial transactions are conducted through 95,000 agents distributed over the country (CGAP, 2006). WIZZIT is a successful mobile banking provider in South Africa that has seen its user base increase over the years. RBI is also taking initiative to provide branchless banking in rural areas so that villagers don't have to move 20-30 km to use banking facilities. According to a World Bank Consultative Group (CGAP), branchless banking is cheaper than traditional banking method (Gautham and Ignacio, 2008). The operationalization of the Finance Act 2009 in January amended the Banking Act, allowing banks to use third party agents such as petrol stations, supermarkets, shops, Saccos and small retail outlets to reach the unbanked [James Anyanzwa, 2010]. Branchless banking is 19% cheaper than comparable products offer by bank through traditional channel (CGAP, 2010).

PROBLEM FORMULATION

Branchless banking aims to serve rural India, but how much it has achieved in last few years is question which is to be answered by our financial institutions. Despite of all efforts, we are still not able to give a transparent and trustworthy banking infrastructure to our rural customer where they can easily perform their routine transaction in secure and cost effective environment.

Recently, Finance and security experts have raised questions about lack of security in rural banking models. Experts are not very much satisfied with security standards used in rural banking and believe secure and simple environment can bring more rural population to banks (Bangudu, 2009). Techniques used to provide banking facilities in rural areas and not very comfortable for not so technical and mostly uneducated villagers and expected results cannot be drawn from current investments.

ATM is one of the forms of Branchless banking (BLB). Finance Minister Pranab Mukherjee aimed to install ATM for bank transactions in villages where population is more than 2000 as said in his budget speech. (Hindustan Times, 2010). Setting up an ATM is low cost as compared to setting up branch for handling cash needs of villagers but uneducated rural customer require assistance to operate these ATM machines. The RBI circular no. BP.BC.60/21.03.051/96 specifies that "no person other than the security guard should be posted at such "non-branch"/"stand-alone" ATM centres" (CGAP, 2009). Hence banks cannot employ any assistance to support customers.

To overcome password related problems (forget password), Govt. of India has also taken initiative in installing token less identification or biometric ATM's where a person's speech, face image or fingerprints is used for the identification. But what about the issue when person is not able to read the instructions written on ATM. Deposit through these ATM's is not very easy. For deposit one have to leave cheque in the drop box after writing name and account details on the back of cheque without getting any proof of dropping it. In case of non-credit of cheque, he cannot enquire bank about deposited cheque as he don't have any proof.

Another form of branchless banking is bank correspondent or bank facilitator. In this concern major issue is consumer protection. Adequate regulatory provisions are required to minimize chances of fraud by third party. More and more technology advancement is used to make the procedure secure but this advancement can create problems for not so technical advance villagers At times these legitimate agents also defraud customers and providers (CGAP, 2009).

Innovation is the key to solve all these issues and expand frontiers of formal financial services by administer security in rural India through simple biometric system which is easy to understand and simple to follow:

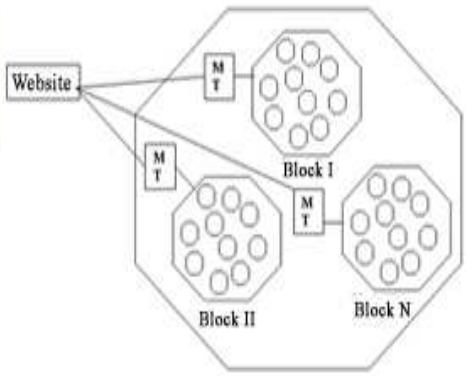
The main objective of this study is to propose a Framework that can answer the following issues:

1) How to provide easy access of main stream banking facilities to villagers in remote harder areas.
2) Credibility of proposed banking framework.
   a) Avoidance or reduction of fraudulent activities.
   b) Safe environment required for MT BLB agent.
3) How to enhance security aspects of Branchless Banking (BLB)?
4) When and how to update main stream bank records?
5) Cost control by leveraging present IT and Telecom infrastructures.
6) Efficient functioning/operations of Govt. Schemes for BPL and APL households.

SYSTEM ARCHITECTURE AND COMPONENTS

Keeping above discussed problems in mind, we have proposed a framework for rural India where villagers can avail **BLB** services with minimal efforts, door-step availability and improved security measures. Anticipated framework organizes villages into blocks on the basis of geographical proximity. Each block may consist of few (max. 10) villages. One ***Agent*** with ***MT*** is responsible to provide service to all villages belonging to that block and provide balancing service to AH in each village on different days of the week.

FIG I: BLOCK FORMATION ON THE BASIS OF GEOGRAPHICAL AREA



Proposed model consist of BLB Agent, Account Holder (AH), Bank Database on secure website, Mobile Terminal (MT), VPN token and Smart Card for AH.

BLB AGENT

BLB Agent registers himself with bank for offering his support to villagers on behalf of bank. After ensuring liquidity details and knowledge about current technologies (that are required for smooth working of assigned responsibilities) bank issues an identity to BLB Agent which includes unique number,

demographic details and finger prints of agent are recorded digitally. Using VPN token and MT, agent authorizes himself to bank for accessing related data and executing transaction on behalf of AH.

ACCOUNT HOLDER (AH)

When a villager opens an account with bank, a smart card including all (demographic, unique Account ID and biometric) details is issued by the bank to the villager. This smart card is required to perform any transaction from their account with the bank.

BANK DATABASE ON SECURE WEBSITE AND CONNECTIVITY

Bank records information about authorized Agents and their respective blocks. Authorized agents are allowed to view only assigned blocks or villages. Bank also saves information about villager's demographic details and their biometric prints. Once a transaction is completed following information is stored about executed transaction; Unique Id of Agent and all demographic details of agent, Biometric and demographic details of villager from bank that contain information about current and balance after transaction by villager that confirms transaction.

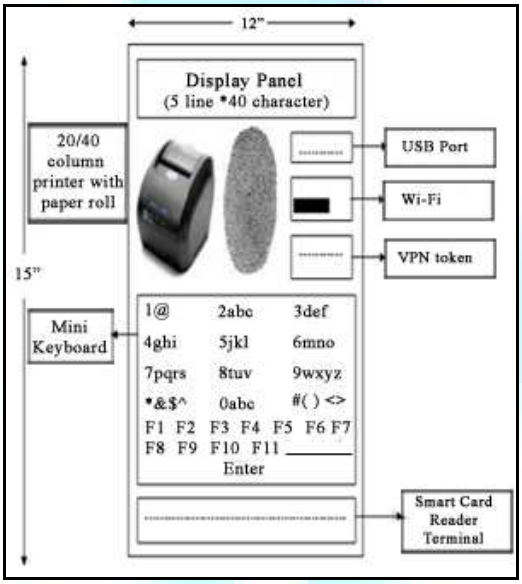
BLB MOBILE TERMINAL

EXISTING FEATURE

Every banking correspondent is provided with battery operated Wi-Fi enabled mobile terminal for authentication and connectivity with official bank website. It is usually a 12'' X 15'' inches set which has a display panel of 5 lines and 40 characters. A 20 column printer with a paper roll is placed on it to take transaction slip printout and a mini keyboard is attached with basic and some special purpose function keys to type in information. Every terminal has USB port to connect data travelers devices in which banking correspondent can download data or update transaction in case of internet connectivity to bank website is not working. A BioEnable Fingerprint Recognition Terminal (FRT) with LCD, fingerprint scanner is attached on MT. This device (FRT) also uses processor, memory, communication and data storage capabilities placed on Logic card of MT (The GreenBow 2011**)**. A smart card reader terminal is positioned at bottom for reading smart card details of villagers (assigned by bank official) for their identification. It is sleekly designed with no cables or batteries and compatible with MT (Mobile Terminal). Smart Card uses SocketScan software and SDK saved on memory of Logic card.

A smart card is plastic card made-up with IC (Integrated Circuit) containing CPU, RAM, and non-volatile memory for storage and transaction of data (CardLogix Corporation, 2010). Application software and personal information of the AH and Account Number are saved in the chip at the time of issue of smart card to AH. It is secure portable device which is similar to a credit card in size and has storage capacity of 32MB. The card data is transacted via a reader that is placed on MT. Tamper proof storage of AH details greatly improves the convenience and security of bank transactions. Information saved in the microchip of this card can instantaneously verify the cardholder's identity through biometric properties, such as finger prints fed into MT using FRT.

FIG II: WI-FI ENABLED MOBILE TERMINAL



PROPOSED NEW FEATURE

USB socket is available for connecting VPN token given to BC by Bank for authentication of the correspondent.

VPN (VIRTUAL PRIVATE NETWORK) TOKEN

Tamper proof VPN Token is an authentication mechanism consists of a "token"—a piece of hardware and software. It is three way authentication device, where user should have **Login Details** (Uname, Password and Group ID), **and VPN token** and must know **PIN** (Personnel Identification Number). It is plugged on the slot available on MT and protected with PIN + Random key, generated on the fly whenever token is inserted on device.

FIG III: VPN (VIRTUAL PRIVATE NETWORK) TOKEN ASSIGNED TO BLB AGENT

MODEL DESCRIPTION AND WORKING OF SYSTEM

PHASES

Implementation of proposed system is completed by practicing two phases:

- Preliminary Phase
- Operational Phase

PRELIMINARY PHASE

Multiple teams, authorized by Banks and State Govt. are allotted group of villages, may be 100 to 250 villages to one team. These teams, equipped with specialized Smart Card making equipment visit each village and on the basis of list of villagers provided to them by State Govt. Rural Development Department takes demographic data and thumb impression from each applicant, processes the information into database and issues Smart Card to them. The database is consolidated from all teams and submitted to the Bank and State Govt. During this phase, BLB agents are identified and asked to visit the nearest branch of the bank to get their identification verified, opening of BLB account, other formalities, issue of MT and VPN token.

OPERATIONAL PHASE

This phase explains the "Power On" process of MT by the following steps:

1. For execution of any transaction AH has to visit Agent with smart card.
2. In the beginning of any transaction, agent authorization is required for that purpose agent inserts VPN token on Mobile terminal slot and enter security PIN for login (3 way security procedure is explained in section V) and try to connect bank database or website.
3. Once Login is successfully completed he is allowed to view details of related block.
4. AH is also authenticated where smart card is inserted on MT and biometric details (finger, thumb impression, image or eye Retina) in card are matched with person holding the card.
5. If authentication procedure is successful then AH details can be accessed by agent. Account balance can be seen on the MT display.

TYPES OF TRANSACTIONS

WITHDRAWAL

Agent enters the required amount on MT and waits for response from bank for withdrawal. The bank database checks status of AH balance and if the required amount is less than available amount, amount is withdrawn and give to AH by BLB agent. After completion of transaction a receipt is generated and signed by Agent and AH (Thumb impression of AH if he can't sign). Printed receipt contains information such as Transaction type: withdrawal, previous balance, amount withdrawn, new balance, date, time, AH name and Agent name. Original receipt is given to the AH and second copy is kept by agent for his record and third copy will be submitted in bank by agent.

DEPOSIT

Agent enters the amount to deposit on MT and waits for response from bank. AH gives the requested amount to the agent and agent deposits it to account of AH. Once the transaction is completed, receipt is generated and signed by Agent and AH (Thumb impression of AH if he can't sign). Printed receipt contains information such as Transaction type: deposit, previous balance, amount deposited, new balance, date, time, AH name and Agent name. Original receipt is given to the AH and second copy is kept by agent for his record and third copy will be submitted in bank by agent.

OTHER TRANSACTIONS

Disbursement under NREGS and other relief schemes of Central and State Govt. can also be processed through this framework.

SECURITY ASPECTS

Recognizing the mounted concern of rural e-banking security, we have considered security as a main concern in order to develop confidence of AH in anticipated new system. To assure security aspect it is required that these three parties authenticate themselves with each other. For all transactions, Bank, BLB Agent and AH have to ensure that they are dealing with each other without any imposter in between.

BLB AGENT AND BANK

1. Agent connects VPN on MT, security information stored on stick works only with the particular MT and if stick is lost, no one can use it on another computer, MT or any other device.
2. After plugging on to the slot, this three way security device will try and connect registered website or database.
3. On connection with website, BC has to enter uname, password and Block ID.
4. These details are verified from database and after due procedure of authentication a security string is available on the page where BC has to enter PIN + security string being displayed at that moment on his token.
5. On the other hand, the server which also has a real-time clock and a database of valid cards with the associated seed records computes what number the token is supposed to be showing at that moment in time, checks it against what the user entered, and makes the decision to allow or deny access.
6. On successful completion of authentication procedure, Agent is allowed to perform any transaction on database for AH.

VILLAGER/AH, BLB AGENT AND BANK

This is a three way security check:

1. First check is to compare the photo on smartcard with the person. Smart card has photo of card holder, so on single glance authentication can be checked whether person holding the card is authorized to use it or not.
2. Second check is comparison of biometric details. Smart card also saves biometric impression of AH, and same can be checked by swiping card on MT and giving thumb or finger impression on MT's FRT (Fingerprint Recognition Terminal).
3. Third check is to compare the card of AH with the list of lost cards maintained by bank website. This is done to avoid misuse of stolen cards.
4. At the time of registration smart card is issued to AH. Before committing any transaction AH is requested to verify his smart card consisting of his biometric details and if both are matched then transaction is completed otherwise it will stand cancel.

AGENT FAKING WITHDRAWAL

Agent can not initiate withdrawal without AH consent as smart card + biometric impression is required to access details of AH, and if it matches, only then transaction is completed at bank's end. Agent cannot afford to write incorrect amount for withdrawal, as withdrawal amount, current balance, balance after transaction is confirmed by bank through receipt generated by MT.

BLB MOBILE TERMINAL OR VPN TOKEN LOST

In case MT is lost, neither agent nor AH or any other person can misuse it because MT does not start without VPN token. Similarly, VPN token does not work without MT.

CONCLUSION AND FUTURE WORK

Our paper presents framework to implement branchless banking (BLB) in rural and remote areas. In this work, authors have attempted to address the issues raised in section 3 as follows:

1) Proposed framework will bring improvements in life of thousands of villagers, as they can access their bank accounts connected to main stream Bank like State Bank of Sikkim easily at their doorstep.
2) Here credibility is ensured as the smart card ID and thumb impression are verified before any transaction can be made. In addition, AH will receive printed slip of the transaction which also enhances credibility.
   a) Through this framework Govt. can provide a secure environment where BLB agent and AH are duly authorized before executing any transaction. Also, all transactions are updated in main stream bank records on continuous basis. This will be helpful to avoid fraudulent transactions.
   b) In this scenario BLB agent authentication is done through VPN token. It is three way authentication device, where user should have Login Details (Uname, Password and Group ID), VPN token and must know PIN (Personnel Identification Number).
3) Security aspects have been analyzed and criteria specified to enhance them in BLB framework in section 6.
4) Through this framework, main bank records will be updated simultaneously as and when any transaction is being done by AH. Only when network is temporarily down, previous days' data status will be utilized using backup in USB drives.
5) It is cost effective as it is using the existing IT infrastructure of banks and their portal evaluating online transaction. Further existing Telecom infrastructure is used for connectivity purpose which has almost country wide footprint.
6) It will be beneficial for Govt. as their new financial schemes can be extended to rural India using this BLB banking system and benefits will reach to concerned person without any middleman.

The usage of such schemes being initiated in some rural areas may be examined in future research.

In future eye retina can be used as biometric details in addition to finger and thumb impression for identification purpose. It is also possible to store critical health data on these smart cards and may be even provide health insurance to rural masses using this technological framework. Voice messages to/from over Wi-Fi network and required bandwidth can also be explored for authentication and transaction purposes in future work.

ABBREVIATIONS

AH- Account Holder, **BC-** Bank Correspondent, **MT-** Mobile Terminal, **BLB-** Branchless Banking, and **ATM**- Automated Teller Machine.

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BIOMETRIC SECURITY IN MOBILE BANKING

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ABSTRACT

Mobile technology is growing very speedily, each person have mobile in its pocket. Banking sector started mobile banking service but insecurity is also growing with the same speed. To overcome this insecurity we are moving for biometrics as secure path to communicate and authentication purpose. Present study deals with new innovative model for Mobile using biometric technology for operating secure mobile banking. Proposed model provides high security in authentication which protects service user from unauthorized access. In this proposed model user required to authenticate himself with biometric identification, middle fingerprint and Personal Identification Number (PIN).

KEYWORDS

Authentication, Biometric, Mobile model, Mobile banking, PIN.

INTRODUCTION

UNAUTHORIZED ACCESS

A very high-level term that can refer to a number of difficult sorts of attacks is unauthorized access. The goal of those attacks is to access some resource that your machine should not provide the attacker.

TYPES OF RISKS ASSOCIATED WITH BANKING

Operational Risk: Operational risk, also referred to as transactional risk is the most common form of risk associates with I-banking. It takes the form of inaccurate processing of transactions, non-enforceability of contracts, compromises in data integrity, data privacy and confidentiality, unauthorized access/intrusion to banks systems and transactions etc. Besides, inadequacies in technology, human factors like negligence by customers and employees, fraudulent activity of employees and crackers/hackers etc. can become potential source of operational risk.

Security Risk: Security risk arises on account of unauthorized access to a bank's critical information stores like accounting system, risk management system, portfolio management system etc. A breach of security could result in direct financial loss to the bank. For example hackers operating via the internet, could access, retrieve and can use confidential customer information and can also implant virus. This may result in loss of data, theft of or tampering with customer information, disabling of a significant portion of banks internal computer system thus denying service, incurring costs to repair these etc. Other related risks are loss of reputation, infringing customer's privacy and its legal implications etc. Thus, access control is of paramount importance. Controlling access to banks system, has become more complex in the internet environment which is a public domain and attempts at unauthorized access could emanate from any source and from anywhere in the world with or without criminal intent.

Security threats to online transactions are: malicious code, hacking and cyber vandalism, credit card fraud/theft, spoofing, denial of service attacks, sniffing and insider jobs.

OBJECTIVE

1. To study various biometric authentication techniques.
2. The application of biometric authentication in mobile device for secure e- banking.
3. To generate logical model that helps for simple operating mobile device for banking services with full proof authentication.

WHAT IS BIOMETRIC AUTHENTICATION?

Biometrics is biological authentications, based on some physical characteristics of the human body. The list of biometric authentication technologies is still growing. There are two categories of biometric identifiers include physiological and behavioral characteristics. **Physiological** characteristics are related to the shape of the body, and include but are not limited to: fingerprint, face recognition, DNA, palm print, hand geometry, iris recognition (which has largely replaced retina), and odour /scent. **Behavioral** characteristics are related to the behavior of a person, including but not limited to: typing rhythm, gait, and voice. More traditional means of access control include token-based identification systems, such as driver's license or passport, and knowledge-based identification systems, such as password or Personal Identification Number (PIN).

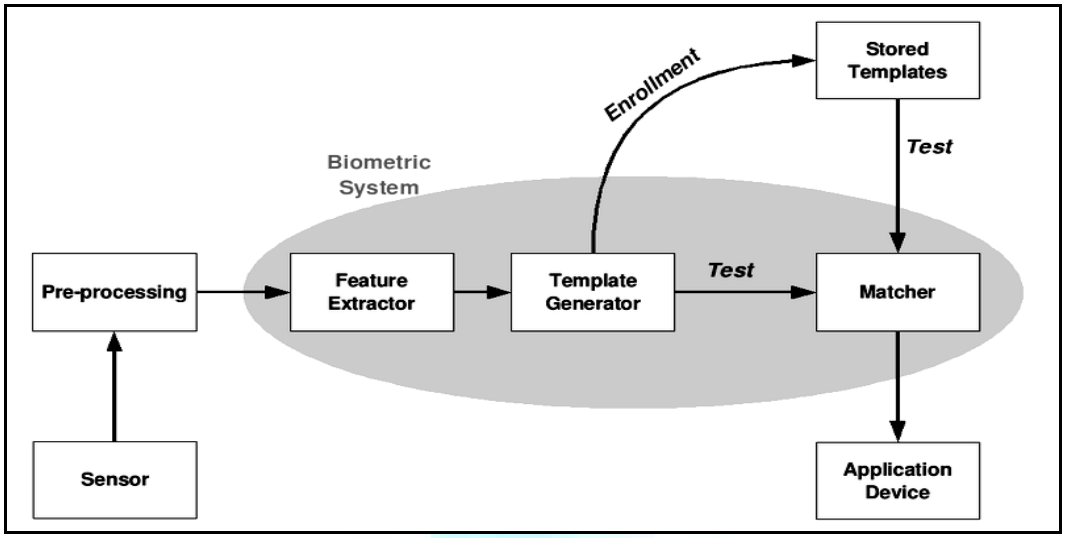
Now there are devices to recognize the following biometrics: fingerprints, hand geometry (shape and size of fingers), retina and iris (part of the eyes), voice, handwriting, blood vessels in the finger, and face. Authentication with biometric has advantages that is it cannot be lost, stolen, forgotten lent or forged and is always available, always at hand, so to speak. If we success in combining this authentication along with password/ PIN then it becomes as easy way to use with full proof authentication.

Biometric authentication mechanism is receiving a lot of public attention. A biometric device is perhaps the ultimate attempt in trying to prove who you are.

WORKING OF BIOMETRIC AUTHENTICATION

A biometric device works on the basis of some human characteristics, such as fingerprint, voice or patter of line in the iris of your eye. These devices include handprint detectors, voice recognizers and identification patter in the retina. Authentication with such devices uses unforgivable physical characteristics to authenticate users. The user database contains a sample of users biometric characteristics. During authentication, the user is required to provide another sample of the users biometric characteristics. This is matched with the one in the database, and if the two samples are the same, then the user is considered to be a valid user. Following figure shows the working of biometric authentication process.

FIG. 1: WORKING OF BIOMETRIC AUTHENTICATION



Source: http://en.wikipedia.org/wiki/File:Biometric_system_diagram.png

TECHNICAL SPECIFICATION

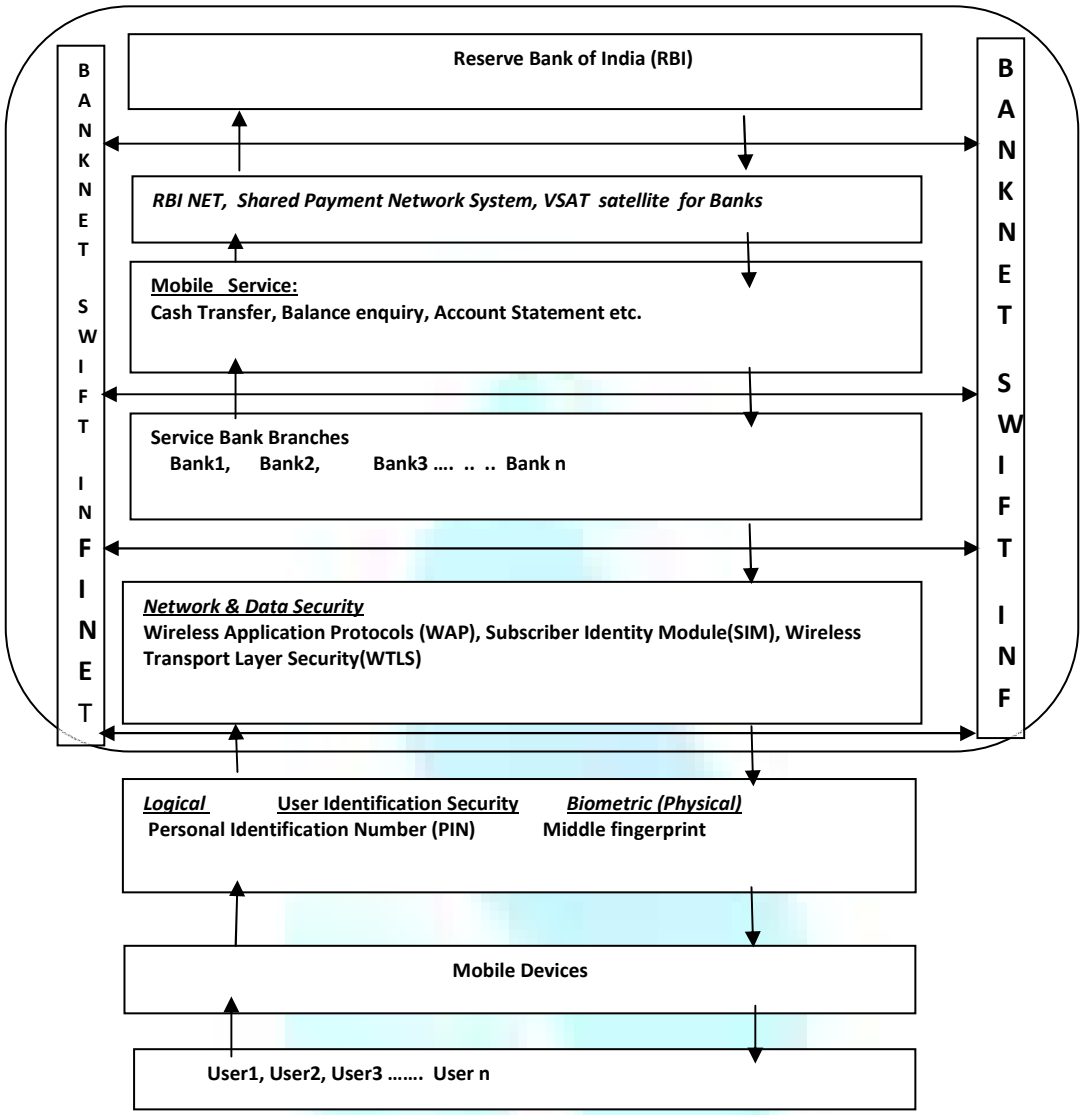
During every authentication process there is slight variation in matching biometric characteristic. This is because the physical characteristics of the user may change for a number of reasons. For instance, suppose the fingerprint of the user is captures and used for authentication every time. The sample taken every authentication may not be the same, because of finger can be dirty, can have cuts, other marks or the fingers position on the reader can be different and so on. Therefore, an exact match of the sample need not be required. An approximate match can be acceptable. Therefore using registration process, multiple samples of the user biometric data are created. They are combined and their average stored in the user database, so that the different possibilities of the users samples during the actual authentication can roughly map to this average sample. Using this basic philosophy, any biometric authentication system defines different configurable parameters these are as:

- **False accept rate or false match rate (FAR or FMR)**: the probability that the system incorrectly matches the input pattern to a non-matching template in the database. It measures the percent of invalid inputs which are incorrectly accepted.
- **False reject rate or false non-match rate (FRR or FNMR)**: the probability that the system fails to detect a match between the input pattern and a matching template in the database. It measures the percent of valid inputs which are incorrectly rejected.
- **Received operating characteristic or relative operating characteristic (ROC)**: The ROC plot is a visual characterization of the trade-off between the FAR and the FRR. In general, the matching algorithm performs a decision based on a threshold which determines how close to a template the input needs to be for it to be considered a match. If the threshold is reduced, there will be less false non-matches but more false accepts. Correspondingly, a higher threshold will reduce the FAR but increase the FRR. A common variation is the *Detection error trade-off (DET),* which is obtained using normal deviate scales on both axes. This more linear graph illuminates the differences for higher performances (rarer errors).
- **Equal error rate or crossover error rate (EER or CER)**: the rate at which both accept and reject errors are equal. The value of the EER can be easily obtained from the ROC curve. The EER is a quick way to compare the accuracy of devices with different ROC curves. In general, the device with the lowest EER is most accurate.
- **Failure to enroll rate (FTE or FER)**: the rate at which attempts to create a template from an input is unsuccessful. This is most commonly caused by low quality inputs.
- **Failure to capture rate (FTC)**: Within automatic systems, the probability that the system fails to detect a biometric input when presented correctly.
- **Template capacity**: the maximum number of sets of data which can be stored in the system.

For the banking and finance sector there is high security requirement for financial transaction through various electronic devices. Recently various electronic devices are used for financial transactions like- Computer, Mobile, ATMs, Point of Sale (POS) Machines, Laptop's etc. Perhaps the best security solution is to combine the password/PIN with biometrics characteristics. It covers all the key aspects related to authentication:

Who are you? = Personal Identification Number (PIN)
What you know? = Biometric authentication (middle fingerprint)

FIG. 2: LOGICAL MODEL FOR MOBILE BANKING SUPPORTING KNOWLEDGE AND BIOMETRIC BASED SECURITY



Source: Self generated Logical Model

WORKING

Bank will create user's biometric sample e.g. middle fingerprint and personal identification number (PIN) and stored in the user database of that bank. During the actual authentication, the user is required to provide a sample of the same nature i.e. finger print with its Personal Identification Number (PIN) then system will generate code called virtual account identification (V-ID). This is usually sent across an encrypted session (e.g. using SSL) to the server. On the server side, the user's current sample is decrypted and compared with the stored in the database. If the two samples match to the expected degree on the particular values, the users is considered as authenticate user and proceed further for transactions, otherwise user is considered as invalid user and then terminates session.

REQUIREMENT AND WORKING PROCEDURE

1. Service user registers their mobile for mobile banking transaction in respective bank.
2. Mobile should have scanners for accessing biometric authentication and have PIN for operating bank services.
3. Authentication is required for every transaction.
4. If users fail more than 4 times to identify himself then block that user for that day.
5. If such blocks more than 4 (within 3 months) then block the user account and ask to regenerate new authentication.

ADVANTAGES

1. Provides strong authentication.
2. Ideal for Indian rural masses.
3. Flexible account access allows service users to access their accounts at their convenience.
4. Due to biometric authentication no one is able to access others account.
5. In case user may change their PIN code for security purpose.
6. Biometric technology presents a step forward in reducing cases of identity fraud.

LIMITATIONS

1. This method is costly requires mobile as per prescription of bank.
2. Due to biometric only owner can access account.
3. If service user is unable to input correct identification within 4 chances then his account will be blocked and if such block is more than 4 in 3 month his account is blocked and he/she has to re-identify himself in respective bank.
4. At initial stage and in blocked account case banks has to do take more efforts to re-generate identity.

SUGGESTIONS

1. Separate efficient, talent and technical staff should be available in bank for that process
2. Banks should have one DEMO Room in bank for demonstrating new technologies to service users, bank staff, video conferencing
3. Bank should promote their service users for operating mobile banking services.
4. Banks should always support to their service users regarding any problems while using mobile banking services.

PROBLEMS WITH BIOMETRIC

1. Biometric are relatively new, and some people find their use intrusive. Hand geometry, fingerprint and face recognition (which can be done from a camera across the room) are not quite enveloping, but people have real concerns about peering (hard to watch) into a laser beam or strictly a finger into a slot.
2. Biometric recognition devices are costly, although as the devices become more popular, their cost goes down.
3. All biometric readers use sampling and establish a threshold for when a match is close enough to accept. The device has to sample the biometric, measure often hundreds of key point, and compare that set of measurements with a template. There is normal variability.
4. Although equipments are improving, there are still false reading / recognition.
5. The speed at which recognition must be done limits accuracy. We might ideally like to take several readings and merge the results or evaluate the closet fit. But authentication is done to allow a user to do something. Authentication is not the end goal but a gate keeping the user from the goal. The user understandably wants to get past the gate and becomes frustrated and irritated if authentication takes too long.

CONCLUSION

Proposed module is designed for mobile banking users which performs various operation on their mobile like balance enquiry, transfer of funds, service request etc. This system requires biometric authentication (Middle Fingerprint) which is always with you and PIN then system creates virtual account which are helpful for authenticating service user. Due to simple method of operating mobile for banking services with high security reflects more usage of banking services in future.

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SPIRITUAL INTELLIGENCE – A CHANGE MANAGEMENT STUDY

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ABSTRACT

A lot is expected today from young MBA graduates. In the current business environment organizations are expecting the younger generation to work in very challenging situations and handle them with lot of maturity. With the success of sports psychologists and spiritual gurus in coaching our cricket teams, youngsters are looking at their icons, to emulate their mental attitude towards success. Many Organizations are expecting these young candidates to adopt to this dynamically changing business environment. This paper looks into the need for spiritual intelligence in our younger generation. Specific examples towards development of a stable and well grounded mental attitude are studied from Indian scriptures and its relevance to management students towards adoption is considered. A study was conducted with MBA students and results of the correlation to spiritual intelligence and their employability are discussed.

KEYWORDS

Spiritual Intelligence, Indian Ethos, Change Management.

INTRODUCTION

The world is dynamic and changing at a very fast pace today. The market place today is demanding lot more from management students. Companies are looking at young graduates to ramp up very fast inside the organization and provide excellence in their performance at workplace. They expect management graduates to be very creative, challenging the existing rules in the organization and provide solutions for the organization be agile. The "Recruit, Train and Place" model is getting obsolete and focus of most organizations today is shifting to a ready-to-hire administration model. This poses some new challenges to our Young generation, as the skills expected for employability are very different. The organizations are expecting their new employees to come with a mature and tough mental attitude.

This is comparable to the scenario we have in the sports arena. The icons for our youth are the sport stars. The expectations are very similar in sports and young athletes are expected to perform well very quickly and maintain their performance for a long time. The focus of most of the athletes is on mental conditioning and strength, the soft areas, in additional to basic skill and aptitude in the sport. When an athlete feels they have a degree of self-mastery with their mind-body connection, it serves to motivate them in continued efforts towards increased performance.

In Indian sports there are many examples of success and challenges overcome by cricketers like Sachin, Dhoni, Sehwag and other athletes like Leander and Saina. A lot of these athletes today are using very unique approaches, like yoga, meditation and motivational talks by spiritual gurus towards this mental conditioning. Today their approach is studied very closely by management graduates and applied to the workplace context.

Approaches and examples from the Indian scripture of Gita are studied towards enhancement of Spiritual intelligence. A study is also conducted to understand the relevance of Spiritual intelligence towards enhancing employability of young graduates.

LITERATURE REVIEW

Effective performance in the workplace can be captured by cognitive intelligence, academic qualifications or hard technical skills. More than 25 years ago, Harvard professor of education, Howard Gardner challenged the hegemony of Intelligence Quotient (IQ) and in doing so dismantled the prevailing monolithic view of academic intelligence. In its place he helped establish an egalitarian vision of human capabilities, with the multiple intelligence approach. (Gardner 1983). Practical intelligence has been described as an individual's ability to find the best fit between themselves and what the environment demands of them. In essence, practical intelligence (PI) is the context-specific knowledge acquired experientially and which is needed to solve practical problems and succeed in everyday working life (Sternberg and Hedlund 2002). Practical Intelligence is not only related to performance. It accounts for aspects of performance that traditional measures of IQ apparently cannot account for it. Therefore PI helps to explain why some people are more successful in the real world than others who have equal or higher cognitive intelligence. In mid-1990s, Daniel Goleman revealed findings in neuroscience and psychology that stressed the importance of Emotional Quotient (EQ). This makes us aware of our feelings and that of others. It gives empathy, motivation, compassion and an ability to respond skillfully to pleasure and pain. Goleman argued that EQ was a basic requirement for the use of IQ. Dana Zohar and Ian Marshall introduced a new dimension to human intelligence and coined the term "SQ" for Spiritual Intelligence Quotient". While rational, logical thinking gives one's IQ, and the associated habit-bound, pattern recognizing emotive thinking gives one the EQ, the creative, insightful, rule-making, rule breaking thinking with which we reframe and transform our previous thinking gives one the SQ. King and DeCicco(2009) developed a Spiritual intelligence Self-report Inventory (SISRI). This consisted of 4 components

1. Critical Existential Thinking (CET): the capacity to critically contemplate meaning, purpose, and other existential/metaphysical issues (e.g., existence, reality, death, the universe); and to come to original existential conclusions or philosophies; also the capacity to contemplate non-existential issues in relation to one's existence (i.e., from an existential perspective).
2. Personal Meaning Production (PMP): the ability to derive personal meaning and purpose from all physical and mental experiences, including the capacity to create and master (i.e., live according to) a life purpose.
3. Transcendental Awareness(TA): the capacity to identify transcendent dimensions/patterns of the self (i.e., a transpersonal or transcendent self), of others, and of the physical world (e.g., holism, non materialism) during normal states of consciousness, accompanied by the capacity to identify their relationship to one's self and to the physical.
4. Conscious State Expansion (CSE): the ability to enter and exit higher/spiritual states of consciousness (e.g. pure consciousness, cosmic consciousness, unity, oneness) at one's own discretion (as in deep contemplation or reflection, meditation, prayer, etc.).

In the Indian context, Bhagavad Gita is considered as the most precise text for any consideration of spiritual intelligence. David Wolf (1998) made a psychometric analysis of the three gunas and developed the vedic personality inventory (VPI) an instrument that assesses the validity of the three guna constructs. Charles Choi Hoi Hee (2007) applied perspectives from Bhagavad Gita towards development of a holistic approach to business management. Venkat Krishnan (2001) studied the characteristics of transformational leadership and why Indian philosophical approaches are needed in management. Mulla and Krishnan (2006) identified the dimensions of Karma-Yoga using a contemporary version of the Gita (Gandhi, 2001). They also further studied its relationship with empathy

(2008). The need to study cultural aspects in an Indian context and application of Indian ethos in managing people was revealed in our earlier study conducted in 2009 and 2011.

In chapter 2 of Bhagavad Gita, a concept of *Sthithatprajna* is very nicely described. *Sthithatprajna,* can be explained as a person who has an even mind which is neither elated by joy nor dejected by sorrow, a person who is emotionally stable. He is a person, who is able to think through the actions is a very dispassionate manner. This is a very useful concept in the context of our study, as this is the precise nature of the mind that is required in today's context to manage various situations.

GITA – THE PROFILE OF A PERFECT PERSON

The Bhagavad Gita, is one of the best handbooks covering all the aspects of spirituality. Chapter 2 of Gita highlights the characteristics of perfect person and gives many examples to describe these characteristics. A study was done of this chapter and the examples described were studied for their relevance in the modern managerial context.

The ultimate purpose of all spiritual pursuits is to control and still the mind. It is the mind which has projected this illusory world of multiplicity. The basis of the entire world is only "thought", which again is based on past impressions (*Vasanas*). The vasanas have accumulated through repeated actions motivated by desire.

The qualities or characteristics of a Sthitaprajna have been described in detail from verses 55 to 71 of Chapter 2. For development in the spiritual or material world, a combination of "steady intellect" and a "contemplating and visionary" mind is essential.(verse 56)The mind should be tuned to not get affected by joy or sorrow. Also this mind should have freedom from desire, fear and anger. This is also very essential while making business decisions, as extreme emotions will affect taking a rational decision. A realized person has been compared with tortoise (verse 58). He engages himself in the world using his six faculties, the five senses and mind. As soon he feels the lure of temptations he withdraws within, like a tortoise, under the stronghold of intellect. A lot of emphasis is laid in controlling and managing the senses. Verses 62 and 63 describes how this process affects a person. Pondering over sense objects, one gets attached to them. Attachment breeds desire, from desire anger is born. Anger leads to delusion, from delusion the memory gets clouded. Once the memory is clouded, the intellect is destroyed. This ultimately destroys the individual completely. In verse 67, this state of mind is compared to the way a boat is drifted away into water with strong winds. In contrast verse 70 gives the example of an ocean. An ocean which, filled from all sides with water entering it, remains still. Similarly, we should develop in such a way that our desires should lead to peace and not a desirer or desires.

These concepts described in Indian ethos are closely related to the concept of Critical Existential Thinking, personal Meaning Production and Transcendental Awareness. Some aspects described in Gita are more comprehensive and describe the foundational aspects required to achieve the above components.

Understanding this process of the human mind is very essential for all students, as this is the foundation process to strengthen an individual internally. This leads us towards a development of a calm mind and steering it in the right direction towards making rational decisions.

RESEARCH METHODOLOGY

A study was conducted amongst final year MBA students in a reputed college in Bangalore to understand the various aspects of spiritual intelligence and their correlation to employability.

A structured questionnaire was designed and administered for data collection. A purposive and judgmental sampling was used. We implemented this approach because the data being sought could only be sourced from Gen Y individuals and colleges were a good source of this information. Questionnaires were distributed to participants physically. The primary reason for choosing this approach to administrated questionnaire was efficiency in data collection for measuring specific variables of interest. All statistical analysis was conducted using PSPP Software.

Measures

A questionnaire was designed to collect the job status and their spiritual intelligence. A 24-item five-point interval scale for measuring Spiritual intelligence was readily available from DB King (2010) . This Spiritual Intelligence Self-report Inventory (SISRI) 24 questionnaire was seen proven and used by many researchers hence we used the same questionnaire. We added a few additional questions to check their job status.

The Spiritual intelligence measures 4 main Components, as described earlier, namely , Critical Existential Thinking(CET), Personal Meaning Production(PMP), Transcendental Awareness(TA), and Conscious State Expansion(CSE).

RESULTS AND DISCUSSION

A test was performed to check for the correlation between job status and the spiritual intelligence. The correlation was also done for all the components in spiritual intelligence, in order to understand whether any specific component had higher statistical significance to employability. The job status was collected for students based on the campus interviews conducted at the college. It must be noted that this only indicates the initial preference for candidates, as most students may finally get a job after their exams.

Results Summary

The survey results were analyzed. Thirty four candidates, in the age group of 22 to 25, all final year MBA students were contacted for the survey. All the candidates were made aware of spiritual intelligence in their change management class, and this survey were conducted at the end of the semester.

PSPP software was used for statistical analysis. The Pearson correlation coefficient results are shown in figure (1).

FIGURE 1: CORRELATION RESULTS FOR PEARSON COEFFICIENT FROM PSPP

Correlations

		JOB_STATUS	CET	PMP	TA	CSE	TOTAL
JOB_STATUS	Pearson Correlation	1.00	.44	.25	.42	-.06	.36
	Sig. (2-tailed)		.01	.16	.01	.75	.04
	N	34	34	34	34	34	34
CET	Pearson Correlation	.44	1.00	.57	.33	.41	.74
	Sig. (2-tailed)	.01		.00	.06	.02	.00
	N	34	34	34	34	34	34
PMP	Pearson Correlation	.25	.57	1.00	.50	.56	.84
	Sig. (2-tailed)	.16	.00		.00	.00	.00
	N	34	34	34	34	34	34
TA	Pearson Correlation	.42	.33	.50	1.00	.33	.74
	Sig. (2-tailed)	.01	.06	.00		.06	.00
	N	34	34	34	34	34	34
CSE	Pearson Correlation	-.06	.41	.56	.33	1.00	.74
	Sig. (2-tailed)	.75	.02	.00	.06		.00
	N	34	34	34	34	34	34
TOTAL	Pearson Correlation	.36	.74	.84	.74	.74	1.00
	Sig. (2-tailed)	.04	.00	.00	.00	.00	
	N	34	34	34	34	34	34

Source: Survey results

Critical Existential Thinking (CET) and Transcendental Awareness (TA) are the two major components that have a good correlation to job status for students. Also the Significance value is less than 0.05 for CET and TA. This indicates they are statistically significant.

These components relate to a "grounded" personality, a person who understands his environment well and understands the reason for his existence. Also transcendental awareness relates to a capacity to identify the relationship to one's self and to the physical world. These 2 components seem to be valued higher than other components. Also Spiritual intelligence in general, that includes all four components also have a fair correlation to their job status. The significance value is also less than 0.05, which indicates it is statistically significant.

SUMMARY OF FINDINGS

The results do indicate the significance of spiritual intelligence in employability for our younger generation. There is a need to incorporate this as a part of the formal study. The statistical study indicates good statistical significance for Spiritual Intelligence with employability aspects with a positive correlation.

In the current dynamic and challenging environment, there is an expectation from management graduates to show a strong decision making capability. In addition, a cool, calm and mentally tough state is essential for a stress free life. Spiritual intelligence directly addresses these aspects of calmness, cool mind and mental toughness. Hence this correlation is in the expected direction between spiritual intelligence and employability. Two components, namely Critical Existential Thinking (CET) and Transcendental Awareness (TA), have a good statistical significance.

The results overall seem encouraging to consider the element of Spiritual intelligence. Also this aspect has been very well addressed in an Indian ethos and the profile of a perfect person has been well described in Gita. Such aspects from Indian ethos can be considered for its applicability in management domain for further study.

LIMITATIONS

This study has some limitations that are acknowledged with this research.

First, because the study adopts purposive sampling, the findings from this study need a validation on a larger scale with a probabilistic sample before it can be generalized. Second, the data collection method used was very structured. This approach did not allow the opportunity to identify measure and test other significant variables that may be associated with Spiritual Intelligence and job factors. Third, self-reporting on a questionnaire is subjective rather than objective. Finally, respondents may have underestimated or overestimated their level of Spiritual intelligence and their approach in Interviews for their jobs, producing respondent bias.

This study has been conducted primarily to understand their ability to find a job on the campus and its correlation to spiritual intelligence. Their academic performance and other factors of their soft skills and analytical skills have been kept outside the scope of this study.

Despite these limitations, which are common in most social research, the design and methodology was considered adequate.

AREAS OF FUTURE RESEARCH

This study does highlight the need for studying the rich, ancient Vedic literature that is a part of the basic cultural life in India. There are elements like sthithatprajna that can be considered for further study in the modern management context. These elements in Indian philosophies help us study in a more holistic manner, to address the areas of people development in an Indian Context.

Spiritual intelligence is a growing domain of study today and many Indian philosophies seem to address this domain. Future studies on applying spiritual intelligence to various other management issues like change management and change resistance in an Indian context may also be considered, while managing the younger generation.

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INTEGRATED RELIABILITY MODEL AND FAILURE MODES EFFECTS & CRITICALITY ANALYSIS FOR OPTIMUM RELIABILITY

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ABSTRACT

The present research work is on Integrated Reliability Models for Redundant Systems. All most all the models that are reported primarily considered Cost as the basic constraint. In this scenario, the Authors proposed a class of Integrated Reliability Models for Redundant Systems with multiple constraints as a novel beginning in the mentioned area of research and initiated the optimizing the System Reliability for the said model under two different approaches and the results reported in the work is highly useful for the Reliability / Design Engineers for successful implementation which helps to produce highly Reliable and quality goods and the models are established for the Series – Parallel Reliable Configuration Systems. These model can also be further investigated for different mathematical functions of interest and also can be applied for Parallel – Series Configuration Systems, where the application of these models for such systems will be feasible only when the cost of the system is very low. The Authors is of the opinion that the stated problem can be investigated under the scope of study. The Lagrangean Approach has given the Reliability of three stage system is 0.8512 where the number of components are real, which has been increased to 0.937 (10%) by just rounding off the number of components to the nearest integer, since the number of components cannot be real numbers. The system reliability has gone to 0.9113 when calculated scientifically by using Dynamic Programming which has taken care of Cost, Weight, Volume and the number of components is integers.

KEYWORDS
Integrated reliability models, redundant systems.

INTRODUCTION

Reliability Engineering has been extensively developed over the years with a significant contribution by defense personnel, which resulted in developing much more reliable products / services. It is easy to manufacture Cost effective Systems that perform better by blending Reliability concepts in all phases of the product life cycle from proposal to manufacture. The Reliability of a System can be maximized subject to the resource constraint to determine the optimum number of redundant Components for each stage when the Reliability of each Component is known. In other situation, the Reliability of the System can be maximized subject to the resource constraint to determine the Reliabilities of the Components in the System when the number of redundant units in each stage is known. Literature survey reveals the available techniques to solve the problems in these two situations. K.B.MISRA [1972] developed a simple algorithm for the solution of redundant optimization problem. The literature regarding optimization of Integrated Reliability Models for Redundant Systems with Multiple Constraints is scanty in nature, that a few authors in recent times mentioned in their work, that the system could be optimized with multiple constraints like Weight, Volume, Size etc., apart from the basic Cost constraint. One of the pioneers, R. GORDON [1957] expressed the view that the redundant Reliability of a system can be maximized by treating Volume, Weight, and Size etc., as constraints apart from the basic Cost constraint. So far as the literature on maximization of System Reliability problems are concerned, the researchers opined that optimization problems can be handled with multiple constraints also but to the best of the knowledge of the authors, the optimization of Integrated Reliability Models for Redundant Systems with Multiple Constraints are not reported. In this scenario, the authors want to make an attempt to optimize the Reliability of Integrated Reliability Model with multiple constraints, reinforced with Failure Mode Effect & Criticality Analysis.

To study and optimize, the Integrated Reliability Model for Redundant Systems with multiple constraints is considered with Cost, Weight and Volume as constraints, for the given known mathematical function $r_j = \left[\frac{c_j}{b_j}\right]^{\frac{1}{d_j}}$. To establish the results for the above specified mathematical function, Lagrangean Multiplier Method is applied to calculate the number of Components in each stage, Components Reliability and corresponding stage Reliability in real value numbers. Since the number of components in each stage cannot be rounded off to nearest integer due to variation in Cost and Reliability and further to optimize the Integrated Reliability Models for Redundant Systems with Multiple Constraints, the authors used Dynamic Programming. Finally the result of this work supports the researchers' statement of the problem concurring that these Models are particularly of high application value for any Series – Parallel Redundant Systems with multiple constraints.

STATEMENT OF THE PROBLEM

The problem considers the component reliabilities and the no. of components in each stage are unknowns for the given constraints to maximize the System Reliability. The authors in this work make an attempt to negotiate the impact of Weight and Volume as constraints in optimizing the Redundant Systems under consideration for the selected above mathematical function. Though Cost has direct relation in maximizing System Reliability, the indirect impact of Weight and Volume as constraints in optimizing the Reliability of a redundant system presents a novel beginning in the mentioned area of research. The Series – Parallel Systems are considered with Cost, Weight and Volume as constraints to maximize the Reliability of a redundant system as its objective function.

ASSUMPTIONS OF THE MODEL

- All the components in each stage are assumed to be identical.
- The components are assumed to be statistically independent i.e. failure of one component does not affect the performance of the other components in the system.
- A component is either in working condition or non-working condition

MATHEMATICAL MODEL

The objective function and the constraints of the model are

$$\text{Max } R_s = \prod_{j=1}^{n} R_j = \prod_{j=1}^{n} [\,1 - (1 - r_j)^{x_j}\,]$$

Subjected to

$$\sum_{j=1}^{n} c_j \cdot x_j \le C_o \quad \text{.... 1}$$

$$\sum_{j=1}^{n} w_j \cdot x_j \le W_o \quad \text{....2}$$

$$\sum_{j=1}^{n} v_j \cdot x_j \le V_o \quad \text{....3}$$

Non negativity restriction x_j is an integer and r_j , $R_j > 0$

Where R_s = System Reliability

R_j = Stage Reliability j $0 < Rj < 1$

r_j = Reliability of each component in stage j, $0 < rj < 1$

x_j = No. of components in stage j

c_j = Cost coefficient of each component in stage j

w_j = Weight coefficient of each component in stage j

v_j = Volume coefficient of each component in stage j

C_0 = Maximum allowable System Cost

W_0 = Maximum allowable System Weight

V_0 = Maximum allowable System Volume

System Reliability for the given Cost function is

$$R_s = \prod_{j=1}^{n} R_j$$

Cost coefficient of each component in stage j is derived from the following relationship between Cost and Reliability

$$r_j = [\,c_j / b_j\,]^{(1/dj)}$$

$c_j = b_j \cdot r_j^{dj}$ .... Cost Constraint

Similarly using the same relationship Weight and Volume Constraints are

$w_j = p_j \cdot r_j^{qj}$ .... Weight Constraint

$v_j = k_j \cdot r_j^{lj}$ .... Volume Constraint

Since Cost constraint is linear in x_j, substituting cj, wj, vj in the respective equations and after simplification the Lagrangean function is formulated as follows

$$F = Rs + \lambda_1\left[\sum_{j=1}^{n}\left\{\left(b_j.r_j^{d_j}\right).\frac{\ln(1-R_j)}{\ln(1-r_j)}\right\} - C_0\right] + \lambda_2\left[\sum_{j=1}^{n}\left\{\left(p_j.r_j^{q_j}\right).\frac{\ln(1-R_j)}{\ln(1-r_j)}\right\} - W_0\right] +$$

$$\lambda_3\left[\sum_{j=1}^{n}\left\{\left(k_j.r_j^{l_j}\right).\frac{\ln(1-R_j)}{\ln(1-r_j)}\right\} - V_0\right]$$

The stationery point can be obtained by differentiating the Lagrangean function with respect to R_j , r_j , λ_1 , λ_2 , and λ_3 and the problem can be re written after simplification.

$$\frac{\partial F}{\partial r_j} = \lambda_1\left[\left\{\sum_{j=1}^{n} b_j.\ln(1-Rj)\left(\ln(1-rj).dj.rj^{d_{j-1}} + \frac{rj^{d_j}}{(1-r_j)}\right)\right\}\right] +$$

$$\lambda_2\left[\left\{\sum_{j=1}^{n} p_j.\ln(1-Rj)\left(\ln(1-rj).pj.rj^{q_{j-1}} + \frac{rj^{q_j}}{(1-r_j)}\right)\right\}\right] + \lambda_3\left[\left\{\sum_{j=1}^{n} k_j.\ln(1-Rj)\left(\ln(1-rj).lj.rj^{l_{j-1}} + \frac{rj^{l_j}}{(1-r_j)}\right)\right\}\right] = 0$$

$$\frac{\partial F}{\partial R_j} = 1 - \lambda_1\left[\sum_{j=1}^{n}\frac{b_j.r_j^{d_j}}{\ln(1-rj)}.\frac{1}{(1-R_j)}\right] - \lambda_2\left[\sum_{j=1}^{n}\frac{p_j.r_j^{q_j}}{\ln(1-rj)}.\frac{1}{(1-R_j)}\right] - \lambda_3\left[\sum_{j=1}^{n}\frac{k_j.r_j^{l_j}}{\ln(1-rj)}.\frac{1}{(1-R_j)}\right] = 0$$

$$\frac{\partial F}{\partial \lambda_1} = \left\{\sum_{j=1}^{n} b_j rj^{d_j}.\frac{\ln(1-R_j)}{\ln(1-r_j)}\right\} - C_0 = 0$$

$$\frac{\partial F}{\partial \lambda_2} = \left\{ \sum_{j=1}^{n} p_j r_j^{q_j} \cdot \frac{\ln(1-R_j)}{\ln(1-r_j)} \right\} - W_0 = 0$$

$$\frac{\partial F}{\partial \lambda_3} = \left\{ \sum_{j=1}^{n} k_j r_j^{l_j} \cdot \frac{\ln(1-R_j)}{\ln(1-r_j)} \right\} - V_0 = 0$$

CASE

Consider the case of a Mechanical system with three stages for which the component Reliability is given by the equation: : $r_j = \left[\frac{c_j}{b_j} \right]^{\frac{1}{d_j}}$. To determine the optimum Component Reliability (r_j), Stage Reliability (R_j), Number of Components in each stage (x_j), and the System Reliability (R_s) not to exceed the system Cost Rs.200, Weight of the system 400 Kgs and Volume of the system 600 cm^3. The Component Reliabilities, Stage Reliabilities, Number of Components in each stage and the System Reliability are determined by solving the above mathematical function using MATLAB are presented in the following Tables.

COST, WEIGHT & VOLUME AS CONSTRAINTS

Reliability Design relating to Cost, Weight and Volume is shown in the following tables.

STAGE	r_j	R_j	x_j	c_j	$c_j.x_j$
01	0.7875	0.9046	1.52	62.02	94
02	0.7707	0.9664	2.30	22.89	53
03	0.8162	0.9737	2.15	24.40	53
TOTAL COST					200

STAGE	r_j	R_j	x_j	w_j	$x_j.w_j$
01	0.7875	0.9046	1.52	62.02	094
02	0.7707	0.9664	2.30	68.67	158
03	0.8162	0.9737	2.15	68.78	148
TOTAL WEIGHT					400
STAGE	r_j	R_j	x_j	v_j	$x_j.v_j$
01	0.7875	0.9046	1.52	186.04	283
02	0.7707	0.9664	2.30	68.67	158
03	0.8162	0.9737	2.15	73.23	159
TOTAL VOLUME					600

SYSTEM RELIABILITY: Rs= 0.8512

COST, WEIGHT & VOLUME WITH x_j ROUNDING OFF

The Reliability Design is reestablished by considering the values of x_j to be integers (by rounding off the value of x_j to the nearest integer) and the relevant results relating to Cost, Weight and Volume are presented in the following table, further calculated the variation due to Cost, Weight, Volume and System Reliability.

STAGE	r_j	R_j	x_j	c_j	$c_j.x_j$
01	0.7875	0.9548	2	62.02	124
02	0.7707	0.9879	3	22.89	069
03	0.8162	0.9937	3	24.40	073
TOTAL COST					266

System Reliability: Rs = 0.937

STAGE	r_j	R_j	x_j	w_j	$x_j.w_j$
01	0.7875	0.9548	2	62.02	124
02	0.7707	0.9879	3	68.67	206
03	0.8162	0.9937	3	68.78	206
TOTAL WEIGHT					536

STAGE	r_j	R_j	x_j	v_j	$x_j.v_j$
01	0.7875	0.9548	2	186.04	372
02	0.7707	0.9879	3	68.67	206
03	0.8162	0.9937	3	73.23	220
TOTAL VOLUME					798

Variation in Total Cost= 33.0%
Variation in Total Weight = 34.0%
Variation in Total Volume = 33.0 %
Variation in System Reliability = 10.1 %

DYNAMIC PROGRAMMING

To optimize the design by using Dynamic Programming the same case problem discussed in the preceding chapter has been considered by taking the values of Component Reliabilities (r_j), the number of components in each stage (x_j), Stage Reliabilities (R_j) and the System Reliability (R_s) as inputs. This Approach is particularly useful in optimizing the design with the values of x_j's to be integers, which are highly appreciated for practical implementation to real life problems. The necessary program is developed in C Language with inputs taking from the Lagrangean Method. The number of components, which was taken as a real number has been changed to an integer. The output has come in two stages with corresponding Stage Reliability.

DYNAMIC PROGRAMMING – STAGE 1

Number of Components - x_j	Stage Reliability - R_j
01	0.7875
02	0.9548
03	0.9904
04	0.9979
05	0.9995
06	0.9999

DYNAMIC PROGRAMMING – STAGE 2

x_j	STAGE RELIABILITY R_j					
02	0.60					
03	0.73	0.74				
04	0.76	0.90	0.77			
05	0.76	0.93	0.93	0.78		
06	0.77	0.94	0.97	0.95	0.78	
07	0.70	0.94	0.98	0.98	0.95	0.78

DYNAMIC PROGRAMMING – STAGE 3

x_j	STAGE RELIABILITY R_j					
3	0.49					
4	0.60	0.58				
5	0.73	0.72	0.61			
6	0.76	0.87	0.74	0.61		
7	0.79	**0.90**	0.90	0.75	0.61	
8	0.81	0.94	0.93	0.91	0.75	0.61

RELIABILITY DESIGN- COST

From the Dynamic Programming tables the maximum System Reliability is 0.9113 with a total COST of Rs. 242 and the corresponding optimal values are as shown below.

STAGE	r_j	R_j	x_j	c_j	$c_j.x_j$
01	0.7875	0.9548	2	62.02	124
02	0.7707	0.9879	3	22.89	069
03	0.8162	0.9662	2	24.40	049
TOTAL COST					242

RELIABILITY DESIGN - WEIGHT

From the Dynamic Programming tables the maximum System Reliability is 0.9113 with a total WEIGHT of 468 and the corresponding optimal values are as shown below.

STAGE	r_j	R_j	x_j	w_j	$x_j.w_j$
01	0.7875	0.9548	2	62.02	124
02	0.7707	0.9879	3	68.67	206
03	0.8162	0.9662	2	68.78	138
TOTAL WEIGHT					468

RELIABILITY DESIGN -VOLUME

From the Dynamic Programming tables the maximum System Reliability is 0.9113 with a total VOLUME of 725 and the corresponding optimal values are as shown below.

STAGE	r_j	R_j	x_j	v_j	$x_j.v_j$
01	0.7875	0.9548	2	186.1	372
02	0.7707	0.9879	3	68.67	206
03	0.8162	0.9662	2	73.23	147
TOTAL VOLUME					725

System Reliability = 0.9113
Variation in Total Cost = 21.0%
Variation in Total Weight = 17.0%
Variation in Total Volume = 21.0 %
Variation in System Reliability = 7.06 %

FAILURE MODE EFFECTS AND CRITICALITY ANALYSIS

Failure Modes Effects & Criticality Analysis is a Novel method of identifying primary functional failures, their related failure modes or states, the effect of the failure modes on the operation of the system and the criticality associated with the failure mode as a function of impact likelihood [5]. This effective tool improves the management of failure modes or enables the removal of failure modes, through application of advanced maintenance techniques, redesign or redundancy.
The total impact of failure of each subsystem in a plant is calculated using the relation:-
Total impact weightage of failure:

$F_{TW} = (A + B + C)^x$

Where
A = Possible effects of failure
B = Criticality of such failure
C = Inverse of the reliability of detection / control mechanism

x = Frequency of failure occurrence

Criticality of each equipment / system / subsystems is decided, based on the total weightage obtained. This is an analysis, which should be implemented during the design phase, to have maximum influence and impact on the final design.

The Failure Modes Effects & Criticality Analysis supports safety engineering effects in analysis such as the FAULT TREE ANALYSIS. The failure modes with their assigned criticality would be seen as basic events. As part of the maintainability analysis, Failure Modes Effects & Criticality Analysis is the importance that detection and isolation is accurately reflected in the overall mean time to repair calculations. This analysis would support the design engineering effort to ensure that programme design requirements are taken care of, which could be in the support of requirements like as no single points of failure.

The Failure Modes Effects & Criticality Analysis & Criticality Analysis can be implemented as a functional analysis and or physical analysis. Functional analysis approach would be taken earlier in a design process. With improved definition of the design and as more details are firmed up then this will permit a physical analysis to be implemented. The analysis effectively provides a contribution to final system configuration, with regards to reliability performance characteristics, during the actual design phase.

It is to be noted that Reliability centered Maintenance treats the symptom while this analysis finds and corrects the cause. That means to say that the purpose of the analysis is to uncover the underlying reasons (root causes) why an event is occurring so that the necessary steps can be taken to eliminate the event in its entirety by analyzing the modes.

CRITICALITY ANALYSIS / CRITICALITY MATRIX:

Once the failure mode is identified in the Failure Modes Effects Analysis, then the purpose of Criticality Analysis is to rank each failures mode according to the severity and the probability of occurrence of the same. This results in a Criticality Matrix.

The failure mode criticality number (C_n) is calculated by using the relation:-

$C_n = \alpha \beta \lambda_p t$

Where,

α = Failure mode ratio

β = Conditional probability of failure effect

λ_p = Part failure rate per million hours

t = Operation time in hours

The criticality number of each system is calculated per each severity category. The criticality number is the sum of the specific failure mode criticality numbers related to the particular severity category.

That is,

$$Cm = \sum_{i=1}^{m} Cn$$

$$= \sum_{i=1}^{m} \alpha \ \beta \ \lambda p \ t$$

Where, m = Number of models at the particular severity category.

The next step is to divide the criticality scale into a number of sections according to the probability of occurrence to represent Z axis of the criticality matrix.

Level 1, Frequent: The probability which is greater than or equal to 0.2 ($\geq$ 20%) of the overall system probability of failure.

Level 2, Moderate: The probability which is between 0.1 and 0.2 (10 to 20 %) of the overall system probability of failure.

Level 3, Occasional: The probability between 0.01 and 0.1 (1 to 10%) of the overall system probability of failure.

Level 4, Remote: The probability between 0.001 and 0.01 (0.1 to 1%) of the overall system probability of failure.

Level 5, Very unlikely: The probability which is less than 0.001 ($<$ 0.1%) of the overall system probability of failure.

The next step is to calculate the severity classification as follows:

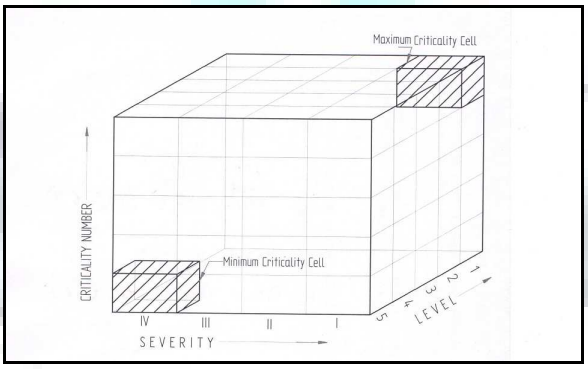
Category I, Catastrophic: A failure that may cause death or total system loss (that is, aircraft, vehicle, missile, ship, Train etc).

Category II, Critical: A failure that may cause severe injury, major property damage, or major system damage, which results in considerable loss.

Category III, Marginal: A failure that may cause minor injury, minor property damage or minor system damage, which results in a delay or degradation.

Category IV, Minor: A failure which is not serious enough to cause injury, property damage or system damage, which results in unscheduled repair or maintenance.

The criticality matrix is constructed as follows:



CONCLUSIONS

Till date not much of work is reported on Integrated Reliability Models for Redundant Systems. All most all the models that are reported primarily considered Cost as the basic constraint. In this scenario, the Authors proposed a class of Integrated Reliability Models for Redundant Systems with multiple constraints as a novel beginning in the mentioned area of research and initiated the optimizing the System Reliability for the said model under two different approaches and the results reported in the work is highly useful for the Reliability / Design Engineers for successful implementation which helps to produce highly Reliable and quality goods and the models are established for the Series – Parallel Reliable Configuration Systems. These model can also be further investigated for different mathematical functions of interest and also can be applied for Parallel – Series Configuration Systems, where the application of these models for such systems will be feasible only when the cost of the system is very low. The Authors is of the opinion that the stated problem can be investigated under the scope of study. The Lagrangean Approach has given the Reliability of three stage system is 0.8512 where the number of components are real, which has been increased to 0.937 (10%) by just rounding off the number of components to the nearest integer, since the number of components cannot be real numbers. The system reliability

has gone to 0.9113 when calculated scientifically by using Dynamic Programming which has taken care of Cost, Weight, Volume and the number of components is integers.

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FACTOR ANALYSIS OF DEFECTS IN SOFTWARE ENGINEERING

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ABSTRACT

Factor analysis has realistic and profound significance to improve the quality[6] and reliability of software. There is little research on the methods applied to software engineering to analyse defects. Two analyses are carried out in this paper. First analysis is by considering prior defect potential for ten versions of same software projects. Second analysis is for delivered defects taking [7]five different activities.

KEYWORDS
Correlation, defects, factor analysis.

INTRODUCTION

Quality analysis involves exploration of quality results using several metrics. Defect$_1$ potentials and defect removal efficiency are the primary metrics. Defect potential of a software project is the sum of the errors found in a)Requirements , b)design, c)coding, d)user documentation and e)Bad fixes errors introduced while repairing earlier defects$_9$. Defects per function points is better than defects per kloc$_8$. These analysis all are pointing defects prior and after software delivery.[2] Hence two similar analysis is carried out here for the delivered defects using factor analysis. Ten versions considered here are 1)Assembly 2) C, 3) Chill, 4)Pascal, 5) PL/I, 6)Ada83, 7) C++, 8)ADA95, 9)Objective and 10) Smalltalk taken from 2[2].

ANALYSIS

Data is standardized using normal distribution principle.
Correlation matrix is generated in table1 to analyze inter relationship among the factors under consideration. Orthogonal factor rotation method is the most popular rotation method of focusing on simplification of columns in factor matrix[4].

VARIMAX ROTATION[3]

This is an orthogonal rotation method that minimizes the number of variables that have high loadings on each factor4. Table A1
Table B1 represents Varimax rotation of defects prior and after delivery. A11 and B11 are corresponding rotation matrices. It simplifies the interpretation of the factors. Varimax method maximizes the sum of variances of required, loadings of the factor matrix. With the Varimax rotational approach, the interpretation is easiest, when the variable factor correlations are (1) close to either +1 or -1, indicating positive / negative association between the variable and the factor; or (2) close to 0 indicating a clear lack of association. Varimax gives a clearer separation of the factors. Varimax rotation tends to be more invariant than that obtained by the quartimax method when different subsets of variables are analyzed. The varimax method has proved successful as an analytic approach to obtaining an orthogonal rotation of factors. Same data is used considering ten versions for five different activities.

EQUIMAX ROTATION

The Equimax[5] approach is a compromise between the quartimax and varimax approaches. Rather than concentrating either on simplification of the rows or on simplification of the columns, it tries to accomplish some of each. Equimax has not gained wide spread acceptance and is used infrequently. Five different activities with ten versions considered. Table A2 and B2 represent Equimax rotation of defects prior and after delivery reapectively. A22 and B22 are corresponding rotation matrices.

QUARTIMAX ROTATION

The goal of a Quartimax4 rotation is to simplify the rows of a factor matrix. That is quartimax focuses on rotating the initial factor so that a variable loads high on one factor and as low as possible on all other factors. In these rotations, many variables can load high or near high on the same factor because the technique centers on simplifying the rows. The Quartimax method is not suitable to produce simpler structures. it involves dealing with cluster of variables; A method that tends to create a large general factor is not in line with the goals of rotation. Table A3 and B3 represents Equimax rotation of defects prior and after delivery. A33 and B33 are corresponding rotation matrices. Quartimax solution is analytically simpler than the varimax solution[6],[9]

CONCLUSION [3]

Correlation matrix is generated to analyze inter relationship among factors. Here two analysis are given. First analysis is pointing defects using five key parameters as factors for ten languages prior delivery. Second similar analysis is, defects after software delivery. The application of factor analysis produces reduction in the data dimensionality through the aggregation of variables in to a smaller set of uncorrelated factors. High degree of freedom involved in the available choices of methods and rotation methods in factor analysis.

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TABLES

Table A1	**varimax**	
0.0973	0.6579	0.0973
0.5132	-0.5181	0.5132
-0.8345	-0.2673	0.1655
0.0584	0.3948	0.0584
0.1655	-0.2673	-0.8345

Table A11		
0.9591	0.2626	0.1061
-0.2151	0.9191	-0.3301
-0.1841	0.2937	0.938

TableA2	**equamax**	
0.3881	0.3881	0.3881
0.1264	-0.8736	0.1264
-0.8736	0.1264	0.1264
0.2328	0.2328	0.2328
0.1264	0.1264	-0.8736

Tabe A22		
0.9429	-0.3206	0.0899
0.3004	0.9356	0.1855
-0.1436	-0.1479	0.9785

Table A3	Promax			
0	0	0	0	-1
0	0	0	0	0
-1	0	0	0	0
0	0	0	-1	0
0	0	-1	0	0

Table A33				
0.8529	-0.4106	-0.0001	-0.2	-0.2764
0.1208	0.756	0.0059	-0.3	-0.5516
-0.2304	-0.2347	0.8917	-0.2	-0.2666
0.3427	0.3427	0.3427	0.8	0.067
0.2956	0.2956	0.2956	-0.4	7374

		Correlation			
Req	1	0.9935	0.8608	1	0.9274
Design	0.9935	1	0.8383	0.9935	0.9095
Coding	0.8608	0.8383	1	0.8608	0.9887
Doc	1	0.9935	0.8608	1	0.9274
Bad fix	0.9274	0.9095	0.9887	0.9274	1

Factors	**Table B1**	**varimax**	
Req	0.0439	0.0238	0.8427
Design	-0.0014	-0.999	0.0214
Coding	-0.9955	0.0055	0.0361
Doc	0.0263	0.0143	0.5056
Bad fix	-0.0794	-0.034	0.1802

Table B11		
0.9723	0.1314	-0.1933
-0.2286	0.7066	-0.6697
0.0486	0.6953	0.7171

Factors	**Table B2**	**equamax**	
Req	0.0247	0.0161	0.8436
Design	-0.002	-0.999	0.0124
Coding	-0.9961	0.0055	0.0136
Doc	0.0148	0.0097	0.5062
Bad fix	-0.0835	-0.035	0.178

Table B22		
0.9765	0.1329	-0.1699
-0.2133	0.7127	-0.6683
0.0323	0.6888	0.7242

Factors	**Table B3**		**promax**		
Req	0	0	1	0	0
Design	0	-1	0	0	0
Coding	-1	0	0	0	0
Doc	0	0	0	0	-1
Bad fix	0	0	0	1	0

Table B33				
0.9742	0.1368	-0.117	-0.1164	0.0702
-0.2073	0.72	-0.558	-0.1262	0.3345
0.0186	0.6793	0.6229	0.1021	-0.3738
0.0871	0.0382	-0.151	0.9798	0.0904
0	0	0.145	0	0.8575

CONCERNS FOR SECURITY IN MIGRATING TO CLOUD COMPUTING

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ABSTRACT

Cloud Computing is slowly and steadily becoming the foundation of many corporate dealings. Organisations are trending towards migrating its data and applications onto cloud technology because of the perks being offered by using this remotely-hosted service. Though, cloud computing has been around since mid-2000, it has only become popular now with two internet giants establishing themselves in the field of remote-computing – Google and Amazon. "With great power, comes great responsibility" fits appropriately to this situation, as cloud computing along with being a popular service is also a major concern for the security of the enterprise's data. Thus, it is necessary to delve deep into the various security issues put up regarding the cloud platform and find a way to tackle them. This paper focuses on the security breaches to sensitive data in the Cloud Computing Environment. It highlights the concerns of the major giants rapidly reaping the benefits of this technology.

KEYWORDS

Analysis of Platforms; Cloud Computing; Security Concerns.

INTRODUCTION

Cloud Computing is the emerging technology which maintains its focus on providing and sharing virtualized and highly available computing resources ,i.e, networks , servers , applications and data , among a group of cloud users . The two main entities of the cloud architecture [1] are –

- Cloud Provider – who works on distributing cloud services, as on demand, and collecting as well as maintaining data from various users in data centres.
- Cloud User – who sends data to Cloud Provider and also requests for either of the cloud services.

Many people are still not aware of the services provided by the cloud platform. If you are an enterprise and are currently hosting a large number of applications via internet, then your monetary resources required for server storage [2], computers processing for the requests coming from the users, electricity needed to run those computers, physical storage space such as an office is required for the purpose of hosting these applications on web. Also, employee would be required to handle the computer equipment and for proper functioning of the service. Problem also arises when a customer requests for a certain application which requires a different operating system than installed in the computer. In that case, you would be required to have more computers than required with a different OS on each system. But with the use of cloud computing and virtualization technology, the user can access the only server of the enterprise by the use of virtual machines, where several users are under the impression that they are working on a remote server. These users take the services provided by the cloud on a pay per use basis [3] instead of splashing lots of money on resources alone. Since, the location of the remote server is unknown to the cloud users, they have collectively termed it as "cloud'.

Cloud computing service framework [4] is categorized in following:

- Infrastructure as a Service (IaaS) – For providing hardware infrastructure services like disk storage, virtual servers, etc.
- Platform as a Service (PaaS) – Provides development platforms on cloud for user's application.
- Software as a Service (SaaS) – Offers software services on cloud, on a pay per use basis.

Various virtual machines are deployed on a single server, from where cloud users can use and pay for the services they may take and need not worry about the budget overheads such as data storage and infrastructure. It is possible for the security concerns and threats to arise because of various parameters, some being - use of virtual machines[5] instead of physical systems , organisation losing its control over Information Technology(IT) infrastructure and letting a third party have complete access to it , and most importantly , all processing and computing being done on a single physical remote server.

SECURITY CONCERNS

Some security concerns which will require attention are as follows –

1. A huge amount of data is being transferred from virtual machines to the remote server and vice-versa. In this case, it is important to keep a check on various malicious users who may breach the security and pose a threat to the authenticity of data, raising questions about security isolation in cloud environment.
2. Storing data collected from every cloud user onto a single physical remote server gives way to a huge responsibility to the cloud provider, as he is entitled to ensure the integrity and availability of their data and thus, prevent it from any loss. Therefore, it is up to the cloud provider to safeguard his system

against any data lock-in [6] and if in case it suffers from data loss, it may be well equipped with data recovery mechanisms. Relying on data which may be lost may lead to loss of trust on user's end and heavy financial losses to the organisation. The legalities [7] of data are also challenged. Thus, it is necessary to keep it safe from data leakage and data loss [7] [3].

3. One major concern that constantly bugs the cloud management is ensuring privacy against unauthorised users to access the information and modify it without the knowledge of owners. For this, many security mechanisms like firewalls, intrusion detection and prevention systems are used and rational use of filters [8] is made. But what if the malicious user is on the same side of firewall instead of being outside it???? Such an action would wreak havoc on company's market image, increase monetary losses and losses incurred due to low or no productivity [9]. Also it is recommended [9] that strict verification of cloud employees is done and their work is kept transparent.
4. Any person with a valid payment option such as [10] credit or debit cards is eligible to use the services of cloud. Therefore, no authentication is checked at the user level which provides various hackers and cyber criminals a chance to attack cloud users and vendors. Cloud Security Alliance[10] have proposed the key areas of security issues as hosting unauthenticated & modified data, denial of service(DOS) attack, and password and key cracking and so on. Some of the major causes due to which these attacks are possible are poor validation of users during registration and lack of mechanisms to monitor and prevent fraud from provider's end.
5. An account is provided to the employee for the sole purpose of efficient management of data and services by the employee for the organisation. Account protection should be the foremost requirement, so as to protect important credentials and information of the employee. But, the cloud computing environment is prone to various Account Hijacking [11] techniques. Attackers, by the means of gaining account credentials, can malign the industry image of that employee as well as use his account to access critical areas [11] of the deployed cloud. This concern calls for an urgent implementation of various risk analysis, assessment and management [12] techniques and deploy systems that provide quick response to any unauthorised activity that is identified within the organisation's system.
6. The basic need for a cloud arises in order to maintain and share your data in the form of application interfaces with other cloud users. These applications are developed and monitored by various organisations in order to serve the user's needs with multiple services. Thus, the responsibility to secure these interfaces [7] rests with these organisations and third-party agencies [7]. Developing the APIs on a simple security structure poses threat and arise information related risks in organisations, therefore questioning the integrity, security, reliability of the applications. The basic cloud security framework [13] of these applications must be modelled keeping in mind the protection mechanisms against accidental and malicious [7] authorization risks.
7. Cloud environment enables multiple users to be logged on at the same time and access various value-added services given by the provider. This feature calls for a much more efficient infrastructure and better compatibility among various components. There is also a need for stronger compartmentalization [7] so as to provide required isolation among all cloud users. Poor isolation and lack of defence techniques gives unauthorised users the much needed chance to affect operations of other users. Shared components [7] such as disk partitions, CPU caches and GPUs provide a gap through which the attackers fulfil their malicious attempts. These concerns can be tackled with the help of appropriate SLAs and by removing compatibility issues between the shared components. Thus, efforts need to be made in order to protect and secure the vulnerable systems and services handled by cloud.
8. These were some of the concerns which are known and are expected to occur during the lifecycle of the cloud. But we also need to keep a check on those concerns and risks, which may occur unexpectedly and are unknown [10]. It is recommended to focus on such risks, because if overlooked, they may pose serious threats to system as well as data and all the stakeholders of the cloud. The famous Heartland Payment data breach [14] is one of the examples, where ignorance to security warnings resulted in a major information breach, for which the company incurred huge losses. Vulnerable systems of Heartland Payment Systems were hacked and credit card information of several million users was stolen in order to duplicate cards and use them in various transactions. The organisation along with bearing losses of about half a billion dollars, also lost the market image that it had made over the years. Had they been more careful and attentive to the security breach and their warnings, this event could have been avoided. Thus, it makes necessary for all the organisations to learn from the mistakes that Heartland made, and make their security infrastructure strong enough to prevent any breaches. It can be done by constant monitoring of data access, checking the details related to various security components such as firewalls, intrusion detection systems, honeypots, patch levels [10], etc.

These security concerns can play havoc if attacker's intentions are not well. This calls for a need to implement stronger security techniques of the likes of Single Sign-On [15] which prevents you from signing on to various sites at the same time. Instead, the users need to authenticate to a single account through which it can access the very same sites without paying heed to security issues related to privacy. Also, organisations and individuals may choose to use Virtual Private Networks for the purpose of communicating with each other in a cloud. These are some of the reasons as to why organisations are still hesitant on accepting this technology and migrating their data to cloud.

Some researchers have also proposed various security models [16] to defend the cloud environment. They suggest that data processing and data storage should be done by two different independent service providers, which would ensure a required control over frauds and failures and keep a check on misuse of excessive control on the part of one service provider. Based on similar models are Tunnel Model, Migration Model, and Cryptography Model. Also, it is required to use advanced cryptographic and encryption algorithms like digital signatures, hash algorithms, message authentication codes, encryption techniques like DES and AES, and a well based PKI architecture to defend the cloud against all attacks.

ANALYSIS OF PLATFORMS

A brief comparison between three main existing public clouds based on different service models would help us know more about the main domains that need to researched and looked upon. After a detailed comparison, it was found that each of the cloud platforms has its own set of pros & cons.

Google cloud (based on SaaS model), though having a higher reliability and scalability rate scores low on data security and copyright protection [17]. Whereas, **IBM Blue Cloud** (based on PaaS model) provides highly reliable services and is less vulnerable as compared to the rest of the two cloud platforms. But, less scalability in terms of its architecture prevents it from surpassing others [17]. **Amazon Elastic cloud** (based on IaaS model), on the other hand, is true to its name. Providing flexible architecture and highly virtualised environment based on XEN technology, its elastic nature has been a boon for the e-commerce users. Even though it takes various measures such as taking help from Virtual Private Networks and using Public Key Infrastructure (PKI) management, still it falls behind in preventing security breaches aimed at its system [17].

CONCLUSION

This paper identifies the major security concerns over the vulnerabilities of data in the Cloud Computing Environment, and stresses on the need and mechanisms that are required to tackle them effectively. It also highlights a brief comparison and security risks related to some of the well known existing cloud infrastructures.

Though this domain is well under research and experts have managed to partially clear the doubts that are continuously bugging our minds, but there still remains a need to form a strong Cloud Security Model which can challenge previous security frameworks and prevent the cloud data and applications from any security breach.

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PREDOMINANCE OF TRADITIONAL SECTOR IN UNORGANISED MANUFACTURING OF INDIA

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ABSTRACT

Unorganised sector provides employment to about 90 per cent of the population but its contribution towards NDP is only 60 per cent. The main reason behind it is that unorganised manufacturing sector is more concentrated in agricultural states or economically backward states. In these states mostly traditional activities are carried out and the unskilled workers find employment in the unorganised manufacturing sector. The research work is aimed at analysing the dominance of Traditional Sector in unorganised manufacturing of India after economic reforms. The period under study i.e. 1994-1995 to 2005-2006 is a period of rapid reforms. This reform period has largely favoured the non-traditional units and many of the traditional occupation are dying away. The early reform period has been most favourable to the non- traditional organised manufacturing but since 1994-1995 the unorganised manufacturing sector has surged forward in terms of employment as well as enterprises. So, here it will be important to see if the period since 1994-1995 has observed any type of structural changes in unorganised manufacturing sector of India.

KEYWORDS

predominance**,** traditional sector**,** economic reforms, unorganised manufacturing.

INTRODUCTION

The developing economies are generally dual in nature comprising of an emerging modern sector and giant sized traditional sector. The traditional sector, which is largely informal in character, is assumed to be transitory in nature and diminishes in its size and importance as the economy moves above the ladder of growth. But in many developing countries, particularly India, the reverse has happened as the unorganised sector has been assuming more and more importance as the economies have grown. During the process of structural transformation of the economy, the unskilled labour force has fewer chances to get employed in the modern sector and so such labour force is more likely to get placed in the informal, low paid activities. India is also no exception in this case as about 92 per cent of its total work force is employed in the unorganised sector. Though, agriculture comprises a huge share of this employment but outside agriculture, the role of unorganised manufacturing sector is very important. It has been providing employment to a substantial number of people and is also contributing significantly to the national output. It is also being seen as the next engine of the growth for the Indian economy. Though, its contribution to total employment is immense but its share in net domestic product of the economy is not as high. This indicates towards low level of productivity in this particular sector. Moreover, the employment in this particular sector is mainly concentrated into small sized own account enterprises. Thus, most of the workers in this sector earn very low amount. Low earnings and lack of any social security make them vulnerable to the contingencies of life. But still, this sector has to a large extent solved the problem of joblessness and so helps in mitigating the problem of poverty. But the distribution of this particular sector is not evenly spread across industries and different types of enterprises. Some of the sub-sectors (or industries) in the unorganised manufacturing sector of India, have shown dynamic growth trends in case of employment, wages as well as productivity in recent years while some of them have been contracting. In some sub-sectors growth of employment has been associated with growth of productivity as well as growth of wages while some have experienced deterioration on these grounds. In today's competitive world, it is high time to recognise such sectors which have high growth potential (both in terms of output as well employment). So, present study is an attempt to analyse all these aspects of the unorganised manufacturing sector of India.

OBJECTIVES OF STUDY

Objectives of this study is to observe the shift in case of employment as well as number of enterprises and whether the relative importance of traditional and non traditional industries has under gone any significant change during reform period.

REVIEW OF LITERATURE

Many studies have been conducted in this regards.

Kundu (1993) is of the opinion that the growth of informal sector in less developed areas is because of the survival strategy and taking up the traditional and low productive activities by the poor residents.

Shaw (1994) emphasized in his research to look into the manufacturing activities in the informal sector and concluded that the informal sector can develop more with the active government support both in terms of encouraging investments and providing infrastructure facilities.

Bhalla, (2003) has analysed the traditional & modern segments of unorganised manufacturing sector of India. She has pointed out that though the productivity of the modern sector is much higher than the traditional sector and is growing at an even faster pace, yet the traditional sector has an unmatching contribution to employment in this sector.

Marjit and Kar (2005) pointed out that in order to understand the impact of reforms on labour market; one has to assess the working of the capital market as well.

Prakash and Meher (2006) analysed the data from the four NSSO Surveys and examined the structural change and productivity trends in the unorganised manufacturing sector during the period 1985-2001.

Harris-white and Sinha (2007) noted that in the context of India, it is important to realise that the informal sector can be far more dynamic than the organised sector, provided, they have the right opportunities to flourish.

Kathuria, et. al. (2010) have analysed the productivity performance of the organised and unorganised units of the Indian manufacturing sector at the state level for the period 1994-95 to 2004-05 and have examined the impact of reforms on their performance.

DATA SOURCE & RESEARCH METHODOLOGY

This study is based upon secondary data. Source of the study is NSSO (National Sample Survey Organisation) surveys which provide extensive data on unorganised manufacturing sector. NSSO defines the unorganised sector in terms of all unincorporated proprietary enterprises and partnership enterprises (GOI, 2001). NSSO provides data for about 23 sub-sectors as per National Industrial Classification. All classification has been adjusted according to National Industrial Classification, 98 as per the concordance table provided by NSSO. This data is further disaggregated into rural-urban segments across various sub-sectors. The data provided by NSSO is classified into three types of enterprises namely, Own Account Manufacturing Enterprises (OAMEs), Non-directory Manufacturing Enterprises (NDMEs), Directory Manufacturing Enterprises (DMEs). NSSO defines OAMEs as those enterprises which operate with no hired worker on a fairly regular basis. NDMEs are those enterprises which employ less than six workers including household workers and DMEs employ six or more workers with at least one hired worker but not registered under the Factory Act 1948 (NSSO, 2002).For analysing the data, simple averages and percentage method have been used.

DISTRIBUTION ACROSS SECTORS

TABLE 1: PERCENTAGE SHARE OF NUMBER OF ENTERPRISES AND EMPLOYMENT IN UNORGANISED MANUFACTURING SECTOR IN INDIA BY INDUSTRY GROUP (1994-95)

Industry Name	No. of Enterprises			Employment		
	Rural	Urban	Combined	Rural	Urban	Combined
Agro Foods	29.52	18.10	26.34	29.87	15.59	25.11
Textiles	16.98	14.11	16.18	20.43	19.65	20.17
Wood & Wood Products	23.27	10.76	19.81	19.71	9.32	16.24
Paper & Paper Products	0.49	3.07	1.21	0.59	3.82	1.67
Leather & Leather Products	1.15	2.25	1.46	0.86	2.83	1.52
Chemicals & Chemical Products	0.59	1.87	0.95	0.71	1.75	1.06
Rubber & Plastic Products	0.23	1.52	0.58	0.25	2.46	0.99
Non-Metallic Mineral Products	7.10	2.70	5.88	10.13	3.20	7.82
Basic Metals	0.07	0.68	0.24	0.09	0.94	0.37
Metal Products	2.38	4.99	3.10	2.27	7.07	3.87
Machineries	0.56	1.63	0.85	0.54	2.82	1.30
Transport Equipments	0.07	0.51	0.19	0.10	0.94	0.38
n.e.c.*	17.59	37.80	23.17	14.43	29.79	19.56
All	100	100	100	100	100	100

Source: Calculated from NSSO 1998 (Report No 433)
Note: * n.e.c.: Not elsewhere classified

TABLE 2: PERCENTAGE SHARE OF NUMBER OF ENTERPRISES AND EMPLOYMENT IN UNORGANISED MANUFACTURING SECTOR IN INDIA BY INDUSTRY GROUP (2000-01)

Industry Name	No. of Enterprises			Employment		
	Rural	Urban	Combined	Rural	Urban	Combined
Agro Foods	34.00	21.74	30.05	32.99	17.85	27.64
Textiles	28.00	36.67	30.72	25.78	35.01	29.04
Wood & Wood Products	21.00	6.79	16.52	18.67	5.67	14.08
Paper & Paper Products	0.40	3.62	1.37	0.49	4.69	1.97
Leather & Leather Products	0.76	1.66	1.03	0.56	2.03	1.48
Chemicals & Chemical Products	0.90	2.22	1.29	1.27	2.02	1.53
Rubber & Plastic Products	0.33	1.23	0.60	0.45	1.90	0.96
Non-Metallic Mineral Products	5.75	2.62	4.82	10.69	3.71	8.23
Basic Metals	0.12	0.48	0.23	0.17	0.70	0.36
Metal Products	3.11	5.34	3.77	2.82	6.95	4.28
Machineries	0.88	2.64	1.40	0.87	4.43	2.13
Transport Equipments	0.07	0.59	0.23	0.10	1.12	0.46
n.e.c.	5.23	14.40	7.98	5.15	13.93	8.25
All	100	100	100	100	100	100

Source: Calculated from NSSO 2002 (Report No 479)

TABLE 3: PERCENTAGE SHARE OF NUMBER OF ENTERPRISES AND EMPLOYMENT IN UNORGANISED MANUFACTURING SECTOR IN INDIA BY INDUSTRY GROUP (2005-06)

Industry Name	No. of Enterprises			Employment		
	Rural	Urban	Combined	Rural	Urban	Combined
Agro Foods	36.43	20.29	31.76	31.48	16.63	26.19
Textiles	30.64	41.99	33.92	27.19	37.85	30.99
Wood & Wood Products	15.79	4.53	12.53	15.03	4.11	11.14
Paper & Paper Products	1.02	3.28	1.68	1.02	4.04	2.10
Leather & Leather Products	0.32	2.14	0.84	0.40	2.93	1.30
Chemicals & Chemical Products	2.45	2.45	2.45	2.55	2.04	2.37
Rubber & Plastic Products	0.25	0.97	0.46	0.45	1.49	0.82
Non-Metallic Mineral Products	4.42	2.14	3.76	8.37	2.87	6.41
Basic Metals	0.11	0.44	0.21	0.14	0.61	0.31
Metal Products	3.05	5.06	3.63	3.03	7.30	4.55
Machineries	1.01	3.42	1.71	0.96	5.07	2.42
Transport Equipments	0.09	0.57	0.24	0.26	1.09	0.56
n.e.c.	4.42	12.73	6.83	4.85	13.97	8.10
All	100	100	100	100	100	100

Source: Calculated from NSSO 2008 (Report No. 525)

Table 1, 2 and 3 shows the percentage share of enterprises and employment in different industry groups which are further segregated into rural and urban areas from 1994-1995 to 2005-2006. The tables show the respective share of different industries out of the total enterprises and employment in the rural areas, urban areas and combined totals separately for the different periods. They highlight the industries which account for the maximum enterprises and employment as well as the industries which account for the minimum share of the enterprises and employment during this period.

It can be observed that the sector of manufacturing of agro-foods, textiles and wood & wood products had remained the three largest sectors in the unorganised manufacturing sector of India. About 76 per cent of the total enterprises in the unorganised manufacturing sector of India are involved in manufacturing of these three sub-sectors and they together give employment to about 70 per cent of total workers in this particular sector. Among these sectors, the sector of manufacturing of agro-foods has experienced an increase in its share of enterprises as well as employment. In case of enterprises, it has increased from 26.34 per cent in 1994-95 to 31.76 per cent in 2005-06 while in case of employment it has increased from 25.11 per cent in 1994-95 to 26.19 per cent in 2005-06. It can also be observed that rural units of this sub-sector have registered a large increase in their share out of total enterprises and employment as compared to urban counterparts.

The sub-sector of manufacturing of textiles has experienced the largest increase in its share. In this sub-sector, the share of enterprises has increased from 16.18 per cent in 1994-1995 to 30.72 per cent in 2000-2001 and further to 33.92 per cent in 2005-2006. The share of employment has increased from 20.17 per cent in 1994-1995 to 29.04 per cent in 2000-2001 and then to 30.99 per cent in 2005-2006. This sector has observed the trends of urbanisation as the share of

enterprises in the rural areas increased from 16.98 per cent in 1994-95 to 30.64 per cent in 2005-2006 and the share of employment has increased from 20.43 per cent in 1994-1995 to 27.19 per cent in 2005-06. In contrast, in the urban areas the share of enterprises has increased from 14.11 per cent in 1994-95 to 41.99 per cent in 2005-06, while the share of employment has also increased from 19.65 per cent in 1994-95 to 37.85 per cent in 2005-06. On the other hand, in the manufacturing of wood & wood products the share of enterprises has decreased from 19.81 per cent in 1994-95 to 12.53 per cent in 2005-06. Similarly the share of employment has decreased from 16.24 per cent in 1994-95 to 11.14 per cent in 2005-06. This decline can be observed both in the rural and urban areas.

Besides, the sub-sector of manufacturing of non-metallic mineral products and basic metals also have significant share in both total enterprises and employment in the unorganised manufacturing sector of India. But out of these, the former sector has experienced a decline in its share while the latter has been increasing its share in total enterprises as well as employment. In the manufacturing of non-metallic mineral products the share of enterprises has decreased from 5.88 per cent in 1994-95 and then to 3.76 per cent in 2005-06. However, the share of employment has decreased from 7.82 per cent in 1994-95 to 6.41 per cent in 2005-06. On the other hand, in case of manufacturing of metal products, the share of enterprises has increased from 3.10 per cent in 1994-95 to 3.63 per cent in 2005-06. The share in employment has increased from 3.87 per cent in 1994-95 to 4.55 per cent in 2005-06. Both of these shares have increased in rural as well as urban areas.

The above analysis of the share of enterprises and employment in different industries in the rural areas shows that in 1994-95 this share was the maximum in the sub-sector of manufacturing of agro foods and was followed by manufacturing of wood & wood products, manufacturing of textiles and manufacturing of non-metallic mineral products. In 1994-95 the share of enterprises and employment was very low in the industries like manufacturing of basic metals, manufacturing of transport equipments, manufacturing of paper & paper products, manufacturing of machineries and manufacturing of chemicals & chemical products. Similar situation was observed in 2000-01 and 2005-06 as the manufacturing of agro foods industry followed by textiles, wood & wood products and non-metallic mineral products comprised the largest share and the sub-sectors of transport equipments, basic metals, rubber & plastic products and leather & leather products had been placed at the lower end of distribution of enterprises and employment in unorganised manufacturing sector of India. Similarly, the rural-urban break-up shows that the share of enterprises has remained maximum in agro foods industry for both urban and rural areas over all the years but the share of employment was the maximum in the textiles industry followed by agro foods, wood & wood products and metal products. So during 1994-95 in the urban areas, the share of enterprises was the maximum in manufacturing of agro foods but the share of employment was the maximum in the manufacturing of textiles.

FINDING OF THE STUDY

The sector-wise distribution shows that the unorganised manufacturing sector of India is mainly concentrated in three sub-sectors, namely, manufacturing of agro-foods, textiles and wood & wood products. These sectors account for 75 per cent of the total enterprises and about 70 per cent of the total employment in the unorganised manufacturing sector of India. Out of these, the sectors of manufacturing of agro-foods and textiles have experienced an increase in their share both in employment and enterprises while the manufacturing of wood and wood products has experienced a decline in its share. Another interesting point of this distribution is that the manufacturing of agro-foods is gradually being ruralised and the manufacturing of textiles is being urbanised. However, among the various sub-sectors, the fastest growing sectors are the manufacturing of chemicals & chemical products, machineries and transport equipments.

CONCLUDING REMARKS

From above analysis, we can sum up that most of the unorganised enterprises in the manufacturing sector are mainly concentrated in the sub-sectors of manufacturing of agro foods, manufacturing of textiles, manufacturing of wood & wood products i.e. in the traditional areas. Over a period of time we can observe that though both the sectors of manufacturing of agro foods and manufacturing of textiles have registered increase in their share in employment as well as enterprises, the increase in manufacturing of textiles is far greater than manufacturing of agro-foods and any other sub-sector of the unorganised manufacturing sector of India. Another point to note is that in both these sub-sectors the increase in share in enterprises is far greater than the increase in share in employment. Interestingly, the sub-sectors at the lowest end of distribution of employment and enterprises in unorganised manufacturing sector of India (e.g. manufacturing of metal products, manufacturing of machineries and manufacturing of transport equipments etc.) had shown the opposite trend that the increase in their share in employment has been greater than that of the enterprises. Similarly, where the share has declined, the decline in share in employment has been lesser than that of the enterprises with a few exceptions. Further, the trends of ruralisation can be observed in case of the sub-sector of manufacturing of agro-foods and that of urbanisation in case of manufacturing of textiles

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THE INSIGHT VIEW OF QUALITY OF WORK LIFE: A STUDY ON THE EMPLOYEES OF PUBLIC SECTOR AND PRIVATE SECTOR BANKS IN TIRUNELVELI DISTRICT

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ABSTRACT

The quality of work life is a wide term covering an immense variety of programmes, techniques, theories and management styles through which organizations and jobs are designed so as to grant employees autonomy, responsibility and authority. As every employer wants a good employee every employee wants a good employer. The main yardstick is the Quality of work life which every company offers to its employees. Quality of work life is all about the conducive and congenial environment created at the work place as it is one of the main reasons for better performance and productivity. To keep the organization sustainable, employees need to be motivated to care about the work they do, to acquire knowledge- related skills and to perform the work to the best of their abilities. This paper aims to study the various factors influencing quality of work life of Bank employees. A happy and healthy employee will give better turnover and make good decisions and positively contribute to organizational goal. A questionnaire survey was carried out with the employees belonging to various cadres in Private and Public sector Banks in Tirunelveli District. Data were analyzed using descriptive statistics, factor analysis and Correlative analysis. However, it is observed Quality of work life of Bank employees are influenced by various significant factors.

KEYWORDS

Bank employees, Employee involvement: Quality of work life.

INTRODUCTION

Growing competition, complex economic environment, rising labor costs, etc compel organizations to espouse proactive strategies towards employee contribution. In the present competitive business environment, Indian organizations are feeling compelled from within to reorient their employment relationships *Budhwar, 2000; Sodhi, 1999.* After years of organizational restructuring and work re-engineering, management comes to recognize that a productive workforce is increasingly important to attain sustainable competitive advantage for business organizations on a global basis *Bohl et al., 1996.* Therefore organizations are in need to adopt a strategy to improve Quality of work life to satisfy both the organizational objectives and employee needs. As the composition of workforce continues to change, organizations focusing on Quality of Work Life of employees are expected to gain leverage in hiring and retaining valuable people. The banking industry like many other industries is adjusting to the multiple changes in the market place over the past two decades. These sustained changes can be instructive only by prompting greater interest in Employee Involvement.

At the outset, Quality of work life is one of the comprehensive programmes designated to create a sense of fulfillment in the minds of the employees and contributes toward greater involvement, improving productivity and overall effectiveness of the organization. In the service sector, banking industry is the major player which involves public for mobilizing funds but also the secured place for the public to keep their wealth safe. Maintaining good quality of work in banking industry is of great relevance which may construe the overall quality of work life of service Sector. The purpose of this paper is to gain an insight view on the various factors influencing Quality of work life of Bank employees in Tirunelveli District. The factors that prominently influence Quality of work life are Designation, Age and family arrangement, Duration of service, Remuneration, Rewards and Recognition, working under good leadership and career growth.

REVIEW OF LITERATURE

"The quality of a person's life is in direct proportion to their commitment excellence, regardless of their chosen field of endeavor" –Vincent Lombardi.

Both employers and employees now better appreciate the importance of Quality of Work Life in an organization. The evolution of Quality of work life began in late 1960s emphasizing the human dimensions of work by focusing on the quality of the relationship between the worker and the working environment. Indeed it is difficult to best conceptualize the quality of work life elements. Walton (1975) proposed eight major conceptual categories relating to Quality of Work Life as 1. Adequate and fair compensation 2. Safe and Healthy working conditions 3. Immediate opportunity to us and develop human capacities 4. Opportunity for continued growth and security 5. Social integration in the work organization 6. Constitutionalism in the work organization 7. Work and total life space and social relevance of work life.

According to Loscocco and Roschelle, the most common assessment of QWL is the individual attitudes. This is because individual work attitudes are important indicators of Quality of Work Life. Katzell et.al (1975) viewed Quality of Work Life more broadly as an individual's evaluation of the outcome of the work relationship. Delamotte and Walker (1974) indicated that the number of emphasis have been made in the humanization of work which includes the need to protect the worker from hazards of illness and unemployment and the protection of the worker from arbitrary to the authority of the Management.

Hanita Sarah Sad et.al (2008) found out that the employees perception towards quality of Work Life are directly related to job satisfaction. A study conducted in Malaysia by Che rose et al., (2006) concluded that the most important predictor of Quality of Work Life is organizational climate followed by career achievement, career satisfaction and career balance. Raduan Che Rose et al., (2006) concluded that the essential predictors of Quality of Work Life appears to be career related and these career elements are not in isolation but in harmony with the organizational climate. Some research indicates that a happy family life

correlates with high levels of job satisfaction. Rapoport and Rapoport (1980) supported this by showing that the family's morale support and the siversion that it entails make it an important factor affecting Quality of Work Life. Cohen and Rosenthal (1980) describes quality of work life as an intentionally designed effort to bring out increased labour management and cooperation to jointly solve the problem of improving organizational performance and employee satisfaction. In reviewing the literature it is observed that Quality of work life of employees working in various organizations varies based on their perceptions.

SCOPE OF THE STUDY

The Private Sector and public sector Banks which pool under the services sector are the main drives of economic growth in India and it forms the largest component of the company too. This service sector heavily depends on people who are capable of handling it and as a consequence of this people form the basic asset of this sector. Employees working in this sector are young, view their careers as supreme and have different mindset relating to social norms life balance etc. These employees typically work in an intensely results-driven culture. They work long hours and often must accommodate their working hours to the time zones of major financial hubs. With many banks extending operating hours there is a need for work life practices as well.

In Quality of work life, Quality of life describes a person's or group's standard of living environment, public health, safety and general surroundings while Quality of work life encompasses things that affect their well being such as salary and benefits. Significant work life programmes for banks include part-time work, telecommuting and flexible benefits. Quality of work life is increasingly a significant part of the total benefits package. The study is carried out in organized public sector and private sector banks. The study confines its scope to recognize the various factors involved in the Quality of Work Life of employees more specifically in banking sectors.

QUALITY OF WORK LIFE IN BANKS

Due to bank's wide spectrum of exposure across industries, their performance is considered as a proxy for the economy as a whole. Unfortunately for India, the banking sector has historically remained under the impact of non-competitiveness, poor technology integration, high NPAs and grossly underproductive manpower. (A.Sabarirajan and N.Geethanjali 2011, Banking sector in India has a wide mix, comprising of joint sector, nationalized sector, specialized corporate financial institutions, co-operative sector and foreign sector (Rajesh Bagga, Garima Arora, Sanjeev Arora 2008).It is expected to be financial one stop shop- advice customers, manage their wealth, look after corporate and provide best possible services, look at various delivery channels and adopt the ones customers want, undertake fee-based services, meet national and international standards given in the internet economy and all these without complaining and attracting the ire of customers, perhaps make available its services on 24 hour basis. It is perhaps the toughest job in the world – a true tightrope act- on the one hand provide the maximum, cheapest services to customers and on the other, ensure cost- effective operations and employee satisfaction while being compliant with all regulations and standards! It is this situation the banking industry faces every single day!! Therefore, the Human Resource Development in the banks is in need to act as an important instrument to encourage employees to show creativity, to reach for excellence and finally to render better customer service.

OBJECTIVES OF THE STUDY

1. The study purports to explore and gain better understanding of Quality of Work life of Private sector and public sector Bank employees in Tirunelveli District
2. The contribution of this study is to examine the various factors influencing the Quality of Work Life of Bank employees
3. This paper aims to study the good fit of various key factors to the Quality of work life of bank employees.

METHODOLOGY

The study employed the survey method that allow broad coverage, flexibility and convenience with inputs from respondents of various cadres in public sector Banks and private sector Banks in Tirunelveli District. Public sector Banks included State Bank of India, Indian Overseas Bank, Canara Bank and Private sector Banks included HDFC Bank, Axis Bank, City Union Bank and Karur Vysya Bank. The survey instrument used for this research study was carefully designed structured questionnaire. Validity of the instrument refers to its capacity to measure what it wants to measure. Collection of Data was self administered to determine the level of Quality of Work Life. Each organization was visited at least twice by the researcher to establish rapport and reinforce contacts with the top management and relates personnel to ensure smooth implementation of the questionnaire, distribution and collection. Perception of the employee has been judged through 5 –point likert scale. Factor Analysis is carried out to observe the various significant factors influencing Quality of Work Life of Bank Employees. The factors attributed to the quality of work life were derived as communalities which indicate the amount of variance in each variable .To observe the good fit of the factors Cronbach's Alpha value is determined.

STATISTICAL ANALYSIS OF DATA

Collected Data were analyzed using SPSS software windows version 11.5 for factor analysis and reliability analysis.

FACTOR ANALYSIS

TABLE 1: COMMUNALITIES -THE AMOUNT OF VARIANCE IN EACH VARIABLE THAT IS ACCOUNTED FOR INITIAL AND EXTRACTION VALUES

	Initial	Extraction
Designation	1.000	.791
Age	1.000	.844
Children	1.000	.742
Duration of service	1.000	.756
Salary	1.000	.861
Fair Compensation	1.000	.856
Able to save	1.000	.817
well informed	1.000	.766
good reputation	1.000	.868
good support from staff	1.000	.802
conflict free zone	1.000	.704
Good interactions in formal level	1.000	.743
Interation with manager about change of work	1.000	.806
Team spirit	1.000	.824
Achieve healthy balance between home and work life	1.000	.708
Trust in Management	1.000	.736
Good balance between objectives and performance	1.000	.709
No expectation to work over office hours	1.000	.797
Availability of leave	1.000	.692
Good Safety and Health Conditions	1.000	.602
Allows me to be productive	1.000	.824
Superior concerned about my welfare	1.000	.703
Interesting work	1.000	.662
Recognition	1.000	.679
Awards and Rewards	1.000	.809
Compensation	1.000	.853
Friendly Co-workers	1.000	.811

COMMUNALITIES

Communalities indicate the amount of variance in each variable that is accounted for initial and extraction values in the information about Quality of work life which is influenced by significant factors. All the communalities satisfy the minimum requirement of being larger than 0.60.

INITIAL

Communalities are estimates of the variance in each variable accounted for by all significant factors about the Quality of work life of Private Sector and Public sector Bank employees in Tirunelveli District. For principal components extraction, this is always equal to 1.0 for correlation analyses.

EXTRACTION

Communalities are estimates of the variance in each variable accounted for by the components. The communalities in this table indicate the information about Quality of work life which is influenced by significant factors like

- Age
- Salary
- Fair Compensation
- Able to save
- Good reputation
- Interaction with manager about change of work
- Team spirit
- Good balance between objectives and performance
- Availability of leave
- Compensation
- Allows me to be productive
- Friendly Co-workers
- Career Advancement

The above terms are high extraction values, which indicate that the extracted components represent the variables are good fit.

TABLE 2: TOTAL VARIANCE EXPLAINED

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.665	17.278	17.278	4.665	17.278	17.278
2	3.540	13.110	30.388	3.540	13.110	30.388
3	2.845	10.537	40.925	2.845	10.537	40.925
4	2.098	7.771	48.696	2.098	7.771	48.696
5	1.769	6.551	55.247	1.769	6.551	55.247
6	1.734	6.421	61.668	1.734	6.421	61.668
7	1.522	5.638	67.306	1.522	5.638	67.306
8	1.345	4.981	72.286	1.345	4.981	72.286
9	1.248	4.622	76.908	1.248	4.622	76.908
10	.912	3.377	80.285			
11	.740	2.741	83.027			
12	.688	2.547	85.574			
13	.644	2.384	87.958			
14	.491	1.819	89.777			
15	.440	1.629	91.407			
16	.395	1.464	92.871			
17	.350	1.298	94.168			
18	.285	1.056	95.224			
19	.241	.894	96.118			
20	.222	.822	96.940			
21	.181	.669	97.610			
22	.171	.634	98.244			
23	.130	.480	98.723			
24	.124	.461	99.184			
25	.097	.358	99.542			
26	.070	.259	99.800			
27	.054	.200	100.000			

INITIAL EIGENVALUES

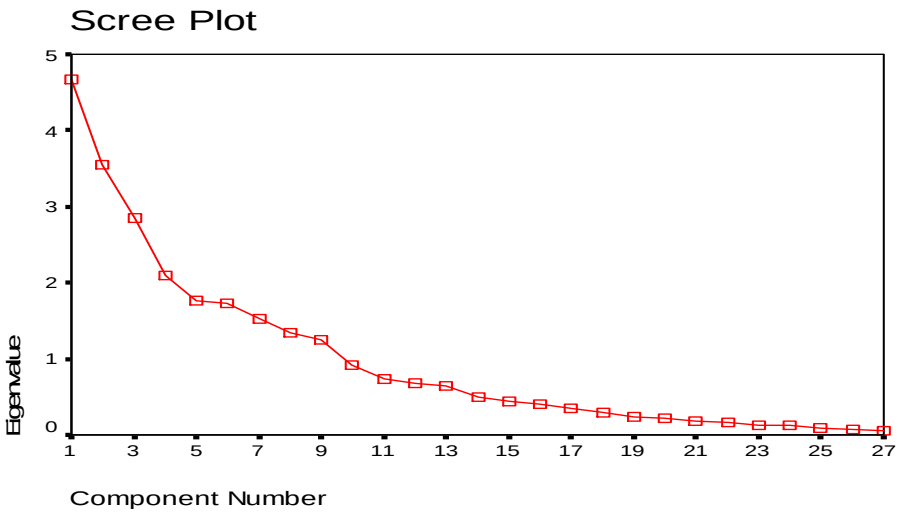
This first section of the table shows the Initial Eigen values. The variance explained by the initial solution, extracted components, and rotated components in the Quality of work life of Private Sector and Public sector Bank employees in Tirunelveli District is displayed in this section. The 2nd column % of variance gives the amount of variance in the original variables accounted for by each component.

The 3rd column cumulative % gives values and is expressed as a cumulative percentage of the variance accounted for by each component to the total variance in all the variables.

EXTRACTION SUMS OF SQUARED LOADINGS

The second section of the table shows the extracted components. They explain nearly 77% of the variability in the original twenty seven variables and considerably reduce the complexity of the data set by using these nine components, with 23 % loss of information.

FIGURE: 1



The Scree plot figure1 helps to determine the optimal number of components.
The Eigenvalues of each component in the initial solution is plotted.
The components 1, 2, 3, 4, 5, 6, 7, 8, and 9 extract on the steep slope and other components 11 to 27 on the low slope contribute little to the solution.

TABLE 3: ROTATED COMPONENT MATRIX – REPRESENTATION OF THE COMPONENTS

	Component								
	1	2	3	4	5	6	7	8	9
Designation	-.626	.233	-.044	.201	.121	.374	.096	-.142	.344
Age	.103	.872	-.129	.003	.058	-.098	.133	.073	-.143
Children	.110	.834	-.084	.086	-.015	-.104	-.008	-.063	.075
Duration of service	.067	.811	.070	-.173	.117	.055	-.155	-.093	.097
Salary	-.186	.762	.038	.098	-.125	.278	.021	.098	.363
Fair Compensation	.065	-.069	.215	-.053	.046	.819	.240	.192	-.178
Able to save	.460	.071	-.097	-.015	.111	.677	-.123	.004	.324
well informed	-.142	-.053	.307	-.191	.491	.099	.417	.043	.430
good reputation	-.112	.055	.259	-.083	.838	.222	.137	-.042	-.081
good support from staff	.254	.033	-.014	.111	.838	-.083	-.111	.032	.042
conflict free zone	.693	.207	.057	.195	.354	.050	-.067	.088	-.003
Good interactions in formal level	.414	-.028	-.128	.100	.138	.210	.301	.618	-.094
Interation with manager about change of work	-.091	-.008	.137	-.002	-.105	.065	.001	.831	.272
Team spirit	.281	-.035	.540	-.183	.277	.010	-.007	.420	.407
Achieve healthy balance between home and work life	.667	.406	.093	-.053	.051	-.014	-.282	-.014	.060
Trust in Management	-.053	-.089	.379	-.374	.286	.311	-.015	.410	-.306
Good balance between objectives and performance	.111	.169	-.013	.024	-.023	-.034	-.071	.153	.798
No expectation to work over office hours	.705	-.032	.325	.144	-.261	.230	-.157	-.026	.162
Availability of leave	.745	-.027	.109	.052	.061	.117	.304	-.039	.106
Good Safety and Health Conditions	.036	-.159	.718	-.087	.142	.011	.011	.169	-.056
Allows me to be productive	.161	.020	.874	.044	-.002	.025	.038	-.149	.081
Superior concerned about my welfare	.348	.264	.513	.204	.169	.266	-.223	.165	-.177
Interesting work	-.205	-.011	-.076	-.645	.043	.376	-.052	.229	.007
Recognition	.011	-.054	-.024	-.757	-.094	-.041	-.003	-.289	.094
Awards and Rewards	.098	.078	.063	.275	-.010	-.154	-.825	.038	.091
Compensation	.018	-.186	-.216	.745	-.081	.202	-.284	-.254	.154
Friendly Co-workers	.065	.110	.053	.468	.009	-.082	.686	.307	.032

The rotated component matrix table reveals what the components represent. The 1st component is most highly correlated with Availability of leave, the 2nd component is most highly correlated with Salary, the 3rd component is most highly correlated with the conditions that allow to be productive, the 4th component is most highly correlated with Compensation, the 5th component is most highly correlated with good support from staff, the 6th component is most highly correlated with Fair Compensation, the 7th component is most highly correlated with Friendly Co-workers, the 8th component is most highly correlated with Interaction with manager about change of work, and the last component is most highly correlated with Good balance between objectives and performance. Finally the table focuses on Availability of leave, Salary, conditions which allow 'being productive', Compensation, support from staff, Fair Compensation, Friendly Co-workers, Interaction with manager about change of work, Good balance between objectives and performance in Further Study.

RELIABILITY ANALYSIS

SCALE RELIABILITY

The assessment of scale reliability is based on the correlation between the individual items or measurements that make up the scale, relative to the variances of the items.

In the factor analysis we identified following five factors (age, salary, Fair Compensation, good reputation, Compensation). It will be premature to claim that the underlying items of these factors make up the scale for measuring these factors. But for the purpose of illustration, we assume this to be correct. So we measure the reliability of these scales.

TABLE 4: RELIABILITY STATISTICS

Cronbach's Alpha	N of items
.0962	5

The reliability statistics gives the value of the Cronbach alpha co-efficient and the number of items selected for the scale. For the analysis of the significant factors influencing the Quality of Work Life of Bank Employees of Public Sector and Private Sector banks in Tirunelveli District, we find that the Cronbach's alpha value to be 0.96 which indicate that the extracted variables are good fit.

TABLE 5: ITEM STATISTICS

	Mean	Std Dev	Cases
Age	2.2400	1.0214	50.0
Salary	2.5600	.9723	50.0
Fair compensation	3.9400	.5859	50.0
Good reputation	3.9200	.6952	50.0
Compensation	3.9000	1.2495	50.0

The item statistics gives item wise mean and standard deviation values.

TABLE 6: ITEM-TOTAL STATISTICS

	Scale Mean if item Deleted	Scale Variance if item Deleted	Corrected Item-total correlation	Cronbach's Alpha if item Deleted
Age	14.3200	3.2424	.1238	-.0373
Salary	14.0000	2.6531	.3608	-.3910
Fair compensation	12.6200	4.2812	.0481	.0773
Good reputation	12.6400	4.2351	.0080	.1077
Compensation	12.6600	4.1882	-.1971	.4371

In this table the corrected item total correlation gives an indication of the degree to which each item correlates with the composite score for the scale, and the last column Cronbach's alpha item deleted gives the impact of removing each item on the alpha coefficient. Since these values go along with Cronbach alpha coefficient values, we may decide to remove some of the items from the scale.

TABLE 7: SCALE STATISTICS

Mean	Variance	Std.deviation	N of items
16.5600	4.7412	2.1774	5

From the Scale statistics we observe that the scale measurement which quantifies the variables namely Age, Salary, fair compensation, good reputation and compensation considerably determine the Quality of Work Life.

CONCLUSION

The study observes the various factors decisive to the Quality of Work Life of Bank employees of Private Sector and Public sector Bank Employees. It is discernible from Table 3 that factors such as Designation, Age and family arrangement, Duration of service, Remuneration, Rewards and Recognition, working under good leadership and career growth are positively correlated with various other factors such as availability of leave, condition which allow 'Being productive', good support from staff, good interaction with Manager at the time of change and good balance between objectives and performance. Age is observed to be the most individual influence on work attitudes. Hence older employees are more satisfied, more job involved and more committed to their work. Quality of work life is a shared responsibility not only by the management and employees but also by the society.

All over the world, people crave for human dignity and self respect. Besides their aspirations and expectations that are rising along with rapid changes in times, there is a growing significance attached to human resources. Therefore the quality of work life of an organization is ensured by certain significant factors.

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DATA MINING FOR MOVING OBJECT DATA

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ABSTRACT

It is easy to observe that the number of moving objects in moving objects databases like those used in transportation systems, or air traffic control centers may be very large. To achieve an acceptable level of performance with such large volumes of continuously changing data, in answering moving object queries, it is not desirable to examine the location of each moving object in the database. Indexing the location attribute is hence necessary. The widely used mechanisms for indexing spatial data, like R Trees, MVB Trees, and Quad Trees etc would not the serve the purpose well since the data in spatio-temporal applications have to be continuously updated. Movement of a point object represents the trajectory of the moving point object. Data is typically treated as a set of line segments that collectively describe the trajectory of a moving object in the database. One simplifying approach suggested in [1] is to consider indexing structures to be append-only with respect to time. This means, data grows mainly in the temporal dimension.

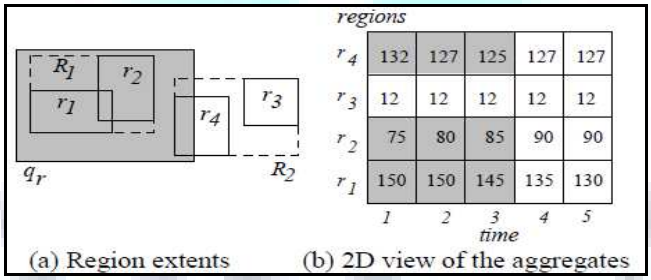
KEYWORDS
data mining, moving object data.

THE FM ALGORITHM AND COUNTING SKETCH

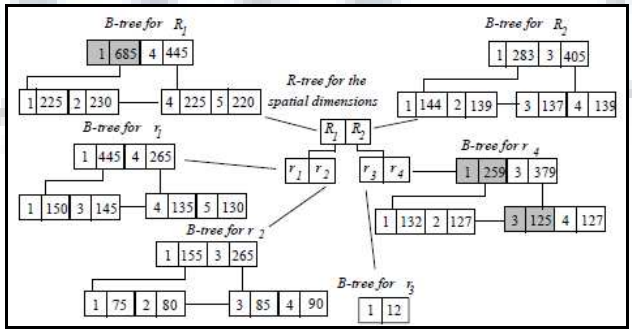
Estimating the number of distinct objects in a dataset has received considerable attention. Many methods in the literature are based on the FM algorithm developed by Flajolet and Martin [FM85]. FM requires a hash function *h* which takes as input an object id *o*, and outputs a pseudorandom integer *h*(*o*) with a geometric distribution, that is, Prob[*h*(*o*)=*v*] = 2−*v* for *v*>=1. A *sketch* consists of *r* bits, whose initial values are set to 0. For every object *o* in the dataset, FM sets the *h*(*o*)-th bit (of the sketch) to 1. After processing all objects, FM finds the first bit of the sketch that is still 0.

THE aRB TREE

The aRB-tree facilitates aggregate processing by eliminating the need to descend nodes that are totally enclosed by the query. As an example, consider the query in Figure (with interval *qt*=[1,3]). Search starts from the root of the R-tree. Entry *R1* is totally contained inside the query window and the corresponding B-tree is retrieved. Since the entries of the root node in this B-tree contain the aggregate data of interval [1,3] (and [4,5]), the next level of the B-tree does not need to be accessed and the contribution of *R1* (i.e., the contribution of *r1*, *r2*) to the query result is 685. The second root entry *R2* of the R-tree partially overlaps the query rectangle *qr*; hence, the algorithm visits its child node, where only entry *r4* intersects *qs*, and thus its B-tree is retrieved. The first root entry suggests that the contribution of *r4* for interval [1,2] is 259. In order to complete the result, we have to descend the second entry and retrieve the aggregate value of *r4* for timestamp 3 (i.e., 125). The total number of objects in these regions during the interval [1,3] is the sum 685+259+125. Nevertheless, the aRB-tree does not take into account multiple object occurrences. Therefore, aRB-trees are not directly applicable for applications that require distinct counting.



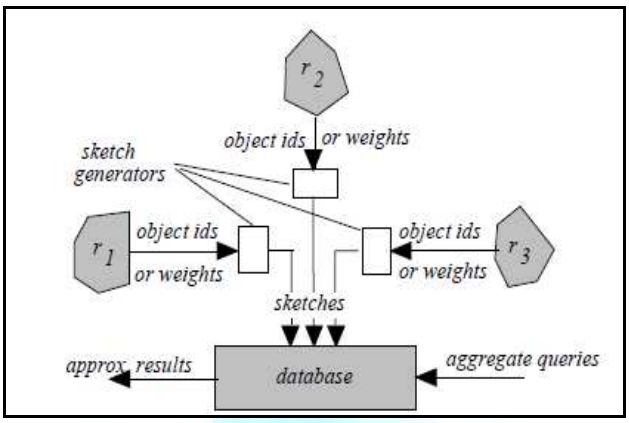
REGIONS AND THEIR AGGREGATE DATA



THE aRB TREE

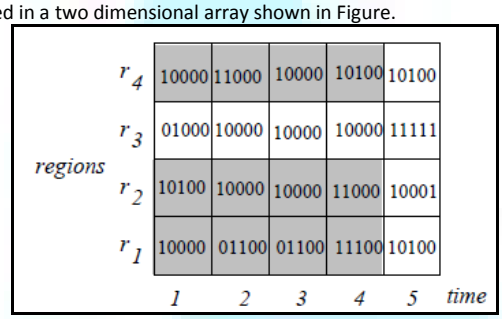
DISTINCT SPATIO – TEMPORAL AGGREGATION IMPLEMENTATION (SKETCH INDEXING STRUCTURE)

Using the FM algorithm discussed in Section 2, for each region *ri* (1≤*i*≤*m*) and timestamp *t* we maintain a sketch *si*(*t*) that captures the (ids of) objects in *ri* at *t*. Figure 3.1 presents the system for distinct aggregation. At each timestamp, every object reports its id (or measure, for DS queries) to the region that covers its location. The region has a *sketch generator* that creates the corresponding sketches based on the object information, and transmits them to the database.



SYSTEM ARCHITECTURE

The sketches received by the database can be stored in a two dimensional array shown in Figure.



CONCEPTUAL SKETCH STORAGE MODEL

MINING SPATIO – TEMPORAL ASSOCIATION RULES

Consider a user in region *ri* at time *t*. What is the probability *p* that this user will appear in region *rj* by time *t*+*T*? We denote such a spatio-temporal association rule with the syntax (*ri*,*T*,*p*)⇒*rj*. Inferring such rules is important in practice. For example, in mobile computing, they can identify trends in user movements and lead to better allocation of antenna bandwidth to cater for potential network congestions in the near future. Additional constraints, such that *ri* and *rj* must be within certain distance, may also be specified. Then, the number of objects that appear in *ri* at time *t* and then appear in *rj* during [*t*+1, *t*+*T*] equals *n1*+*n2*−*n3*. This idea naturally leads to a simple brute-force algorithm for discovering the association rules, checks all possible instances of (*ri*, *rj*, *t*).

```
algorithm associate_rule_mining (T, p, c)
/* T is the horizon; p is the appearance probability; c is the
confidence factor */
1.  for each region ri
2.    for each region rj
3.      sample=0; witness=0
4.      for each timestamp t in history
5.        sample++
6.        s' = sj(t+1) OR sj(t+2) OR ... OR sj(t+T)
7.        n1=FM estimate from si(t); n2=FM estimate from s';
          n3=estimate from si(t) OR s'
8.        if (n1+n2−n3)/n1>p then witness++
9.      if (witness/sample>c) then output rule (ri,T,p)⇒rj
end associate_rule_mining
```

OBJECTIVES AND CONTRIBUTIONS

As described in the previous section, spatial indexing structures do not serve the purpose well enough when they have to deal with spatio-temporal data.
Spatio-temporal indexing structures described in the previous section are mechanisms that are designed to deal with continuously changing data points. Another class of spatio temporal indexing structures are designed to deal with moving object data that changes only discretely. Such data can be indexed efficiently by simply coalescing indexing structures like R Trees, Quad Trees etc with those useable for versioning data, like B Trees and B+ Trees. Examples of such indexing structures include MVB Tree. These indexing structures are easy to implement, manage and have their own class of applications. One such application under study as part of this project work is aggregation querying on moving objects data.

AGGREGATION QUERIES

Given a region (a bounding box), a spatial aggregation query is expected to retrieve aggregated data about all moving objects in the specified region. For some applications of moving object databases, this class of queries is very important. Traffic data analysis is one important example. As a motivating example, consider the query “find the road segments with the heaviest traffic near the centre" or, given a medical emergency, "which is the hospital that can be reached fastest, given the current traffic situation” [aR Tree ref].

In both cases, we are interested only in the number of cars and not the specific details. Now, if the positions of the cars and line segments representing roads are indexed in two different R Trees, the join could be time-consuming. Answering a query such as "give me the traffic for every road segment in an area of 1km radius around each hospital" would require a spatial join between the indexing structures. Such a join is inherently costly.

Also, analytical/aggregation queries in the spatio-temporal context are different from those involving non-spatial attributes in the sense that there is very little a-priori knowledge about the grouping hierarchy. In addition to some predefined regions, a user may request groupings from an arbitrary grid in a selected window.

INDEXING FOR AGGREGATION QUERIES

Aggregation R Tree[ref] is an example of an indexing structure that is designed to index spatial aggregate data. This structure however does not deal too well with temporal attributes of data points. In fact, it uses mechanisms like individual incremental updates (IIU) and batch incremental updates (BIU) to make moving object updates more efficient. A 'temporal lifting' of such a structure is to add versioning support using B trees that represent versions. A similar yet more advanced structure for spatio-temporal aggregation queries has been proposed, called the aRB Tree[ref]. The aRB or the aggregate R- B- Tree uses 'sketches' to represent moving object data in an R Tree. The details of the aRB Tree have already been dealt with in the previous section.

IMPLEMENTING THE aRB TREE

As described in the previous sections, the aRB Tree uses the R- and B- Trees to maintain spatial and temporal aggregation data respectively. We attempt to implement this structure and design algorithms for answering a decent range of aggregation queries.

It is shown in the following sections that, user queries that ask for aggregations from arbitrary groupings can efficiently answered using the indexing structure. The implementation also aims at eliminating certain inherent drawbacks of using R Trees in this indexing structure. Also, for range queries involving time, we suggest the use of B+ Trees instead of B Trees.

Also, the indexing structure introduces the concept of sketches for representing moving objects data. This idea is actually very interesting and useful in applications that look for frequent moving patterns. For example, a query that asks for the region at time 't ' with the maximum population density can be easily answered using algorithms on the aRB Tree that deal just with the sketch bit strings. The same is the case with a query that asks for say, 'What is the percentage population in-flow for Electronics City during the time interval (t1, t2)'? Algorithms to a host of similar queries will be described and demonstrated in the sections to follow.

IMPLEMENTATION OF QUERYING FEATURES USING aRB TREE

This section introduces various querying features implemented by the team as part of this project. The detailed algorithms will follow in the next chapter of the report.

The simplest aggregation query in this data structure would be to ask for the total number of objects in a given bounding box/area during a given time interval (t1, t2). This would simply involve operations like ‘OR’ing of and counting the number of 1's in a given bit string, similar to the algorithm explained in the previous section. The more complex queries could involve asking for the time of day when a given bounding box observed its maximum population density. This query is equivalent to asking a moving object database, "When during the day, did Electronics City's population peak?"

The advantage of using aRB trees with sketches lies in the fact that it houses enough granularity to answer queries like "When did the bus with Route Number 111 enter R T Nagar?", despite the fact that aRB Tree is a structure designed to support aggregation queries. Another interesting query could ask for "List all fighter planes that passed through area - Id BG235".

CONCLUSION

The proposed aRB Tree is implemented using the C language and various querying features are demonstrated as discussed in the previous sections.

The structure despite being designed keeping aggregations in mind, serves really well for queries requiring higher granularities. We discover a few drawbacks of the structure proposed in [ref] and suggest implementation mechanisms to overcome them. Also, as mentioned the section 2, structures like R*- trees and B+ Trees would be better options for implementing the structure. Spatio-temporal pattern mining is also a much more simplified task using sketches in aRB Trees.

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ECONOMIC TOURISM MANAGEMENT: AN APPLIED S.H.G. MODELING THROUGH CASE ANALYSIS OF ELLORA CAVES & DAULATABAD FORT – AN INDIAN APPROACH

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ABSTRACT

Tourism market can be managed by radical organizations who understand the new functions of tourism management. It is nothing but plantation of a concept for acceptability, which transacts a business between the buyer and seller. It is about the services, products and experience of the tourist at a price tag in a given context. What is important is for developing the content, context and infrastructure in a given location that can enamor the recreating spirit of visitors; who aspire to travel for change. Change is all about breaking the monotony and insipid living conditions, about a breath of fresh air. Pilgrimage tourism, city tourism, eco-tourism, hospital tourism, heritage tourism, cultural tourism, fashion tourism, aesthetic tourism, urban tourism and village tourism are the major concepts of current epoch. Saps of the ancient times does exist but with a modern taste and flavor of contemporaneous luxuriant living. The natural ambience of life is drifting with advanced lifestyles. Eco-tourism market should develop human resources to be manned in organizations. Therefore, in order to equip the raw manpower available in locales across the category; facilitators have to be trained. The USP (Unique Selling Proposition) of tourism market module in tourism sector lays stress on the tourism related market modules, within a single category applicable in the unique environment. Emphasis is on innovative traits of uncategorized tourism modules, which is not category specific. This module tourism takes a holistic facet of category and attempts to optimize the inputs through the pedagogy and demagogy. In India, a poverty stricken country known for elephants, snake charmers, plethora of religions, Taj Mahal, mystic religious gurus, temples, rich flora & fauna, culture, estuaries, coral island and bounties of natural abundance are befitting aspects for tourism destination to be created. Currently tourism and infrastructure for tourism and culture industry is in an infant stage of development but having a mammoth scope and potential. Consequently a rapid growth is inevitable and is foreseen through the currency exchange rates; INR vis- a-vis USD or any other currency. The emerging waves of liberalization and globalization process in the near future are bound to seamlessly access in to the grassroots of life and living conditions. Eco-tourism shall look in to rural tourism, village tourism and pastoral tourism for absenting oneself in to attainment of solitude and peace in oblivion; away from pompous luxury badging. Developing economies like India which is in the strategic need of employment for its masses. SHG (Self Help Group), a new dimension of Cooperative Management is modeled for this research to conceptualize, enhance and practice as low cost tourism. As the USP's are studied, and market demand is examined, the model of SHG in enhancing and applying a Rural Tourism to Cater the domestic tourists of Ellora Caves & Daulatabad Fort. The adjacent Berul Village of Ellora Caves is the primary survey case taken in to applied-economics modeling for the purpose. Both the monument sites are within the close proximity of 8 K.M. SHG is an experimental economic model for micro application of tourism strategy and marketing. This research paper displays a strategic intent for a category and frame of thought for the implementation in tourism management category. This module shall remain as a guideline for India and global entrepreneurs and business developers everywhere in any walk of life, it can utilize by dint of a marketing concept a product to gain revenue and economy and ultimate customer satisfaction.

KEYWORDS

Tourism Organization, Managing Tourism, Economy Scale, Service Industry, Eco-Tourism, SHG (Self Help Group).

INTRODUCTION – SHG ROLE PLAY IN TOURISM

Tourism as a phenomenon of economic change can prohibit penury by profits is obvious for alleviating per capita and GDP in the economy. Community management group in villages through devolution mechanism can create tourism infrastructure to enable tourist visits and generate economy. It is based on a supply-chain process of managing categories of tourism products available everywhere. Distinct group of tourism facilities at strategic business units

can be developed to generate better profits. It should focus on serving customer values. It can be further classified to compete in each tourism category to attract tourists' loyalty and currency. (Kotler, 2010)

India's economy is at a transitional phase where logic for innovating themes of business to drive tourist can be seen. At the bottom of the pyramid poorest of the poor nations should be alleviated by engaging certain technique to generate comparative per capita income, GDP and GNP. SHGs (Self Help Groups) can be converted to SBUs (Strategic Business Unit) for generating business. SHGs should create brands for specific tourist experience by developing a composite category of business. (Survey of Indian Industry, 2010) This new model shall recognized by improving a lifestyle concept of for managing tourism organizations in the current times. Brand oriented tourism has challenges and scopes to business in the typical tourist agencies. SHG managed offerings on tourism shall create opportunities for joint ventures and FDI. (Evaluation study of Rural Tourism, 2007)

RESEARCH METHODOLOGY

This article is produced through extensive secondary research and qualitative research of secondary sources and field studies and extensive observations. Primary research was followed through depth interviews and interpretations of applied projects of the field. Second hand primary sources were examined and analyzed for micro findings and conceptualization of the theme and contextual validity. This article carries policy research and working paper examination method for delivering applied model and validity appreciation.

CREATING AND MANAGING TOURISM ORGANIZATION

Tourism based units in villages or GPs can develop tourism SHGs and create provisions for SHG beneficiaries by encasing house accommodation and hospitality at village dwellings. This business shall provide accommodation merchandising; reduce the expansive package pricing and facilitate community accommodation at a less price. This can educate the tourist on culture, tradition and India. Trend setting ideas of business can be given to each beneficiary of SHG and can introduce a democratization of the tourism consumer culture rather than a business culture prevailing. (India Year Book, 2011) Amazon .com with its multi networking has become one of the global leaders in the concept of e-reading. SHG brand should price its product at competitive price. It can invite tourist exchange programs between SHGs in the domestic front and across the globe. It can create social security for tourists through community clubs. These pricing of products defrayed by global tourist can enrich the economy of the locales by the transactions. (India Today, 2008)

INTER-ACTIONS IN LIBERALIZED TOURISM AND FUTURE BUSINESS

Liberalization has bought forth competition and cross-cultural meetings. Hotel industry of the current times is an extension of pilgrimage accommodations provided in the early times. What is offered is a broad assortment of brand name and competitive price for the luxury and convenience. Reducing prices and putting most products within the proximity of the common tourists can be treated as a global product.(Walker, et al, 2011) Business category killers are present everywhere ranging from book sellers to the toys, to the tourism facilities. It contributes and mars the business designs and multiplies. Ever-day low pricing is the symbol of the current age. There is a great allegiance to the deal than the dealer. Price of products have low-price bargain on hospitality. These are handled by pricing made on the services of SBUs. (George, 2007) Tourism price is defined; what a tourist agency puts on the services and goods for reselling the tourists as consumers. It has impacted the business through internet making and software. Indeed, Conscious tourists want more for less. (Andrews, 2007)

CREATING SHG CENTERS

Unemployed village youths and part-time workers can be employed at low-wages in the tourism stations. Category killers in the fast paced market cannot make profits; in the presence of myriad e-commerce sites and search engines operated by SHGs.(Gupta, 2002) Tourism sites of SHG have to be inexpensive and attractive which can replace the city market place. SHG tourism should come up with proprietary brand, catalogs and web sites. Established brand encroach upon the product segment of the lesser brands. Starbucks Coffee as a category killer constantly finds its way to leverage its brands into other product categories and channels of distribution. SHG tourism requires a globalization process to tap alliances with leading players based on the concept. (Page, 2002) SHG packaging facilities for the promotion of tourism; for improving sells and profits across different product classifications are important. Tourism products have to be made with an amalgamation of categories where each SHG category should be uniquely priced with respect to expected performance. Tourism vendor in SHG community has to behave himself as a category captain and determine the strategy, evaluate goals, identify target consumer and influence plan implementation. (Wall, 2006)

ORIGIN OF TOURISM AND CURRENT EPOCH

Prosperous Americans move to suburbs for enjoying nature and sightseeing, away from the concrete jungles. It is possible for the restless city life, atmosphere not conducive. Tourism evolved for recreation and retreat which generated trade and commerce on which tourism grew. (Gratner, 1996) Luxuriant life style confined to concretes made them paranoids.

Each type of tourism personality can develop a customer loyalty through SHGs. This concept can be reinvented and revolutionized as a model across the seasonal cycle, across the geographical barriers. (Gupta, 2002)

Tourism revolution around the globe is enchanting. These changing nature of business to those changes are transitional. A distribution network from the cosmopolitan places to the SHGs in the hamlet has to be fabricated to call for capitalistic investments. SHG tourism shall design employment sources and advertising campaign has to be undertaken on the corporate basis. (Page, 2002) Today the tourism market share is limited to the cities, which needs to be stepping down the ladder. This expansion plan could be in response to the comparative pace of growth. In fact, major brands in the tourism marketing should enter the SHGs in tandem; to tap fiscal investments from global players and MNCs. (Bhatia, 2001)

CHANGING SCENARIO & TOURISM DIMENSIONS

Latest trend in US is to migrate to the suburban places. Basket countries are affected from tourism revenue due to strife and civil disturbance. (Waver, 2004) This is possible with alliances with SHGs. SHG tourism shall take place and will strongly influence the future of global tourists due to the sky- rocketing real estate price boom in metros. SHG category killer in tourism is essentially a real estate extension. Today category killers in tourism should have two pronged approach. They are build large complexes in areas with under-valued property and building SHG tourist centers in down towns. In fact, category killers in the retails are also opening small easy to shop neighborhood stores to attract time pressed consumers. (Poynter, 1993) Pedestrian friendly tourism halts, stores and motels can be visualized as a business proposition. Tourism SHG shall create help-age neighborhood markets for age old citizens and ideal villages. SHG can be re-defined as a tourism category model based on the demographic variables. It can also cannibalize the existing business with a touch of reformation and newness in approach. SHG s can be created with a perfect networking and private public partnership and can navigate and revitalize expansion plans for tourism products which are unexplored and can developed as SHG centers. SHGs can be tailor made for specific cultures and green fields can be developed revamping the undeveloped tracts and terrain facilitated with aerial trolley. (Hinch, 2006)

Change in business is nothing but natural. Like the western communities not greeting the mall developers to the densely populated localities, tourists have started preferring to isolate themselves from the madding crowd. This can also raise revenue for cash starved municipalities and look for re-orienting blighted feudal structures and infrastructures like lagoons, plantations and mountain range. The motive of SHG tourism can be developed by empowerment that is public power and private game and focalization of land use can be made, return on investment can be generated. (Goswami, 2003)

In view of the above a strategy can be developed for community living and community focused gorilla strategy to alienate a part of the business prevalent. Today who is who of consumer goods of US -Procter and Gamble, Kraft, Revlon and Gillette to name a few are pounding into suburbs and Cost CO , Wall Mart , Best

buy and Bed Bath and beyond are changing their guard for market positioning. Why the strategy is so very different? In order to beat competition the following approach seems logical. (Waver, 2004)

TOURISM MANAGEMENT – THE SHG SIGNIFICANCE

Tourism category management in SHG is paradigm. SHG tourism brand category management is a holistic approach to advent a business. Brand management is essentially an intensification of focus on a rival category. Even within a category, competing brands also cannibalize and recreate resources for a strategic advantage. Choice and implementation of category strategies are the keys of category management process. This strategic frame work shall enable the performance of category management and is dependent on the strategic and operational efficacies of the implementation procedure .A lot of factors decide the performance of a particular category.

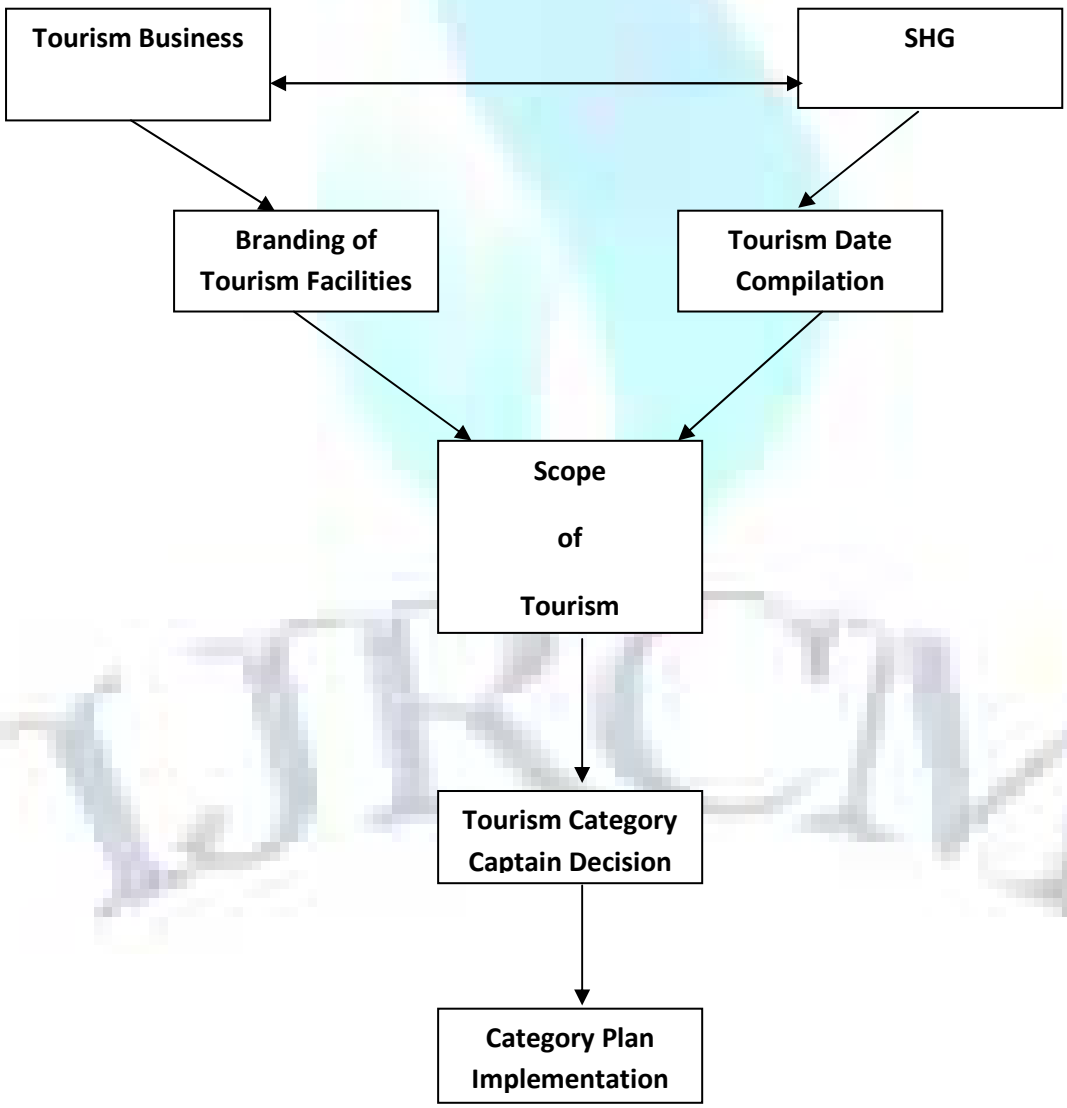
STRATEGIC MODEL FOR PERFORMANCE

Models look for inputs duly factorized to guide the performance of the category and procedure. Performance depends on three groups and two relationships. The three groups are tourist consumers, SHG and facility provider. The 'two relationships' that are keys to category performance are facility provider- SHG relationship and SHG- Tourism relationship. This model illustrates the overall interaction of entities and effect of inter-relationships. Performance model of 'Facility-provider and Tourism-relationship' contribute to formulate category management strategies and implementation. At the SHG, the 'Tourist -SHG relationship' comes into the picture and the consumer is offered enhanced value through category management. This model illustrates the entities and the effects of 'SHG- Tourism relationship' which needed for consumer satisfaction, promotes category and fulfills final objective.

FACILITY PROVIDER-SHG RELATIONSHIP

Category management is primarily an SHG strategy which influence facility provider and cannot be negated. Facility provider develops expertise to determine the efficient assortment, pricing, promotion and placement of the various kinds for category. These data gives the ability to play the role of 'category captain'. 'Category captain' is a facility provider who forms a strategic alliance with the SHG. It enables the SHG developed consumer insights, satisfy consumers, improve performance and profit across the entire category. It is solution that matters. This can be categorized into three segments**.** They are planning and implementation, branding for creating opportunity and trust and bonding. It can also be extended by the SHG- Tourism Relationship. This model proposed signifies the aspects of relationship. Customer satisfaction has been assigned the utmost importance as the determinant of category performance. What is important is consumer satisfaction and the benefits of customer satisfaction are important. To survive in today's consolidating environment SHG-Facility provider need to improve their collaboration with trading partners using newest ways, for attracting tourists. We can see a diagram which speaks of the convergence:

MODEL- IMPLEMENTATION PROCESS OF TOURISM CATEGORY MANAGEMENT



Source: Self Conceptualized Model of Applied Research

APPLIED ECONOMIC CASE ANALYSIS MODELING – ELLORA CAVES & DAULATABAD FORTE (MAHARASHTRA, INDIA)

Aurangabad district of Maharashtra is a Municipal Corporation, cultural & tourism capital of the state and historically a significant place of world class monuments of Ancient India, early mediaeval and mediaeval period. UNESCO heritage sites like Ellora Caves and Ajanta Caves are its golden assets of tourism. From the town center Ellora Caves are 30 KMs and Daulatabad Fort is 22 KMs far in the same direction, connected through state highway road. In tourists attraction both the sites attract huge domestic tourists and substantial foreign tourists with seasonal variations of peak season – September to April and off-peak season – May to August. Off peak season months experience tourist flow at large from domestic segments. As per the year 2011 local records Ellora attracted at an average of 3000 domestic tourists and 400 foreign tourists per day in the tourism peak season i.e., December to February. In the mid-tourist seasons September – November average domestic tourists were 2600 per day and 200 foreign tourists per day. In the off-peak season May – August average domestic tourists drop down to 1200 per day and foreign tourists to 80 per day. Annual average of tourists, (Domestic) 2250 and average foreign tourists 225 do visits Ellora and Daulatabad. In record keeping more than 12 Lakhs domestic tourists and 1 Lakh international tourists visit Ellora caves per year.

The rock cut shrines of Ellora in Maharashtra are magnificent artistic creations, between the 5th and the 13th century. These caves with diverse details and minute carvings, representing three different faiths, Buddhist, Brahminical & Jaina, are superb examples of Indian art. The Buddhist caves which are profusely ornamented, carved on large-scale, differ from Ajanta caves in their arrangements, subjects and details. Among the Brrahminical caves, Kailasa (Cave 16) is remarkable for striking proportion, elaborate workmanship and architectural content besides sculptural ornamentation. This is regarded as the monolith Shiva temple in India. It is by far the most elaborate and extensive rock-temple. Of the five Jaina caves, Indra and Jagannath Sabha are massive, rich and extensive in execution. The caves of Ellora run approximately in the north-south direction for almost 2 KMs. Visit of Ellora caves are a matter of complete 2 days observations by the tourists to attain satisfaction. Due to non availability of accommodation fitting to the disposable spending level of the tourist's domestic tourists visit the Ellora caves in one day. For foreign tourists accommodations are located in the Aurangabad city mostly.

Daulatabad, a castle migrated to a fort an impregnable fort during Mughal period. Jadhav dynasty started this fort as Deogiri and from there it migrated to the hands of Khilji's and Tuglaqs and finally passed to the hands of Mughals. During Mughal period Aurangabad was the capital of the Deccan province and Daulatabad turned a citadel of power. Auranzeb ruled 27 years as an emperor from Daulatabad. During his time extensive fortification works were taken care of and many wall cities were established – Aurangabad, Khultabad, Etlabad etc. Daulatabad has three phases from the ground to the hill top and for any tourist to visit it takes one full day. As one of the unique forts of India and being at the close proximity to Ellora caves both the sites takes a three days time for tourist satisfaction.

S.H.G. (SELF HELP GROUP) FOR INCOME GENERATION THROUGH TOURIST SERVICES

In Berul and Khultabad areas, the immediate locations near Ellora and Daulatabad have only few hotels for overnight stay. Numbers of rooms available in both places are less than 200 and type of hotels is low budget category range. Hotel room tariff per night vary between INR 700 to INR 1000. This is comparatively a higher price in comparison to other states based on the facilities available in the hotels. More than 600 rooms are available in Aurangabad city for hotel stay. Hotels are expensive in the city due to strategic location and industrial hub in the outskirts of the city. Ellora has famous Shiva temple Ghrinesvara known as one of the Jyotir Linga of India. This temple was built in the late 17th century by Ahilya Bai Holkar of Indore, this attracts more than two million devotees per year.

A tourists satisfaction survey reveals that the two nights stay for the visit of Ellora per average family consisting of two adults and two children at budget accommodations – 2 nights stay @ INR 1650 x 2 = INR 3300 plus INR 2200 plus local conveyance from the city to destination – INR 2200 and miscellaneous expenses – INR 500. These expenses amount to in total INR 8200 for two nights and three days with uncertainty of accommodation availability and peak season price rise. Cost factors pushes the tourists flow to move out of the destination in a single day. As per the survey more than 50% of tourists are looking out for a price tag of INR 3000 for 2 nights and three days stay per family. As per the primary findings 30% plus domestic tourists are looking out for a price tag of less than INR 5000 for the similar concept. In response to this MTDC (Maharashtra Tourism Development Corporation) offers a price range of INR 8000.

Ellora and Daulatabad micro destinations are visited by tourists whose preferences are budget accommodations from the inland. Tourist needs are not catered at the destination sites. This strongest USP of tourist economy can be applied in the Berul village for Village Tourism / Rural Tourism to promote Ellora and Daulatabad destinations fitting the price preferences of the tourists. Berul village has a predominant agriculture economy with more than 500 concrete roof houses. Village is sizably large and at a walking distance from Ellora caves not exceeding half kilometer. Rural workforce has lowest women employment as any other Indian village. More than 50 percent housewives have spare time for involvement and engagement from the house. Among the rural youth more than 60 percent engaged with marginal employment. So the manpower available for engagement of higher earnings amounts to more than 500 people from the Berul Village for S.H.G. modeling.

S.H.G. ACTIVITY MODELING AND BUSINESS PROPOSITION FOR PROFITABILITY

Berul village of Ellora as per primary experimental economics research is identified as the destination of S.H.G. activity of "Economic Tourism Management" to cater two composite micro destinations of tourism – Ellora and Daulatabad Fort. The application validity of business proposition for S.H.G. (Self Help Group) involvement in employment generation, tourism promotion, social entrepreneurship and village economic enhancement is examined by adaptation by S.H.G. activity modeling.

SHG ACTIVITY MICRO-MODELING OF BERUL VILLAGE – ELLORA CAVES

GUEST ROOMS

Village dwellers have the potentiality to spare two rooms from each house and in the first hand hundred houses can generate 200 guest rooms with little investment in painting and furnishing. Construction of attached toilet and bath rooms in some houses will be required.

STANDARDIZATION

Each room to be provided with specific and minimum facilities of toilet & bathroom, good ventilation, double bed and an extra bed provision for each room to accommodate two adults and two children, hygiene and cleanliness. Room rent per day is provisioned INR 350 with 24 hour checkout. Maintenance of the guest rooms will be the job of the housewives and booking of the rooms will be done by the central office of the SHG. This is involving 100 housewives.

FOOD & SNACKS

Four to eight food outlets in the houses of SHG members will be opened up to cater the food needs with fixed menu for a capacity of 400 people at the best. Outlets will be run by the house wives with youth supporting hands for the services. Food is provisioned per person per day at INR 200 including Breakfast, Lunch, evening Snacks & Night Dinner as fixed price. Food preparation will engage 40 house wives in food preparation and delivery.

LOCAL CONVEYANCE

Site visits to Ellora, Daulatabad, pick up and drop facilities for the guests from the Aurangabad Railway station and Bus station to Berul village per family by auto-Rickshaw at a fixed price of INR 900. Business will be run by the local youth having auto-Rickshaw ownership. This model will engage 30 local youth and will keep options open for the additional employment.

CENTRAL OFFICE FOR BOOKING, OPERATION MONITORING AND SHG LEADERSHIP

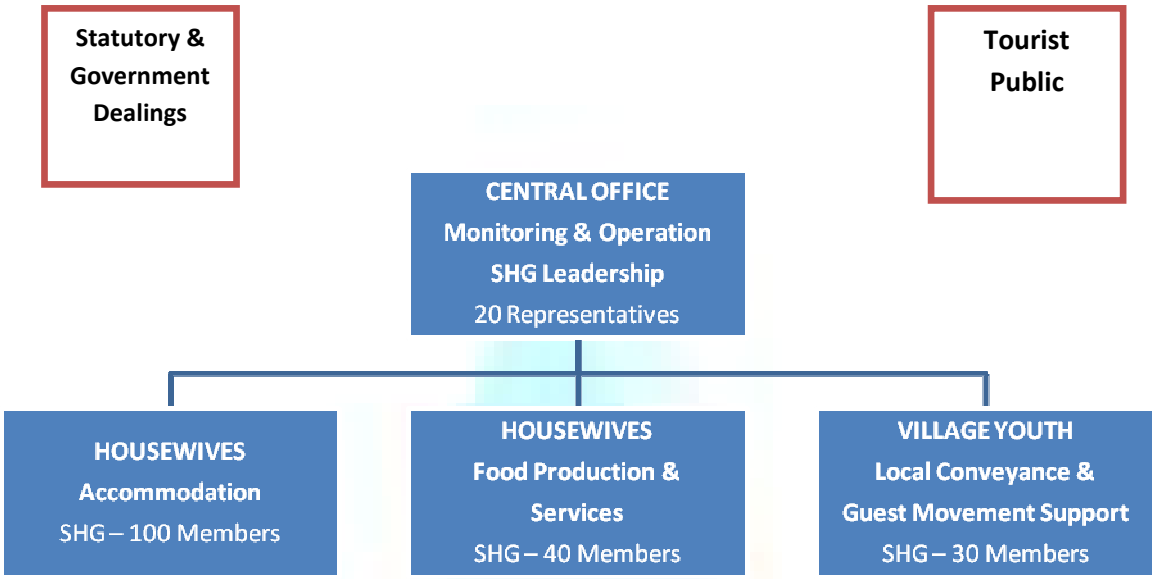
Central office operating by participating members for booking, coordinating, promotion, monitoring guest satisfaction, transactions of all cash deliveries. This team of 20 SHG representatives will be involved in the leadership roles of micro model provisions.

SHG INVOLVEMENT (MEMBERS)

100 Housewives for 200 Rooms
30 Youth for local conveyance provisions
40 Housewives for Food preparation and delivery
20 Youth and Village members for Central Office – Monitoring and Control Provisions
Total direct employment of 190 SHG members
Tourist package of 2 Nights & 3 Days stay INR 3000 with local conveyance & Pick up & drop facilities per family
Available current market rate for the similar facilities at a price of INR 8200 with local conveyance

SHG offering is at a 37 Percent of the market price generating a profitability of INR 2000 for the SHG members per package from each family with one room occupancy resulting in 66% profit for the model application.

EXPERIMENTAL ECONOMICS MICRO MODEL OF ECONOMIC TOURISM MANAGEMENT BY SHG



Source: Self Conceptualized Micro Modeling of SHG – Berul Village, Ellora

POTENTIALITY OF S.H.G. ROLE PLAY AND FUTURE ENHANCEMENT – CONSTRUCTION OF NATIONAL MODELING

An economic applied model of economic tourism has phases of operation in benefitting and creating larger SHG networks. This experimentation modeling has potentiality for expansion and multi-track growth to a level of saturation with micro territorial confinement and market limitations. Potentiality of the growth of SHG in the existing model enhancement can further add on to the strength of 200 guest rooms to 600 guest rooms and multiplying SHG membership by four times, which will involve 760 members in the SGH. Multi track growth factors are additional avenues for SHG for SHG operation and involvement. Additions as prime potentiality will be as;

a) Setting up of house front handicrafts market
b) Organizing of events, carnivals, food festivals, ceremony celebrations of Buddhism, Jainism and Hinduism (Shivism) etc. to attract and retain off season tourists flow.
c) Public – Private Partnership modeling and engagements with A.S.I. (Archeological Survey of India), Ministry of Tourism – Government of India & Government of Maharashtra, UNESCO, Buddhist Associations and recognized cultural organizations to ultimately generate tourism business through via-medias of different applied market tools and techniques
d) Partnerships of business interests with artifacts, art commodities, handlooms, sculpture creations, and other productivity sides of special skills for different revenue models.

This experimentation in its potentiality is a micro case of involvement of 80 percent of the employable manpower of the village to earning hands beyond sustainability and to grow up to the lengths. Advantages of such cases have contagious effect on other potential destinations of tourism concern. Secondly, the off business time has the growth potentiality of getting converted to revenue model generation by diluting seasonal phenomena in domestic tourism market. Third, SHG model of economic tourism has potentiality of National Economic Tourism Modeling across states and Union Territories with the support of research and experimentation modeling based on available U.S.P. of locations and destinations.

This experimentation model of micro case study of Berul village, Ellora caves site in Maharashtra state is a projection approach of economic tourism services through the concept of "Value for Money" with national level validation and national policy supporting activity of rural employment through SHG (Self Help Groups). Berul is an applied economics and strategic tourism case model awaiting implementation through N.G.O. (Non-Government Organisation).

FUTURE OF TOURISM MANAGEMENT – RURAL TOURISM THROUGH SHG

This category management in tourism possesses huge potential to transform the rural economy through tourism sector business. The model based on the category management principles is contingent to reasonable arguments. This has to be net-worked in the hierarchy of a pyramidal form. As a matter of fact, SHG tourism shall be bringing communication and satellite connectivity. Prototype of the Disney land concepts in the barren places can be developed through ventures. Investment from foreign countries shall be invited for participation and partnership in the tourism business. It can be based on a local (local + global) concept. Research scholars critically view that Indian economy can boom with the help of SHG tourism development. This model framework can be validated and tested by the active research of SHG markets and tourism market patterns. And can go for quantitative models. Transformation of tourism industry can be studied at its various stages and can be identified with categories where management principles can be applied scrupulously.

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IMAGE RETRIEVAL USING CONTENT OF IMAGE

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ABSTRACT

In this paper, we provide a new image retrieval model which integrates the spatial distributing information of colors, shape and the texture features. We suggest CBIR (Content Based Image Retrieval) method using color, shape and texture information. Using just one feature information may cause inaccuracy compared with using more than two feature information. We use three feature, HSV color model as color information, Fourier descriptor and moment invariant as shape representation, and GLCM(gray-level co-occurrence matrix) and spectral measure as texture representation. Feature vector of all the candidate images are calculated before and stored as a metadata. Here Euclidean Distance is used as proposed methodology for retrieving similar images.

KEYWORDS

Content based image retrieval, HSV color model, shape and texture and query image.

INTRODUCTION

Image retrieval is achieved according to the similarity of image features. CBIR for general-purpose image databases is a highly challenging problem because of the large size of the database. An image database system aims to help people in this regard and enable them to find their desired images as quickly as possible. In content-based image database system, intrinsic properties of images are captured in some feature vectors which are indexed or compared to one another during query processing to find similar images from the database.

OVERVIEW OF FEATURE EXTRACTION

The Feature extraction is defined as calculating distinctive characteristics of pixels in an image. Generally, any CBIR technique uses visual features of images, such as colour, shape and texture yielding vectors with hundreds or even thousands of features. As many features are correlated to others bring extra knowledge and produces redundancies among them. Using a large number of features leads to the dimensional mismatch problem and is time consuming. This dissertation proposes a new technique to retrieve the query image efficiently with accuracy by using two features namely colour and shape. Collectively all these features were combined to form a single vector which is called as feature vector.

HSV COLOR MODEL ANALYSIS

HSV color model is used to represent the color information of image. In HSV model, H denotes hue, S denotes saturation of color, V denotes intensity value (corresponding to brightness or grey level).

SHAPE ANALYSIS

In this paper, a Fourier descriptor (FD) and moment invariants are used to overcome the drawbacks of existing shape representation techniques.

TEXTURE ANALYSIS

Another set of features which we used to describe an image is texture feature. Two main approaches concerning with texture analysis are: GLCM measure and spectral measure [9, 13].

PROPOSED METHODOLOGY

RETRIEVING SIMILAR IMAGES USING EUCLIDEAN DISTANCE

The efficiency and accuracy of the image retrieval is significantly affected by the ability of the distance calculation techniques. Let $X = [X1, X2 \ldots\ldots\ldots\ldots\ldots\ldots Xn]$ be the feature vector of the candidate image and $Y = [Y1, Y2 \ldots\ldots\ldots\ldots\ldots\ldots Yn]$ be the feature vector of the query image.Euclidean distance between the candidate image feature vector and the query image feature vector is given by.

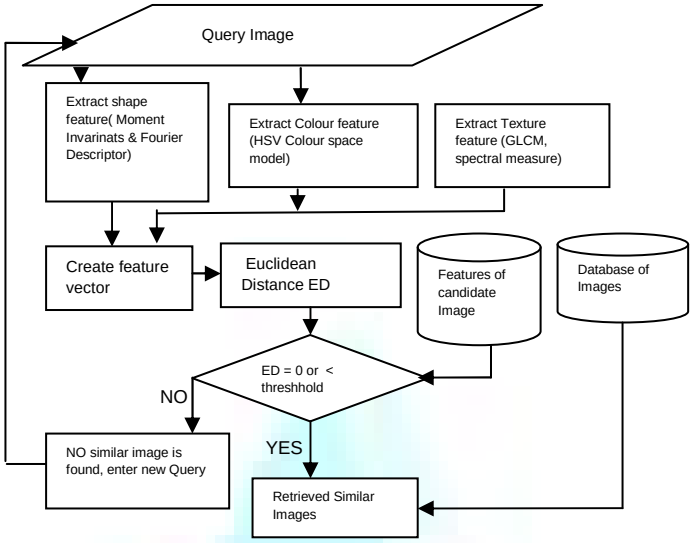
$$D = \left(\sum_{i=1}^{n} |X_i - Y_i|^2\right)^{\frac{1}{2}} \qquad (23)$$

The result of the distance calculation is used for retrieving or adding the image from/to database.

DATABASE PREPARATION

One thousand eight hundred and seventy five (1875) different digital general images of various categories collected from the open source were used. The database is comprises of various categories of general images i.e it contains the image of different animals, flowers, fruits, birds, aquatic animal and insects. The figure shows below some of the example of the database images. The figure (3.2) shows the flow chart of the proposed methodology.

FIGURE 3.2: THE FLOW CHART FOR RETRIEVAL OF GENERAL IMAGE



RESULT & CONCLUSION

GENERAL IMAGE RETRIEVAL

IMAGE DATASET

The image database is collected from the website **Caltech 101** [8]. The database consists of different images of various kinds such as images of animals, aquatic animals, plants and fruits. There are about 1875 total images.

QUERY IMAGES

There are about 100 query images presented to the CBIR system.

PRECISION

For the performance evaluation of retrieval result, Precision -Recall table is used. Precision is defined as the total number of relevant image retrieved to the total number of images retrieved by the system. Retrieved images are considered relevant if it belongs to the same class. Therefore the precision of the retrieval performance is defined as

$$precision = \frac{t_p}{t_p + f_p} = \frac{r}{k} \quad (24)$$

Where r the number of total number of relevant image is retrieved and k is the number of total image retrieved.

t_p is the number of image retrieved relevant to the query, f_p is the number of image retrieved irrelevant to the query. In this result t_p is the number of animal images and f_p is the number of Non – animal images.The query images are presented to the CBIR system and their precision is calculated. The precision is calculated for shape features, colour features and their combined approach. The precision is calculated for the average 100 queries given to the system.

The table below shows results.

TABLE 4.2: PRECISION OF QUERY GENERAL IMAGE RETRIEVAL

S.NO	Feature	Precision (%)
1	Shape(Moment invariant, Fourier descriptor)	68.4211
2	Colour(HSV colour space model)	75.8772
3	Combined Approach	79.8772

Images below show the results of proposed CBIR system.

It can be easily seen from the Figure (4.1) and precision-Recall table that when only shape feature is used for retrieval of query image it gives a very poor result. Thus it is concluded that shape features are highly affected if query is incomplete and may result in very low retrieval efficiency. It is clear from figure (4.2) that retrieval efficiency is increased by using colour feature. For increasing the efficiency of the system both colour and shape features were combined together. More weight age is given to the colour feature vectors in the combined approach. Figure (4.3) shows result of retrieval using both colour and shape feature.

FIGURE 4.1: QUERY IMAGE AND SIMILAR IMAGES RETRIEVED BY THE SYSTEM USING SHAPE FEATURE

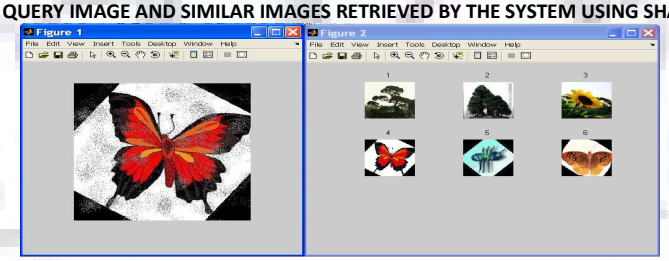


FIGURE 4.2: QUERY IMAGE AND SIMILAR IMAGES RETRIEVED BY THE SYSTEM USING HSV COLOUR SPACE FEATURE

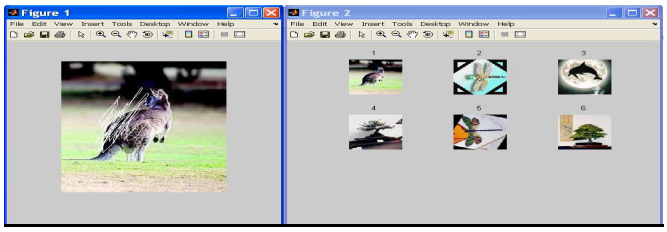
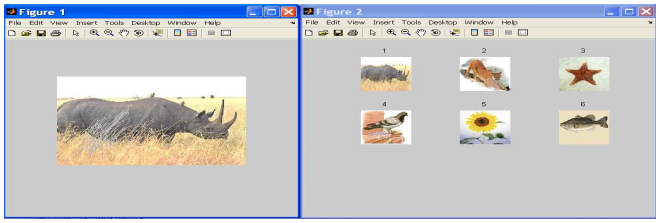


FIGURE 4.3: QUERY IMAGE AND SIMILAR IMAGES RETRIEVED BY THE SYSTEM USING COMBINATION OF FEATURES



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FACTORS INFLUENCING COMPANY VALUATION: AN EMPIRICAL ASSESSMENT OF THE INDIAN CORPORATE SECTOR

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ABSTRACT

Improvement of company value is one of the most challenging aspects of modern finance. In today's competitive world every company is trying hard to improve its value in order to accomplish its wealth maximization objective. In this backdrop, the present paper made a modest effort to assess the influence of three important variables, namely Total assets & total income, Profit after tax and Total reserves on company valuation. The sample size of the study consists of thirty four companies which have been selected by taking the top most companies on the basis of companies' total assets and total income. This selection has been made considering "The BW real 500, the definitive ranking of India's biggest companies" published by Business world, New Delhi, October, 2011. The issue analyzed in this study has been tackled using relevant statistical tools and techniques.

KEYWORDS
Market Capitalization, Company Valuation, Profit after tax.

INTRODUCTION

Globalization, privatization and liberalization of the Indian economy have introduced tremendous competition among companies throughout the globe. In this age of cut thought competition stakeholders are more active to know the real value of company. Value of the company can be measured in different ways. As a result, finance managers are now more serious to know the factors influencing company valuation as well as the nature of influence of these factors. More specifically they are trying to identify the parameters which have positive or negative impact on value of the company. In this backdrop, present study made a modest attempt to capture the impact of three important variables namely Total assets and total income (TATI), Profit after tax (PAT) and Total reserves (TR) on improving the value of company.

In this paper MC that is obtained by multiplying a company's shares outstanding by the current market price of the share has been considered as an indicator of the value of the company. Basically, there are three valuation approaches used to value business entities, viz., Income Approach, Cost Approach and Market Approach (Gautom & Banerjee, 2005). In the present study Market Approach of company valuation has been used by taking MC as an indicator of value of the company. MC shows the total value of the company or stated differently what it would cost to buy the whole company in the open market. In the present study MC has been considered as the indicator of the value of the company because MC is the consensus opinion of what the market thinks regarding the worth of the company (while book value is based on what accountants think the assets and liabilities of a company are worth). Besides this, MC is a short-cut that helps to determine how big or small a company is without doing all the calculations related to sales, revenues, liabilities, debt and all that (Chakraborty, 2011).

The remainder of this paper is structured as follow. Section 2 deals with the review of the existing literature on the present topic that is impact of different variables on company valuation. Section 3 presents the objectives of the study. Section 4 deals with the methodology developed in this study. In Section 5 the findings of the study are discussed. Section 6 gives a brief conclusion about the study.

REVIEW OF EXISTING LITERATURE

Before entering into the empirical study, a quick look through the existing literature on the analysis of the impact of different variables on company valuation seems desirable. The following paragraphs are devoted to a brief explanation of some significant studies on the issue so far carried out in India.

Ghosh and Ghosh (2008) in their paper studied how the probability of future value creation is affected by firm's profitability. They have considered firms listed in Indian stock exchange and used relevant statistical tools and techniques. One of the most important observations of the study was that the increase in profitability has a positive influence on the probability of creating future value and the relation is stronger for foreign standalone firms as compared to private Indian standalone or business group owned firms.

Chakraborty (2011) in his study measured influence of assets and profitability on the value of listed financial service companies in India. While doing so relevant statistical tools, techniques and tests such as simple correlation, multiple correlation and multiple regression, t-test, F-test have been applied. The study revealed that total assets had a positive correlation with the value of the company whereas influence of profitability on the value of the company was negative in case of Indian financial service companies.

Chakraborty (2011) conducted a study for examining the impact of assets and profitability on business valuation by considering thirty three listed non-financial companies. The study applied relevant statistical tools, techniques and tests such as simple correlation, multiple correlation and multiple regression, t-test, F-test to analyze the matter. The study disclosed that assets and profitability had a positive influence on the value of the company.

OBJECTIVES OF THE STUDY

The study has the following objectives:

1. To assess the influence of TATI, PAT and TS on MC of the selected companies by computing Karl Pearson's simple correlation coefficient, Spearman's rank correlation coefficient and Kendall's correlation coefficient between MC and each of these selected important parameters that have influence on the MC of the company. The assessment has been done taking all the selected companies as a whole.
2. To evaluate the joint effect of the selected variables influencing value of the selected companies on their MC. The issue has been addressed by taking all the selected companies in a consolidated manner.

METHODOLOGY OF THE STUDY

The study is based on thirty four companies which have been selected by taking the top most companies on the basis of companies' total assets and total income. This selection has been made considering "The BW real 500, The definitive ranking of India's biggest companies" published by Businessworld, New Delhi, October, 2011. Selected seven industries and thirty four companies have been displayed in Appendix. TATI, PAT and TR have been considered as the parameters which influence value of the company. MC has been considered as the indicator of the value of the company. The degree of the relationship between MC and each of the selected parameter that influence it (MC) has been assessed through correlation coefficients between MC and each of the selected parameter influencing MC taking into account their magnitudes (i.e., by Pearson's simple correlation coefficient), ranking of their magnitudes (i.e., by Spearman's rank correlation coefficient) and the nature of their associated changes (i.e., by Kendall's correlation coefficients). For studying the joint influence of the selected parameters influencing value of the company i.e., TATI, PAT and TR on MC, multiple correlation and multiple regression techniques have been applied. In order to examine whether the computed values of correlation coefficients and partial regression coefficients are statistically significant or not, t-test has been used. The multiple correlation coefficients have been tested by F-test.

FINDINGS OF THE STUDY

In Table 1, the effects of TATI on MC, PAT on MC and TR on MC of the Indian corporate sector have been evaluated. These have been done by computing Pearson's simple correlation coefficient, Spearman's rank correlation coefficient and Kendall's correlation coefficient between TATI and MC, between PAT and MC as well as between TR and MC taking all 34 companies as a whole. In order to test whether the computed values of correlation coefficient are statistically significant or not t-test has been conducted. Considering that more TATI, PAT and TR increases the company's MC, we expect a positive relationship between TATI and MC, between PAT and MC as well as between TR and MC. Table 1 shows that there were positive association between TATI and MC, between PAT and MC as well as between TR and MC, which were statistically significant at 1 per cent level in 7 cases out of total 9 cases (only Kendall's correlation coefficient between TATI and MC was positively significant at 5 per cent level and Spearman's rank correlation coefficient between TATI and MC was positive but statistically insignificant).

In Table 2, multiple correlation analysis and multiple regression analysis have been conducted to investigate the joint influence of TATI, PAT and TR on MC, taking all the selected companies in a consolidated manner. The partial regression coefficients and the multiple correlation coefficients have been tested using the t-test and F-test respectively. The regression equation that has been fitted in this study is $MC = B_0 + B_1.TATI + B_2.PAT + B_3.TR$, where B_0 is the intercept, B_1, B_2 and B_3 are the partial regression coefficients. Table 2 exhibits that for one unit increase in TATI the MC decreased by 0.121 unit which was statistically insignificant. When PAT increased by one unit, the MC stepped up by 11.811 units which was statistically significant at 1 per cent level. Table 2 also depicts that for one unit increase in TR, the MC increased by 0.527 units which was statistically insignificant.

Table 2 also reveals that the multiple correlation coefficient of MC on TATI, PAT and TR was 0.853 which was found to be statistically significant at 1 per cent level. This Table also discloses that the selected influencing factors (TATI, PAT and TR) contributed 72.70 per cent of the variation in the MC.

CONCLUDING REMARKS

1. In most of the cases computed values of Pearson's simple correlation coefficient, Spearman's rank correlation coefficient and Kendall's correlation coefficient taking all the selected companies as a whole, give proof of the significant positive relationship between TATI and MC (only Spearman's rank correlation coefficient between TATI and MC was positive but statistically insignificant), between PAT and MC as well as between TR and MC. Thus it conforms to that the larger the volume of TATI, PAT and TR, the higher the value of the company. In other words, TATI, PAT and TR have a positive correlation with the valuation of the company.
2. The partial regression coefficients shown in the multiple regression equation of MC on TATI, PAT and TR fitted in this study reveals that PAT made positive as well as very significant contribution towards improvement of the value of the company, while TATI made negative as well as insignificant contribution towards improvement of value of the company. The effect of TR on MC was positive but statistically insignificant.
3. Although the joint influence of TATI, PAT and TR on the valuation of the company was very significant, it was possible mainly due to very positive contribution of PAT towards improving value of the company as reflected in the multiple regression analysis made in this study.
4. It is clear from the outcome of the analysis of multiple determinations that 72.70 per cent of the total variation of valuation of the company was accounted by the joint variation in the volume of TATI, PAT and TR.

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TABLES

TABLE 1: ANALYSIS OF CORRELATION BETWEEN SELECTED FACTORS (TOTAL ASSET AND TOTAL INCOME, PROFIT AFTER TAX AND TOTAL RESERVES) INFLUENCING VALUE OF THE COMPANIES AND THE PARAMETER (MARKET CAPITALISATION) INDICATING VALUE OF THE SELECTED COMPANIES

(Taking all the companies in a consolidated manner)

Company	Total Assets & Total Income (Rs crore)	Profit after tax (Rs crore)	Total reserves (Rs crore)	Average market cap (Rs crore)
Reliance Industries	507774.33	19271.52	151111.73	319610.77
Indian Oil Corporation	431033.73	8085.62	55147.26	84272.53
Oil & Natural Gas Corporation	294039.31	22824.97	111049.49	253433.60
Tata Steel	219723.58	8856.05	34426.97	53343.58
Bharat Petroleum Corporation	197053.77	1742.06	15704.68	23198.10
Hindustan Petroleum Corporation	184645.83	1702.04	12941.43	13512.23
NTPC	180707.28	9348.23	60198.06	156310.40
Tata Motors	176075.22	9220.79	18533.76	53552.46
Bharti Airtel	168288.60	5899.20	46894.80	129653.14
Hindalco Industries	131625.79	2879.35	28824.29	35751.46
Larsen & Toubro	116729.93	4384.31	24514.93	106247.29
Reliance Communications	106077.06	1505.82	39467.17	27367.47
Steel Authority of India	103862.22	5017.29	33473.91	71640.98
Coal India	103364.55	10867.35	28622.21	222806.14
Sterlite Industries (India)	96387.43	7322.04	41099.36	56392.59
Adani Enterprises	81224.76	2825.90	17404.13	62039.99
MMTC	77915.21	112.26	1466.60	115307.68
Mahindra & Mahindra	74147.82	3197.79	13956.49	40702.87
Power Grid Corporation of India (s)	73860.22	2696.89	16737.27	45464.75
Jaiprakash Associates	70525.05	2059.03	10353.82	21970.46
Essar Oil (s)	69344.16	653.88	5155.63	16977.25
Bharat Heavy Electricals	64656.57	6053.36	19665.56	107731.62
GAIL (India)	64366.70	3980.85	19945.39	58186.83
Tata Consultancy Services	63106.64	9189.79	24209.09	196381.00
DLF	61126.46	1638.02	24031.77	46295.17
Tata Power Company	60655.07	2181.91	13790.55	30228.43
Wipro	59646.40	5265.30	21968.00	103124.74
JSW Steel	57535.32	1659.38	15429.36	21329.16
Infosys	54688.00	6835.00	25690.00	165052.21
Aditya Birla Nuvo	53587.74	907.97	25494.28	9016.79
Cairn India	53378.16	6334.40	38335.84	61001.20
NHPC	53336.23	2462.77	14229.52	33838.08
Maruti Suzuki India	52833.00	2307.10	14164.30	37185.99
Reliance Infrastructure	52191.79	1229.00	23340.14	20773.36
Correlation Coefficient	Pearson	Kendall	Spearman	Pearson	Kendall	Spearman	Pearson	Kendall	Spearman	
	0.519**	0.237*	0.320	0.846**	0.640**	0.777**	0.736**	0.419**	0.548**	
** Significant at 1 per cent level	* Significant at 5 per cent level									
Source: "The BW real 500, The definitive ranking of India's biggest companies" published by Businessworld, New Delhi, October, 2011 (Vol.31, Issue 23).										

TABLE 2: MULTIPLE CORRELATION ANALYSIS AND MULTIPLE REGRESSION ANALYSIS OF THE PARAMETER (MARKET CAPITALISATION) INDICATING BUSINESS VALUE ON SELECTED FACTORS (TOTAL ASSET, NET PROFIT AND SALES) INFLUENCING BUSINESS VALUATION

(Taking all the companies in a consolidated manner)

Multiple correlation of MC on TA, NP and S	Regression equation of MC on TA, NP and S. $MC = B_0 + B_1.TA + B_2.NP + B_3.S$		
	Variable	Partial Regression Coefficients	t Value
R = 0.853	TATI	-0.121	-1.092
R^2 = 0.727	PAT	11.811	4.374**-
F = 26.686**	TR	0.527	0.931
	Constant	18404.008	1.635
** Significant at 1% level Table value of F with (k, n-k-1), i.e. (3,30) degrees of freedom at 1% level is 4.51	** Significant at 1% level Table values of t with (n-k-1), i.e. 30 degrees of freedom at 1% level is 2.75		
Source: "The BW real 500, The definitive ranking of India's biggest companies" published by Businessworld, New Delhi, October, 2011 (Vol.31, Issue 23).			

APPENDIX

APPENDIX: 1

Name of the companies under study
Reliance Industries
Indian Oil Corporation
Oil & Natural Gas Corporation
Tata Steel
Bharat Petroleum Corporation
Hindustan Petroleum Corporation
NTPC
Tata Motors
Bharti Airtel
Hindalco Industries
Larsen & Toubro
Reliance Communications
Steel Authority of India
Coal India
Sterlite Industries (India)
Adani Enterprises
MMTC
Mahindra & Mahindra
Power Grid Corporation of India (s)
Jaiprakash Associates
Essar Oil (s)
Bharat Heavy Electricals
GAIL (India)
Tata Consultancy Services
DLF
Tata Power Company
Wipro
JSW Steel
Infosys
Aditya Birla Nuvo
Cairn India
NHPC
Maruti Suzuki India
Reliance Infrastructure

Source: 'The BW real 500, The definitive ranking of India's biggest companies', published by Businessworld, New Delhi, October, 2011 (Vol.31, Issue 23)

CHRONOLOGICAL STUDY ON POSITIONING WITH EMPHASIS ON MALLS

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ABSTRACT

Growth of malls in India has been phenomenal, initially in the metros and now in tier II and tier III cities. However as per the reports of reputed property consultants, the vacancy levels in various malls have been steadily increasing and the new malls are also struggling to get sustainable occupancy levels. Given this scenario, the authors believe that there is a need for a sound positioning strategy in the development of malls. The successful positioning strategies are those of Sahara mal, Gurgaon as a mall for middle income segment, Select city walk, Delhi for high networth individuals and Palladium in Mumbai as a mall for the creamy layer of the population. This paper, based on the analysis of reports of various consultants, expert opinions and available literature, highlights the importance of positioning of malls in India. A chronological order has been made from the earlier researches about the various ways in which positioning and image were understood and defined. The distinction between image and positioning and how their understanding and usage by marketer's influences consumer decision making process has been presented.

KEYWORDS
Consumer Decision Making, Image, Malls, Positioning, Retail.

INTRODUCTION

The Indian Retail Sector is booming and mall growth in India has been phenomenal. Dominant retail activity is visible in the top cities but tier II and III cities are also witnessing change. However vacancy levels of malls in India continue to be high. According to Jones Lang LaSalle, India, vacancy levels across Indian malls in top seven cities of Mumbai, NCR, Bangalore, Kolkata, Chennai, Hyderabad and Pune is about 17-18%. As per real estate consultants, Knight Frank India, the total vacancy rate of malls is as high as 30% in NCR, 10-12% in Mumbai and 15-18% in the southern markets. Out of the 90 malls expected to be developed, 50% are likely to struggle for occupants. Of the existing malls, some of the successful ones are Select Citywalk (Delhi) and Sahara Mall (Gurgaon). Both Select and Sahara have a clear positioning. While Select Citywalk is positioned for HNI customers, Sahara mall is positioned as a mall for the MIG segment. Palladium in Lower Parel, Mumbai is also able to get good clientele. With high end brands and availability of valet parking it is clearly positioned as a mall for creamy layer of the population. Based on these facts, experts opinion and available literature, the authors conclude that there is lacuna in the strategy development in this area. In short it can be said that a majority of mall developers do not realize the relevance of positioning strategy. Hence there is a need to focus and do researches on this untouched but crucial issue of mall positioning. The purpose of this paper is to conduct a chronological study of positioning and image, distinguish between image and positioning, distinguish between image based consumer decision making and positioning based consumer decision making, discuss the relevance of positioning malls in India, the work done so far on positioning research and the need for future research on mall positioning in India.

METHODOLOGY

To write this conceptual paper, around 40 research papers have been reviewed, out of which 15 research papers were found useful for the study. The research articles have been collected mostly from EBSCO and other sources. Books and electronic resources have also been widely used for the research. A chronological order has been made from the earlier researches about the various ways in which positioning and image were understood and defined. The findings have been presented in the table I in this article. An attempt was then made to distinguish between positioning and image and how their understanding and usage by marketers influences consumer decision making process.

LITERATURE REVIEW - POSITIONING

In early 1960s, *positioning* referred to simply placing or locating. It became popular in marketing only in the 1970s mainly in the area of advertising and promotion (John. P. Maggard, 1976). The earliest distinct definition of positioning was given by Al Ries and Jack Trout (1972) in their seminal work "Positioning: The Battle for your Mind". According to them, "positioning is where the company wants its product to be placed in the customer's mind so that it will achieve optimal utilization… not what you do to the product but what you do to the mind of the prospect." Positioning is also referred to as an act of designing the companies offering and image to occupy a distinctive place in the minds of the target market... (Philip Kotler, 2000). Positioning means different things to different people, to some it means the segmentation decision, to others it is an image question and to still others it means selecting which product features to emphasize (David Aaker and Gary Shansby, 1982). Lewis Alpert and Ronald Gatty (1969) described consumers in terms of their usage, their perceptions about a brand, and demographics such as age, income and family size. This is useful in finding out product positioning which they define as the differentiation of brands by studying the ways in which their consumers differ as well as how consumer perceptions of various brands differ. In retail, positioning refers to the target market segment (s) served by the retailer and the differential advantage it is perceived to offer (Marcel Corstjens and Peter Doyle, 1989).

A new perspective on positioning was conceptualized by Andreas Herrmann and Frank Huber in 2000, which included a place (what place does the specific brand occupy in its relevant market?), a rank (how does the given brand fare against its competitors on various evaluative dimensions?) and a mental attitude (consumer attitudes – the cognitive, affective and action tendencies) toward the given brand. In short, product positioning means the place, a product occupies in a given market.

IMAGE Vs. POSITIONING

The term image is an abstract concept incorporating the influences of past promotion, reputation and peer evaluation of the alternative and it connotes the expectation of the consumer (Dennis H. Gensch, 1978). To differentiate between positioning and image, David Aaker and Gary Shansby (1992) say that the term

position differs from the older term image in that it implies a frame of reference; the reference point usually refers to the competition. For instance, when the Bank of California positions itself as being small and friendly, it is explicitly, or perhaps implicitly, positioning itself with respect to Bank of America.

In their study on retail stores, Zimmer and Golden found that consumers used different types of image descriptors to express their perceptions, i.e., attribute based perceptions, global image perceptions, store-type labels, prototypic and exemplar image descriptions, product-related image descriptions and behavioral image descriptors. A store's image as defined by Zimmer and Golden is the way it is perceived by consumers. The consumer's perceptions of store image include both subjective and objective characteristics. Overall image of a retail store is greater than the sum of its parts. In a similar way a store's image is a combination of factual and emotional material and also a combination of tangible and intangible factors (Golden, Albaum and Zimmer, 1987).

As Subroto Sengupta (1995) says, the brand image represents the essence of all the impressions or imprints about the brand that have been made on the consumer's mind. It includes impressions about the physical features, functional benefits, people who use it, emotions and associations aroused by it, imagery and symbolic meanings evoked in the consumer's mind. The brand image is the totality of the brand in the perception of the consumer. It is truly a complex symbol and defines oversimplification. On the contrary, when we compare image with positioning, it is clear that positioning is the simplification.

TABLE - I: CHRONOLOGICAL CHART OF THE STUDIES ON IMAGE AND POSITIONING

S. No.	Year	Author	Findings
1	1958	Martineau	Image of a retail outlet as a combination of functional and psychological attributes
2	1961	Kunkel and Berry	Retail store image as a total conceptualized or expected reinforcement associated with that particular store
3	1969	Lewis Alpert & Ronald Gatty	Differentiation of brands based on consumer perceptions defined as Product Positioning
4	1972	Al Ries and Jack Trout	Positioning as a marketing strategy
5	1974-75	Lindquist	Store image as a combination of tangible and intangible factors
6	1974-75	Oxenfeldt	Store image as a combination of factual and emotional factors
7	1976	John. P. Maggard	Evolution of Positioning meaning as placing or locating to its related advertising and promotion Positioning Strategy Internal & External Positioning Positioning as a conceptual vehicle Head on Positioning Social accountability positioning
8	1978	Dennis, H. Gensch	Image as an abstract concept incorporating the influences of past promotion, reputation and peer evaluation of the alternative and connotes the expectation of the consumer
9	1982	David Aker and Gary Shansby	Positioning as (i)a segmentation decision (ii) an image question (iii) selection of product features to emphasis
10	1982	David Aker and Gary Shansby	Difference between image and positioning. Position implying reference to competition
11	1982	Leonard Berry	Positioning as identifying and occupying an available position in the market
12	1987	Golden, Albaum and Zimmer	Types of image descriptors used by consumers
13	1988	Zimmer and Golden	Store's image as subjective and objective characteristics
14	1989	Marcel Corstjens & Peter Doyle	Positioning referred to retailer's target market segment and its perceived differential advantage
15	1990	Subroto Sengupta	Image representing the essence of all the impressions or imprints about the brand in the consumer's mind.
16	2000	Philip Kotler	Positioning as a company's offer to occupy a distinctive place in the target market's mind
17	2000	Andreas Herrman & Frank Huber	Positioning as a (i) place (ii) rank (iii) mental attitude
18	2007	Jones LL & Meghraj Report	Positioning of mall referring to offer of category or services with respect to demographics, psychographics, income levels and competition.
19	2011	Suresh Sannapu and Nripendra Singh	Positioning as fulfillment of the dual expectations of each of the three stakeholders – mall developers, retailers and shoppers

Source: As adapted by the authors from various publications

It is evident from the table-I, 'Chronological chart of the studies on Image and Positioning' that the term Image was initially used by researchers and academicians for defining the consumers overall perception especially in retail stores. The term image was gradually replaced by positioning, which got the focus of researchers and was used commonly. Also, it is observed that there is a significant difference from how positioning emerged and understood in the 60's and how it culminated to its present definition. Even now the thin line between image and positioning is not understood by many marketers and they are synonymously used by them. However, from the table few things are clear. Positioning quite distinctly differs from image, in the sense, positioning has clear reference to competition where as image need not be so. For instance, DLF Emporia is positioned as luxury mall; implicitly it refers to being high end compared to Ansal Plaza in Delhi and Metropolitan Gurgaon. Similarly, Sahara mall in Gurgaon is positioned as a mall for the MIG (middle income group) segment, implicitly refers that customer segment which it caters to differs from the segments targeted by Select Citywalk in Delhi or Ambience Mall in Gurgaon. On the other hand image is a complex symbol. For instance, DLF Emporia has a image of a mall with aesthetic design, spacious, premium merchandise, life style products, good ambience, large visual displays, wide corridors, artful lighting, visited by the rich for buying premium products.

TABLE II: MALL POSITIONING Vs. MALL IMAGE

Mall Name	Positioning	Image
DLF Emporia, Delhi	Luxury Mall	Mall with aesthetic design, spacious, premium merchandise, life style products, good ambience, large visual displays, wide corridors and artful lighting.
Sahara Mall, Gurgaon	Mall for MIG (Middle Income Group)	A mall with high range of products, reputed brands, good parking, large atrium, reputed anchor stores, reputed restaurants, good discounts and multiplex

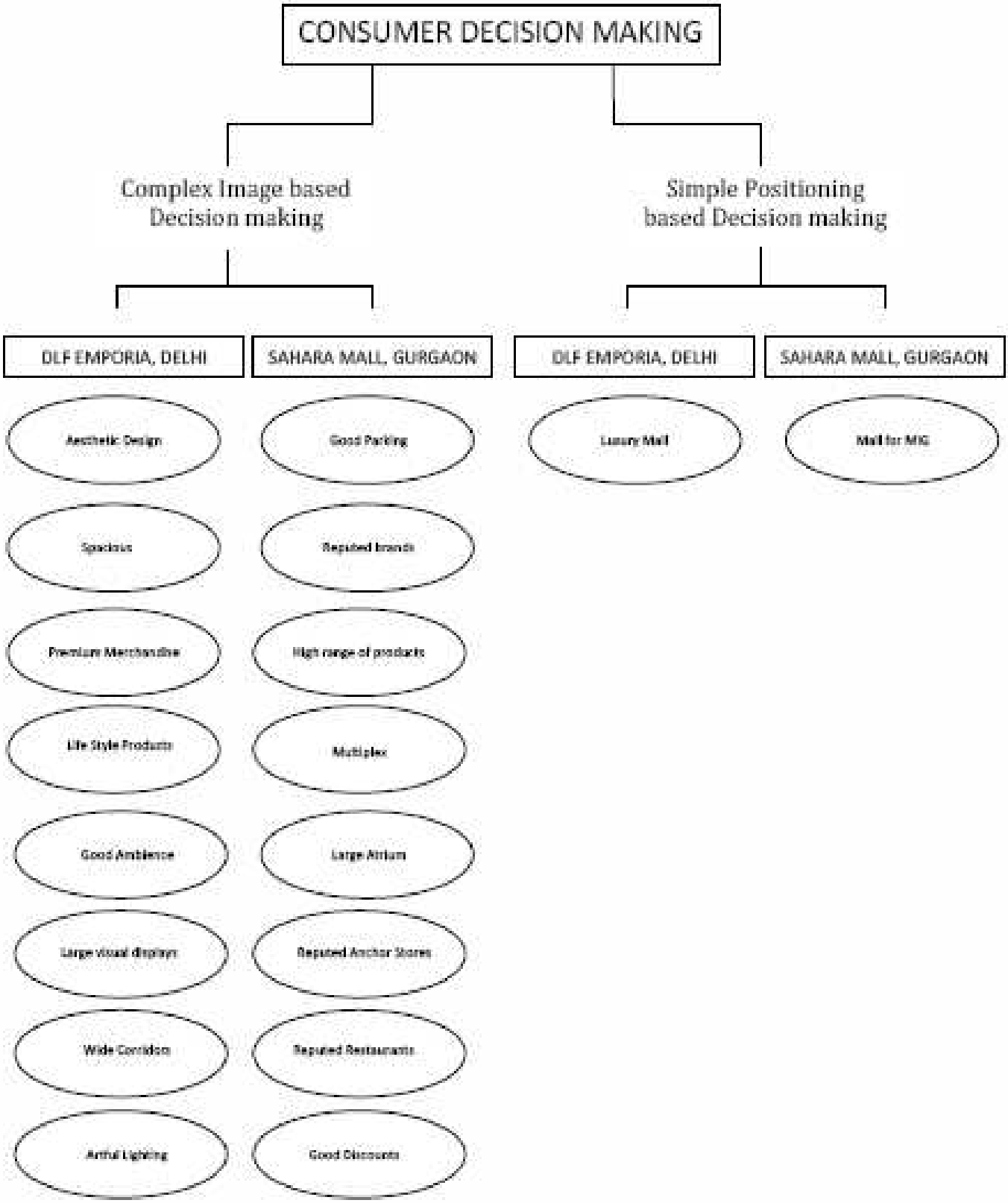
Source: As developed by authors

MALL POSITIONING AND CONSUMER DECISION MAKING

Before the malls have arrived on the shopping map, most consumers had to visit local kirana store for convenience products and local markets or high streets(like those at Sarojini Nagar, Lajpath Nagar and Janpath, high streets at South extension and Cannaught Place at Delhi) for shopping products. When the first few

malls have come up, many consumers have replaced malls and other organized retail formats as shopping destinations to local markets and kirana stores. The malls have given the consumer the convenience of shopping, food and also movies at one place. The benefits from the malls were saving of time, effort, money, a pleasant environment and good ambience to shop at. However as the malls have started coming up in large numbers, they have also come with almost the same retail mix. In a poll question asked by India Retailing, "Shopping centres are still not unique when it comes to retail offerings", 68.22 per cent of the respondents said "yes", whereas only 8.41 per cent said "no". As shoppers have to make a choice, they have started patronizing a few malls and have started ignoring the rest. The authors believe that the reason for this is the complexity involved in the image based decision making in selection of these malls. Majority of the malls carried the same image in that they offered similar retail mix in terms of shopping, entertainment and food. This similarity in image based perceptions made the consumer decision making complex. On the other hand, positioning based decisions were easier. For luxury goods you visit DLF emporia, for gold products you visit Gold Souk and so on. In future there may be malls based on categories (food and grocery or apparel), themes (entertainment, kids, women or family), etc. Hence, the authors conclude that positioning will help consumers in simpler decision making and will hence help in mall patronization. Fig. I A consumer decision making model has been developed using illustrations from the retail sector (malls).

FIG. I: IMAGE BASED VS POSITIONING BASED CONSUMER DECISION MAKING



Looking at the tremendously growing organized retail in India, it is quite surprising that positioning concept is hardly used by the sector, despite an impulsive need forced by the market environment. Mall occupancy rates are decreasing day by day, vacancy rates are going up, decreasing footfalls, increasing number of window shoppers, increasing cost of resources and services and growing competition, it is inevitable to differentiate between image and positioning. A proper understanding of the two can help to reduce the ambiguity in terms of developing a sound strategy.

RECOMMENDATIONS/SUGGESTIONS

A well-planned and implemented strategic positioning is critical for the success of a shopping mall (Yiu & Yau, 2006). Positioning plays an important role for the success of any mall. A very well designed mall constructed with good aesthetics can be a failure if the positioning is not done in an appropriate way. For instance, positioning is the primary factor for a luxury retailer. To give an example, French label Christian Dior scouted for a suitable space in Mumbai for more than four years before finally settling for a store in the upscale Taj Mahal Palace Hotel in October 2010. Thus, the success of Indian malls will not only be achieved by housing the best mix of retailers, but also by setting up new standards and procedures that will provide a platform to differentiate itself from competitors. Retailers can also help developers with their operational expertise to devise strategies best fitted with the overall mall positioning. As has been observed that many malls are becoming unviable, one of the main reasons seems to be a lack of sound positioning strategy. Facing a similar situation in the U.S., the importance of mall positioning has been recognized within the shopping center industry and industry leaders have been encouraging low performing malls to emulate (LeHew & Fairhurst, 2000). Similarly in India now developers who have understood the importance and relevance of positioning of their mall are emerging as successful. An image focused strategy leads to confusion in the minds of customers as it creates complexity because of too many focuses on different features and characteristics of the mall, leading to complexity in decision making. On the other hand, positioning strategy gives a clear picture of mall to the shoppers and clearly identifies the advantages over the competition, which simplifies the decision making in the minds of the customers.

CONCLUSION

Thus, it can be concluded that with crores of investment at stake, and expected huge losses it is rather surprising that there is no clear positioning strategy in place for many malls. However it is heartening to note that the sector has started to realize the importance of the same, and a few of them have taken significant steps in that direction. The authors hope that with increasing realization about the importance of mall positioning, if more developers take interest in positioning their malls, the benefits will be galore not only for the developers, but also for the retailers for more profitability and also for shoppers in their shopping decisions.

SCOPE FOR FURTHER RESEARCH

There is a large scope of research on positioning of malls in India. As a part of the ongoing study, the authors have brought in the conceptual understanding through this paper, which is validated by an empirical study in the forth coming research paper. Research may also be conducted in other situations and geographical regions to validate the same.

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CYBER ATTACK MODELING AND REPLICATION FOR NETWORK SECURITY

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ABSTRACT

Cyber security methods are continually being developed. To test these methods many organizations utilize both virtual and physical networks which can be costly and time consuming. As an alternative, in this paper, present a simulation modeling approach to represent computer net-works and intrusion detection systems (IDS) to efficiently simulate cyber attack scenarios. The outcome of the simulation model is a set of IDS alerts that can be used to test and evaluate cyber security systems. In particular, the simulation methodology is designed to test information fusion systems for cyber security that are under development.

KEYWORDS
cyber attack modeling, network security.

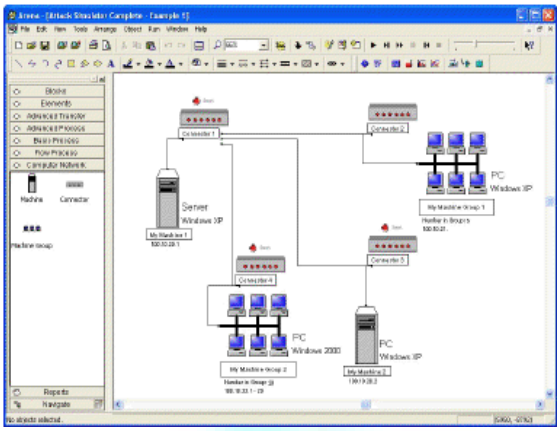
INTRODUCTION

As the use of computer networks grows, cyber security is becoming increasingly important. To enable systems administrators to better protect their networks, cyber security tools are employed to warn of suspicious network activity.
In some situations, systems administrators have to deal with millions of such warnings each day. Consequently, situational awareness and threat assessment tools that employ information fusion techniques are being developed to aid in fighting cyber attacks [1]. As these systems are being developed, data is needed to test and evaluate their performance. As an alternative to a physical computer network, a simulation modeling methodology is presented.
The simulation method allows the user to construct a virtual computer network that produces cyber attack warnings representative of those produced by intrusion detection systems. Consequently, this flexible simulation modeling framework will enable the efficient generation of data to test and evaluate situational awareness and treat assessment tools for cyber security. There is some research in modeling of computer net-works and cyber attacks. Although simulating the flow and processing of packets in the computer network is possible (potentially billions of packets per day), only a small fraction of the packets cause alerts to be produced by the intrusion detection system which in turn would be used by the information fusion tools. Furthermore, modeling a system at this level of detail requires great amounts of time and effort for modeling as well as requiring large amounts of computer processing time for simulating "good" packets. As an alternative to modeling the details of packet flow in a net-work, this work presents a simulation model for simulating the behavior of the intrusion detection system by producing simulated alerts representative of malicious cyber attacks and non-malicious network activity based on the user's specification. Consequently, the user can efficiently construct scenarios of various computer networks and cyber attacks and generate the corresponding alerts.

OVERVIEW OF THE REPLICATION MODEL

A discrete-event simulation model has been developed for generating representative cyber attack and intrusion detection sensor alert data. Although the model is primarily de-signed to be used in testing cyber situational awareness and analysis tools, other applications such as training of systems analysts may also make effective use of the model. The simulation model is initially implemented in the ARENA simulation software [3].
An object-oriented model written in Java is currently under development. Although this paper utilizes the ARENA model to illustrate the modeling concepts, the focus is on the concepts themselves. The simulation model provides a user with the ability to construct a representative computer network and setup and execute a series of cyber attacks on certain target machines within that network. IDS sensors that are setup within this network produce appropriate alerts based on the traffic they observe within the network. The alerts produced consist of a combination of the alerts produced as a result of attack actions and as a result of typical "noise" (non-malicious network traffic that triggers an alert.)Figure 1 displays an example network interface setup using the ARENA model. To effectively model a network setup in ARENA and to provide users that may not have extensive simulation training with a friendly interface, custom modules were created for the network devices. The simulated computer networks consist of three primary types of devices: machines, connectors, and subnets. A machine can represent an individual computer or server. Machine characteristics can be specified including the IP address, the operating system, and the type of IDS sensor on the machine (if any). For each IDS sensor specified, an associated output file will be generated containing the sequence of alerts produced when the simulation is run.
A connector represents the means by which computers are connected, such as through a switch or a router. The network connectivity plays in important role in establishing the path that an attacker can take through the network. The connector also has network IDS sensors that can be represented which are used to monitor any network traffic that travels through the connector and produce alerts corresponding to known potentially harmful actions. A subnet represents a group of several machines with connectivity to the network that all share a common set of properties (such as the operating system). Machines within a subnet contain the same set of properties that could be specified if the machines were placed into the network individually. The subnet just provides an efficient method of specifying groups of computers (particularly useful when specifying large networks.)Connector lines are used in the model to connect the modules and represent the connection of machines/subnets to a connector, as well as the connections between connectors themselves. When a computer network has been created, an attack scenario can be setup and run on the network. An attack scenario consists of a series of specified cyber attacks occurring over a period of time along with a specified quantity of network noise. A user-interface with a series of forms is used to specify the desired scenario. The model structure enables manual or automatic attack generation. In the manual mode, the user can specify all of the details of the attack scenario including the sequence and timing of attack actions as well as the path the attack will take through the computer network. In the automatic mode, the user can specify the goal (ultimate attack action and target computer) of the attack, and the simulation model will generate a random, feasible sequence of attack actions along a path that leads to the goal. Additional parameters that represent the behavior of the attacker can also be specified. These parameters include the efficiency, stealth, and skill of the attack being modeled. The efficiency refers to how direct the attack is, and this utilizes a range between0 and 1, with 1 representing the most efficient attack path. The stealth parameter refers to how well the attack avoids detection, primarily by avoiding intermediate "goal" steps, and this also utilizes a range between 0 and 1. The skill refers to the probability of success for each step.

FIGURE 1: SAMPLE NETWORK INTERFACE IN ARENA MODEL



Currently, an attack scenario in the ARENA model can handle up to 25 attacks with 250 steps per attack. Also, for each type of attack, the user can specify the time between attack steps based on a fixed number or on a random number sampled from an exponential distribution. The steps/actions available for use in an attack are chosen from a categorized list of 2,237 known exploits in 5 major groups and 23 subgroups. If no specific exploit is selected, one will be chosen at random based on the subgroup. In addition to attacks, the user can specify, the rate at which non-malicious traffic alerts (noise) is generated, as well as the probability of noise alerts corresponding to each of the action categories. Once the scenario has been created, the information is saved in a file for future use. The simulation is then run, and the attack scenario is executed. The output of the simulation includes a file listing the actions generated for each attack (known as the "ground truth") and the time the action occurred. In addition, an output file containing IDS alerts is produced for each IDS sensor specified in the modeled network. These files containing IDS alerts are in-tended to be used to test the situational awareness and analysis tools.

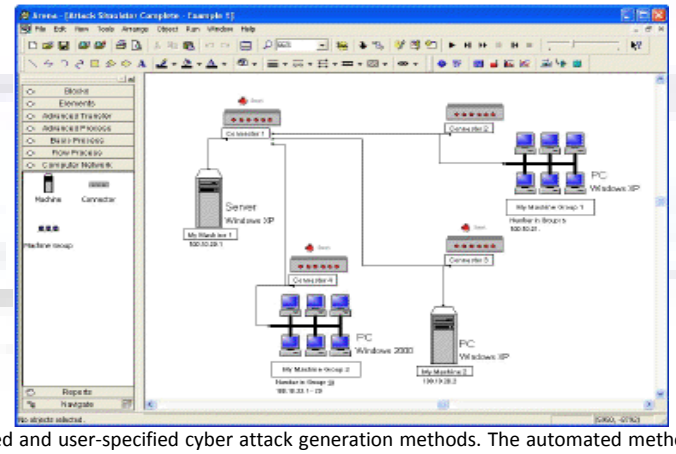
SIMULATION METHODOLOGY

Modeling Computer Networks, the computer network is modeled using two basic constructs: machines and connectors. The third construct, subnets, represents a group of machines. The modules representing the machines, connectors, and subnets provide a visual representation of the computer network. However, functionally, these modules provide a logical method for the user to enter the data about the computer network including whether the ma-chine can be accessed externally from the Internet. The connecting lines showing the connectivity of the network are used to construct a from-to type of matrix representing the network topology that will be used in the attack generation. The details of the devices (such as the type of IDS) are stored as variables that can be accessed based on the device ID. The devices used can be easily modified by double-clicking their corresponding representation in the interface to bring up a form to enter or change information.

MODELING CYBER ATTACKS

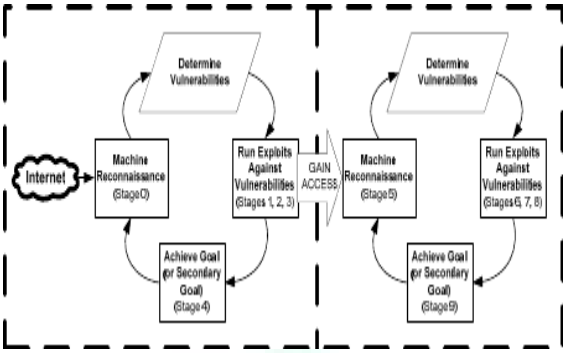
The scope of this work is on cyber attacks that are initiated by a hacker through the Internet. Although insider attacks could also be modeled, this is not the primary purpose of the model. The progress that a hacker can make in an at-tack is dependent upon the hacker's capabilities and the vulnerabilities of the network. The methods for modeling and simulating the initiation and progression of cyber at-tacks through a computer network included in this model are based on Sudit et al. (2005). Sudit et al. (2005) place the sequence of attack actions that a hacker may use into stages that correspond to the hacker's capabilities given the current state of the network. These stages are referred to as Stage 0 through Stage 9where Stage 0 represents generally reconnaissance activities on the external part of the computer network where the attacker is using exploits to simply gain more information about the network. (In this discussion an external machine is one that can be accessed from the Internet, and an internal machine is a machine that can only be accessed from an external machine through a firewall or from another internal machine.) Stage 0 –Stage 4 represent hacker actions on external machines, and Stage 5-Stage 9 represent hacker actions on internal machines. Figure 2 shows some typical hacker actions that correspond to an attack stage. The hacker can attack an organization's machine that is on the external side of the computer network. Once the external machine has been successfully compromised, the hacker can use the compromised external machine to work their way through the external network until the capability to access internal machines is reached. Once the hacker has infiltrated the internal network, the internal machines can be compromised until the hacker reaches their goal. Figure3 illustrates the cyber attack process from the internet to a goal on an internal machine.

FIGURE 2: TYPICAL HACKER ACTIONS IN A CYBER ATTACK



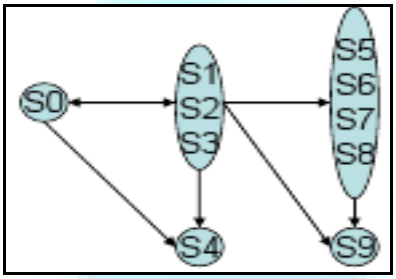
The simulation model includes automated and user-specified cyber attack generation methods. The automated method utilizes the network specifications and connectivity in combination with a guidance template of the available stages to determine the capabilities of the attacker and vulnerabilities of the network and generate a feasible sequence of attack steps for the cyber attacks. The graph based guidance template is used to determine which groups of actions are feasible at different points of the attack. A diagram of the graph-based template that the simulation model currently operates under is shown in Figure 4 (S0, S1, …, S9 represent Stage 0, Stage 1, … , Stage 9.)

FIGURE 3: PROGRESSION OF A CYBER ATTACK ON A COMPUTER NETWORK FROM THE INTERNET



The graph is a directed graph, which means that an edge (arc) only indicates a feasible transition in the direction that the edge is pointing. Nodes within the same group form a complete graph in which each node is connected to the every other node. This graph-based template is represented as an adjacency matrix of 1's and 0's representing which stages are accessible after which other stages have been performed.

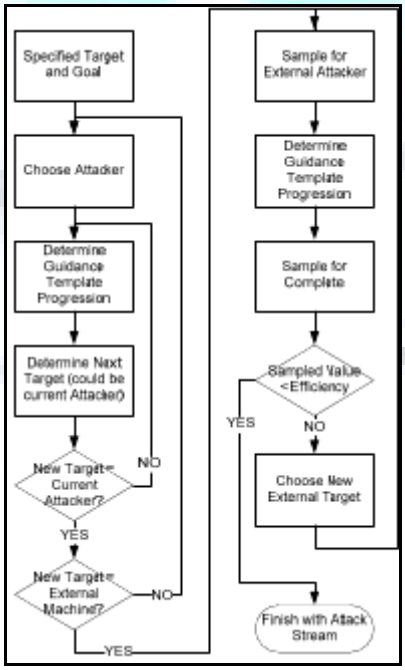
FIGURE 4: DIRECTED GRAPH REPRESENTING ATTACK STRUCTURE



Given the attack structure (in the form of the guidance template) and the network configuration specified, the user also specifies a target machine, a goal, and several other attack related parameters through a series of forms. Figure 4 illustrates the auto-mated method that is used to generate the specific multi-stage attack.

In generating the steps (prior to simulating them over a time period), the methodology works backwards through the network by first defining the attack's target and finding a path up out of the network that the hacker could attack through. The logic first chooses an attacker(machine from which the hacker could execute the attack step) which is able to communicate with the chosen target based on the topology of the network. After the attack progression for the current target is determined, a new target can be chosen. The options for the new target are a machine with which the current attacker can communicate or the current attacker itself. Choosing the current attackers the new target will move the attack to a higher level of the network topology (toward the external machines) to model the way in which hackers penetrate a network. If the chosen target is not the current attacker, the logic will repeat the steps for determining guidance template progression and determine another target, using Stage 5through Stage 9. However, if the current attacker is chosen for the new target, the attack generation moves up a level in the network topology. Thus, the logic evaluates whether the chosen target has become an external ma-chine. If the chosen target is not an external machine, the logic will choose a new attacker who can reach the new target and repeat the attack generation process. However, if the target is external, the attacker must be attacking from the Internet. Thus, the attacker IP address for attacks on external machines is created randomly since hackers will generally "spoof," or disguise, their IP address when attacking from the Internet. The logic will then determine the guidance template progression for the external target, now using Stage 0 through Stage 4.

FIGURE 5: AUTOMATE ATTACK GENERATION METHOD



CURRENT DEVELOPMENT

Current work entails the development of an object-oriented Java simulation model. The primary motivation behind this development is to create a simulator that is plat form independent and easier to use for individuals with expertise in computer networks and cyber security rather than simulation. This new model improves up on the ARENA model by providing several features allowing for networks and attacks to be defined in more detail and allowing for a wider range of inputs to and outputs from the model. These features include:

- Allowing multiple attack scenarios to be created and saved with a network;
- Separating the auto-attack generation and event simulation, and providing a display for each;
- Defining a list of services running on a machine;
- Defining a list of ports/protocols that are allowed or banned through a specific connector path;
- Utilizing the machine vulnerabilities and connector attributes to determine the selection and the success of an action/exploit (as opposed to strict probability);
- Allowing network traffic to be routed through more than two connectors (based on connector link attributes);

CONCLUSION

The Cyber Attack Simulator presented in this paper is capable of generating IDS alert and ground truth files based on the specification of a computer network and attacks. The simulator is built with a user interface to allow the creation of various computer network configurations and attack actions. The model also incorporates a method for automated attack generation given the network configuration, characteristics describing hacker capabilities, and vulnerabilities of the network.

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WORKING CAPITAL MANAGEMENT OF HUL – A CASE STUDY

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ABSTRACT

Management of working capital is a very common phenomenon of every business firm and is of great importance for its overall growth and decline. Working capital management decisions are related with current assets and current liabilities and also the short-term financing. Such decisions involve the relationship between firm's short-term assets and its short-term liabilities. The main objective of working capital management is to assure the liquidity position of the company by proper controlling of adequate cash flow for meeting the short-term obligation and future operational costs. Excessive and inadequate working capital is harmful to the business. Therefore, for achieving the objective of the business, working capital should be managed in such a way that it controls liquidity and at the same time increases the profitability of the business. The present study is made to make a detailed analysis of working capital management of Hindustan Unilever Limited.

KEYWORDS

Working Capital Management, Working Capital Policy, Working Capital Leverage, Liquidity, Profitability.

INTRODUCTION

Management of working capital is a well-known subject not only from the academic point of view but also from the real world situation. The efficiency with which the working capital is managed in a business firm is of great importance for its overall growth or decline. The significance of working capital varies from industry to industry. A business firm in the capital goods industry may have relatively a lower percentage of the total investment in the current assets than what has to be blocked up in fixed assets. From that point of view working capital management may assume a greater importance in consumers' goods industry, trading firms etc. But, whatever may be the size of business it is important to maintain a desirable portion of working capital in the business. It is the 'life blood' of each and every business concern. Even a business which is fully equipped with all types of fixed assets required is bound to collapse without (1) adequate supply of raw materials for processing, (2) cash to pay for wages, power and other costs, (3) creating a stock of finished goods to feed the market demand regularly and (4) the ability to grant credit to its customers. For all these require working capital. The business will not be able to carry on its day to day activities without the availability of adequate working capital. More working capital signifies more liquidity. Liquidity plays a very vital role in a business for its prosperity or failure. But it is not desirable to maintain more cash for its liquidity. The liquidity of a firm may hurt its profitability.

Decisions relating to working capital involve managing the relationship between a firm's short-term assets and its short-term liabilities. The goal of working capital management is to ensure that the firm is able to continue its operations and that it has sufficient cash flow to satisfy both maturing short-term debt and upcoming operational expenses. The management of working capital involves managing inventories, accounts receivables and payables and also cash.

Short-term assets or current assets are essential to use fixed assets profitably. Short-term assets refer to those assets which in the ordinary course of business can be converted into cash within one year without undergoing diminish in value and without disrupting the operations of the firm. On the other hand, short-term liabilities are those which are to be paid within a year out of the current assets or earnings of business firm.

The principal objective of working capital management is to assure that the company is capable of carrying out its functions and it receives adequate cash flow for meeting the short-term obligations and future functional costs. Shortage of funds invested in working capital restricts the normal growth of the firm. Lack of efficient and effective utilization of working capital leads to earn low rate of return on capital employed or even compels to sustain losses. The need for efficient working capital management has thus become greater importance in recent years.

Working capital management is the art and increasingly the science of managing a company's short-term resources to sustain its ongoing activities mobilizes funds and optimizes liquidity. Working capital is a systematic process, plan and technique of managing the current assets and liabilities of the concern and establishing an effective link between current assets and current liabilities. It has the ultimate objectives of maintaining the liquidity and attaining the financial goal of increasing the net health of the business organization. Management of working capital is particularly important for new growing business. Inadequate and excessive working capital poses a threat to the business. Inadequate working capital may stop the operating activities of the organization whereas excessive working capital results in blocking of capital without any effective yield.

In the present study, an attempt has been made to analyze the working capital management of Hindustan Unilever Limited, a very well- known company in Indian FMCG industry.

LITERATURE REVIEW

Sur (1997) made a study on working capital management in Colgate Palmolive (India) Ltd. He attempted to assess the efficiency of working capital management in terms of working capital ratio, acid test ratio, current assets to total assets ratio, current assets to sales ratio, inventory turnover ratio and debtors' turnover ratio. His study revealed that the working capital management was inefficient during the study period. He also suggested special attention to the inventory management.

Shanmwgam and Poornima (2001) conducted a study on 28 medium and large scale spinning mills in Coimbatore industrial area (Tamil Nadu). In this study they revealed that effective working capital management is very important in organization's success. Their study showed that most of the industries (10 mills) depended on production plans in working capital planning without considering all norms aside.

Swamy in 1997 made a study on primary agricultural societies (19) in the area of Dakshina kamada district in Karnataka. The study revealed that the balancing of liquidity and profitability was the major problem of working capital management in his sample units. In this study he stressed the importance to the effective working capital management in the societies.

In 1983 Ghosh conducted a study regarding the existing practices of working capital in crane manufacture industry in India. His study indicates that the management of individual components of working capital was erratic. He also recommended that the payments to the suppliers were equally delayed keeping highest portion of payables pending for more than allowed period.

Banerjee (1979) made a study to establish the relationship between liquid ratio, debtors' turnover ratio, creditors' turnover ratio and the movement of overdraft. He opined that when the liquid ratio was below the norm, debtors' turnover ratio and creditors' turnover ratios were high whereas the movement of overdraft showed declining capital was not satisfactory.

OBJECTIVE OF THE STUDY

The objective of the present study is to analyse the Working Capital Management (WCM) of the selected company. More specifically, the present study has the following objectives:

(i) To analyse the liquidity and the efficiency of the WCM of the selected company by using a few important parameters.

(ii) To make a componentwise analysis of working capital of the selected company.

(iii) To analyse the variation of the working capital of the company under study.
(iv) To evaluate the working capital financing pattern adopted by the selected company.
(v) To estimate the working capital requirement of the selected company and to find out the deviation of the same from its actual working capital.
(vi) To examine the working capital policy of the company under study.
(vii) To measure the sensitivity of the overall profitability of the selected company to changes in its working capital size.

RESEARCH METHODOLOGY OF THE STUDY

(1)Sample Design: The study is based on Hindustan Unilever Limited, a first moving consumer goods company. While selecting this company in the present study purposive sampling procedure has been followed.

(2) Collection of Data: The study is based on secondary data only. For the purpose of the study, secondary data have been collected from Capitaline, Official data bank, Capital Market Publishers (I) Ltd.; Mumbai and Annual Published Reports. Editing, classification and tabulation of the data collected from the above mentioned sources have done as per the requirement of the study.

(3) Analysis of Data: In order to analyze these data the techniques of financial statement analysis like comparative statements, ratio analysis etc., simple mathematical tools like percentage, average, ratios etc., simple statistical techniques like mean, standard deviation, coefficient of variation etc. and statistical techniques like Karl Pearson's simple correlation analysis, simple regression analysis etc have been used.

HINDUSTAN UNILEVER LTD. (HUL)

Hindustan Unilever Limited (HUL) is India's largest fast moving consumer goods producing company, touching the lives of two out of three Indians with over 20 distinct categories in Home and Personal Care products and foods & beverages. Endow of the company with a scale of combined volumes of about 4 million tones and sales of Rs.10, 000 crores. HUL is also one of the countries largest exporters. It has been recognized as a golden super star Trading House by the Government of India. Out of 15,000 employees over 1300 managers are working in this organization. HUL meets everyday needs for nutrition; hygiene and personal care with brands that help people feel good, look good and get more out of life. HUL holds 51.55% of the equity and rest of the share holding distributed among 380000 individual shareholders and financial institutions.

HUL's brands are Lifebuoy, Lux, Surf Excel, Rin, Wheel, Fair & Lovely, Ponds, Sunslik, Clinic, Pepsodent, Close-up, Lakeme, Brooke Bond, Kissan, Knorr-Annapurna, Kwality, Wall's etc. Such products are manufactured over 40 factories across India. The operations involve over 2000 suppliers and associates. HUL's distribution stockiest, comprising about 4000 redistribution stockiest, covering 6.3 million retail outlets reaching the entire urban population and about 250 million rural consumers.

Hindustan Unilever Research Centre (HLRC) was set up in 1958 to incorporate latest technology in all its operations, now has facilities in Mumbai and Bangalore. HUL is focusing on health & hygiene education, women empowerment and water management. It is also involved in education and rehabilitati0on of special or underprivileged children, care for the destitute and HIV positive and rural development.

Hindustan Unilever Limited (HUL) supplies high quality goods and services to meet the daily needs of consumers and industry. In doing so the company is committed to exhibit the highest standards of corporate behaviour towards its consumers, employees, the societies and the world where we live. HUL recognizes its joint responsibility with the government and the public to protect environment and is committed to regulate all its activities so as to follow best practicable means for minimizing adverse environmental impact arising out of its operations.

The liberalization of Indian economy in 1991 and subsequent removal of the regulatory framework allowed HLL to explore every single product and opportunity segment, without any constraints on production capacity. In 1992 Brooke Bond acquired Kothari General Foods with significant interest in Instant coffee. In 1993, it acquired the kissan business from UB Group. The most talked about events of India's corporate history, the erstwhile Tata Oil Mills Company (TOMCO) merged with HLL in April 1993. In July, 1993 Brooke Bond India and Lipton India merged to for Brooke Bond Lipton India Limited (BBLTL). HLL has also set up a subsidiary in Nepal, Nepal Lever Limited (NLL). In January, 2000, as part of its divestment strategy, the government decided to acquire 74% equity in Modern Foods to HLL. In 2002, HLL acquire the government's remaining stake in Modern Foods. In February, 2007 the company has been renamed to "Hindustan Unilever Limited" to strike the optimum balance between maintaining the heritage of the company and the future benefits and synergies of global alignment with the corporate name of "Unilever".

FINDINGS OF THE STUDY

In Table I for analyzing the management of working capital of Hindustan Unilever Limited an attempt have been made to show the volume of working capital and its importance in relation to sales, debtors and inventory of the company.

(1) **Current assets to total assets ratio (CATA):** Current assets to total assets ratio explains the relationship between current assets and the total amount of fund invested in assets. The business firm should manage its current assets efficiently and effectively so that it can manage its liquidity as well as can accrue profit regularly. Table I shows that on an average 51.44 per cent of total assets were current assets. It signifies that during this period apparently equal portion of the total investment of the company was made for the working capital purpose. Table I shows that the share of current assets in total assets which was 42.72 per cent in 2005 rapidly increased to 66.28 per cent in 2008. During the period 1998 to 2005 the share of working capital to total in total assets decreased by 17.11 per cent, except the year 2001, showing low rate of investment in current assets than fixed assets. It is observed that although this ratio has increased in the last three years of the study period, except in the year 2009. The decline in CATA ratio during the study period mentioned above might have been due to expansion/ modernization plan.

(2) **Current assets to sales ratio (CASR):** It indicates the efficiency of the management of working capital. The lower the ratio, the higher the efficiency of the WCM. From Table- I it is clear that the CASR of the company fluctuated during the period of the study. During the years 2000, 2004, 2005 and 2007 this ratio decreased. On an average it was 29.14 percent.

(3) **Debtors to sales ratio (DSR):** This ratio measures the efficiency in managing the debtors of the company. A low value of DSR signifies prompt payment by debtors. On the other hand, a high value of DSR indicates very liberal, ineffective and inefficient credit and collection policy. Table- I reveals that a steady growth in the DSR of the company in the years 1998 to 2004 was noticed whereas in the years 2005 to 2009 a declining trend was observed. It implies that in the first half of the study period the efficiency of the credit management of the company reduced, it improved significantly in the second half of the study period.

(4) **Inventory to sales ratio (ISR):** This ratio shows the efficiency of the inventory management. The lower the ratio, the better is the inventory management of the company and vice-versa. Table I depicts that the ratio increased in one year then it decreased in next year and such trend continued throughout the study period. On an average, the ratio was 12.80 per cent. It varied between 11.17 per cent in 2000 and 14.89 per cent in 2004 during the study period. Definite conclusion can not be made unless the ratios are calculated product wise. But still larger fluctuation portrays the poor control of the company over its inventory.

COMPONENTS OF WORKING CAPITAL

In Table II a component wise analysis of working capital has been made in order to find out the factors responsible for significant changes in working capital during the period under study. Out of four components of gross working capital, debtors, cash & bank and other current assets including loans and advances contributed 12.02, 21.40 and 21.98 per cent respectively towards gross working capital. Inventories contributed the highest i.e. 44.60 per cent towards the gross working capital. During the study period a very remarkable change in the share of different components of working capital took place. The share of other current assets including loans & advances decreased from 23.39 per cent in 1998 to 12.54 per cent in 2009. The share of cash & bank balance increased from 25.30 per cent in 1998 to 33.45 per cent in 2009. The share of inventories stepped up from 43.91 per cent in 1998 to 61.87 per cent in 2009. Similarly, sundry debtors increased from 7.4 per cent in 1998 to 11.08 per cent in 2009. The most noticeable outcome of the analysis is that during the study period more than 20 per cent

of total investment in working capital was made for other current assets including loans and advances while, on an average, only 12.02 per cent was blocked up in sundry debtors.

FINANCING OF WORKING CAPITAL

In Table III an analysis regarding variation of working capital during the period of study has been shown whereas in Table IV an attempt has been made to explain the relative importance of long term and short-term debts in financing working capital. Table III shows that out of two sources of working capital, short-term debt dominated the over all picture. Table IV shows that the percentage of long term funds used for financing working capital occupied a very negligible portion during the period of study. Such trend reflects the decreasing dependence on long-term funds as a source of working capital than the short-term funds. The increasing dependence on short-term funds in financing working capital of HUL reveals the better performance of the company regarding working capital management. Although, no comparison between the respective costs of long-term and short-term debts has been made for the sake of simplicity, generally, we know that the long-term debts are more costly than the short-term debts.

ESTIMATION OF WORKING CAPITAL REQUIREMENT AND THE RESULTANT VARIATION

An estimation of working capital requirements of the company with the help of simple regression equation has been made in Table V. The difference between actual working capital and estimated working capital has been found out. The linear regression line used in this analysis is Y = a + bx, where, Y= working capital, x= sales, b=rate of growth in working capital and a= intercept of the line on the Y axis i.e. the amount of working capital required when sales are nil. Table V shows that in the years 2001, 2002, 2003, 2004, 2008 and 2009 the actual working capital was greater than the estimated working capital. It signifies the inefficient management of working capital due to under utilization of fund in these years whereas in the years 1998, 1999, 2000, 2005, 2006 and 2007 there was a shortage of working capital. These shortages indicate the over utilization of fund. Proper attention should, therefore, be given on the working capital management of the company under study due to the risk of over and under utilization of its working capital funds.

WORKING CAPITAL POLICY

In Table VI an attempt has been made to test the overall working capital policy adopted by the company and to assess the relationship between the policy of the company and its profitability. Generally, it is expected that the lower the current assets, the higher the sales to gross working capital ratio, the higher the risk and aggressiveness, the higher the profitability of the company and vice versa. The company adopted moderately aggressive working capital policy by applying lower level of gross working capital in relation to sales throughout the study period. The sales to gross working capital ratio of the company was 3.63 in 1998. It decreased to 3.37 in 1999. Then it increased to 3.83 in 2000. But it again decreased to 3.1 in 2001, to 2.9 in 2002, to 2.89 in 2003. Ultimately this ratio reached 3.44 in 2009 signifying investment in current assets as compared to investment in fixed assets. Adoption of aggressive working capital policy throughout the study period except in the year 2004, the profitability (i.e. EBIT / Total Assets of the concern) massively increased from 57.28 per cent in 1998 to 113.77 per cent in 2009. Therefore the company throughout the study period got the reward of taking higher risk. Only in the year 2004 the company converted its working capital policy from aggressive to conservative policy by increasing the level of current assets in relation to sales.

WORKING CAPITAL LEVERAGE

The working capital leverage of the company has been calculated in Table VII, in order to measure the sensitivity of return on investment (ROI) to changes in the level of current assets. It should be kept in mind that the changes in working capital in last year will be maintained in the next year in calculating the working capital leverage. In the year 2007 the working capital leverage of the concern was 2.00 which was the highest among all the years under study showing the maximum sensitivity of ROI changes in the level of current assets. On the other hand in 2001 the working capital leverage of the company was the lowest which was 0.90 which was the least, signifying the minimum sensitivity of ROI changes in the level of current assets. Therefore, changes in current assets were maximum sensitive in 2007 and minimum sensitive in 2001 in increasing the profitability of the concern.

CONCLUSIONS OF THE STUDY

The analysis done so far reveals that management of working capital is one of the important aspects of this company. During the study period gross working capital of the company has rapidly increased and heavily relied on current assets rather than fixed assets. The company's debtors as a percentage of sales were 2.04 per cent in 1998 and it sharply increased to 4.93 per cent in 2004. After that the company restricted its debtors and at the same time increased its turnovers. Analysis of variation of working capital of the company during our study period depicted a very interesting story. Most of the time of our study period, the short-term financing has dominated the picture. It speaks about the decreasing dependence on long-term fund as a source of working capital than short-term fund. Decreasing dependence on long-term sources means savings in cost. Therefore, from this point of view the company managed its working capital properly. Out of four components of working capital inventories were contributed the highest followed to other current assets including loans & advances, cash & bank and debtors. The company adopted moderately aggressive working capital policy by applying lower level of gross working capital in relation to sales throughout the study period. The adoption of aggressive working capital policy helped the company to increase its profitability (i.e. EBIT / Total Assets) except in the year 2004. It signified that the company gets the reward of taking higher risk throughout the study period. The sensitivity of return on investment (ROI) to changes in the level of current assets was measured through working capital leverage. The greater sensitivity of return on investment to changes in the level of current assets has shown in 2009 during the study period.

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TABLES

TABLE - I: SELECTED RATIOS RELATING TO WORKING CAPITAL MANAGEMENT (Rs. In crores)

Particulars	1998*	1999*	2000*	2001*	2002*	2003*	2004*	2005*	2006*	2007*	2008*	2009*	Average for the period of study
Gross Working Capital (in crores)	2608.72	3011.15	2761.32	3426.78	3431.07	3501.79	3304.96	2773.01	3169.65	3277.41	4480.76	4875.00	3385.14
Current Assets To Sales (%)	27.57	29.71	26.09	32.22	34.47	34.64	33.28	25.03	26.25	23.68	27.67	29.05	29.14
Current Assets to Total Assets (%)	133.31	132.06	106.21	109.57	92.29	91.12	92.74	117.37	113.29	202.83	225.53	216.48	136.07
Debtors To Sales (%)	2.04	2.31	2.5	3.99	3.70	4.66	4.93	4.72	3.65	3.36	2.65	3.22	3.48
Inventory to Sales (%)	12.11	12.93	11.17	11.66	12.85	13.87	14.89	11.95	12.84	14.47	12.49	12.46	12.80

*Annualized.

Source: Corporate Database Capitaline Publishers Ltd and Published Annual Reports.

TABLE - II: STATEMENT OF VARIATION OF WORKING CAPITAL OF HINDUSTAN UNILEVER LIMITED (Rs. In crores)

Particulars	1998*	1999*	Increase/ Decrease	2000*	2001*	Increase/ Decrease	2002*	2003*	Increase/ Decrease	2004*	2005*	Increase/ Decrease	2006*	2007*	Increase/ Decrease	2008*	2009*	Increase/ Decrease
Applications Inventories	1145.68	1310.01	164.33	1182.1	1240.04	57.94	1278.74	1402.45	123.71	1479.58	1324.97	(154.61)	1551.02	1953.6	402.58	2023.09	2092.8	69.71
Debtors	192.94	233.75	40.81	264.51	424.78	160.27	367.85	470.85	103	489.27	522.83	33.56	440.37	443.38	3.01	429.50	540.15	110.65
Cash & Bank	659.88	810.45	150.57	522.08	913.16	391.08	942.63	806.48	(136.15)	698.05	355.03	(343.02)	416.94	200.86	(216.08)	1421.88	1630.92	209.04
Loans & Advances	610.22	656.94	46.72	792.63	848.8	56.17	841.85	822.01	(19.84)	638.06	570.18	(67.88)	761.32	679.57	(81.75)	606.29	611.13	4.84
Total Current Assets	2608.72	3011.15	402.43	2761.32	3426.78	665.46	3431.07	3501.79	70.72	3304.96	2773.01	(531.95)	3169.65	3277.41	107.76	4480.76	4875.0	394.24
Sources Long term Debt	264..31	177.27	(87.04)	111.61	83.74	(27.87)	58.3	1704.31	1646.01	1471.12	56.94	(1414.18)	72.6	88.53	15.93	115.72	28.93	(86.79)
Short-term Debt	1878.42	2143.74	265.32	2234.28	2410.42	204.01	2465.34	2559.49	94.15	2590.79	2969.45	378.66	3201.63	3837.09	635.46	221.84	55.46	(166.38)
Net Worth	1692.63	2102.77	410.14	2488.22	3043.69	555.47	3658.87	2138.72	(1520.15)	2092.71	2305.62	212.91	2723.49	1439.23	(1284.26)	1648.67	2063.86	415.19
	3835.36	4423.78	588.42	4834.11	5537.85	703.74	6182.51	6402.52	220.01	6154.62	5332.01	(822.61)	5997.72	5364.85	(632.87)	1986.23	2148.25	162.02
Net Fixed Assets	(1226.64)	(1412.63)	(185.99)	(2072.79)	(2111.07)	(38.28)	(2751.44)	(2900.73)	(149.29)	(2849.66)	(2559)	(290.66)	(2828.07)	(2087.44)	(740.63)	2494.53	2726.75	232.22
Total Current Assets	2608.72	3011.15	402.43	2761.32	3426.78	665.46	3431.07	3501.79	70.72	3304.96	2773.01	(531.95)	3169.65	3277.41	107.76	4480.76	4875.00	394.24

*Annualized.

Source: Corporate Database Capitaline Publishers Ltd and Published Annual Reports

TABLE - III: FINANCING OF WORKING CAPITAL OF HINDUSTAN UNILEVER LIMITED (Rs. In Crores)

Particulars	1998*	1999*	2000*	2001*	2002*	2003*	2004*	2005*	2006*	2007*	2008*	2009*
Working Capital (Gross)	2608.72	3011.15	2761.32	3426.78	3431.07	3501.79	3304.96	2773.01	3169.65	3277.41	4480.76	4875.00
Sources of Working Capital: a. Short-term funds b. Long-term funds	 1878.42 730.30	 2143.74 867.41	 2234.28 527.04	 2410.42 1016.36	 2465.34 965.73	 2559.49 942.3	 2590.79 714.17	 2969.45 nil	 3201.63 nil	 3837.09 nil	 221.84 4258.92	 55.46 4819.54
Total Long-term funds (Net worth + Long-term debt)	1956.94	2280.04	2599.83	3127.43	3717.17	3843.03	3563.83	2362.56	2796.09	1610.31	1764.39	2092.79
Net fixed assets and other assets (Investments)	1226.64	1412.63	2072.79	2111.07	2751.44	2900.73	2849.66	2559.00	2828.07	3385.78	2494.53	2726.75
Percentage of long-term fund used for financing working capital (2b as % of 3)	37.32	38.04	20.27	32.50	25.98	24.52	20.04	nil	nil	nil	241.38	230.29
Percentage of long-term fund used for financing fixed assets and investments	62.68	61.96	79.7	67.5	74.02	75.48	79.96	nil	nil	nil	141.38	130.29

*Annualized.

Source: Corporate Database Capitaline Publishers Ltd and Published Annual Reports.

TABLE - IV: COMPONENTS OF WORKING CAPITAL WITH RESPECTIVE PERCENTAGE OF HINDUSTAN UNILEVER LIMITED (Rs. In crores)

Particulars	1998*	1999*	2000*	2001*	2002*	2003*	2004*	2005*	2006*	2007*	2008*	2009*	Average
Inventories	1145.68 (43.91)	1310.01 (43.51)	1182.1 (42.81)	1240.04 (36.19)	1278.74 (37.27)	1402.45 (40.05)	1479.58 (44.77)	1324.97 (47.78)	1551.02 (48.93)	2003.77 (61.87)	2003.09 (45.15)	2092.80 (42.93)	44.60
Sundry Debtors	192.94 (07.40)	233.75 (7.76)	264.51 (9.58)	424.78 (12.4)	367.85 (10.72)	470.85 (13.45)	489.27 (14.80)	522.83 (18.85)	440.37 (13.89)	464.93 (14.19)	429.5 (09.58)	540.15 (11.08)	12.02
Cash & Bank	659.88 (25.30)	810.45 (26.91)	522.08 (18.91)	913.16 (26.65)	942.63 (27.47)	806.48 (23.03)	698.05 (21.12)	355.03 (12.80)	416.94 (13.15)	200.86 (6.13)	1421.88 (31.73)	1630.92 (33.45)	21.40
Other current Assets including Loans & Advances	610.22 (23.39)	656.94 (21.82)	792.63 (28.70)	848.80 (24.77)	841.85 (24.54)	822.01 (23.47)	638.06 (19.31)	570.18 (20.56)	761.32 (24.02)	607.85 (18.55)	606.29 (13.53)	611.13 (12.54)	21.98
Working Capital	2608.72 (100.00)	3011.15 (100.00)	2761.32 (100.00)	3426.78 (100.00)	3431.07 (100.00)	3501.79 (100.00)	3304.96 (100.00)	2773.01 (100.00)	3169.65 (100.00)	3277.41 (100.00)	4480.76 (100.00)	4875.00 (100.00)	(100.00)

*Annualized.

Figures in parantheses indicate percentages.

Source: Corporate Database Capitaline Publishers Ltd and Published Annual Reports.

TABLE - V: ESTIMATION OF WORKING CAPITAL REQUIREMENT OF HINDUSTAN UNILEVER LIMITED

[With the help of Regression Equation Y = a + bx] (Rs. In crores)

Year	Actual Working Capital (O)	Estimated Working Capital (E)	Excess Working Capital	Shortage of working capital
1998	2608.72	2881.06		272.34
1999	3011.15	3029.50		18.35
2000	2761.321	3129.13		367.81
2001	3426.78	3140.05	286.73	
2002	3431.07	2989.43	441.64	
2003	3501.79	3023.95	477.83	
2004	3304.96	2984.86	320.09	
2005	2773.01	3238.75		465.73
2006	3169.65	3458.62		288.97
2007	3277.41	3849.31		571.90
2008*	4480.76	4368.31	112.45	
2009*	4875.00	4499.18	375.82	

*Annualised

Source: Corporate Database Capitaline Publishers Ltd and Published Annual Reports

TABLE - VI: TEST OF WORKING CAPITAL POLICY (AGGRESSIVE / CONSERVATIVE) OF HINDUSTAN UNILEVER LIMITED (Rs. In Crores)

Particulars	1998*	1999*	2000*	2001*	2002*	2003*	2004*	2005*	2006*	2007*	2008*	2009*	Average
Sales	9461.83	10133.5	10584.3	10633.7	9952.18	10108.4	9931.51	11080.3	12075.2	13843.02	16191.46	16783.61	--
EBIT	1120.99	1410.33	1678.24	1974.13	2200.37	2234.74	1614.98	1642.93	2198.24	2210.02	2440.35	2562.00	--
Total Assets	1956.94	2280.04	2599.83	3127.43	3717.17	3843.03	3563.83	2362.56	2796.09	1527.76	1986.76	2251.99	--
Gross Working Capital	2608.72	3011.15	2761.32	3426.78	3431.07	3501.79	3304.96	2773.01	3169.65	3277.41	4480.76	4875.00	3385.14
EBIT / Total Assets (%)	57.28	61.86	64.55	63.12	59.19	58.15	45.32	69.54	78.62	144.66	122.83	113.77	78.24
Sales / Gross working Capital (in times)	3.63	3.37	3.83	3.1	2.9	2.89	3.01	4.01	3.81	4.22	3.61	3.44	3.49

*Annualized.

Source: Corporate Database Capitaline Publishers Ltd and Published Annual Reports.

TABLE- VII: WORKING CAPITAL LEVERAGE OF HINDUSTAN UNILEVER LIMITED (Rs. In crores)

Particulars	1998*	1999*	2000*	2001*	2002*	2003*	2004*	2005*	2006*	2007*	2008*	2009*
Current Assets	2608.72	3011.15	2761.32	3426.78	3431.07	3501.79	3304.96	2773.01	3169.65	3277.41	4480.76	4875.00
Total Assets	1956.94	2280.04	2599.83	3127.43	3717.17	3843.03	3563.83	2362.56	2796.09	1527.76	1986.76	2251.99
Working Capital Leverage [Current Assets Total Assets +/-ΔCurrent Assets]	--	1.12	1.18	0.90	0.92	0.90	0.98	1.51	0.99	2.00	1.41	1.84

*Annualized.

Source: Corporate Database Capitaline Publishers Ltd and Published Annual Reports.

A STRATEGIC FRAMEWORK TOWARDS INDIAN RURAL RETAIL INDUSTRY IN THIS COMPETITIVE ERA

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ABSTRACT

Retail is an emerging sector in India. The country's dynamic retail landscape presents a grand opportunity to investors from across the globe, to use India as a strategic business hub. Marketers are shifting their focus to rural retail as it offers huge potential which can be tapped effectively through innovative distribution channels with retailing being the most critical element. The concept of rural malls is becoming popular. Famished of modern forms of entertainment, the rural middle class have greeted these malls with great passion. Despite being visibly a huge green pasture this rural retail sector penetration offers several bottlenecks which include rural infrastructure, life styles and varied perceptions of rural consumers. Only those companies who understand that there is no short cut to seize rural markets and frame their strategies altogether different from metros are likely to tap this resource. The purpose of this paper is to study the present scenario of rural retailing, noteworthy rural initiatives of the marketers, problems and myths. Further, it also highlights the strategies the marketers need to lay focus on before entering this segment.

KEYWORDS
Rural market, retail, Rural Retail Outlets.

INTRODUCTION

The Retail Industry in India is emerging as a one of the largest industries estimated to account for more than 10 per cent of the country's GDP and around 8 per cent of the employment. As a highly dynamic and fast growing industry undergoing a major shake-up it is heading towards next boom industry. India has already weathered the earlier economic recession and it's after effects faced by many developed and established economies and on all counts may come out of the present slow down also successfully. As a 'Vibrant Economy', India topped A T Kearney's list of emerging markets for retail investments for three consecutive years and stood 2nd fastest growing economy in the world, the 3rd largest economy in terms of GDP in the next 5 years and the 4th largest economy in PPP terms. After USA, China & Japan India is rated among the top 10 FDI destinations. Currently, as a fastest growing economy by 2030, India may become one of the Top 5 economies in terms of GDP.

Presently, the Indian retail industry is in a highly unorganized state. The organized retailing share in the total retail volume has been below double digits in India as compared to 20% in China, 25% in Indonesia, 35% in Philippines, 40% in Thailand and 50% in Malaysia, around 80% in US and 70 % in Europe while as in Asia on the whole it comes to around 20%.

Several agencies have projected different estimates of Indian retail volume both for organized and unorganized sectors. The **BMI India Retail Report** for the first quarter of 2011 forecasts that the total retail sales will grow from US$ 392.63 billion in 2011 to US$ 674.37 billion by 2014 whereas its report for the first quarter of 2012 estimated that the total retail sales will grow from US$ 422.09 billion in 2011 to US$ 825.46 billion by 2015.

The Technopak Advisors have also estimated that the country's retail market accounted for US$ 310 Bn in 2006 , estimated to touch US$ 420 Bn in 2011 and may reach the levels of US$ 675 Bn in 2016 at CAGR of 7.5 % and 620 billion Euros (around Rs 37 lakh crore) by 2020. The organized retail market which was estimated at US$ 10 Bn during 2006 and US$ 26 Bn for 2011 may grow to US$ 84 Bn by 2016, at CAGR of 26%. **Talwar (2010)** has also projected India's overall retail sector to US$ 833 Bn by 2013 and to US$ 1.3 trillion by 2018, at a compound annual growth rate (CAGR) of 10%. A report by **Boston Consulting Group** (BCG) has revealed that the country's organized retail is estimated at US$ 28 Bn with around ***7 per cent*** penetration. It is projected to become a US$ 260 billion business over the next decade with around 21 per cent penetration.

The modern retail segment in India has accelerated its growth rate since 2007 as the major global players and Indian corporate houses were seen entering the fray in a big way. Organized retailing in small-town India is already growing at over 50-60 per cent a year, compared to 35-40 per cent growth in the large cities. About 200 tier-III cities with population of less than 2 million and another 500 rural towns have the potential to be the hub for rural markets.

India's retail markets offer tremendous opportunities with almost half of it shared by rural India. According to National Council of Applied Economic Research (NCAER) reports, rural India is home to 720 million consumers across 627,000 villages. Seventeen per cent of these villages account for 50 per cent of the rural population as well as 60 per cent of rural wealth. This implies that reaching out to just 100,000 plus villages will ensure access to most of the rural opportunity. India's rural retail market was expected to grow by 29 percent to 1.8 trillion rupees (US$ 45.34 Bn) by 2010. A study by CII and Yes Bank revealed that Retail opportunity in Indian villages is set to reach US $58 billion by 2015 shared by rural households which stood at 135 million in 2001-02 with estimated increase to 153 million in 2009-10. Global consulting firm McKinssey and Co. has projected that India's rural market would touch US $ 500 Bn by 2020.

Rural markets emerge as a huge opportunity for retailers as is reflected in the share across most categories of consumption. A study conducted by the Chennai based **Francis Kanoi Marketing Planning Services** reveals that the annual rural market for FMCG is worth $14.4 Bn, far surpassing the market for tractors and agri- inputs, which is estimated at US$10 Bn. Here the sale of cars, scooters and bikes amount to $ 1.7 Bn and sale of consumer durables over $ 1 Bn, all these total to an astounding figure of US $ 27 Bn.

While these estimates appear to have been arrived at taking literacy, accessibility, degree of penetration, increasing income levels, distance from major commercial and business hubs, brand awareness, and concepts of quality increasing consumerism among middle class in rural areas yet these do not necessarily indicate a green pasture in rural India as more than 45000 villages continue to remain uninhabited besides about 2.20 Lakh villages having a population of less than 500 souls continue to be without effective/functional retail sales outlets. 29% of our population (2001 census) falling below poverty level with increasing levels of retail prices form other gray areas require due considered before making an optimistic estimation.

With the changing face of country's dynamic retail landscape the Indian consumer is in for a rapid transformation. Corporate bigwigs such as Reliance, AV Birla, Tata, Godrej, Bharti, Mahindra, ITC, RPG, Pantaloon, Raheja and Wadia Group are expected to invest close to Rs.1 trillion in the business of retail over the next five years. Reliance Retail is investing Rs.30, 000 crore in setting up multiple retail formats backed by a 68-strong distribution network, with expected sales of over Rs.100,000 crore by 2010. The Future Group's Pantaloon Retail and RPG's Spencer's are also going all out to maintain their dominant position on India's retail horizon. Subhiksha has earned global accolades for its fast-track growth. The Lifestyle India, Indiabulls, Wadhawan Group, Vishal Retail, petroleum majors IOCL, BPCL & HPCL, and others are firming up more and more ambitious retail expansion plans by the day. While global retailers Metro AG and Shoprite Holdings increase their presence on the Indian retail landscape, the Bharti – Wal-mart combine is scouting locations for their joint retail venture. The recent tie-up between Tata and Tesco further adds to the action in retail. Modernising retail will see some 15 million people engaged in retail and retail support activities by 2010 – including front end retail operations, supply chain, logistics, process & infrastructure development and supplies.

(Source: Assocham conference on Re-inventing retail in New Delhi on 26th September 2008, (www.assocham.org/events/recent/event_271/vikas_visal.pdf.)

PROMINENT RURAL RETAILING INITIATIVES AND THEIR UNIQUE SHOPPING EXPERIENCE

The concept of rural malls, which was first introduced by ITC, is proving to be an effective distribution strategy in rural market. Along with ITC's Choupal Sagar, few more companies have taken enterprise in this identical direction. To name a few are TATA Kissan Sansar, Delhi Shriram's Kissan Haryali Bazaar, Godrej's Aadhar & Manthan.

ITC's CHOUPAL SAGAR

The ground-breaking effort towards the commencement of rural malls came from ITC. It had two initiatives in rural market "Choupal Sagar and e-choupal".The company launched rural malls under the banner "Choupal Sagar". The very first "Choupal Sagar" came up on an eight –acre plot in Rafiqganj, about 4 KM from Sehore in Madhya Pradesh in august 2004. It is transporting rural local economies to a new level of productivity and consumption.

At 7,000 square feet, it is too small to be a mall. And while it has opted for self service, stocking its merchandise on shelves lining the neat aisles, it stocks a breadth of products no supermarket can. It offers almost everything - from toothpastes to televisions, hair oils to motorcycles, mixer-grinders to water pumps, shirts to fertilisers... It defies pigeon-holing. It is just a very sharply thought-out rural store.

Most of the brands it sells are national. You see Marico, LG, Philips, torches from Eveready, shirts from ITC's apparel business, bikes from TVS, and tractors from Eicher. The warehouse is one bulwark of its strategy, obviously. But the farmers will come here only after every harvest. To ensure that they keep coming to Chaupal Sagar even at other times, the company is offering a slew of other goodies like a bank, a cafeteria and many others. ITC has tied up with agri-institutes to offer farmer training programmes. Then, plots of land have been earmarked to display large agricultural machinery like threshers. Other parcels of land have been earmarked for pesticide and fertilizer companies for demonstrating their products.

The e-Choupal initiative was launched in 2000 and by 2007 it had its presence 6,500 e-Choupals empowering four from risks of reversal in Government's agri reforms. The company is in the process of rolling out e-Choupal's Version 3.0, under which it plans to offer personalised crop management advisory services to individual farmers. The company is gearing up e-Choupals as rural employment exchanges, which will connect the rural youth with jobs through its 'Rozgaarduniya' initiative according to Mr Sivakumar Chief Executive-Agri Businesses, ITC Ltd. ITC also started piloting Choupal Fresh in Hyderabad a year ago, it was a model to deliver fresh fruits and vegetables to consumers and institutions based on demand. Whatever is produced, gets consumed. It has worked well in Hyderabad, million farmers in 40,000 villages. However, in 2007, Government re-imposed restrictions on commodity sourcing. So further expansion of e-Choupals came to a halt. A virtual freeze on the expansion of e-Choupals since 2007 seems to have encouraged ITC to discover new anchor businesses to insulate its existing e-Choupal model and garner additional sources of revenues.ITC plans to broad-base the e-Choupal model to discover new anchor businesses to insulate its existing e-Choupal model

TATA KISAN SANSAR (TKS)

Tata Chemicals and Rallis India, the two companies under the $29 billion Tata Group undertook two separate ventured till 2003. Tata Chemicals had a chain called Tata Kisan Kendra which offered farmers agri-inputs to financial advisory functions. Rallis in partnership with ICICI bank and HUL supported farmers from pre-harvest to post-harvest stage. In 2004, these two operations merged under the Tata Kisan Sansar(TKS) . The idea behind the establishment of TKS was

"To provide the farmer with a package of inputs and services for optimum utilization of balanced primary nutrients; plant protection chemicals; water; seeds; post-harvest services; and to develop a genuine partnership with the farmer"

TKS today is operating in three states, namely: Uttar Pradesh, Haryana and Punjab. It is active in providing the sophisticated modern technology to the small farmers and making them harness the gain from ICT. The kendras also have exhibition halls where special events — educational, social or just pure entertainment — are held for members of the Tata Kisan Parivar (Tata Farmers Family), an organization promoted by the TKK network to build relationships with farmers and their families.

The farmers are benefited in a number of ways by this initiative:

- Easy availability of credit
- Easy leasing of farm equipments
- Assessability to latest latest technological know-how.
- Availability of crop insurance
- Knowledge sharing
- Better prices of final products
- Increased competition within the farmers helps in improving productivity.

HINDUSTAN UNILEVER- PROJECT SHAKTI

Project Shakti is unleashing the potential of rural India and thus changing lives of rural farmers. It is leading to prosperity and, more importantly, self-respect. Hindustan Unilever's Shakti Entrpreneurial Programme helps women in rural India set up small businesses as direct-to-consumer retailers. In 2001 HUL initiated Project Shakti in Nalgonda district, Andhra Pradesh, to provide micro credit and to train women to become direct-to-home distributors through self-help groups in rural areas. As an extension of this project, HUL set up internet kiosks —commonly referred to as "i-Shakti" —in these rural areas to disseminate information in local languages, including material on health education. The scheme equips women with business skills and a way out of poverty as well as creating a crucial new distribution channel for Unilever products in the large and fast-growing global market of low-spending consumers. Today project Shakti has spread to 55 Indian cities, reaching 85,000 villages in 385 districts through 20,000 female entrepreneurs, or "Shakti Ammas. " The distribution network formed by these female entrepreneurs could in the future distribute condoms in rural areas. By 2012 the Shakti network aims to have reached 600 million consumers.

GODREJ - AADHAR AND MANTHAN

Godrej's agri business, started 30 years ago in a modest way, had grown to a Rs 1,000 crore division under Godrej Agrovet and Goldmohur Foods. It started its rural marketing initiative based on two concepts- Aadhaar and Manthan. Godrej Industries test-launched the concept in Maharashtra and Andhra Pradesh to sell its own and other products, besides offering soil testing and veterinary services through Aadhaar. Manthan focuses entirely on supplying quality animal feed so that the animal produce, dairy and poultry, gets a boost. In 2008, Future Group had picked up around 70 per cent stake in Aadhar Retailing Limited. It now operates stores in Gujarat, Maharashtra, Haryana and Punjab and mainly sells wheat and paddy apart from daily need products. The company also provides farmers with solutions to problems regarding their agricultural output, which includes what kind of crop can they plant and when, along with techno-commercial suggestions to help them give a better output. Now future Group is planning to restore Aadhar brand. It is planning to come up with wholesale distribution centers across different districts and then roll out franchisees to individual entrepreneurs. They can source products from these wholesale centers and then sell it in villages.

DCM HARIYALI KISSAN BAZARS

DCM Sriram Consolidated Ltd., which is in consumer finance and insurance businesses, has diversified into rural malls too under the banner "Hariyali Kissan Bazars" Each "Hariyali Kisaan Bazaar" centre operates in a catchment of about 20 kms. A typical centre caters to agricultural land of about 50000-70000 acres and impacts the life of approx. 15000 farmers.

Each centre is engaged in:

- Bridging the last mile: Provides handholding to improve the quality of agriculture in the area. Provides 24X7 supports through a team of qualified agronomists based at the centre.
- Quality Agri-Inputs: Provides a complete range of good quality, multi-brand agri inputs like fertilizers, seeds, pesticides, farm implements & tools, veterinary products, animal feed, irrigation items and other key inputs like diesel, petrol at fair prices.
- Financial Services: Provides access to modern retail banking & farm credit through simplified and transparent processes as also other financial services like insurance etc.
- Farm Output Services: Farm produce buyback opportunities, access to new markets & output related services.

- Other Products and Services: Fuels, FMCG, Consumer Goods and Durables, Apparels etc.

Haryali centres are IT enabled capturing critical data of farmers and providing them with an access to weather forecasts, market prices and latest technical knowledge.

(DSCL) now has entered the milk procurement business in Uttar Pradesh and is looking to expand to Rajasthan and other states also. The milk is being supplied to dairy units and is being mainly used to produce milk powder.

The company has started a pilot dairy operation in Hardoi and Lakhimpur Kheri districts of central UP, where it has four sugar mills. The company has also made arrangements with regional rural banks to facilitate farmers in getting finance for cattle purchase. To its landmark achievement it has been taken up as a Case Study by Harvard Business School (HBS).

However after thriving opening of about 300 outlets and an economic slowdown it did not expand in 2009-10 and 2010-11 also.

OTHER RURAL RETAIL INITIATIVES

1 ***Rajkot based Champion Agro Ltd*** is planning to come up with single window shopping facility for farmers. The company which already has 35 agri-retailing outlets in the Saurashtra region will now open around 400 outlets at a taluka level across Gujarat in the coming five years. It will open 50 new outlets by the end of this year for an investment of Rs 15 crore. The overall investment planned is between Rs 300 to Rs 400 crore. The company had entered into the agri-retailing space in 2006. This apart, Champion Agro will come up with warehouses, cold storage and packaging solutions as well.

2 ***Triveni Engineering*** had set up 44 Triveni Khushali Bazars (TKBs) in four states However, recently, Triveni decided to shut its 42 stores after its retail venture incurred losses of about Rs 19 crore in over five years of operations. The company had not expanded the number of outlets for the past two years.

3 In fiscal 2012, ***Coromandel International*** which accounts for 45% of Murugappa Group's turnover, plans to set up 200 more such rural retail centres in Andhra Pradesh (125 centres) and Karnataka (75) These centres sell agri inputs such as fertilisers, pesticides, specialty nutrients, seeds, organic fertilisers and even insurance products.According to the company's 2011 annual report, it increased its turnover from the sale of traded products through rural retail centres by 24%.The emphasis (for rural retail stores) is to leverage the relationship with the rural customers for expanding business and enter into new and diversified areas.

INITIATIVES TO EXPLORE RURAL POTENTIAL

During recent past a number of initiatives have been taken to explore rural retail market potential, viz.

Establishment of 1200 multipurpose retail outlets in rural sector(DCM Haryali, ITC Chaupal, Tata Kisan Kendra, Aadhar etc.) & 2700 Kisan Seva Kendra by IOC

Significant share of rural sales in total sales- Hindustan Uniliver Ltd.50%, Colgate 50%, Godrej 30%.

Designing of products according to specific need of rural sector (LG Sampoorn TV, Samsung, Guru Mobile chargeable by solar energy, Tide Natural –a 30% cheaper version of Tide Detergent by Proctor and Gamble and many others)

Inclusion of NGO's and self help groups in Channel of Distribution (HUL- Shakti Project, TataTea's Gaon Chalo, TTK Prestige NGO involvement)

Change in advertising strategy-Substitution of National level Brand Ambassadors by Regional Brand Ambassadors, language and display more suitable to rural audience, Use of rural folks by Coca cola.

CHALLENGES FACED BY ORGANIZED RURAL RETAIL OUTLETS IN PENETRATING HINTERLANDS

According to a study conducted by National Council of Applied Economic Research (NCAER), the major hindrances retailers face in penetrating the rural market can be attributed to inadequate infrastructure, low income levels and an entirely different lifestyle. However, the major problems faced in rural areas are:-

- People living below poverty line and markets located at distant places.
- Complex legal processes are a major hindrance to these outlets. There are approximately 30 government permissions required to set up an organized rural retail outlet which needs to be simplified.
- Nearly 50% villages in India lack proper communication infrastructure and are scattered with its population residing in small hamlets especially in hilly and difficult terrain.
- Rural villages are quite segregated specially in hilly terrains which makes the distribution of the products difficult. Rural people by and large live in small dwellings which are quite segregated that may or may not have storage facilities.
- The number of languages varies from area to area, state to state and region to region. The message not understood due to diversity in local dialects.
- Rural areas are scattered and it is impossible make a brand available in all the parts of the country.
- There is a vast difference in the lifestyles of the people. Rural people have to make choices among what is available to them as against urban consumer who has a variety of brands at his disposal.
- There is a plethora of imitation products available in rural market. As rural buyer is not product savvy, he/she generally buys a product for its generic value. He / she do not bother to look at the brand name closely, so he could end up buying Nilima instead of Nirma and Borocine instead of Boroline.
- Illiterate and uneducated population slow to change, making promotions and advertisements ineffective.
- Rural consumers usually prefer shopping from traditional means like haats, village shops and melas for purchase of specific items. Right product at right place at the time of purchase has to be delivered otherwise all the efforts of the marketer prove worthless.

STRATEGIES FOR SUCCESSFUL RURAL RETAIL

Assist farmers for market access:

Organized rural retailers apart from considering the changing patterns of rural consumers should also encourage farmers about their benefits of investing in modern Retail Outlets. When farmers will have the opportunity to sell their produce to multiple buyers, the price realization will increase and will have a direct impact on quality of the produce. It ***will lead to a win-win situation.***

Collaboration with non competing companies already existing in vicinity:

Companies making roadways into the rural market need to build collaborations with non-competing companies already present in that vicinity. That will provide them the opportunity to quickly scale up and get quicker returns. For instance, consumer Electronics Company Samsung has partnered with the Indian Farmers Fertiliser Cooperative to market its mobile phones, leveraging the latter's presence in rural areas. The Multi-Commodity Exchange and state-owned Bank of India have partnered with India Post, the biggest postal network in the world, to bring value to rural consumers through a new business model.

Encouraging retailers to promote products for consumers

The rural consumers interact directly with their retail salespersons who has a strong conviction power and whose recommendations carry weight. The owners' relationship with customers is based on an understanding of their needs and buying habits and is cemented by the retailer extending credit. Some of the successful manufacturers creatively develop new revenue activities for the rural retailer. So the role of village retailer needs to be clearly visualized and emphasized to make the product penetrate into the market.

Converting footfalls into sales

Rural villages are quite segregated specially in hilly terrains of these countries which makes the distribution of the products difficult. Retailers have a unique opportunity to tap these consumers. Distribution network needs to be extensive with massive reach of the products. Usually, companies operating in the rural landscape need to handhold rural customers in making informed decisions. Companies must create multiple distribution channels to ensure that their rural marketing becomes a dynamic function. Another characteristic of the rural market in India is that it is extremely unpredictable. Earning and spending capacities of the average farmer fluctuate depending on the vagaries of the monsoon. So the companies need to connect the inner core of the mind of rural consumer.

Contract Farming – a new spotlight of organized retailing in India

Contract Farming is the new mantra of organized retailing in India. There is no doubt that the farmers are in some way benefited by contract faming where in, the latest technology and equipment and scientific farming is done by farmers with the help of retailers there by increasing the productivity in agriculture, and uniform payment for their produce through out the crop irrespective of fluctuations in market price. But one should also focus on the freedom of farmers to sell their produce at will. It is evident in India that rich farmers who possess vast lands are the beneficiary but farmers who have little land and dependent on other trades are marginally benefited by this kind of business.

Reengineering rural malls to make shopping a distinctive experience for villagers

In majority of the malls the customers are farmers from the surrounding areas. The villagers are able to get quality products and commodities at economical prices. Also the assurance of faithfulness of products in these malls helps in strengthening their trustworthiness for purchase of products. Moreover these malls should prove a unique shopping experience for the villagers who have to travel to near by towns for getting the necessary commodities. The malls should also serve as a source of entertainment for the family who wants to go for an evening outing.

Enhancing multi facility in Rural Shopping Malls

Various other institutions like Banks, Health care; Courier Services which again require infrastructural costs can use rural retail outlets to reach these hinterlands which would again result in symbiotic relationship between the two.

Affordable prices for rural consumers

Shoppers are clamoring for prices they can afford, and with dropping commodity prices, many companies are passing along cost reductions. That's what Hindustan Unilever did with Lifebuoy, its leading soap brand, which is particularly popular in rural India. In January 2009 the company reduced the price from 13 rupees to 12 rupees on 90-gram bars. Meanwhile, companies such as Godrej Consumer Products and Nestlé India are taking other steps that will allow them to reduce prices aggressively while making sure margins aren't eroded—moves such as improving supply chains by shifting suppliers, ensuring they're not caught with excess inventory as consumer demand fluctuates, and looking for ways to reduce operating costs. Companies have launched new value-focused brand extensions, such as different package sizes. Dove shampoo in India successfully introduced a 3-rupee sachet in 2007 that now accounts for more than 30% of the brand's hair-care sales. Clinic Plus, Hindustan Unilever's leading shampoo brand, is aggressively targeting its half-a-rupee sachet to rural consumers through extensive trade promotions.

Choosing an appropriate Retail Format

The biggest challenge in rural retailing is to ensure products are available across the 638,000 villages, which are spread out over three million sq km. The problem is further compounded by the geographical immensity of reaching the 12 million-strong kirana (neighborhood mom-and-pop) stores in the country. Most of these stores are small, and consumer goods companies have to reach out to them in villages only through a channel of distributors and wholesalers, adding to the costs of distribution. At the same time, these small retailers cannot be ignored -- about 90 percent of them are in towns that have no more than a million people and some are in areas that have less than 100,000 people. An appropriate retail format has to be introduced to provide customized solutions to the bottom of pyramid. This also requires providing appropriate product solutions to the villagers and farmers suiting their pocket.

Maintaining harmonious relations with the customers

Rural retailer needs to develop friendly relations with the customers and should have the tendency to provide pertinent solutions to the shopping problems faced by the villagers. For instance there may be customers who walk into outlet to quickly buy something and there may be others who want to spend some time in the outlet or spend their evening in the outlet. If both types of customers are treated in the same way, the retailer may lose some potential customers. So the rural retailer needs to converse in local dialect which helps him to relate with the emotions of the consumer. Moreover he should treat the customer with supreme respect so that the rural consumer becomes the loyal consumer and visits the mall again and again. Such relations with the customer help him to make his business successful and sustainable.

Rural infrastructure man power requirements

National Council of Applied Economic Research (NCAER) study has found the major hindrances retailers find in penetrating the rural market as inadequate infrastructure. With Indian retailing expanding at a faster rate and expected to touch a level of US$637 billions by 2015, retail industry may need more than two million skilled people in various specialized areas across the country. Rural sector which contributes about 57% of total FMCG sale of around US$ 16.03 billion in August 2008, the manpower required to cater the vast number of fragmented and scattered rural inhabitations may need to be reworked as per ground realities.

While different corporate houses have tried a variety of approaches for retail network attaining varied degrees of success, a net work of Lakhs of Self Help Groups formed under Swarnjayanti Gram Swarozgar Yojana (SGSY) of Ministry of Rural Development, Government of India, offer another avenue for taping the members of these groups besides individual swarozgaries which are available in every nook and corner of rural India. These SHGs have multifold membership from all sizes of villages which can be roped in for covering such villages where even retail outlets may not be profitable. This would achieve duel objective of extensive coverage of consumer base and recycle of incentive money in purchase of products.

Recruitment of enthusiastic task oriented youth

The talented educated but unemployed rural youth should be employed in these retail outlets so that they can converse in local dialects.

CONCLUSION

To conclude, the Corporates have found a good business at bottom of pyramid. Both villagers as well as the retailers are benefited by opening of rural retail vistas. The rural consumers get high quality products at affordable prices and marketers increased their profits by targeting rural markets. Still a lot needs to be explored. Retailers need to study the behavior of rural purchaser.

The Mc Kinsey's retail report has rightly summarized the exceptionality of Indian shopper as "least loyal to a single retailer, dislike for packaged fresh foods, willingness to pay more for convenience and services, but not a premium price for a brand and demands ethnicity in apparel accessories. And in the absence of quality control, information about the product and trust in retailers, brands serve as a proxy for all these factors."

Therefore marketers need to understand this behavior of consumers and plan their marketing strategies as per ground realities to undeniably reach this bottom of pyramid which may bring real fortune to them. Truly quoted by *Bijoor "In the old days, the weakest people in organizations, the ones without a star career path, held the reins of the rural marketing divisions," Today, things have changed. Sharper and sharper brains from within the organization are being diverted to rural strategy formulation." The retailers who can understand these basic facts will irrefutably be the frontrunners of rural retail market harvest.*

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EVALUATION OF THE PERFORMANCE OF TRAINING PROGRAM AT CARBORUNDUM UNIVESAL LIMITED, RANIPET

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ABSTRACT

Human Resources management has the components of procurement, development, compensation, integration, maintenance and separations so as to create competing human resources to bench mark in any field of business. Hence the effectiveness of organization can be best assured. Training and Development implies learning, relearning unlearning, education, ASK (Attitudes, Skill and Knowledge) transition, technical and technological accreditation and other means of development. The study of effectiveness of training is therefore inevitable as training and development is only cause for creating right from awareness to experimenting the knowledge in the most potential and desirable forms to ensure effectiveness in any organization. The present study aims at exploring the facts about the efficacy of training program conducted by Carborundum Universal Limited, Ranipet. Both the researcher and the company would like to focus their attention on uncovering the factors instrumental for the effectiveness in the pre and post training situations. The study collects the primary data to ensure first – hand information to reach the effectiveness in training objectively with out any dilemma. The outcome of the study will much be useful to determine the policies and strategic decisions which will upgrade and update the content factors of training leading to the effectiveness of the concern under study, ultimately affect individual, group, organizational and societal issues.

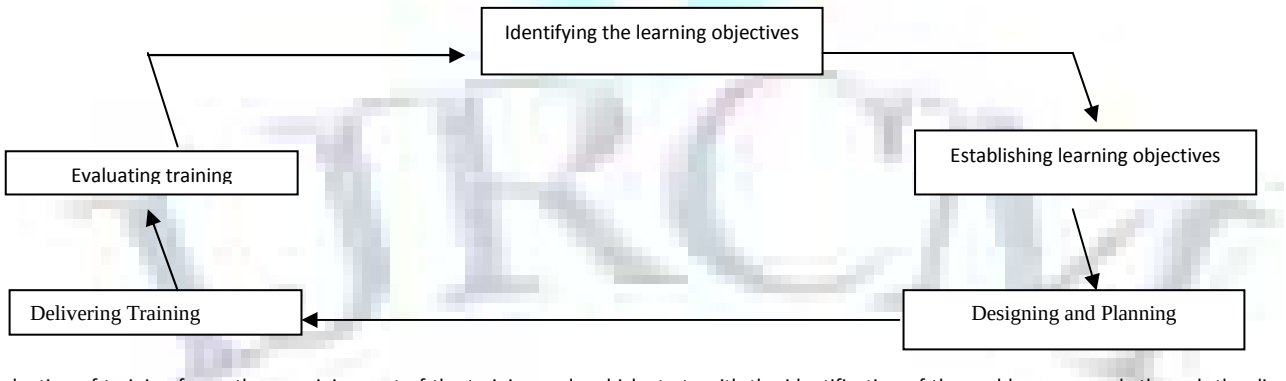
KEYWORDS
employees, Evaluation, Supervisors, training program.

INTRODUCTION

Evaluation involves the collection of information on whether trainees were satisfied with the program, learned the material, and were able to apply the skills back on the job. It may be important to determine whether trainees are capable of exhibiting the appropriate level of a skill (e.g. do new supervisors know all of the organisation's policies and procedures). It may be important to know whether or not trainees have changed their behaviour and if the change was due to training (e.g. do supervisors complete the necessary paperwork for disciplining an employee more so after the training that before it was conducted). Further, it may be critical to know that if the organisation places a new group of supervisors in the same training program that they will also improve their learning or behaviours. Evaluation effects can be designed to answer these issues.

Evaluation ensures that programs are accountable and are meeting the particular needs of employees in a cost-effective manner. This is especially important today, as organisations attempt to cut costs and improve quality. Without evaluation, it is very difficult to show that training was the reason for any improvements. As a result, management may reduce training budget of staff in times of financial hardship. While most companies recognize the importance of evaluation, few actually evaluate their training programs. Many successful firms that emphasize training do so almost as a matter of faith and because of their belief in the connection between people and profits.

THE TRAINING CYCLE – EVALUATION



The evaluation of training forms the remaining part of the training cycle which starts with the identification of the problem, proceeds through the diagnostic phase, where it is classified as a training issue, and continues through to the design delivery of the training course itself.

REVIEW OF LITERATURE

Jennifer Arnold in her article entitled, " A training annual report communities you programmes return on investment" stated that the smallest training departments do some sort of post – training evaluation, and maybe even an occasional ROI analysis. But many departments lack a systematic approach to analysis and a regular means of communicating the results to senior management.

Jonathan A. Segal in his article entitled, "Unlimited Check-Writing Authority for supervisors / EEO training cuts widen costs" stated that if the supervisors are not properly trained on equal employment opportunity (EEO) essentials, they are more likely to do or say anything that will result on legal claims. There's a big difference, though between "some" training and comprehensive training. These problems can be kept to a minimum and the business value of EEO supervisory training can be maximized by shorting up current deficits in your general EEO training program.

Bellio & E. Goru, University of Udine, Italy in his article entitled " Impact evaluation of job training programmes: Selection bias in multilevel models"
Focus on the evaluation of effectiveness of training program composed of several courses. The evaluation based on the process of ascribing a numerical value to different aspects of training event. It is concerned with getting data about the course. The procedure is explained with reference to a data set about a job training programme organised in Italy in the year 1990.

Stephen Calculator and Christine D'Altilio Luchko, in their article titled "Evaluating the Effectiveness of a Communication Board Training Program" highlighted that the Training introduces a technique for systematically observing the consequences of various aspects of treatment on the communicative effectiveness of nonspeaking persons using communication boards in natural settings. Three major factors were found to operate cumulatively in increasing Kay's overall communicative effectiveness: 1) revising the design of her original communication board; 2) training her to functionally use her new board to meet her daily communicative needs; and then 3) introducing interaction strategies to her listeners through an in-service training program.

Scot. M. Duguay and Keith A. Korbut in their article titled "Designing a training program which delivers results quickly" stated that the considerations for the design of a two-phase training program addressing training requirements of a general groups and a detailed program requiring skill mastery by individual functional area. It involves frequent employee leader review and employing the skill of peer coaches and mentors is prepared. The effectiveness of training program can be more accurately accessed via a leadership team review of expected versus actual progress against the training program objectives.

Mr. Jerry Ice discussed in his article that increased knowledge and skill among employees can pay off in the long run for employers.

Costing the effectiveness of training: case study 1 – improving Parcelforce driver performance Patricia Hedges and Dennis Mos. These case studies were designed to focus on the relationship between training provision, the training cost and company profitability. The aim of the study was to try and quantify reporting on the cost-effectiveness of specific training programmes within Parcelforce UK.

While other evaluation studies of training effectiveness may have focused on the relative cost effectiveness of different training methods in achieving the training objectives, or perhaps measured the subjective responses of trainees to the quality of the training they had received (for example, Romiszowski[8]), this study sought to relate training costs directly to profitability in a quantifiable manner.

Evaluation of the training program for Greek Olympic Vasilio Grammatikopoulos'
This study was to develop an instrument to evaluate the educational program's training. The program used for this purpose was the Olympic Education program, which has been implemented in Greek primary and secondary school since 2000. The face validity of items was evaluated the pool of the items selected was factor analysis indicated a three factor solution with high internal consistency.

High-Quality Resources Exist for Training Workers - By Aaron R. Fichtner
Small- and medium-sized businesses face special challenges in providing employees with the training. They must have to keep pace with this dynamic knowledge-based economy. These employers often cannot count on extensive human resources departments, large training budgets, state-of-the-art facilities or in-house staff specializing in training. Surveys consistently show that smaller firms are less likely than larger businesses to invest in training.

The Influence of Training Focus and Trainer Characteristics on Diversity Training Effectiveness COURTNEY by L. HOLLADAY University of Texas M. D. Anderson Cancer Center
This article explained through a systematic evaluation of diversity training design features of focus and trainer characteristics, we demonstrate that the focus of a diversity training program can impact trainees' reactions and subsequent learning. By using a learning-based model of training evaluation, we provided an initial investigation of the design features that influence the effectiveness of diversity training, an example of how to measure the effectiveness of the training design, and a consideration of training outcomes that may warrant examination. If the training conducted in a group environment, it is important to focus on the similarities of the group members to increase the group's effectiveness.

Effects of training in functional behaviour assessment Dukes, C . Rosenberg, H. Brady, M. Florida Atlantic University
The purpose of this study was to investigate the effectiveness of training special education teachers in the process of functional behavioural assessment (FBA) and subsequent development of recommendations to promote behaviour change. An original evaluation instrument was developed that included measures of special education teachers' knowledge of function of problem behaviour and their ability to generate recommendations to promote behaviour change. The instrument was distributed to elementary, middle, and high school special education teachers in a large urban school district. Teachers trained by the school district in the development of initial and sustained training efforts for teachers in functional behavioural assessment methods.

THE ROLE AND RESPONSIBILITIES OF THE SUPERVISOR – Michael Brook 09th December 2005
Supervising is like parenting. These are two of the most important jobs any one can do, but few people are adequately prepared or trained to do them. Most people learn by trial and error with varying degrees of success. But both jobs are far too important to be left to chance and the good news is that you can learn with some help and guidance how to be successful in them. This article will help you to be a more effective and efficient supervisor.

STATEMENT OF THE PROBLEM

Oflate, the effectiveness is the order of the day to excel in business and bench mark among the customers. It is not a day process, it has to be established, maintained and improved (EMI) consistently and continuously through out the voyage of business. Among the too many factors contributing to this situation, factors such as total quality management, advertising, production planning and control (PPC), Business Process Reengineering (BPR) and training and development are playing vital roles. Among these, HRD plays an indispensable role to ensure the effectiveness of human resources. Hence the study is narrowed down as "A study on evaluation of training programme in Carborundum Universal Limited, Ranipet.

OBJECTIVES OF THE STUDY

1. To evaluate the performance of the training programme at Carborundum Universal Limited
2. To enhance the ways to improve the existing training program
3. To analyze the suggestion of the supervisors with respect to training given to them.
4. To identify the problems faced by the trainees during the training programmes and solve them.
5. To identify the ways to increase the efficiency of the supervisors through training programmes.

RESEARCH METHODOLOGY

The study uses Survey method. The respondents are the supervisors of Carborundum Universal Limited. The instrument used to collect primary data is well-designed interview schedule is likert Scaled units.

The test is administered by giving questionnaire to the employees

Sample Size: 50

Sampling Technique: Sampling technique to be adopted "Convenient Sampling" in this method, the sample units are chosen primarily on the basis of the convenience of the investigator.

Statistical Tool: The statistical tools such as frequency, Correlation, Chi square have been used to analyze the data.

Limitations of the study:

1) As the training feed back is obtained from the superiors, the sample size is submitted to 50.
2) Difficulty in meeting workers during working hours & break hours.
3) Employees are not open and frank
4) Primary data is subjective in nature.

ANALYSIS AND PRESENTATION OF DATA

DEMOGRAPHIC FACTORS IN THE STUDY

The demographic variables have pertinent role in ensuring the objectives of the study. Variables such as age, type, marital status, educational qualification, experience, and department are chosen in this regard.

Variable	Frequency	Percentage
Age		
Below 25	5	10
26 – 45	43	86
46 – 55	2	4
Total	**50**	**100**
Gender		
Male	46	92
Female	4	8
Total	**50**	**100**
Marital Status		
Single	9	18
Married	41	82
Total	**50**	**100**
Educational Qualification		
Below 10th standard	1	2
HSC	4	8
ITI	30	60
DME	15	30
Total	**50**	**100**
Experience		
Below 1 year	1	2
1 – 5 years	4	8
6 – 10 years	9	18
11 – 20 years	34	68
20 years above	2	4
Total	**50**	**100**
Department		
Production	35	70
Personal	5	10
Marketing	1	2
Klin Repair	8	16
HR	1	2
Total	**50**	**100**

CORRELATIONS

1. Relationship between the training programme had raised personal goals and levels of aspiration and the employees to use the technical knowledge and skills through training.

DESCRIPTIVE STATISTICS

	Mean	Standard Deviation	N
Increase goals level	3.92	.60	50
Tech know & skill	3.78	.71	50

CORRELATIONS

		Increase goals level	Tech knows & skills
Pearson Correlation	Increase goals level	1.00	.342
	Tech know & skill	.342	1.000
Sig. (2-tailed)	Increase goals levels		
	Techknow skill	.015	.015
N	Increase goals levels	50	50
	Techknow skill	50	50

INFERENCE

From the above table it is inferred that, there is a positive correlation between the training programmes had raised personal goals and levels of aspiration and the employees to use the technical knowledge and skills through training.

2. Relationship between the training programme developing their career and show their opportunity and helps to improve competency.

DESCRIPTIVE STATISTICS

	Mean	Standard Deviation	N
Show opportunity	3.90	.89	50
Improve competency	4.00	.67	50

CORRELATIONS

		Show Opportunity	Improve competency
Pearson Correlation	Show opportunity	1.000	.309
	Improve competency	.309	1.000
Sig. (2-tailed)	Show opportunity		
	Improve competency	.029	.029
N	Show opportunity	50	50
	Improve competency	50	50

INFERENCE

From the above table it is inferred that, there exist a positive correlation between the training programme developing their career and show their opportunity and helps to improve competency.

ANALYSIS

CHI-SQUARE TESTS

Relationship between experience of the workers and identified for training programmes on the bases of their needs

Null hypothesis (Ho): There is no significant difference between the workers experience and workers identified for training programmes on the bases of their needs.

Alternate Hypothesis (H1): There is significant difference between the workers experience and workers identified for training programmes on the bases of their needs.

CHI – SQUARE TESTS

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi – Square	15.612	8	.048
Likelihood Ratio	9.991	8	.266
Linear –by-Linear Association	.062	1	.803
N of Valid Cases	50		

DIRECTIONAL MEASURES

			Value	Asymp. Std. Error	Approx. T	Approx. Sig.
Nominal By Nominal	Lambda	Symmetric	.037	.081	.448	.654
		experience Dependent	.000	.000	.	.
		Traneeds Dependent	.091	.194	.448	.654
	Goodman and Kruskal Tau	experience Dependent	.038	.042		.494
		traneeds Dependent	.142	.074		.083

SYMMETRIC MEASURES

		Value	Approx. Sig
Nominal by Nominal	Phi	.559	.048
	Cramer's V	.395	.048
	Contingency Coefficient	.488	.048
Measure of Agreement	Kappa		
N of Valid Cases		50	

INFERENCE

From the above table the calculated value of chi-square is.048 which is lesser than 0.05 at 5% level of significant. Hence, we have to reject null hypothesis and accept alternate hypothesis. Therefore, there is a significant difference between the workers experience and workers identified for training programmes on the bases of their needs.

This lambda value tells us that there is a 0% reduction in predicting the experience of the worker when we know they identified the needs of the training programme.

Contingency coefficient = 0.488

It is inferred that there is a moderate level of association between the experiences of the workers and identified for training programmes on the bases of their needs.

FINDINGS

The collected data has been analysed and certain inference has been drawn. Also the analysis helped in bringing out useful findings and suggestions for further improvement in training programme.

1. Most of the employees are under age group of 26 – 45 yrs. They get wide experience from the company
2. Most of the employees are Male and only four are female.
3. 92% of the respondents are married. Only 4 employees are unmarried.
4. Most of the respondent belongs to production department; only the 16% respondent is belong to personal department.
5. Most of the respondents are ITI holders and 30% of them are Diploma holders.
6. Using Chi-Square Test it is inferred that there is a significant difference between the workers experience and workers identified for training programme on basis of their needs.
7. Most of the respondents have agreed that the training programmes have provided the training seriously
8. Most of the respondents are agreed that they are given time to practice the knowledge acquired by training.
9. Most of the respondents agree that the faculty has explained the usefulness of the training programme.
10. Using correlation it is inferred that there is a positive correlation between the training programme developing their career and show their opportunity and helps to improve competency.
11. Using correlation it is inferred that there is a positive correlation between the training programmes had raised personal goals and levels of aspiration and the employees to use the technical knowledge and skills through training.
12. Most of the employees have agreed that they are given adequate free time to reflect and plan improvements in the organisation.
13. Most of the respondents have agreed that they build warm, open relationships with subordinate and managers.
14. Most of the respondents have agreed that training programme helps to improve and know their strength and weakness.
15. Most of the employees have agreed that the feedback on training programme is being analysed and follow up action taken.

SUGGESTIONS

1. Most of the workers with different age groups agree that they were satisfied with the overall training programme. Hence the company has to give more inputs, technical and non – technical to improve the training programme.
2. Most of the workers with work experience of 15- 20 years have agreed with the selection of participants for training. Hence the company should give training to the workers.
3. Most of the married and unmarried employees prefer off-the job training compared to other types of training. Hence the company should consider their opinion on the type of training before giving actual training to them. This will be useful to them and they will receive 100% inputs from the training. The company should give off the – job- training to improve the appropriate skills of the workers.

4. Most of the workers felt that training programme is useful for them. The company may give some extra inputs that may be suitable for them to improve their levels of performance.
5. Most of the highly experienced workers felt that the most influencing factor to attend the training programme is improving skills and knowledge. Some of the workers felt that the training programme will not be useful for their career development. Hence the company should consider those factors framing the training programme.
6. Most of the workers who attend the training programme once in 6 months felt that the interest rate of the co-employees with respect to training programme is fair. Hence the company may conduct the training programme once in three months.
7. For melting department, the company may give training once in a month, for others gap between one training programme and the other can be more than three months. This will reduce the unnecessary expenditure on the training programme.
8. All the workers with different qualifications except ITI-E felt that the existing training programme is highly useful for them. The DME workers felt that they require highly technical training programmes.
9. The company should give more appropriate training programme for the workers with work experience less than 20 years.
10. Workers with high qualification will not face any difficulty in the classroom lecture method of training. So the training programme should be made simple free from ambiguity and easy to understand to all the participants irrespective of the educational qualification.
11. Employees having interest in group learning will prefer to implement the inputs received in the training programme. Hence the company should take some steps to improve the group learning interest towards different task in the organization.
12. All the employees in the organization should attend the training continuously so as to keep abreast of recent technological changes that take place in the global environment.
13. As the trainees acquire new knowledge, skills or attitudes and apply them in job situations.
14. The trainee should be helped to see the need for training by making him aware of the personal benefits, he can achieve through better performances.
15. The employees should be helped to practice the inputs learnt during training in the work place and there can be improvement in the employees' status within the company as the sign of encouragement.

CONCLUSION

Training programme in CUMI is really an effective and contributed a lot to ensure the fulfilment of objectives of training. Its efficacy in the fields of training has produced tremendous results. Amidst this, it has certain shortfalls also. Factors such as Career Planning, Competency Mapping, Frequency of training, Training need identification can be concentrated still better in order to achieve the real impact of training

The company can implement effective training methodology if it follows the suggestions given by the researcher and make the productive usage of training programmes. Most of the training is failure in common due to the lack of consistency in the continuous monitoring and quantitative evaluation. Hence the company can have its entire training programme to be more effective by developing ROI (Return on Investment) for each and every individual with reference to cost, benefit, feed back, follow up, counselling, ownership and other relevant factors.

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QUALITY DATA REPRESENTATION IN WEB PORTAL – A CASE STUDY

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ABSTRACT

Web information systems are characterized by the presentation of a large amount of data to a wide audience, the quality of which can be very heterogeneous. Every organization and individual can create a web site and load every kind of information without any control on its quality, and sometimes with a malicious intent. The information systems on the web need to publish information in the shortest possible time after it is available from information sources. The information has to be checked with regard to its accuracy, currency, and trustworthiness of its sources using the data quality measure. The Quality of the Data presented by the web portals has to be analyzed. Intrinsic and representational categories of data quality are very important in the web portal to give the data in most effective manner. The main aim of this paper is to quantify the Data qualities through their dimensions. This paper has made a study about the attributes of quality representation of data and a case study about how effective, the data representation has been made with "Education" column of 'The Hindu' daily news paper web portal (online).

KEYWORDS
Data Quality, Web Portal.

INTRODUCTION

A web portal or public portal is a web site that has lot of information from multiple sources on the web. It organizes the information in an easy user-friendly manner. In worldwide numerous users use web portals to obtain information for their work and to help with decision making. The users and data consumers need to ensure that the data obtained are right for their needs. Thus the organizations that provide Web portals need to offer data that meet user requirements. Dirty data is a serious problem leading to incorrect decision making, inefficient daily operations, and eventually wasting both time and money. Data Quality is a very important aspect in web services. Data quality is a new research area that represents one of the biggest challenges for data mining. Data quality refers to the accuracy and completeness of the data, also measured by the structure and consistency that is, how the data has been represented in the web portal. For the effective representation of quality data in the web portal, certain important attributes has to be followed. Data quality represents a common interest between data consumers and portal providers. Data quality is very important for its efficiency and effectiveness of web organization.

CLASSIFICATION OF DATA QUALITY

The concept of data quality has emerged only during past ten years due to the exchange of data among the business organizations, government etc. In particular the concern on data quality has been increased due to the growth of internet. The review of data quality is done here apart from the context of DBMS like data integrity and data security.

Data Quality is classified into four categories, Intrinsic DQ, Accessibility DQ, Contextual DQ and Representational DQ. Each category has many dimensions like Accuracy, Completeness, Consistency, Timeliness, etc. from literature survey [2] in Table1.

TABLE 1: DQ CATEGORIES AND DIMENSIONS

DQ Category	DQ Dimensions
Intrinsic DQ	Accuracy, Timeliness/Currency.
Accessibility DQ	Accessibility, access security
Contextual DQ	Relevancy,value-added, completeness
Representational DQ	Content coverage/Amount of data, Consistent Representation/Writing Style, Interactivity, Layout, Multimedia Presentation, Navigation Quality, Organization, Achieves/Documentation.

The scope of the study in this paper includes only the intrinsic and representational data quality categories. The following Table 2 shows the Data quality, its dimensions and its definitions.

TABLE 2: DEFINITION FOR THE DQ DIMENSIONS

Category	Dimensions	Definitions
Intrinsic	Accuracy	Ensure data are the correct and valid values.
	Timeliness or Currency	The news is up to date. Information in the articles is useful to your work or life.
Representational	Content coverage	The website includes appropriate information and features.
	Consistent Representation or Writing style	The pages of the portal should be consistent in style. Choose a style and apply it to all the pages in the portal. Alternatively, try not to use more than two or three styles.
	Interactivity	Easy to effectively retrieve specific information on the site.
	Layout	The art of the overall design of a page, such as arrangement of graphics and text
	Multimedia presentation	Use of audio and video content.
	Navigation quality	Links to other websites or between pages
	Organization	The information presented on the pages of the portal should be organized by combining various visual characteristics such as size of letters, images, colours, data grouping etc.
	Archives	Storage and provision of past articles or past newspapers.

CASE STUDY

Newspapers can provide online versions, that are not mirror images of print versions, instead offer something extra such as interactive features or information that could not fit in print version [1]. There are number of newspapers available on internet some with general information and some papers are complete with archives. The Hindu newspaper is one among the complete newspaper available on the internet via the web portal http://www.thehindu.com/.The online web portal of this paper consists of many columns which covers various information every day. But the case study in this paper has analyzed the data qualities like Intrinsic DQ, and Representational DQ in the 'Education column' alone.

The "Education" Column of the portal includes several sub columns like Careers, College & Universities, Issues, Research and School. The study has been done by feedback analysis using statistical tool. A questionnaire has been framed and the feedback has been collected from the undergraduate and postgraduate students of various disciplines who go through this portal in a regular basis.

CHART 1: REPRESENTING THE "INTRINSIC DQ"

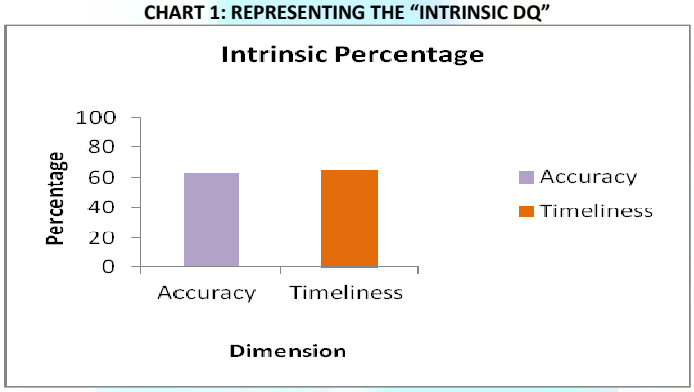
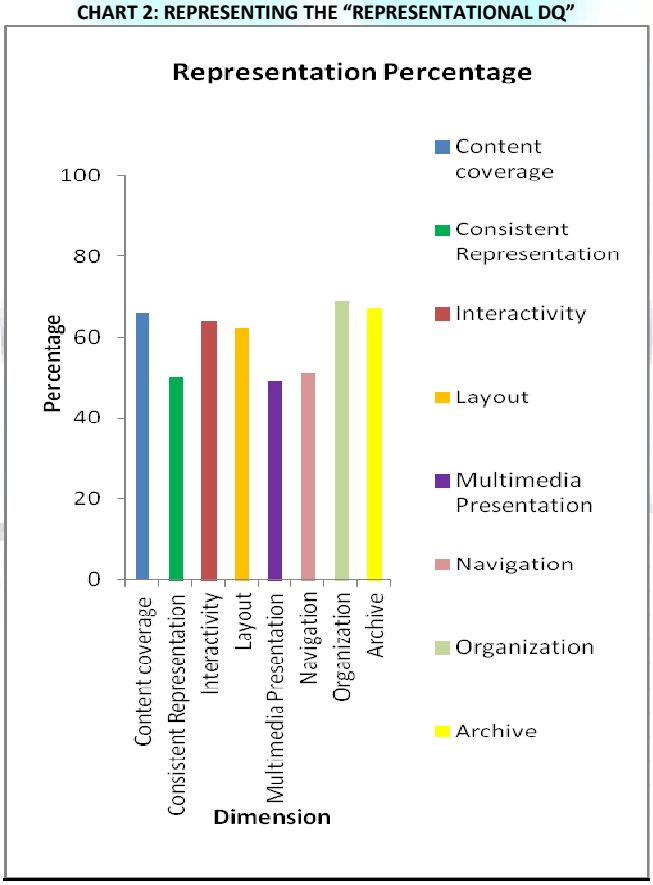


CHART 2: REPRESENTING THE "REPRESENTATIONAL DQ"



In the above chart1 the accuarcy is 63% and the timeliness is 65%. On an average the quality of data , that's is accuracy and timeliness is to be present as 64% on an average.

In the above chart2 the data representational quality has been observed through the factors of content coverage, consistent, interactivity, layout, multimedia presentation, navigation, organizaion and archive.

From the above chart we observe that the organization of data is high as 69%,and the multimedia presentaion, Navigation and consistency of the presentation of data is very low and its found to be 49% , 50 % and 51% with a very small difference of 1% among them.

CONCLUSION

The study on the "Educational" column of this is web portal have shown just the amount of presence of Intrinsic and Representational Data qualities which is quantified by their Data quality dimensions as previously mentioned in the data classifications section. But through quantifying the data quality dimensions we study the exact presence of Intrinsic and representational data qualities. This paper has made a sample study to quantify the Data qualities through their dimensions, so that importance can be given to areas in which a poor quantifying measure is shown. Future study can lead to all the columns of the paper, identification of lacking data quality in the portal, suggestions to improve the data quality can also be included .

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PERFORMANCE ANALYSIS OF FIRE ALARM SYSTEM BASED ON WIRELESS SENSOR NETWORKS USING NS-2

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ABSTRACT

Fire disaster is one of the most dangerous professions in which people are employed. Automatic fire alarm system provides real-time surveillance, monitoring and automatic alarm. It sends early alarm when the fire occurs and helps to reduce the fire damage. In this paper, the use of wireless sensor networks may be one way of reducing the risk faced by the fire disasters and assist in the process of rapid extinguishment of the fire. The NS2 simulation environment is a flexible tool for network engineers to investigate how various protocols perform with different configuration and topologies and the ns-2 framework to include support for sensor networks. This paper presents the simulation results in order to choose the best routing protocol to give the highest performance when implement the routing protocols in the target mobile node application. The simulations comparing two ad hoc routing protocols named DSDV and AODV.

KEYWORDS
wireless sensor networks, fire alarm system.

INTRODUCTION

In recent years, wireless sensor networks (WSNs) are widely deployed in environmental monitoring, structural health monitoring and industrial monitoring. It provides low cost solutions for such applications. It consists of small size, low-power, and low-cost devices that integrated with limited computation, sensing, and radio communication capabilities. So WSN is very suitable for communication between detectors in fire alarm system. Automatic fire alarm system is widely deployed in more hazardous places. Large numbers of small fire detectors should report their information to the control center of a building or a block.

Recent technological improvements have made the deployment of small, inexpensive, low- power, distributed devices, which are capable of local processing and wireless communication, a reality. Such nodes are called as sensor nodes. Each sensor node is capable of only a limited amount of processing. But when coordinated with the information from a large number of other nodes, they have the ability to measure a given physical environment in great detail. Thus, a sensor network can be described as a collection of sensor nodes which co-ordinate to perform some specific action. Unlike traditional networks, sensor networks depend on dense deployment and co-ordination to carry out their tasks.

The primary purpose of this project is to establish a foundation in ns-2 for simulating sensor networks. This foundation consists of building sensor nodes that are tapped into an 802.11 channel for communicating with surveillance center. This work is a small contribution that should benefit sensor network research where simulation is appropriate. It is an effort to aid the analysis of various sensor network configurations under the demands of specific sensor applications.

The paper begins with an overview of the Related Work, followed by section 3 describes our extensions to ns-2 and guidelines for using them in simulations. Section 4 discusses system design and implementation. Results of the simulation are discussed in section 5.Followed by conclusions in Section 6.

RELATED WORK

Wireless sensor networks are dense wireless networks of small, low-cost sensors, which collect and disseminate environmental data [1]. Therefore wireless sensor networks can be an alternative in these cases since WSNs are deployed without the need for any pre-existing infrastructure and with little maintenance [2]. Faouzi Derbel researched the reliability of wireless communication for fire detection systems in commercial and residential areas, and analyzed parameters that can influence the radio transmission within buildings [3]. Ns-2 for simulating sensor networks [3] consists of building sensor nodes that are tapped in to an 802.11 channel for communicating with surveillance center. Performance evolution of routing protocols using NS2 simulations [4].

WSN FOR FIRE ALARM SYSTEM

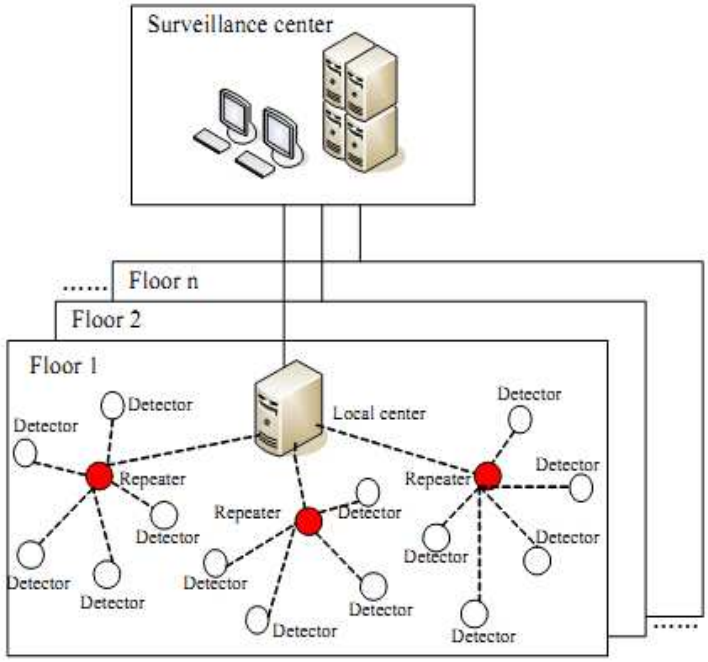
NETWORK ARCHITECTURE

Nowadays, securing one's property and business against fire is becoming more and more important. Monitoring commercial and residential areas all-round is an effective method to reduce personal and property losses due to fire disasters. Automatic fire alarm system is widely deployed in those sites recent years. Large numbers of small fire detectors should report their information to the control center of a building or a block. But the cost of wiring is very high in traditional wired fire alarm systems.

As we know, large numbers of monitoring points are required in high-rise buildings. Due to transmission distance limitations of low-power radio, repeaters are required to relay monitoring information from detectors to surveillance center. If all the monitoring information is transmitted to the surveillance center directly, the network load becomes very heavy. In order to reduce the communication overload and improve the stability of network, a hierarchical structure is designed for our system. The network architecture is shown in Figure.1 large numbers of detectors [2], some repeaters and a local center constitute the wireless sensor network, which responsible for fire detection of one floor. The detector is the simplest monitor, which must connect to repeater to report its monitoring

information. The repeater not only monitoring its area, but also provide network access for detectors. The surveillance information of one floor is aggregated by local center, and local centers of every floor report the monitoring information of the floor to the surveillance center through cable connection.

FIGURE 1: NETWORK ARCHITECTURE



SYSTEM DESIGN AND IMPLEMENTATION

NETWORK SIMULATOR 2 (NS-2)

NS2 is one of the most popular open source network simulators. The original NS is a discrete event simulator targeted at networking research. In this section, we will give a brief introduction to the NS2 system [3].

For network simulation, more specifically, it means that the computer assisted simulation technologies are being applied in the simulation of networking algorithms or systems by using software engineering [4]. The application field is narrower than general simulation and it is natural that more specific requirements will be placed on network simulations [1].For example, the network simulations may put more emphasis on the performance or validity of a distributed protocol or algorithm rather than the visual or real-time visibility features of the simulations.

FIGURE 2: CLUSTER ARCHITECTURE

CLUSTER ARCHITECTURE

The network system taking 4 clusters, each cluster consists of 9 nodes and these clusters contain a cluster head. All the nodes in the cluster have to report the observations to the cluster head if in case the cluster head is dead it can take other node is head, in the cluster choose the packet sending at nearest path, so cluster head in turn will report to the local server (Figure 2).the node 36 is local server and node 37 is surveillance center through with out cable connection.

AD HOC ROUTING PROTOCOLS

An ad-hoc network is a collection of wireless mobile nodes dynamically forming a temporary network without the use of any existing network infrastructure or centralized administration. A number of routing protocols like Ad Hoc On- Demand Distance Vector Routing (AODV) and Destination- Sequenced Distance-Vector (DSDV) have been implemented.

DESTINATION SEQUENCED DISTANCE VECTOR (DSDV) PROTOCOL

The destination sequenced distance vector routing protocol is a proactive routing protocol which is a modification of conventional Bellman-Ford routing algorithm. This protocol adds a new attribute, sequence number, to each route table entry at each node [9]. Routing table is maintained at each node and with this table; node transmits the packets to other nodes in the network. This protocol was motivated for the use of data exchange along changing and arbitrary paths of interconnection which may not be close to any base station.

AD-HOC ON-DEMAND DISTANCE VECTOR (AODV) PROTOCOL

AODV is a very simple, efficient, and effective routing protocol for Mobile Ad-hoc Networks which do not have fixed topology. This algorithm was motivated by the limited bandwidth that is available in the media that are used for wireless communications [7]. It borrows most of the advantageous concepts from DSR and DSDV algorithms [8] the on demand route discovery and route maintenance from DSR and hop-by-hop routing, usage of node sequence numbers from

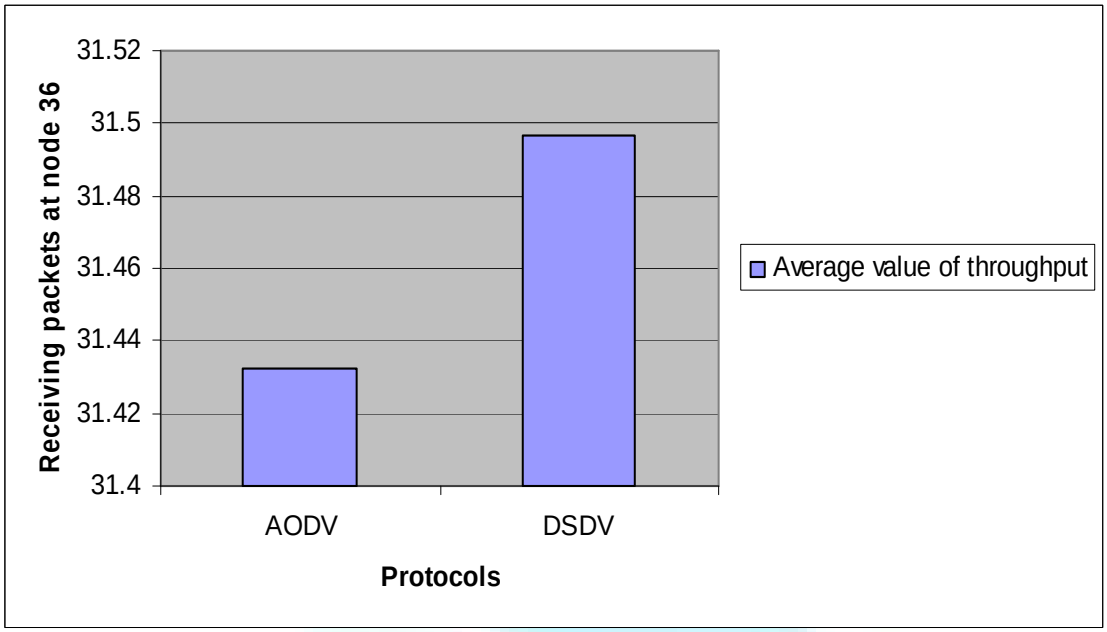
DSDV make the algorithm cope up with topology and routing information. Obtaining the routes purely on-demand makes AODV a very useful and desired algorithm for MANET's.

PERFORMANCE ANALYSIS OF DSDV AND AODV

AVERAGE VALUE OF THROUGHPUT

Figure 3, Throughput is a measure of how fast we can send the data through the network. Comparison of AODV and DSDV using average value of throughput. The explanation of given graph means first we have to take the AODV throughput of receiving packets to 36 node (local center) and same as DSDV throughput of receiving packets to node 36.then we can take average value of throughput choosen.The AODV protocol has less data send to node 36 compare to DSDV so DSDV is the better protocol in the throughput. This graph implementation first we have to take the every cluster send the packets to the local center node 36,so that that time the local center how many packets are receive at the random time to check this type of simulation and to draw the throughput graph of comparison with both AODV and DSDV.

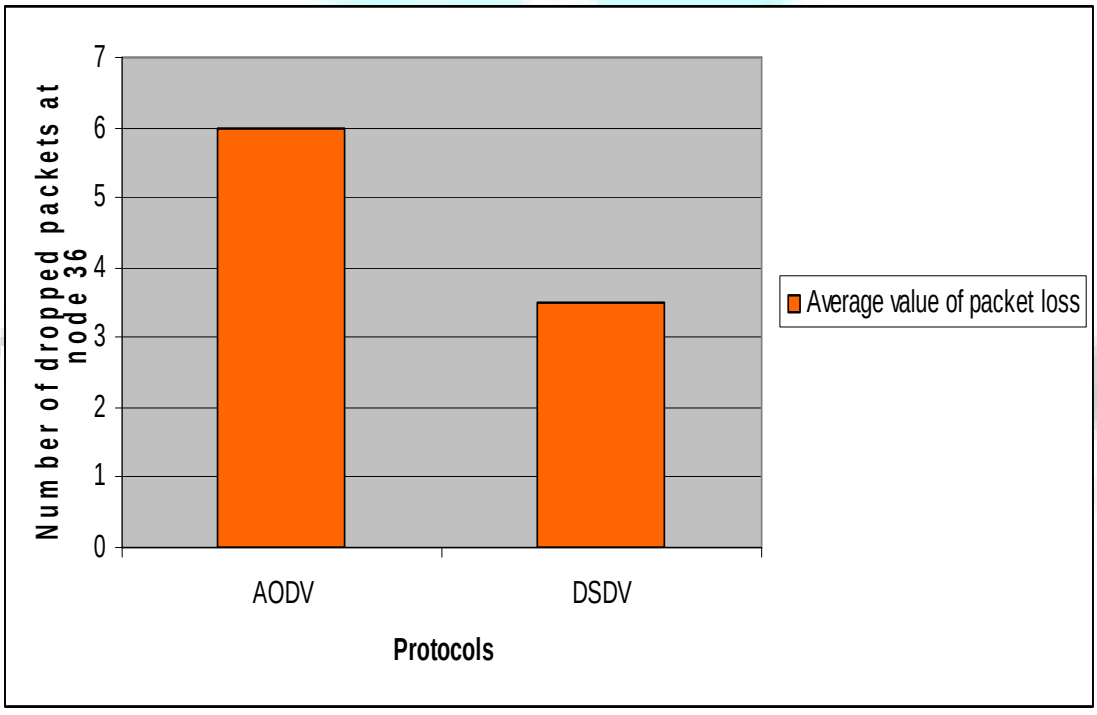
FIGURE 3: THROUGHPUT OF RECEIVING PACKETS AT LOCAL CENTER (NODE 36)



AVERAGE PACKET LOSS

Figure 4; show not much packet loss on DSDV side. This is because when a link fails, a routing error is passed back to a transmitting node and the process repeats. Meanwhile for AODV, this routing protocol shows it is as good as DSDV if packet loss be as indicator [7]. This can be prove by the characteristics of AODV which information on new Routes, broken Links, metric change is immediately propagated to neighbors. This graph implementation first we have to take the every cluster send the packets to the local center node 36, so that that time the local center how many packets are receive at the random time to check and how many packets are dropped at that time and to draw the packet loss graph of comparison with both AODV and DSDV.

FIGURE 4: NUMBER OF DROPPED PACKETS AT THE NODE 36



RESULTS

Throughput and packet loss in the network by using AODV and DSDV are shown in the figures 6,7,8,9 respectively. The average packets generated, sent, received and dropped values are given in the table 1.

FIGURE 5: THROUGHPUT IN AODV

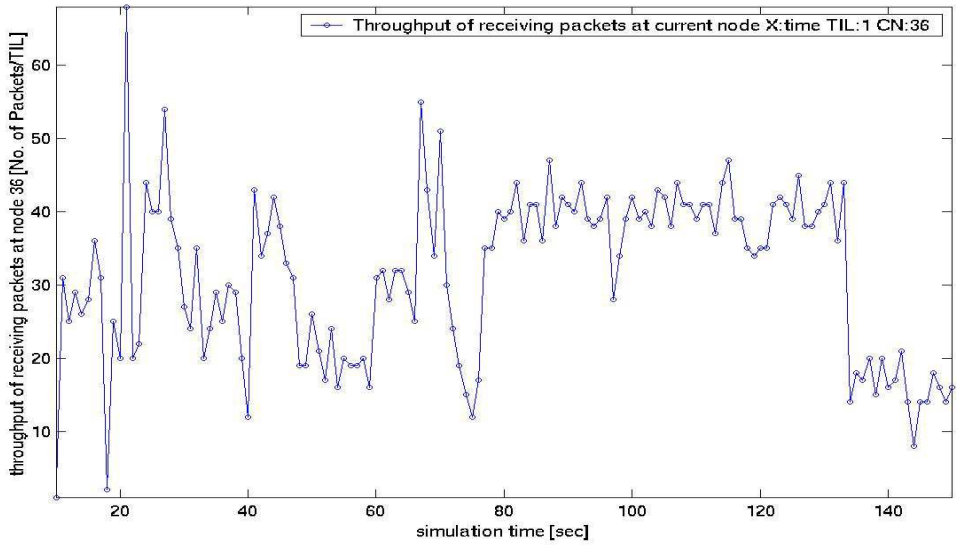


FIGURE 6: THROUGHPUT IN DSDV

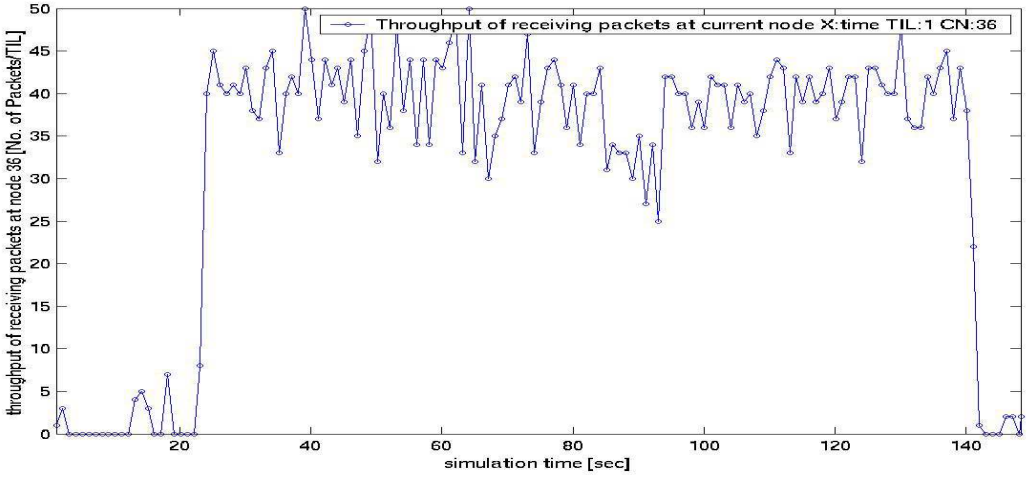


FIGURE 7: PACKET LOSS IN AODV

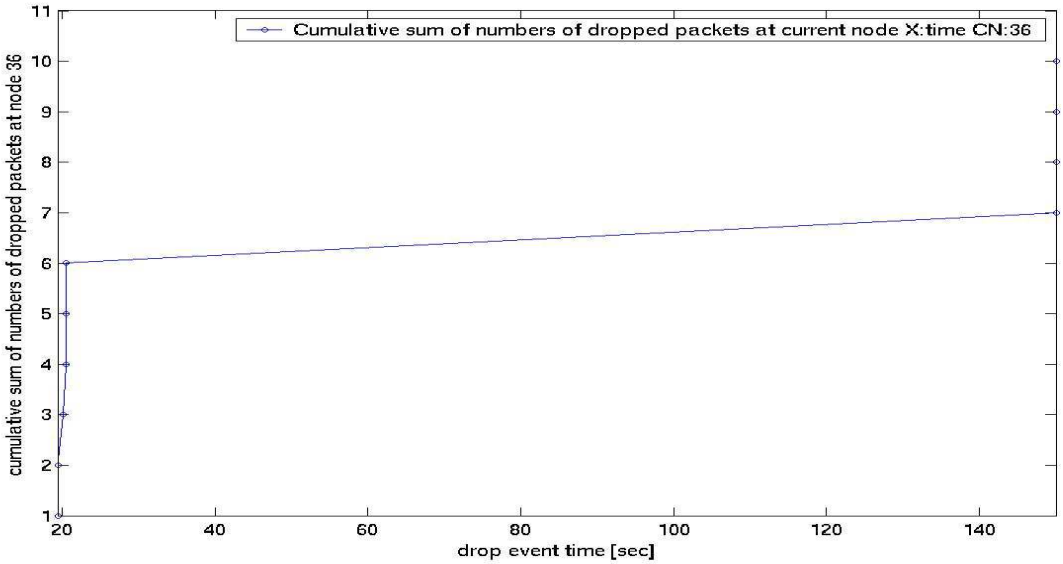


FIGURE 8: PACKET LOSS IN DSDV

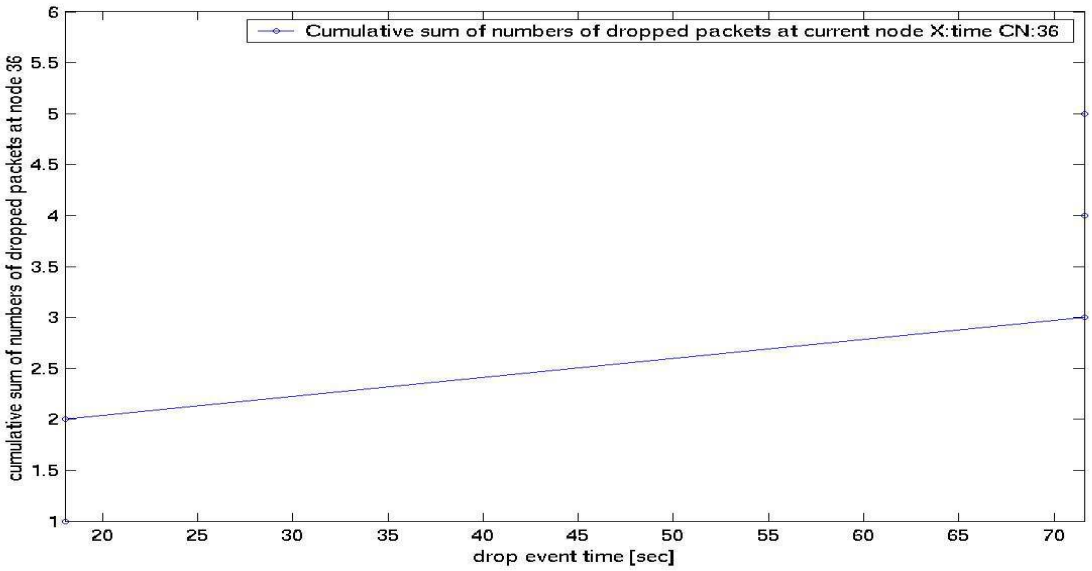


TABLE 1: PERFORMANCE ANALYSIS OF CLUSTER ARCHITECTURE

	Routing protocols	Average value of generated packets	Average value of sent packets	Average value of received packets	Average value of dropped packets
Cluster architecture	AODV	6179.5	5269.5	5035	6
	DSDV	5102.5	5060	4308.5	3.5

CONCLUSION AND FUTURE WORK

An automatic fire alarm system based on wireless sensor networks in NS-2 is designed and developed with emphasis on the network architecture and communication protocol. Prototype system tests show that the system provides early extinguishing of a fire disaster so that damages will be reduced effectively. Detector in this system due to localization mechanism is considered. This paper does the comparison of two routing protocols DSDV, AODV. The significant observation is, simulation results agree with expected results based on theoretical analysis. As expected, reactive routing protocol DSDV performance is the best considering its ability to maintain connection by periodic exchange of information, which is required for TCP, based traffic. In future implementing the clustered based routing protocol LEACH can be simulated.

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COMPARISON AND ANALYSIS OF WIRELESS NETWORKS FOR HEALTH CARE TELEMONITORING SYSTEM

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ABSTRACT

The inconvenience of transportation frequently causes delay in health care for home-dwelling patients with chronic diseases, resulting in inequality of medical care. This paper proposes a Telemonitoring System (WiMAX Telemonitoring Service) framework for monitoring and delivering health care service to home-dwelling chronic hypertension patients, with the idea of improving the accessibility of medical care by utilizing the benefits of Internet to construct a ubiquitous health care environment. The study compared and analyzed three wireless Networks: WiMAX, WiFi and HSDPA, and found that WiMAX has the best performance regarding to stability as a long-distance health care delivery platform. A questionnaire survey in the hospital also revealed that the medical staff is highly recognized with telemedicine, which supports and serves as a reference for the designing of the telemonitoring system.

KEYWORDS

Telemonitoring service, WiMAX, WiFi.

INTRODUCTION

A brand new health caring model has been built up in recent years in Telehealthcare by measuring the physiological signals, such as, blood pressure, heartbeat, ECG (Electrocardiogram), blood sugar etc.[22] of those elderies or who has chronic diseases at home or in their familiar environment, in transferring the data as measured via internetwork to the medical caring institutes to build Personal healthcare database in computer & information system that healthcare professionals are able to monitor the variation of physiological data at any time and take hold of the patient's condition so that the Telehealth care can be achieved by convenient medical information as obtained[5].Since 1990, Internet technology has been vigorously developed from the early stage low speed dial-up modem to the nowadays high speed Broadband network with transmission technology progressing from wire line, ATM(Asynchronous Transfer Mode) , ADSL(Asymmetric Digital Subscriber Lines), Cable Modem, FTTH/B (Fiber to the Home/Building) as well as wireless network technology; The mobile communication network technology from earlier 1G (generation) analog to GSM (Global System for Mobile Communications) 2G digital technology to GPRS (General Packet Radio Services) 2.5G, the wireless communication has come to a new era. Followed by the development of 3G (WCDMA), 3.5G (HSDPA), 3.75G (HSUPA) activated the era of wireless broadband. The reveal of WiMAX (Worldwide Interoperability for Microwave Access) in 2006, i.e. new 4G wireless broadband technology[6], comes with ultra-high broadband and transmission distance based on IP (Internet Protocol) has defined QoS (Quality of Service) and high security as well as with TCP/IP (Transmission Control Protocol/Internet Protocol) as its primary communication protocol[23], the demand of basic transmission packets includes throughput, jitter, delay, packet loss etc. [7-11], the stability of internet signals which influences the quality of service due to the transmission media or other uncertain factors shall be the issue to study further.

Several already known terms related to Telehealthcare are: telemedicine, telehealth, telemonitoring, E-health, homecare and digital health, etc...Telemedicine means “the purpose to achieve consultancy or teletreatment in improving the patients’ health condition via electronic communication, internet or other network in the exchange of medical treatment information”[12-13]. The application of Telehealthcare is rather extensive but not limited to the clinical service, which could be the digital care of the patients’ website, monitoring the remote physiological condition or care call center etc... Via the technology of electronic communication or internet enable service provider in offering the health promoting activity to the service acceptors at home or nursing institutes. Tele-monitoring is one of the services of Telehealthcare, which provide the residents digital monitoring equipment in transferring their physiological condition for tele-monitoring, i.e. and integrated application of service by utilizing Information/ Communication Technology (ICT).

Wireline network transferring the signal via TCP/IP protocols uses doubled twisted wire, co-axial cable or optical fiber in transferring the signal to the clients’ computer[14][24]. The services provided by network could include information communication, video/ audio service [15], resource sharing and VoIP service etc...The reveal of wireless network has provided users more space without being confined in a limited space for connection, also provide more convenience and usability as that of the cable network. The challenge the wireless network facing is its wireless signal in transmission, where the transmission media in 3-D is confined by space, environment, distance and security with certain influences in utilization that the wireless network should think out of way in difference from the cable transmission to solve the confinement so as to provide suitable application and services, such as, the priority of packet transmission by speed or by accuracy, which is the range of QoS of wireless network should consider.

Where, a set of scheduling in algorithm is developed to solve this problem. The current mobile communication network and wireless network, such as 3G(WCDMA, CDMA-2000) 3.5G(HSDPA)、3.75G(HSUPA)、4G(WiMAX), is primarily the base type in cell structure[25]; where, the mobile devices users are facing the base interchange problem in mobilizing that the bases should "handover" to continue the signal in transmission[16][17]; for a connection of in homogeneous network, such as, WiMAX, WiFi, WiMAX and 3G, it is called vertical handover; While a transaction carried out Under the same network protocol is called horizontal handover; where, a handover algorithm is in processing to achieve the requirement in mobilizing [18-19].

METHODOLOGY

FIGURE 1: TELE MONITORING SYSTEM FRAMEWORK

One of the aims of the present paper is to design a Telemonitoring System (WiMAX Telemonitoring Services) framework (as shown in Fig.1)for blood-pressure monitoring, in which the Telemonitoring Server not only save the data including blood pressure and pulse but also provide a Web page as an information platform that end users can retrieve and view the data. The physiological data of blood pressure taken by an electric sphygmomanometer is first digitized and transmitted through the Telemonitoring gateway to the server and then saved for further retrieving. When all the components are connected, the process of data transmission in a Telemonitoring System framwork is as the following (as shown in Fig.2):

1) TELEMONITORING CLIENT

Step 1: The pressure signal sensed by the cuff fixed on the arm of the patient, and the readings of blood pressure and pulse are obtained through the working cycle of the electric sphygmomanometer.

Step 2: The electric sphygmomanometer upload the data via RS 232, and the data are transmited in digital form to the computer of Telemonitoring Gateway.

2) TELEMONITORING ACCESS NETWORK

Step 3: The computer of Telemonitoring Gateway upload the data via the mobility mode of the WiMAX IEEE 802.16e, and than in the fixed form through the IEEE 802.16d to the information plateform of the Telemonitoring Server computer, and save the data in its database.

Step 4: Once the data uploaded successfully, the user can retrieve those data through the WiMAX network to acquire the blood pressure record. This step is determined by the user (shown in Fig. 2 with the dotted line).

3) TELEMONITORING SERVER

Step 5: When abnormal blood pressure above the previously set threshold is noted, the surveillance manager of the information platform would call the family doctor in charge and send the abnormal data to his/her portable communication device immediately.

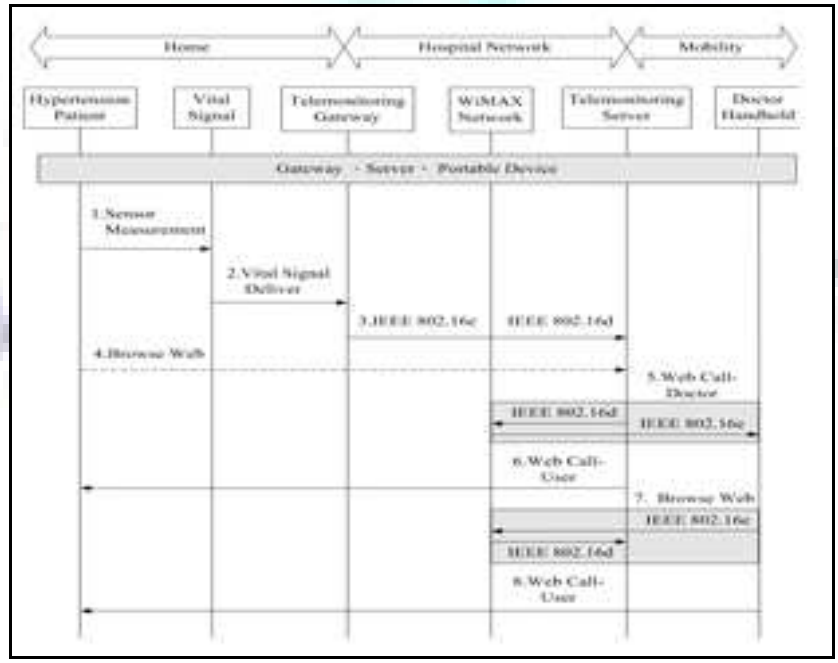
Step 6: The surveillance manager of the platform call the end user of the WiMAX netwrk to notify about starting of the responding mechanism.

4) TELEMONITORING WORKERS

Step 7: The family doctor acquires the client's physiological data by connecting his portable communication device to the WiMAX network.

Step 8: After viewing the client's physiological data on the portable device, the family doctor makes evaluates the condition and makes clinical decision, and calls back to the client to remind some health care points (such as rest, taking medications, or visiting the hospital, etc), or make an urgent call to the local home-care nurse to visit the client and initiate medical managements needed.

FIGURE 2: TELEMONITORING SYSTEM FLOW CHART



PERFORMANCE EVALUATION

WiMAX NETWORK SYSTEM

The hardware of WiMAX system consists of several blocks, the BS, access to service network and network administrating system, Network Topology (as shown in Fig.3) of WiMAX to the CPE equipment at client end, it is mainly in receiving wireless signal of Down-Link and sending Up-Link which is handled by the processor in access control layer of media and hardware accelerator. The function of access control layer in data processing of WiMAX BS media is the same as the CPE equipment at client end; but it is symmetrical to the user station in the system management, i.e. BS is ready to sent the broadcasting, while the client end is ready for receiving and interpreting the broadcasting information. As a BS would have to support multiple under that it is necessary to consider the expandability of hardware and the flexibility of software in design.

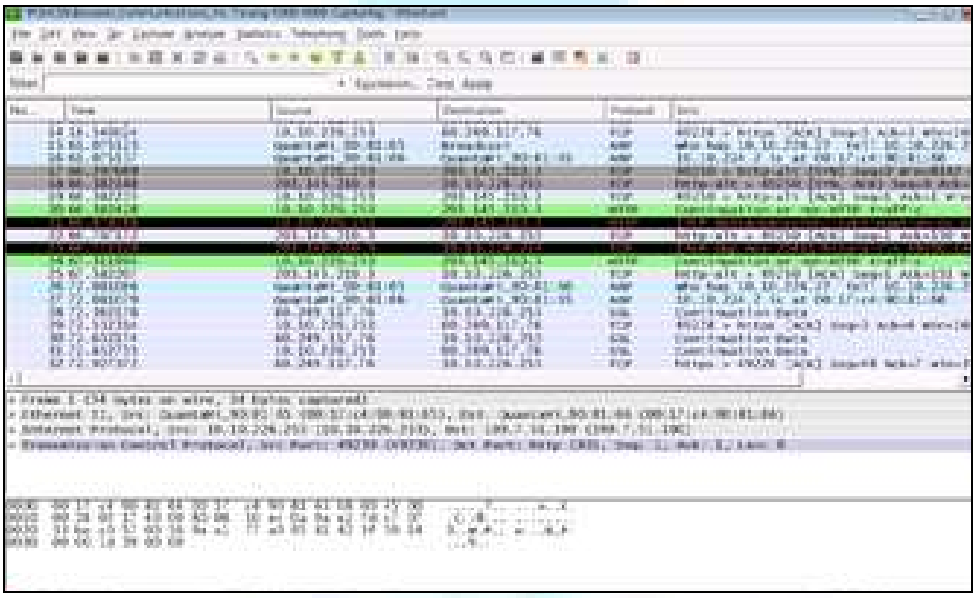
System starts up WiMAX wireless signal in connection to test the equipment of user's end (SS/MSS), including Notebook and WiMAX USB dongle CPE. After having connected CPE terminal device and BS successfully, note down every connecting parameters via operating interface, and starts up electronic sphygmomanometer in connecting with the PC in measuring successfully, finally transmits the data to the remote Web Server for storage that the web data on the information platform can be inquired via web browser.

Under the WiMAX basic architecture, the wireless signal transmission in cell network is primarily based on TCP/IP; where the digital signal was transformed into analog signal and added carrier wave and transformed into wireless signal for transmission. The wireless signal is transmitted in 4-D, which penetrates through the broadband media in air and challenge some certain factors, such as the barrier of large obstacles, code interference in multiple channel, frequency dispersion due to position moving (Doppler extension), noise and interference etc.; moreover, data packet missing when wireless channel traffic jam, false signal lagging, ACK compression and signal temporarily interrupted, etc…

There are many service functions provided on internet, where the applicable service layer transmits down to the lower layer under the restriction of parameters, it will packed up and transformed into TCP and UDP protocol, and finally transmitted out via data link layer to the real entity layer. The significant difference between TCP and UDP is that TCP protocol is reliable linking orientation which requires "3-directional handover procedure" regulation with mechanism of data transmission confirmation, it also uses Sliding Windows in transmitting data; while UDP protocol only send out the data packet.

The data as measured by electronic sphygmomanometer in this experiment has been transmitted via WiMAX wireless network, which uses packet retrieving program Wireshark (as shown in Fig.3), shows the data as measured by sphygmomanometer at receiving end where the packet was transmitted (Sending end IP: 10.10.226.253 , Receiving end IP: 203.145.210.3). Data packet in transmission: first the sending end uses HTTP protocol to transmit the packet to the receiving end. After packet has been received, the receiving end transmits TCP protocol to the sending end and confirms data received.

FIGURE 3: TRAFFIC PACKET CHART



THE METHOD OF EVALUATING PERFORMANCE

1). AVERAGE DELAY TIME

The time elapsed from wireless signal travel from sending end to the destination is called "delay time", which divided into 4 periods. Add up each period and sums up to total delay time.(a)Source processing delay: Time requires transforming the data processing at the sending end.(b)Propagation delay: The time elapsed for signal propagates through cable or wireless media.(c)Network delay: Time elapsed for signal transmitted in network.(d)Destination processing delay: Time required for signal arriving PC at destination end and transformed data.Where, parameter PacketArrivali is the time the ith packet arrived destination end;PacketStarti is the time the packet left source end; n is the total packets.

2). AVERAGE JITTER

In data network, jitter is a variable measurement criterion in passing a network within a certain period f time. When signal is in the transmission, it's shifting on time or phase will result in deviation and synchronic loss that influences the correctness of packet in arriving. Measuring jitter can determine the performance of network and stability of QoS. Calculate time elapsed of a (i+1)th packet arriving target end and leaving source end, and time of ith packet arriving target end and leaving source end, subtract both absolute values and sum up. n is the total packets.

3). PACKET LOSS OR CORRUPTION RATE

The reason of packet loss or damage has some occasions: when web traffic is large and exceeds the loading capacity of channel or network equipment, or circuit quality unstable in network will cause partial packets loss during transmission. The packet loss rate is an index to determine if network is in traffic jam. Parameter Lost Packet Size j is the jth packet lost; Packet Size i is the ith packet sent from source end. The meaning of formula: the ratio of packet lost in sum and the packet size sent from the source end in sum.

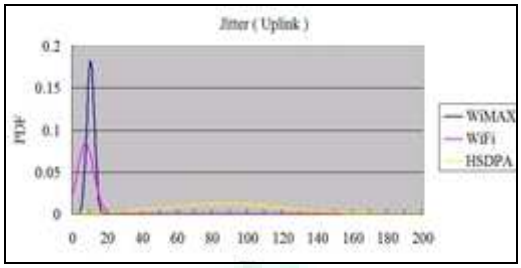
THE MEASUREMENT OF JITTER

1). UPLINK DATA PACKET IN MEASURING OF PDF

Various average values are calculated from the measurement of uplink jitter: WiMAX=10.3ms, WiFi=7.4ms, HSDPA=85.6ms, STD deviation: WiMAX=2.2ms、WiFi=4.7ms、HSDPA=32.4ms, put them into EXCEL calculating form and derive normal distribution curve of PDF (as shown in Fig. 5). The WiFi

data are located within 0~20ms, and concentrated at 7.4ms.WiMAX data are located within 6-16ms, and concentrated at 10.3ms. While, HSDPA data located within 10~170ms, and concentrated at 85.6ms. It is known that the performance of WiMAX and WiFi is the best; the jitter of HSDPA is the largest. The inferior performance of HSDPA in uplink throughput is the result of measurement.

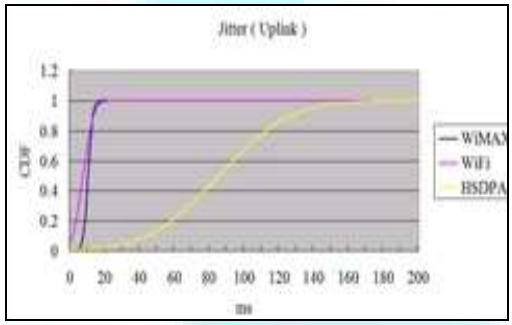
FIGURE 4: THE PDF CURVE OF JITTER UPLINK



2). UPLINK DATA PACKET IN DATA MEASURING CDF

Replace the uplink jitter as measured into EXCEL calculating form and calculate the accumulative distribution curve of CDF (as shown in Fig. 6), and found it is in reverse of PDF curve, which is drafted by total probability value within 0~1. It is found WiMAX data fall within 6~16ms; WiFi's figure fall within 0~20ms, and HSDPA's fall within 10~170ms. In comparison of graphs of the three, it is found WiMAX comes with the steepest slope, i.e. its jitter concentrated at a small range, with more stable performance than that of the WiFi and HSDPA.

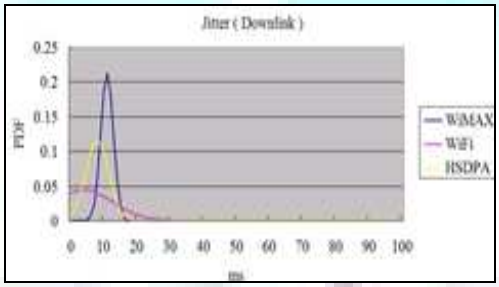
FIGURE 5 GRAPH OF JITTER UPLINK OF CDF



3). DOWNNLINK DATA PACKET IN MEASURING OF PDF

Various average values are calculated from the measurement of downlink jitter: WiMAX=11.0ms WiFi=3.8ms, HSDPA=8.1ms, STD deviation: WiMAX=1.9ms, WiFi=9.1ms, HSDPA=3.5ms put them into EXCEL calculating form and derive normal distribution curve of PDF (as shown in Fig. 7). It is found WiFi data located within 0~30ms, concentrated at 3.8ms; WiMAX's is within 8~16ms, concentrated at 11.0ms.The HSDPA data are located within 0~20ms, and concentrated at 8.1ms. It is known that the performance of WiMAX and HSDPA is the best; the jitter of WiFi is the largest. The inferior performance of WiFi in downlink decreases with the sending distance increasing.

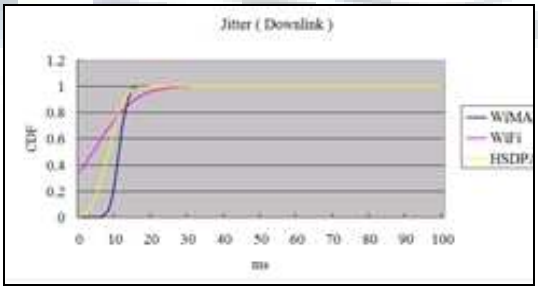
FIGURE 6: THE PDF CURVE OF JITTER DOWNLINK



4). DOWNLINK DATA PACKET IN MEASURING CDF

Replace the downlink jitter as measured into EXCEL calculating form and calculate the accumulative distribution curve of CDF (as shown in Fig. 8), and found it is in reverse of PDF curve, which is drafted by total probability value within 0~1. It is found WiMAX data fall within 8~16ms; WiFi's figure fall within 0~30ms, and HSDPA's fall within 0~20ms. In comparison of graphs of the three, it is found WiMAX comes with the steepest slope, i.e. its jitter concentrated at a small range, with more stable performance than that of the WiFi and HSDPA.

FIGURE 7: THE CDF CURVE OF JITTER DOWNLINK



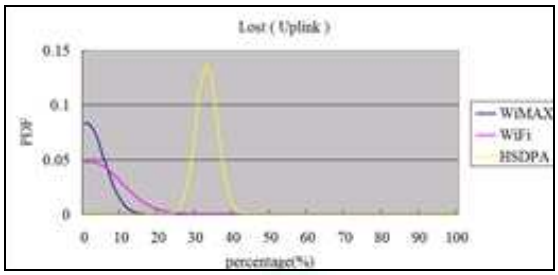
D. THE MEASUREMENT OF PACKET LOST RATE

1).UPLINK DATA PACKET IN MEASURING OF PDF

From the result of measuring uplink packet lost rate, various average values can be derived: iMAX=0.6%, WiFi=1.7%, HSDPA=32.9%, STD deviation : WiMAX=4.8%, WiFi=8.3%, HSDPA=2.9% normal distribution chart of PDF (as shown in Fig. 9).Data of WiFi located within 0~26%, which concentrated at 1.7%; WiMAX located within 0~14%, concentrated at 0.6%; HSDPA data located within 25~41%, concentrated at 32.9%. As all measurement is performed under the

same condition and parameters, it is known that WiMAX and WiFi have the optimal performance, HSDPA comes with the max. lost rate, the uplink throughput and jitter of HSDPA is the most inferior that its performance is fair.

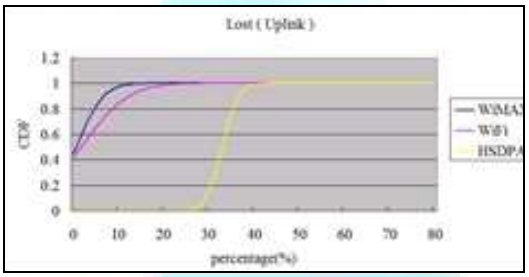
FIGURE 8: THE PDF CURVE OF LOST IN UPLINK



2). UPLINK DATA PACKET IN MEASURING CDF

Replace the lost rate as measured into EXCEL calculating form and obtain CDF accumulation distribution chart (as shown in Fig. 10) with the PDF in reverse, drafted based on the sum of probability value of 0~1. It is found WiMAX data fall within 0~14%; WiFi's figure fall within 0~26%, and HSDPA's fall within 25~41%.In comparison of graphs of the three, it is found WiMAX comes with the steepest slope, i.e. its lost rate concentrated at a small range, with more stable performance than that of the WiFi and HSDPA.

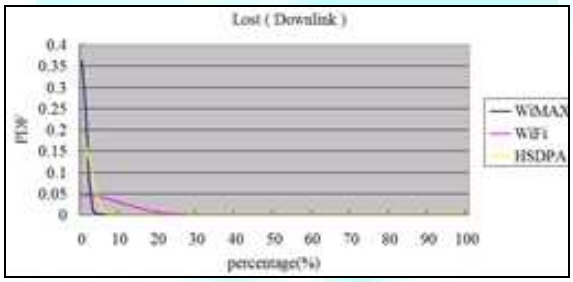
FIGURE 9: THE CDF CURVE OF LOST IN UPLINK



3). DOWNLINK DATA PACKET IN MEASURING OF PDF

From the result of measuring downlink packet lost rate, various average values can be derived: WiMAX=0.1%, WiFi=1.8%, HSDPA=0.2%, STD deviation: WiMAX=1.1% , WiFi=9.1% 、 HSDPA=2.2% , put them into EXCEL calculating form and obtained normal distribution chart of PDF (as shown in Fig. 11). WiFi's data fall between 0~26% with figure concentrated at 1.8%. WiMAX data fall between 0~4%, with figure concentrated at 0.1%. HSDPA data located within 0~8%, concentrated at 0.2%. The result has shown WiMAX and HSDPA comes with the optimal performance, the lost rate of WiFi is the largest, HSDPA downlink performance is better that lead to in reversed effect in uplink; while the performance of WiFi becomes inferior when sending distance increases.

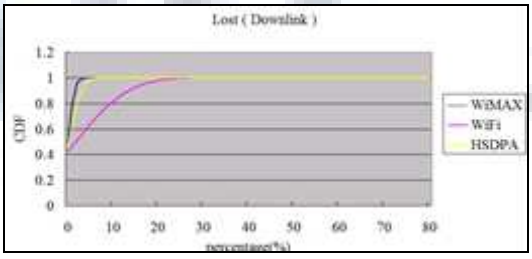
FIGURE 10: THE PDF CURVE OF LOST IN DOWNLINK



4). DOWNLINK DATA PACKET IN MEASURING CDF

Replace the lost rate as measured into EXCEL calculating form and obtain CDF accumulation distribution chart (as shown in Fig. 12) with the PDF in reverse, drafted based on the sum of probability value of 0~1.It is found WiMAX data fall within 0~4%; WiFi's figure fall within 0~26%, and HSDPA's fall within 0~8%.In comparison of graphs of the three, it is found WiMAX comes with the steepest slope, i.e. its lost rate concentrated at a small range, with more stable performance than that of the WiFi and HSDPA.

FIGURE 11: THE CDF CURVE OF LOST IN DOWNLINK



From the result of analyzing throughput of TCP and UDP, the comparable table of packet jitter and lost of WiFi 、 HSDPA and WiMAX has been established (as shown in Table 1); where, WiFi has been found to have sufficient performance in wireless LAN, as long as the distance away from the access point (AP) increasing, the total broadband will decrease; away from hot region of 100m, it is unable to connect.The performance of downlink of HSDPA in wireless wide area network comes with absolute advantage to that of the uplink; where, most mobile network activities are primarily browsing and downloading data which conform to the application of mobile mode. WiMAX being the new generation 4G wireless metropolitan network, it is found from the data measured, there are the same broadband width and performance on uplink and downlink, which can provide users dual work service in wireless connection, such as the application of mobile VoIP; it also comes with advantageous service of 3.5G mobile network of activities.

TABLE 1: COMPARISON TABLE OF WIMAX, WIFI AND HSDPA

Items	WiMAX	WiFi	HSDPA
TCP Throughput (Uplink)	Good	Excellent	Normal
TCP Throughput (Downlink)	Good	Excellent	Good
UDP Throughput (Uplink)	Good	Excellent	Normal
UDP Throughput (Downlink)	Good	Excellent	Good
Jitter (Uplink)	Good	Normal	Normal
Jitter (Downlink)	Good	Normal	Good
Lost (Uplink)	Excellent	Normal	Normal
Lost (Downlink)	Excellent	Normal	Good

CONCLUSIONS AND FUTURE WORK

This paper is to apply WiMAX wireless network in transmitting the measurement of electronic sphygmomanometer via home network gateway and WiMAX wireless network to the information platform on motoring server; where all the data as measured can be correctly stored at the Telemonitor Server so that patients, administrator and health care personnel can browse the blood pressure information on the internet.

Based on the characteristics of long distance transmission and high bandwidth of WiMAX, more medical treatment and video information can be transmitted in the remote health care project, such as 24 hrs ECG, blood sugar machine, blood oxygen monitor etc. They can help patients with heart disease, diabetic and breathing respire. Since WiMAX has sufficient bandwidth, the ECG monitor can transmit data 24 hours. The adding of video information application can provide more interaction as well. As to the promotion of health care project, using WiMAX wireless network as the transmitting station has the advantage of mobility and can let the user not to be limited to the cable network, but anytime, anywhere the network is ready to use. In the integration of wireless network, it can integrate both WiMAX and WiFi into the proxy for accessing indoor/outdoor transmission; both can help developing their advantages so that more wireless networks can be constructed.

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ECO-FRIENDLY MARKETING AND CONSUMER BUYING BEHAVIOR: AN EMPIRICAL STUDY

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ABSTRACT

Eco-friendly marketing and consumer buying behavior are two very important interrelated concepts of new age marketing. With the growing economy the demand and consumption of goods and services are also increasing, this lead to higher and higher environmental pollution. Consumer's education and awareness gave birth to eco-friendly attitude of the customers across the globe. There appears a constantly growing niche market all over the world waiting to consume these products. Conceptually speaking eco-friendly marketing is concerned with designing, developing and delivering products that are eco-friendly creating least harm to the environment and its stakeholders. The main objectives of this paper is to categorize the respondents on the basis of their level of eco friendliness and then to Develop a Model explaining Impact of 'Sustainable development strategies' based on Consumer buying behavior finally to offer suggestions based on the findings. The study based mainly on the primary data captured. For the purpose of measuring attitude 24 items explaining 'Search for Information' (SL), 'Personal apathy and loss of benefit' (PA), Financial cost (FC), Lack of Knowledge (LK) and Post purchase behavior (PPB) were obtained in Likert's five point scales. Reliability, validity and accuracy and authenticity of questionnaire are ensured. Regression analysis is done to develop a relationship amongst the variables. Further test and ANOVA is also used for the analysis. The study findings indicate that few respondents are 'Non users' and 'indifferent' of eco friendly products. On the other hand majority of them are aspirants.

KEYWORDS

Ecofriendly Marketing, Consumer Behavior.

INTRODUCTION

The thrust of eco-friendly marketing emerges from the ideological understanding of eco-friendly attitude of the customers across the globe. The deteriorating, rare and precious natural resources have extended enough signal to the marketers to come out with marketing mix which preserves the natural resources on the one hand and deliver value added products and services to the needy on the other hand. This aspect is felt more considering the global warming, ozone depletion, erosion of natural resources and hunt for safety and healthy consumables. In tune with the increasing awareness on eco-friendly marketing the multinational corporations have reengineered their agenda inserting eco-friendly elements in their product profile. There appears a constantly growing niche market all over the world waiting to consume these products. Conceptually speaking eco-friendly marketing is concerned with designing, developing and delivering products that are eco-friendly creating least harm to the environment and its stakeholders. This needs a strategic move of identifying and employing supply chain participants who care for the eco friendliness. From an another perspective eco-friendly marketing market means making effective utilization of green resources of a country in such a way that the utilization itself contributes to preservation and regeneration of resources meaning in no way the future generation of the country is deprived of the benefits enjoyed by the present generation in terms of natural resources. The prime concern behind this type of marketing is obviously effective utilization, in the mean time efficient preservation of the available natural resources for the benefit the present and future generation.

Eco-friendly marketing mix consists of product, price, place, promotion, process, physical distribution and people with utmost concern for eco- friendliness. As regards products, various attributes are identified, evaluated, procured, processed and preserved to provide healthy consumption and thereby prevent health hazard. For this purpose the price is fixed, taking into account of the value of service rendered or product produced. The promotion comprises of advertising, publicity, and other sales promotion measures which also take into account the eco friendly approach as regards utilization of material, manpower and other resources. The processing of the products needs special care in such a way that pollution generating elements are tackled. It becomes legal compulsion in many countries to come out with strategic measures to control pollution due to processing. As regards place and physical distribution, the activities involved in storage, warehousing, logistics etc should not result in ecological temperament. The people associated with eco-friendly marketing can be categorized as internal and external people. Internal people are employees who are involved in producing and delivering the product and services. On the other hand external people are the target market for whom the product and services are produced for. The internal and external people are expected to have a greater degree of concern over eco friendliness in each and every aspect of production and consumption so that the objective of eco-friendly marketing will be meaningfully fulfilled. Across the globe the challenge to eco friendliness arises from several platforms including that of technology. Technology contributes to hi-tech products which are quite often incompatible with the conceptual underpinning of eco-friendly marketing. Unfortunately consumers are easy prey to hi-tech products in view of the augmented benefits associated. There arise a need to strike a balance between eco friendliness and technology advancements. A perfect harmony of technology vis a vis eco friendliness will lead the marketers to ride the new horizons.

REVIEW OF LITERATURE

Intensive research studies pertaining to eco-friendly marketing in general and eco-friendly consumers in particular across the globe are in the budding stage. It is view of the environmental concern government and international agencies have encouraged research pertaining to eco-friendly marketing. Shamdasani et.al., (1993) in their study observe that the green movement has started to make its impact on the consumption decisions and behaviors of Singaporean consumers. Their exploratory study has examined the differences among ecologically concerned and non ecologically concerned consumers with respect to their personal and social characteristics and their perception of marketing of eco-friendly products. Significant differences in terms of attitude and personality traits among the green and non green consumers are reported. Additionally, it is observed that while there was a perceived lack of marketing effort for these products and services, green consumers were more aware of green alternatives and were willing to pay higher prices and spend more time and effort to adopt environmentally- friendly consumption behavior.

Minton and Rose (1997) investigated the main effect of environmentally concerned attitudes and norms on product choice, search for information, recycling, and the various behavioral intentions. His research supports the work of Schwartz (1977) and Hopper and Nielsen (1991) by showing that the personal norm has the primary influence on environmentally friendly behavior. His finding, that the attitude toward the environment had strongest effect of the three predictors on the behavioral intentions in very important contribution to the literature. However, the personal norm had the strongest effect of the three predictors on product choice, information search, and recycling. Thus, while attitude is a good predictor of intentions to act in environmentally concerned ways, a sense of personal moral obligation is more likely to lead to action in the form of environmentally friendly product choices search, and recycling.

Chen (2001) has developed a quality based model for analyzing the strategic and policy issues concerning the developments of green products with conflicting traditional and environmental attribute. The study has taken into consideration the interactions among the customers' preferences, the producer's product strategies and the environmental standards imposed by governments. The major findings of the study show that green product development and stricter

environmental standards might not necessarily benefit the environment. Ginsberg and Bloom (2004) propose that the companies handling the dilemmas associated with eco-friendly marketing should always keep in mind that the consumers are unlikely to compromise on traditional product attributes such as convenience, availability, price, quality and performance. The authors suggest the green marketing strategy matrix for different market and competitive conditions ranging from the relatively passive and silent "lean green" approach to the more aggressive and visible "extreme green" approach with "defensive green" and "shaded green" in between.

The literature reviewed above interestingly has some commonalities. The authors have probed eco-friendly marketing issues from three major perspectives

(1) the eco-friendly consumers' behavior, perception, attitude and their profile

(2) the eco-friendly marketing practices such as eco-friendly marketing mix, market segmentation etc

(3) the policies and regulations issue of the government concerned and its impact on eco-friendly marketing practices in the respective countries.

The literature reveal that there is a positive inclination towards the acceptance of eco-friendly products, increased awareness across the globe on the availability of eco-friendly products and a welcoming trend towards acceptance of eco-friendly products. It is also to be reported here that the magnitude of acceptance, preference, and attitude are not uniform.

The current study reported here has also attempted to capture the awareness, preference level and perception about the eco friendly products.

THE RESEARCH OBJECTIVES

The concept of eco-friendly marketing is yet to gain recognition, popularity and acceptance to the full extent. In view of growing concern over the environmental issues across the world the marketers are attempting to address the eco-friendly issues by way of increased attention to products of all types. Though the shades of eco-friendly are different, the marketers are constantly addressing the concept. Successful marketing strategy needs to be customer centric and so also the eco-friendly marketing strategy. Among other things it is the positive perception, attitude, interest awareness and preference of consumers towards the eco-friendly products that ensure sustainable success. These pertinent aspects are yet to be explored with much vigor.

Against this background this study has been attempted with the following objectives:

- To categorize the respondents on the basis of their level of eco friendliness.
- To Develop a Model explaining Impact of 'Sustainable development strategies' based on Consumer buying behavior.
- To offer suggestions based on the findings.

RESEARCH HYPOTHESIS

H_{01} : There has been no significant variation in 'Search for Information' with age.
H_{02} : There has been no significant variation in 'Search for Information' with gender.
H_{03} : There has been no significant variation in 'Search for Information' with educational qualification.
H_{04} : There has been no significant variation in 'Personal apathy & loss of benefits' with age.
H_{05} : There has been no significant variation in 'Personal apathy & loss of benefits' with gender.
H_{06} : There has been no significant variation in 'Personal apathy & loss of benefits' with educational qualification.
H_{07} : There has been no significant variation in 'Financial cost' with age.
H_{08} : There has been no significant variation in 'Financial cost' with gender.
H_{09} : There has been no significant variation in 'Financial cost' with educational qualification.
H_{010} : There has been no significant variation in 'Lack of knowledge' with age.
H_{011} : There has been no significant variation in 'Lack of knowledge' with gender.
H_{012} : There has been no significant variation in 'Lack of knowledge' with educational qualification.
H_{013} : There has been no significant variation in 'Post purchase behavior' with age.
H_{014} : There has been no significant variation in 'Post purchase behavior' with gender.
H_{015} : There has been no significant variation in 'Post purchase behavior' with educational qualification.

METHODOLOGY

The study has characteristics of both exploratory and descriptive research. The study was based mainly on the primary data captured through a questionnaire. For the purpose of measuring attitude 24 items explaining 'Search for Information' (SL), 'Personal apathy and loss of benefit' (PA), Financial cost (FC), Lack of Knowledge (LK) and Post purchase behavior (PPB) were obtained in Likert's five point scales. This data is used to categorize respondents into different category of eco friendly consumers based on the questions asked. The Cronbach Alpha is applied to test reliability. Thus the reliability, validity and accuracy and authenticity of questionnaire are ensured. Regression analysis is done to develop a relationship amongst the variables. Further test and ANOVA is also used for the analysis. A sample of 60 respondents from Aligarh was taken for the study. SPSS package was used for analyzing the data.

FINDINGS AND ANALYSIS

CATEGORIZATION OF RESPONDENTS ON THE BASIS OF ECO FRIENDLINESS

The respondents were categorized on the basis of the perception towards eco friendly aspects. For this purpose a set of 24 statements were developed. On the basis of factor analysis performed by principal component method and Varimax rotation; these items were classified into four categories. On the basis of data collected through questionnaire respondents were classified into 4 groups viz., 'Aspirants', 'Loyal Users', 'Indifferent' and 'Non Users' Table 1. The responses to the statements were captured on the five point scale. A brief description of the categories of respondents is given below: Aspirants are aware of the ecological imbalance and its damaging effects. They wish to consume eco friendly products and feel that eco friendly products render value for price paid. Loyal Users have a very strong favorable attitude towards eco friendly products. They buy only eco friendly products, feel that the eco friendly products are good for health and are fully satisfied with the same. They always recommend eco friendly products and wait for the availability of the same instead of buying the alternatives. Indifferent users don't feel much difference between eco friendly products and non eco friendly products and are happy with any product that fulfills their needs. They are not very specific about the eco friendliness and go by product availability, price and quality. Non Users feel that ecological imbalance is bound to happen and as an individual they cannot contribute to avoid the same. They feel that eco friendly products are yet another marketing gimmick, they don't deliver what they promise and that they are costly. They also feel that eco friendliness does not enable to upgrade quality and the products do not have world class quality.

The classification of the respondents as per the findings is reported in Table 1.

RESPONDENT'S CATEGORY ON THE BASIS OF THEIR LEVEL OF ECO FRIENDLINESS

TABLE 1

1	Aspirants	58%
2	Loyal Uses	20%
3	Indifferent	15%
4	Non Users	7.00%

The above table shows that majority (58.3%) of the respondents are 'aspirants', 20 % are 'Loyal Users', 15% are 'Indifferent' and only 7% fall in the category of 'Non Users'.

REGRESSION ANALYSIS

This technique is used to develop a relationship between dependent variables and independent variables. In our study dependent variable is Post purchase behavior (PPB) where as the independent variables are 'Search for Information' (SL), 'Personal apathy and loss of benefit' (PA), Financial cost (FC) and Lack of Knowledge (LK).

The results of regression analysis are shown in table 2.

TABLE 2: MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.941[a]	.885	.866	.29122

a. Predictors: (Constant), LKAvg, SIAvg, PAAvg, FCAvg

Model Summary shows the value of R as 0.941, R^2 as 0.885 and adjusted R^2 as 0.866 which indicates that this regression model is capable to explain 88.5% of variation of dependent variable due to independent variables.

The regression equation is PPB = ax1 + bx2 + cx3 + dx4 + C

Where PPB = Post purchase behavior.

a = 0.623, b = - 0.466, c = -0.205, d = 0.336, x1 = 'Search for Information' (SL) , x2 = 'Personal apathy and loss of benefit' (PA),

x3 = Financial cost (FC), x4 = Lack of Knowledge (LK), C = Constant.

TABLE 3: COEFFICIENTS[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.295	.685		3.350	.003
SIAvg	.453	.089	.632	5.108	.000
PAAvg	-.416	.107	-.466	-3.902	.001
FCAvg	-.250	.187	-.205	-1.334	.194
LKAvg	.369	.185	.336	1.996	.057

a. Dependent Variable: PPBAvg

The above table 3 explains the coefficients of each independent variable ie 'Search for Information' (SL), 'Personal apathy and loss of benefit' (PA), Financial cost (FC) and Lack of Knowledge (LK) as 0.632, -0.466, -0.205 and 0.336 respectively which indicates their respective impact of each independent variable on dependent variable.

From the above table 3 it can be seen that Sl and LK has positive impact on PPB where as PA and Fc is having negative impact. Further FC and LK has significant impact where as SI ans PA is having insignificant impact.

HYPOTHESIS TESTING

The hypothesis is tested using t test and ANOVA wherever applicable. T test is used to test hypothesis related to gender H02, H05, H08, H011 and H014 (shown in table 5) and the ANOVA is applied for testing hypothesis related to age and educational qualifications ie H01, H03, Ho4, H06, Ho7, H09, H010, H012, H013 and H015 (shown in table 4)

Only H02, H08, H010 and H012 have insignificant values while others are showing significant values.

Hypothesis H02, H08, H010 and H012 were rejected, while H01, H03, Ho4, H06, Ho7, H09, h010, H012, H013 and H015 were failed to rejected. (As shown in table 4 and table 5)

FINDINGS

The study findings indicate that few respondents are 'Non users' and 'indifferent' of eco friendly products. On the other hand majority of them are aspirants. This conveys a positive signal to the marketers to further activate the attempts towards coming out with eco friendly marketing mix.

Further, customer segment specific strategic attempts are to be explored for conversion of 'non users' of eco friendly products into 'aspirants' and 'aspirants' into 'loyal uses'. There is a likelihood of more and more eco friendly product to pour into the market as the concern for eco friendly product is higher as compared to others. This has a greater implication on the product mix strategy of the concern. Government can come out with advertising and publicity campaign through television media as a medium in generating awareness about the eco friendly products.

Moreover, government should come out with policy measures to invest as much as possible to build awareness about eco friendly products and render incentives to the organizations committing themselves in the generation and distribution of eco friendly products. The society at large would be benefited by healthy eco friendly products as there would be competition among organizations in developing and sustaining competitive edge on account of capturing the niche segment pertaining to eco friendly products. From the academic perspective studies of this nature are at the budding stage further studies in active collaboration with agencies concerned with eco friendly marketing will yield much more meaningful results that would provide input for strategic decision making for the overall improvement in the corporate performance. The bottom line is preserving and making effective use of rare resources for the betterment of humane of the present generation and the future.

IMPLICATIONS

The following suggestions emanate from the study:

- It is encouraging to note that majority of the respondents fall in the category of 'aspirants'. This green signal shows a ripening market for eco friendly products which can be explored by marketers.
- Profile of the respondents belonging to various categories viz., 'aspirants', 'Loyal users', 'indifferent users' and 'non users' will enable to frame customer segment specific strategies to reach and engage the consumers.
- Majority of respondents are only 'partially' aware. Hence vigorous steps should be taken to increase the awareness.
- In case of eco friendly products and television is the major source of information further 'friends/ relatives/neighbor's can be another source of spreading awareness. These sources can be further explored to a greater extent to create awareness and preference.
- In order to enhance the market opportunities marketers can concentrate on the demographic variables highlighted in the study so as to influence the awareness, preference and satisfaction.

- The study shows that the perception of respondents towards eco friendly products differs. Also the paper has highlighted the variables discriminating the category of respondents which enables to develop customized strategies to address specific category of respondents.
- The ecological imbalance is causing serious implication and the issue is gaining more attention in the global scenario. Among other constituents of the society, marketers have an indispensable role to play in safeguarding the environment by designing, developing, delivering socially responsible marketing mix. This paper mirrors the mindset of eco friendly consumers and thereby provides the knowledge base required to equip the marketers to face the task of creating a safe world for present and prospective consumers. The findings would enable the marketer to arrive at appropriate eco friendly marketing strategies and thereby scale new heights in the less explored terrain.

TABLE 4: COMPONENT MATRIX[a]

	Component			
	1	2	3	4
SI1	-.900	.112	.275	-.083
SI2	-.482	.638	-.531	.175
SI3	-.373	.862	-.226	-.080
PA1	.937	.150	.014	-.217
PA2	.842	.076	-.372	-.091
PA3	.736	.463	.297	-.250
PA4	.726	.492	-.017	-.458
PA5	.554	.055	.003	.793
PA6	.486	.611	-.278	.410
PA7	.740	.578	-.279	-.161
FC1	.211	-.164	.748	.169
FC2	.808	.152	.405	.197
LK1	.681	.472	.394	.006
LK2	.859	.321	.272	.200
LK3	-.143	.793	.488	-.045
PPB1	.873	-.266	-.331	.049
PPB2	-.842	.344	.393	-.003
PPB3	-.841	.460	.003	.132
PPB4	-.743	.611	-.178	.117
PPB5	-.838	.163	.102	-.038

Extraction Method: Principal Component Analysis.

a. 4 components extracted.

TABLE 5

ANOVA			
Hypothesis	F-Value	Sig.Value	Remarks
H01	22.629	0	Failed to reject
H03	27.191	0	Failed to reject
H04	5.249	0.003	Failed to reject
H06	5.11	0.013	Failed to reject
H07	6.02	0.002	Failed to reject
H09	4.163	0.027	Failed to reject
H010	2.159	0.103	Rejected
H012	1.328	0.282	Rejected
H013	32.396	0	Faild to reject
H015	12.764	0	Faild to reject

TABLE 6

Independent Sample t-Test			
Hypothesis	t-Value	Sig.Value	Remarks
H02	0.536	0.596	Rejected
H05	-3.474	0.002	Failed to Reject
H08	-1.626	0.115	Rejected
H011	-2.602	0.015	Failed to Reject
H014	2.13	0.042	Failed to Reject

Questionnaire to measure "Impact of Sustainable development strategies on Consumer buying Behavior: An Empirical Study"
Please tick the following options on the basis of your perceptions about a product on a five point scale. **(5 = Strongly Agree, 4 = Agree, 3 = Neutral, 2=Disagree, 1 = Strongly Disagree)**

SEARCH FOR INFORMATION							
1	I always	compare package label information about the environmental safety of the product and/or package while I am in the grocery store?	5	4	3	2	1
2		notice advertisements about eco friendly products?	5	4	3	2	1
3		talk to my neighbors, friends, co workers & family members about various eco friendly products or activities?	5	4	3	2	1
	Personal apathy and loss of benefits						
1	I do not worry about buying eco friendly products.		5	4	3	2	1
2	I do not believe buying eco friendly products will help the environment.		5	4	3	2	1
3	I do not buy eco friendly products because they are not as convenient as regular products.		5	4	3	2	1
4	I just do not think about the environment when I buy products.		5	4	3	2	1
5	I am too busy to shop around for eco friendly product alternatives		5	4	3	2	1
6	I loose too many benefits when I buy eco friendly products		5	4	3	2	1
7	Eco friendly products are of inferior quality.		5	4	3	2	1
	Financial Cost						
1	Eco friendly products are expensive		5	4	3	2	1
2	Eco friendly products are less durable.		5	4	3	2	1
	Lack of Knowledge						
1	I do not know enough about environment friendly products		5	4	3	2	1
2	I am confused about environment friendly products		5	4	3	2	1
3	I need to know more about actions that I can take when buying products so that the environment is protected.		5	4	3	2	1
	Post Purchase Behavior						
1	I am satisfied with the product even if it is not eco friendly.		5	4	3	2	1
2	I would be willing to pay more taxes to support government implement eco friendly policies.		5	4	3	2	1
3	I would be willing to pay more each time I purchase if it is Eco friendly.		5	4	3	2	1
4	I would be willing to stop buying products from companies guilty of polluting the environment even though it might be inconvenient for me.		5	4	3	2	1
5	I would be willing to make personal sacrifices for the sake of slowing down pollution even though the immediate results may not seem significant.		5	4	3	2	1

Age: Less than 19□ 20-25 □ 26-30□ 31-40□ Above 41□	Gender: Male □ Female □
Education: Less than graduate □ Graduate □ Post graduate □	

6. Which of the following options best suits you as a consumer?

a) I am aware of the ecological imbalance and its damaging effects. I wish to consume eco friendly products and feel that eco friendly products render value for price paid. (Aspirants)

b) I have a very strong favorable attitude towards eco friendly products. I buy only eco friendly products, I feel that the eco friendly products are good for health and I am fully satisfied with the same attitude. Further I always recommend eco friendly products and wait for the availability of the same instead of buying the alternatives. (Loyal User)

c) I don't feel much difference between eco friendly products and non eco friendly products and I am happy with any product that fulfills my need. I am not very specific about the eco friendliness and I go by product availability, price and quality. (Indifferent users)

d) I feel that ecological imbalance is bound to happen and as an individual I cannot contribute to avoid the same. I feel that eco friendly products are yet another marketing gimmick, they don't deliver what they promise and that they are costly. I also feel that eco friendliness does not enable to upgrade quality and the products do not have world class quality. (Non Users)

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A PROPOSED FRAMEWORK FOR AUTO REGULATED MIGRATING PARALLEL CRAWLER

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ABSTRACT

A Web Crawler is a software program of a web search engine that fetches data from web servers [2,7]. It is a time taking process due to tremendous increase rate as well as the high change frequency of web documents, running a web crawler is becoming a challenge. Due to the deficiency in their refresh techniques [10, 11], current web crawlers add unnecessary traffic to the already overloaded Internet. Currently there is no any ways to verify whether a document has been modified or not [1, 3]. The aim of this paper is to develop a crawling technique that reduces load on the network caused by the search engine crawlers in this paper, an efficient approach is being proposed for building an effective migrating parallel crawler. It selectively migrate the crawler to the web server based on some calculation[11] and updates its database and/ or local collection of web pages, instead of periodically sending the crawler in round robin manner thereby improving the "freshness" of the collection significantly and reducing the required network bandwidth. It also detects web servers on which pages frequently undergo up-dation and dynamically calculates the migration rate [10, 11] of migrating parallel crawler for its next visit to the server. This approach will reduce the load and internet traffic on the remote site.

KEYWORDS
web crawler, url, migrating parallel crawler, Search Engine, frequency, regulated priority.

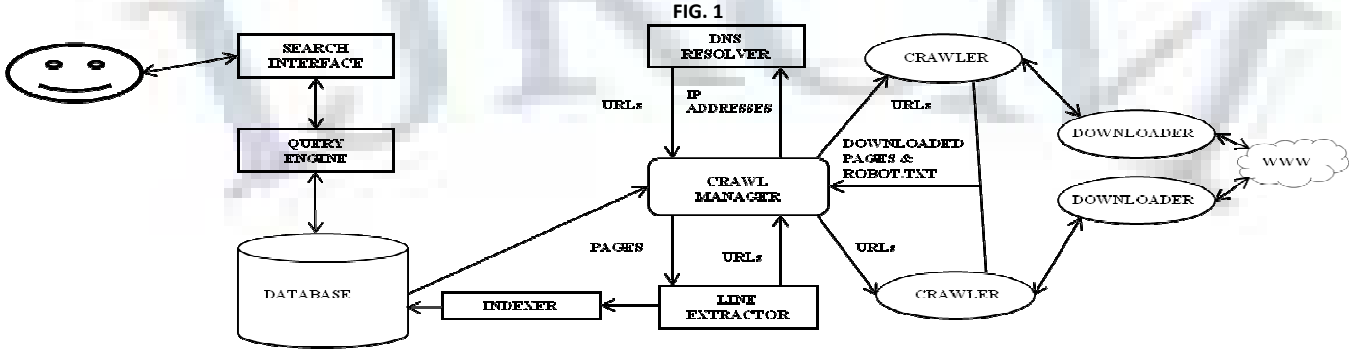
INTRODUCTION

Internet, an interconnection is a worldwide connection of millions of computers around the world, the internet carries a wide range of information, their resources and services. Is a global information system that is logically linked together by a globally unique address space based on the internet protocol [2,4]. The World Wide Web is a global, large repository of text documents, images, multimedia and many other items of information, referred to as information resources lying on different websites, distributed over far and distant geographical locations. [4] It is estimated that www contains more than 2000 billion visible pages which are static and dynamic and five times more lying in the hidden web. WWW is divided into two categories known as surface web and hidden web. So it is not possible to access the web easily so we take the help of search engines. Search Engine is system program designed to search the information on the web servers for specific keywords [2]. The search engine results are often presented in a list of results. Today's search engines are used for efficient and quick retrieval of information. A search engine consists of the three modules. Indexer reads the documents and creates the index based on the word in the document. A front-end user interface and a query subsystem which queries the database and presents the results of searches [6, 7]. A search engine works by sending out a crawler to fetch documents. Due to the extremely large number of pages present on Web, the search engine depends upon crawlers for the collection of required pages. A web crawler is software program that browses the web servers in a automated manner or in a orderly fashion download then scans internet pages to create an index of data.

GENERAL MODEL OF WEB CRAWLER

A web crawler is a computer program that visits web sites corresponding to given URLs and extracts the URLs from the downloaded pages. and store the entire pages in a centralized database are indexed in advance to be able to respond to many user queries quickly. as the Web is growing very large, a crawler have to large coverage but rarely refresh its crawls, the general architecture of a crawler [11] is shown in Fig.1.

FIG. 1



ARCHITECTURE OF GENERAL CRAWLER

In this figure, as user gives the query through the search engine interface, query is passed to the query engine which breaks the query in the keywords, which are search in the database by various combinations. According to query relevant result are provided to user and some URls related to that query given to crawl manager for crawling process. Crawl manager takes first URL from the database and send it to DNS-Resolver to find their corresponding URL-IP Address pair. DNS gives the URL-IP address pair back to crawl manager. This pair will be selected to visit. Crawl manager should make sure that this URL is not and image/pdf/google page/amazon page. If so select the next URL-IP pair. Crawler downloads the document from URL and returned to crawl manager. Crawl manager checks whether the document has already downloaded or not. If the document is new one then it sends to the Link Extrator to extract the urls or references of the other websites from that document. Otherwise discard the downloaded page. Then pattern match for emails. Extract the links within the page. With the help of indexer these new links are inserted into the database at their corresponding keywords.

CATEGORIES OF WEB CRAWLER

1. PARCAHYD [5]:- is a crawling technique that is proposed if the links contained within a downloaded page become available to the crawler before an instance of crawler starts downloading the documents itself, in short we can say as the URL downloaded it will be available for downloading to instance of crawler. Then downloading of its linked web documents can be carried out in parallel by other instances of the crawler. Therefore, it is proposed that meta-data in the form Table Of links (TOL) buffering of the links contained in a document be given and stored external to the document in the form of a file with the similar name as document but with different extension . This one time extraction of TOL can be done at the time of creation of the document
2. Distributed web crawler [12]-is a distributed computer program by using it search engine employs many computers to index the Internet via web crawling. Such systems allow for users to voluntarily offer their own computing and bandwidth resources towards crawling web pages. By dividing the load of these tasks across many computers, costs that be spent on maintaining large computing clusters are avoided.
3. MERCATOR [13] is a scalable and extensible crawler, now used for the Altavista search engine. The implementation issues to be acknowledged for developing a parallel crawler like bottlenecks and traps, which can improve performance. They discuss evaluation criteria and pros and cons of different coordination modes. In brief, they conclude that the communication overhead does not increase directly as more crawlers instances are added, throughput of the system increases directly as more nodes are added and the quality of the system, i.e. the performance to get "important" pages first, does not decrease with increase in the number of crawler processes.
4. PARALLEL CRAWLERS [5,6,7,14], A crawler that instances are centrally managed or totally distributed. The authors mention that distributed crawlers are advantageous than multithreaded crawlers or simple crawlers on the counts of efficiency, scalability, and throughput. If network load and network dispersion reduction are done, parallel crawlers can yield better results. Their instances fully utilize memory of the machines and there is no disk access.
5. MIGRATING CRAWLER [7,15,16], an alternative approach to Web crawling is based on mobile crawlers. these crawlers are transferred to the web server(s) where the data resides in order to filter out any unwanted data locally by reliability test to sure that this is coming from reliable source before transferring it back to the search engine. This reduces network load and speeds up the indexing phase inside the search engine.
6. Focused crawler- is a web crawler that workout to download only web pages that are relevant to a pre-defined topic or set of topics. Focused crawling generally assumes that only the topic is available, while focused crawling also assumes that some labeled examples and not relevant pages are available.
7. Incremental crawlers [10,17]:-is a special crawler that downloads the web pages to improve the freshness of the database. As the freshness of data is above the given level then it stops crawling. And take rest till the freshness of database is below the given level of freshness. By this the unwanted load over the network is reduced.

From above given categories of crawlers we can concluded that if two more categories are merged then the many challenges which we fill in information retrieval can be reduced. If multiple instances of migrating crawler work and crawling speed become efficient. Distributed crawler also spread their instance for fast result. And feature like changes as per requirement available in Mercator is may be applied on others. By these we can improve performance reliability and efficiency also.

CHALLENGES IDENTIFIED

With the rapid growth of the information stored on www, a high performance crawling strategy based on following design issues is need to be addressed.

REDUCE THE LOAD ON NETWORK

When the information contained in a document changes very frequently, the crawler should download the document as often as possible and updates it into its database so that new information could be maintained for the potential users. If the number of such documents is large, the crawling process becomes inefficient and hopelessly slow because it puts a fabulous pressure on the internet traffic. The crawler must not put extra load on network by visiting again and again normally to a web server for fetching fresh documents in order to make the local collection fresh.

KEEP THE LOCAL COLLECTION FRESH AND IMPROVE QUALITY OF THE LOCAL COLLECTION

Freshness of a collection directly proportion on the strategy used. Thus, the crawler should use the best crawling policies to keep pages fresh. This includes adjusting the revisit frequency to a web server based on its estimated change frequency.

The crawler should increase the quality of the local collection by changing less important pages with more important ones. This updation is compulsory for two reasons- firstly pages are constantly created and removed. Some of the new pages can be more important than existing pages in the collection, so the crawler should change the old and less important pages with the new and more important pages. Second, the importance of existing pages reduces with time. When some of the existing pages become less important than previously ignored pages, the crawler should replace the existing pages with the previously ignored pages.

RELATED WORK

Parallel Migrating Web Crawler [5,6,7,14]-is a new framework in which multiple instances of migrating crawler are used to collect more and more data. Decentralization the crawling process is a better idea for fulfill the user need in increasing size of web. As instances of mobile crawling process goes to various locations and run simultaneously by this the crawling process become fast and they save time in crawling. Documents are filtered [7] at remote side and updated pages are sent to local database.

DESIGN OF A PRIORITY BASED FREQUENCY REGULATED

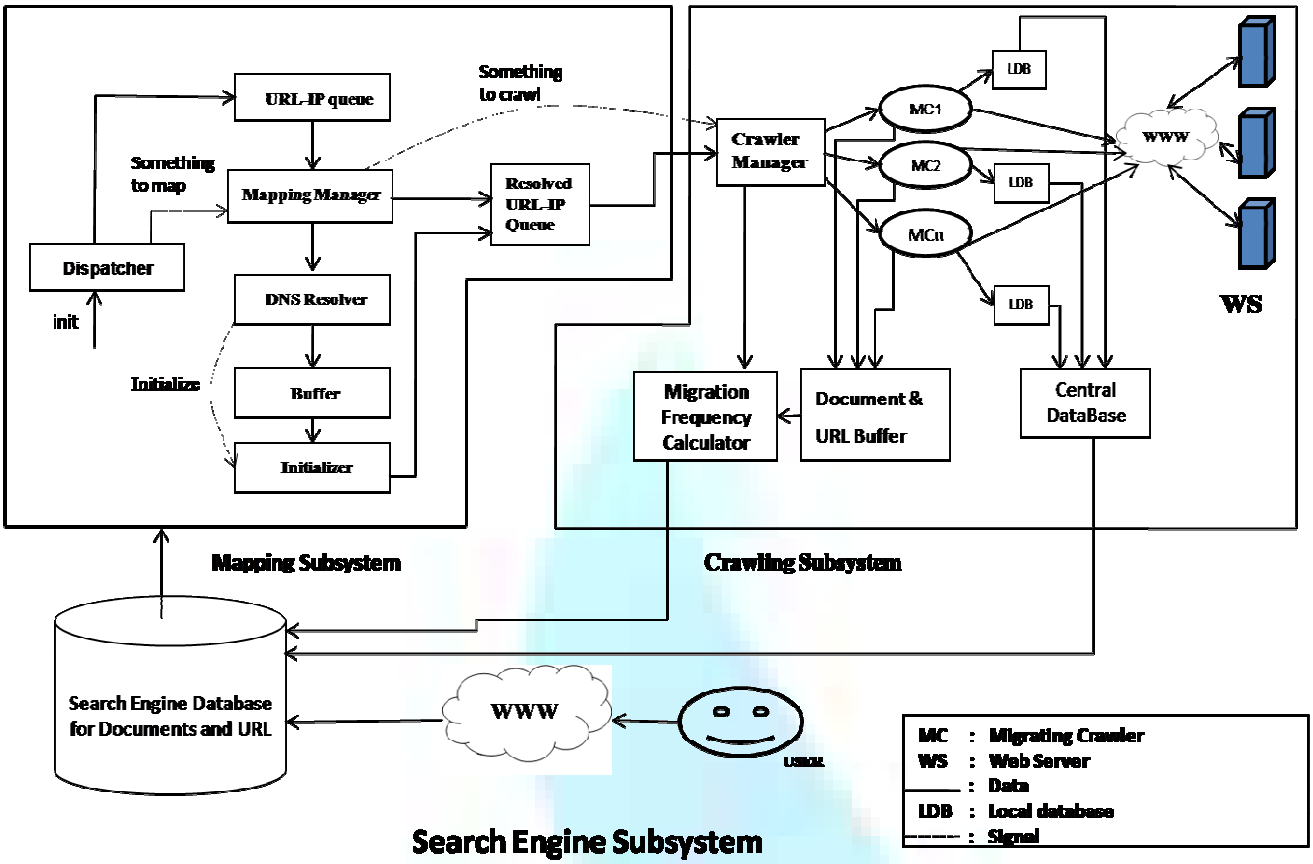
Incremental Crawler [10]- in this paper, the author explain a mathematical formula[10] by using the auto frequency calculator calculates the visit frequency of any web page as often as its updates because some pages are updated very quickly in minute and some in a hour, daily, weekly, monthly and so on. As on their updation time the visit frequency calculator module calculates the revisit frequency of that page so that after it the crawler crawl this.

PROPOSED WORK

As we discussed previously and related work, we conclude that if the instances of migrating crawler should visit a site frequently and the frequency of visits should be adjusted according to the category[10] of the site. Frequency of up-dation is a key idea that decides as when to revisit/crawl a page [10], and is directly depends on the number of visits to the site at present and also on the network traffic. So, a page that change very much frequently say every minutes, needs to be revisited frequently as compared to the page that change less frequently say every week, needs to be revisited least frequently.

The proposed architecture of the Auto Regulated Migrating Parallel Crawling module is given in Figure 2.

FIGURE 2: THE ARCHITECTURE OF THE MODIFIED MIGRATING PARALLEL CRAWLER



In order to maintain the freshness of Search Engine's local database, the proposed crawler should download the fresh/new WebPages, therefore, migration frequency calculator of migrating parallel crawler will find the appropriate migration frequency of the crawling so that crawler can update its search engine database with fresh documents.

The algorithm for **Auto Regulated Migrating Parallel Frequency Calculator Module** is given below.

ARPMFCM ( )
Do
{
Read URL IP-Address pair from URL IP Address queue.
If the last Crawl Time is NULL and their Status is zero
then
change Status into 1
Set Migration Period equal to default migration period
Update URL record
Store URL-IP pair it into URL-IP queue
Else
If the Current Migration Period is greater than Lower Threshold value and Current Migration Period is less than Higher Threshold value
then
remain the previous value for migration period
Else
Calculate the new Migration Period [10]
Set Migration Period = New Migration Period
Store URL-IP pair into URL-IP queue
}
Forever

The whole ***mapping and crawling*** Process [4,8] can be defined as follows:

Mapping manager takes a URL_IP set from the URL_IP Queue and creates multiple instance of mapper threads named as URL-Mappers. Set of URL_IP taken from URL_IP Queue are assigned to each URL_Mapper. URL-Mapper examines each URL_IP pair and if IP is null, then URL is sent to DNS Resolver. After the URL has been resolved for its IP, it is stored in the Resolved URL_IP Queue. If URL is new then DNS Resolver stores it in the Buffer and a signal "initialize" is sent to Field initializer. Field initializer initializes the URL fields and stores them in Document and URL Buffer.

Downloaded documents are checked for modification of contents in it and Migration Period is Auto Regulated accordingly by Auto Regulated Migration Period Calculator module. Later these Documents and URLs are stored in Search engine Database.

So, the modified crawler optimizes the frequency of migration for an Migrating crawler, there by improving the quality of collection without incurring much traffic on the network.

ONGOING WORK

Crawler migration and remote execution of code causes severe security problem because a migrating crawler might contain harmful codes. We suggest introducing an identification mechanism for migrating crawlers based on digital signatures. Based on this crawler identification scheme a system administrator would be able to grant execution permission to crawler.

Instead of sending the entire downloaded pages, the crawl worker may first take difference between previous image and the current one and send only this difference, since many pages are static and do not change very often, this scheme can significantly reduce the network traffic.

Instead of sending the entire downloaded page at it is, we can reduce their size by applying any compressing mechanism on it. By this the traffic on the network will also be reduced.

CONCLUSION

Crawlers are used efficiently to collect Web data for search engine, data mining, and caches [1]. As the size of the Web increases, it becomes progressively important to use migrating parallel crawlers [4,7]. With the help of the proposed scheme, various design options for an migrating parallel crawler has been identified to find the refresh time of the documents and thus resolving the problem of the freshness of the pages [9]. The documents collected from each site are filtered. So only the relevant and useful pages are sent back to the central crawler and this saves network bandwidth. The documents before sending to the central crawler are compressed locally and then send to the central crawler which saves a hug amount of network bandwidth. To perform this task a no. of algorithms and a updated architecture have been proposed that will help the crawler to remove its deficiencies by dynamically adjusting the migration period and refresh time and thus improving the efficiency, as it makes the database rich. Only the useful data is provided to the user, thus network traffic is reduced and data enrichment is achieved.

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