RECENT INITIATIVES IN ICT PERCOLATION IN HIGHER EDUCATIONAL INSTITUTIONS IN MAHARASHTRA STATE

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ABSTRACT

Diffusion of ICTs in HEIs in Maharashtra would respond to the twenty-first century demands. The contemporary higher education systems are aiming for acquisition of ICT skills as part of the core education system, provision of infrastructure/ fully equipped labs, professional assistance and other support needed to enhance quality of education. Application of ICTs in managing higher education institutions and use of the technology to homogenize quality of education in the highly diverse scenario across the colleges and universities established in the country would benefit many students. The arguments against the introduction of ICTs have pointed out that ICTs would benefit the urban and already advantaged sections of society at the expense of rural communities. The situation of limited budget allocations, which were barely enough to meet the salary expenditure leading to developmental activities taking a back seat, is improving. The time is right to push the driving forces hard as it is expected that implementation of initiatives to integrate ICTs bring about improvement in higher education organization and quality education through ICT would be realized.

India, so also Maharashtra State, are making use of powerful combination of ICTs such as open source software, satellite technology, local language interfaces, easy to use human-computer interfaces, digital libraries, etc. with a long-term plan to reach the remotest of the villages. Community service centers have been started to promote e-learning throughout the country (Bhattacharya and Sharma, 2007). ICT in Education has come some distance in India. Starting with its integration in education (ICT Literacy and Skill Development) of late, it has found major space in matters of governance (ICICT, 2012). The Indian institutes of higher education should also critically appraise what he meant to say as educational institutions in the western world and think of making the best use of ICT for their respective institutions. Technology coordinators view the problems of insufficient hardware, software, and training as major obstacles.

KEYWORDS

ICT, Higher Education etc.

INTRODUCTION

"For India to emerge as a super power of the world in the shortest possible time it is important to convert our demographic merit into knowledge power hose by nourishing and uplifting our working population into knowledge enabled working population"

Mission Document NMECIT-MHRD (2007) (Dutta, 2011)

The higher education in India is mired in tradition, ideology and incumbent interests. There is a need for a transformation in the higher education that will help make the learning that is imparted current and relevant. It is indeed a commonly agreed and accepted priority that Higher Education in India, which is a traditionally managed, lacking relevant and quality education, needs total revamping. The true revolution in higher education will come from its digitization. Across the past 10 years, the use of ICT has fundamentally changed the practices and procedures of nearly all forms of endeavor within business and governance in India. In India, within education in general and higher education in particular, ICT has begun to have a presence, but the impact has not been as extensive as in other fields. Experiments and experiences show that there are three broad dimensions to achieve optimally ICT integrated higher education, namely, Percolation ICT culture in higher education; Development of ICT literacy and skill; and ICT supported higher educational management.

Education is a very socially oriented activity and quality education has traditionally been associated with strong teachers having high degrees of personal contact with learners. The education in India is mired in tradition, ideology and incumbent interests. There is a need for a transformation in education that will help make the learning that is imparted current and relevant. Today's students live in a world that is constantly connected, and alive outside the classroom. Yet, education is still delivered through traditional means. The true revolution in education will come from digitization of education so that children can learn at their own pace both within and outside the classroom. All this while, they continue to benefit from the nurturing, mentorship and guidance of teachers. Information and Communication Technologies (ICT) have become commonplace entities in all aspects of life. Across the past 10 years, the use of ICT has fundamentally changed the practices and procedures of nearly all forms of endeavor within business and governance in India.

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In India, within education, ICT has begun to have a presence, but the impact has not been as extensive as in other fields. The use of ICT in education lends itself to more student-centred learning settings and often this creates some tensions for some teachers and students. However, with the world moving rapidly into digital media and information with ultra-modern devices and utilities of ICT, the role of ICT in entire system and all channels of education in India is becoming more and more important and this importance will continue to grow and develop in the 21st century.

In India, Liberalization, Privatization and Globalization (LPG) have generated a good synergy and vibration for higher education (Hussain, et al., 2011). There is growing concern in the Society for Higher Educational Institutions (HEIs) about quality, standards and recognition. Consequent upon this awareness, the HEIs have to evolve for ascertaining and assuring quality, for which, the HEIs have to take initiatives to promote the concept of Best Practices in higher education and endeavor to adopt them, in a planned manner, for self-improvement. Best practices are perceived to have specific characteristics.

INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT)

Information and Communications Technology or **Information and Communication Technology**, usually abbreviated as **ICT**, is often used as an extended synonym for Information Technology (**IT**), but is usually a more general term that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers, middleware as well as necessary software, storage and audio-visual systems, which enable users to create, access, store, transmit, and manipulate information. In other words, **ICT consists of IT as well as Telecommunication, Broadcast Media, all types of Audio and video processing, Transmission, and Network based Control and Monitoring functions.**

The UNESCO uses the term ICT to describe: *"…the tools and the processes to access, retrieve, store, organize, manipulate, produce, present and exchange information by electronic and other automated means. These include hardware, software and telecommunications in the forms of personal computers, scanners, digital cameras, phones, faxes, modems, CD and DVD players and recorders, digitized video, radio and TV programs, database programs and multimedia programs"* (UNESCO, Bangkok, 2003; Bairagi et al., 2012).

JUSTIFICATIONS for ICT BASED EDUCATION

Today ICTs including laptops wirelessly connected to the Internet, personal digital assistants, low cost video cameras, and cell phones have become affordable, accessible and integrated in large sections of the society throughout the world. It can restructure organizations, promote collaboration, increase democratic participation of citizens, improve the transparency and responsiveness of governmental agencies, make education and health care more widely available, foster cultural creativity, and enhance the development in social integration. It is only through education and the integration of ICT in education that one can teach students to be participants in the growth process in this era of rapid change.

ICT can be used as a tool in the process of higher education in the following ways: (Lim and Chai, 2004; Hattangdi & Ghosh, 2010):

- **Informative tool:** It provides vast amount of data in various formats such as audio, video, documents.
- **Situating tool:** It creates situations, which the student experiences in real life. Thus, simulation and virtual reality is possible.
- **Constructive tool:** To manipulate the data and generate analysis.
- **Communicative tool**: It can be used to remove communication barriers such as that of space and time (Lim and Chai, 2004; Hattangdi & Ghosh, 2010).

Main benefits of using ICT in higher education to the various stakeholders: Summarily, following benefits can be propagated:

- To the Student:
    - Increased access,
    - Flexibility of content and delivery,
    - Combination of work and education,
    - Learner-centered approach,
    - Higher quality of education and new ways of interaction.
- To the HEIs:
    - High quality,
    - Cost effective professional development in the workplace,
    - Upgrading of employee skills, increased productivity,
    - Development of a new learning culture,
    - Sharing of costs and of training time with the employees,
    - Increased portability of training.

- To the Governments:
    - Increase the capacity and cost effectiveness of education and training systems,
    - To reach target groups with limited access to conventional education and training,
    - To support and enhance the quality and relevance of existing educational structures,
    - To ensure the connection of educational institutions and curricula to the emerging networks and information resources,
    - To promote innovation and opportunities for lifelong learning.

Sources: (UNESCO, 2002)

Higher education in the country is experiencing a major transformation in terms of access, equity and quality. This transition is highly influenced by the swift developments in information and communication technologies (ICTs) all over the world. The optimal utilization of opportunities arising due to diffusion of ICTs in higher education system presents a profound challenge for higher education institutions. At the same time, the introduction of ICTs in the higher education has profound implications for the whole education process ranging from investment to use of technologies in dealing with key issues of access, equity, management, efficiency, pedagogy and quality.

Higher education systems have grown exponentially in the last five decades to meet the demands of quality education for all. This aspect has further gained momentum due to swift advancements in Information and Communication Technology (ICT). Demand for skilled and competent labour is ever increasing in the contemporary globalized society. Competition in every sector ranging from access to quality in higher education has emerged as determining factor of economic growth and development. In order to increase the access to higher education and improving its reach to the remotest parts of the country contribution of open and distance learning facilities is on increase. In addition, it is catering to lifelong learning aspirations and that too at affordable cost. The last two decades have witnessed the inclusion of developments in ICTs in higher education systems around the world. Even then the challenge to develop a higher education system that is flexible and dynamic so as to holistically integrate the technology in the management and delivery of learning programmes is daunting (Snehi, 2009).

ICT is unanimously acknowledged as a significant catalyst for social transformation and National progress of any country. India has enormous geographic disparity in ICT use but at the same time, she has greater potentialities and possesses the largest ICT workforce in the world. She has recognized the importance of ICT in educational as early as 1984-85. The role of ICT is diverse in the delivery of good and highly competitive in all the four areas of education. It cannot be separated from any of the areas. Increasingly available ICT materials facilitate the learner as well as the teacher to enhance their horizon of knowledge in order to meet out the challenging competitive educational environment. Curriculum for the various levels should be modified in accordance with the changing ICT environment. The curriculum framer needs to update with the emerging trend. Educational programme consists of all the activities that are directed towards educating the citizen of the country in various modes of instruction and training. Information Communication Technologies are a very broad area in which every device facilitates learning, (S. Sampath, 2011).

ICT PERCOLATION IN MAHARASHTRA

The empirical studies and experiences show that the ICT and e-learning are medium of fast connectivity and development, showing a tremendous growth in some sectors, since 1990. The Govt. of Maharashtra has launched policies and programmes for the smooth penetration of ICT at the grass root level so that awareness can be generated at educational, social, economic and political domains for the benefit of the people. The penetration of latest technology opened a new paradigm of education system in the developing hemisphere, especially in Maharashtra in general and higher education in particular.

Impact of Integration of Technology in Teaching-Learning and Outreach

To integrate technology in a manner that it supports development without displacement is a challenge for the ICT penetration in Maharashtra. Higher Educational Institutions [HEIs] in Maharashtra need to be generating knowledge in all occupations and with the help of technology, relate knowledge to the needs of the society. Knowledge generation in the age of information revolution requires a new kind of institutional re-engineering in governance, teaching learning process, evaluation practices that could address the learners' need much more effectively. The UGC in its document (UGC, 2011) clearly highlighted that during the 12th FYP the institutions need to focus on knowledge generation from learners' perspective and with a view to addressing the needs of the society.

National Mission in Education through Information and Communication Technology

A National Mission, (UGC, 2011) in Education through Information and Communication Technology (NMEICT) was launched to cover 378 universities and 18,064 colleges, with the aim of digitization and networking of all educational institutions, develop low cost and low power consuming access to ICT, making larger bandwidth available for educational purposes. Expected outcome of the Mission was supposed to be e-book including digitization of video contents of teaching-learning materials, EduSat Teaching

Hub, 2,000 broadband internet nodes in 200 central institutions, satellite interactive terminal for network connectivity to all 18,000 colleges. The National Knowledge Network (NKN) was also simultaneously launched to cover 1,000 institutions besides providing digital campuses, video conference classrooms, wireless hotspots, laptops / desktops to all students of professional / science courses, and Wi-Fi connectivity in hostels. A sustainable progress in this direction has been made, but much more needs to be done."

The Role of Indian Government, (UGC, 2011) in general and the UGC's role in particular are quite optimistic in proliferation of e-learning and ICT. These governments have framed effective policies in this direction. Some of the e-learning and ICT projects of the government are of world standard. The collaborations of the Government of India with the developed nations and other Economics Blocs of the world for uniform ramification of e-learning and ICT throughout the country have also been causes of smooth percolation of ICT culture in Maharashtra. The Maharashtra state government is also not behind the race as some of them readily adopted the module for the benefit of the people. The empirical studies and experiences show that the Ministry of Human Resource Development (MHRD) and a Regulatory Body-University Grants Commission took initiatives in India in early 1970's, which launched TV Satellite programmes for educational purposes. This was the first Indian initiate as well as a policy for developing ICTs, as a vehicle for promoting education is visible since the use of satellite. However, the same was only in the form of distance learning, and Use of ICT or IT was at minimum level in administration, with a very few computers and printers, mostly showpieces, (Hussain, et al., 2011).

However, despite all these notable developments and initiatives, the empirical studies and experiences show that:

- In most of the Higher Educational Institutions [HEIs] in Maharashtra, including Central and State Universities, National Institutes, Army and Government aided National Research Institutes and Laboratories, etc., except some select Universities, and in some renowned private Universities and HEIs also, there is growing need to use ICT as an effective learning tool and ICT is emerging as the basic building blocks of modern society. Acquiring skills in ICT is fast becoming part of the core education system. ICT, emerging as a natural tool in education, offers great potential for knowledge dissemination. ICT aids the search for new knowledge that lies outside the purview of textbooks. The advantages of ICT are manifold as it enables students and teachers to expand their knowledge by using advances in information technology and tools, which enhance learning, such as the Internet, multimedia, video-conferencing, computer-aided design, animation and graphic-user interface. Noting that ICT is bound to add value to learning, its use among students should be popularized.

- ICT integrated educational management in Colleges, particularly in the rural and semi-urban areas, small and medium level cities, in Maharashtra State, is still in its early infancy for a large number of reasons that include:- [a] lack of personal access for and interest of teaching and non-teaching staff to ICT, [b] poor internet connectivity, [c] inappropriate location of ICT facilities in educational institutions (often centralized and museumised, namely audio-visual rooms or computer labs, without its presence in classrooms, laboratories and libraries with user terminals), [d] shortage of relevant digital contents of high quality, and [e] Teachers consider the lack of time to develop technology-based lesson a concern. Administrators identify teachers' lack of experience using technology in instruction yet another challenge.

- Most of the students, teachers and administrative employees, who face constraints of lack of PCs and restrictions from the authority to use internet face or very few of them could utilize internet facility from their institutions, have no option but to do browsing from their home and internet cafes. For very few students, browsing for their studies is done by utilizing the lab facility of the HEIs, which is not free of cost. Access and use of computers at home/internet cafe is shaped by socio-economic differences.

Thus, the socio-economic environment of students continues to play a significant role in their educational achievements also.

The use of ICT in higher educational system is becoming more and more imperative. Deliberate attempts are being made to percolate the ICT culture in the HEIs in Maharashtra. Following details describe the innovative efforts made to achieve academic excellence and increase the administrative efficiency and transparency in the higher educational system, by the State Government, Universities, Colleges, etc.

- **Voluntary Initiatives** reflect following features:

  - Promotion of Organizational and Communication Skills to facilitate presentation and interpersonal Communication;
  - Enhancing Interaction of Students with Teaching & Non-Teaching Staff;
  - Ensuring Knowledge Dissemination;
  - Introduction of MIS;
  - Introduction Course Management System;

- Introduction of Office Management System;
- Smart Class Rooms, Digital Interactive Boards, Smart Projectors;
- Smart Office with Provision of all Equipment's, Hardware & Software; and Increasing Connectivity.

Initiatives taken by Government of Maharashtra, for Technology Intrusion in HEIs in Maharashtra:

Connectivity of HEIs with affiliating University through Maharashtra Knowledge Corporation Ltd. (MKCL) for:

- Online Affiliation & Recognition: of HEIs and their Courses.
- Online Centralized Admissions: HEIs in Maharashtra have been connected to their respective affiliating Universities for Online Centralized Admissions for some selected UG professional courses, and for some selected PG courses.
- Online Eligibility: HEIs in Maharashtra are also connected online to their respective Universities for online grant of Eligibility to students of all UG and PG courses.
- Online Examination Processes: HEIs in Maharashtra are also connected online to their respective Universities for (a) Submission of Examination form, (b) Issuance of Examination Hall Tickets, (c) Submission of Internal Marks, (d) Declaration of Examination Results of students of all UG and PG courses.

Connectivity of HEIs with concerned Government Departments

- Connectivity for Grant of Scholarship and Free-ships:-HEIs in Maharashtra are connected **online** to/with the Department of Social Justice of Government of Maharashtra for **online** e-scholarship system, available to all Junior and Senior College (UG + PG) students belonging to Scheduled Castes, Socially and Educationally Backward Classes, Nomadic Tribes, Minorities and the members of economically weaker sections of the society and Minority.
- Connectivity for Entrance Test - MHT-CET **–** HEIs in Maharashtra are connected **online** to/with the Department of Higher and Technical Education **for pre-admission Entrance Test to Professional Courses, under Engineering, Technology, Pharmacy** wings for: (a) Submission of Examination form, (b) Issuance of Examination Hall Tickets, (c) Declaration of Examination Results of students of all students at XII Standard (*plus* Two Level).
- **Connectivity for Entrance Test - MHT-CET -** HEIs in Maharashtra are connected **Online** to/with the Department of Medical Education and Drugs Department **for pre-admission to all courses Professional Courses, under 'Health Science'** wings, for (a) Submission of Examination form, (b) Issuance of Examination Hall Tickets, (c) Declaration of Examination Results of students of all students at XII Standard (*plus* Two Level).
- **Connectivity with MKCL –** HEIs in Maharashtra are connected **online** to/with Maharashtra Knowledge Corporation Ltd. (MKCL), which enabled HEIs in Maharashtra for various processes, such as, online Admission, online Eligibility, online Submission of Internal Evaluation on Marks, Semester/Annual Examination Forms, etc.

Provisions in the forthcoming: "Maharashtra Public Universities Act"

Presently, the Maharashtra Universities Act, 1994, governs all State Universities in Maharashtra. With the emerging issues and challenges, advent of new avenues, tasks, the State Government appointed committee submitted a Draft Maharashtra Public Universities Act, 2011. The title of the said draft Act is *"The Maharashtra Public Universities Act, 2011: Pathway for Transforming Higher education into a Socio-Economic Development Force - Draft, 2011.* This Draft-document presents a generic Act, which provides a basic framework for achieving the above mentioned objectives of the contemporary educational system, to manage academic, financial and administrative operations of ten public universities in the state of Maharashtra in an open, transparent and flexible manner The Draft-document clearly provides and outlines the importance and adoption of ICT in higher educational system. Thus, the Nigvekar (2011) committee with its vision and dedicated mission strongly stressed the significance, deployment of and adoption of ICT culture in HEIs in Maharashtra State to make them stronger and transparent (Nigvekar, 2011).

This Draft-document spells out various aspects including the considerations before the draft committee, in its preamble on pages 2, which read:

"These Universities, in spite of the trend for privatization of education, are playing and would continue to play an important role in shaping the future of millions of youth in Maharashtra for decades to come. They need to be endowed with the enabling legal provisions that promote innovations in learning and understanding processes, cultivate a research and development culture and help students to imbibe appropriate knowledge, values and guiding principles relevant to the 21st century and leading to betterment in life and wealth generation. In addition, it should bring openness and flexibility in the teaching framework, that while enriching the basic foundations, which are the core identities of various disciplines, and linkages to human life and to Mother Nature, encourages a seamless approach in the subjects, the disciplines, the time frame and methods of learning and the way for judging the acquisition of knowledge-applications development base offered in a particular degree program for the students. The clever and innovative use of technology in all aspects of educational institutions is a tool to liberate them from the shackles of the past and embrace the challenges of global opportunities. The challenge is to create an enabling structure for good colleges to become autonomous and thereby "empower" them to shoulder the responsibility of

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becoming a part of the degree giving authority. Public universities, by their very nature, do depend on Governmental support; however, they have to be very prudent in the use of the taxpayer's money by adopting financial discipline. They have to be accountable to all the stakeholders in a transparent way. They should devise innovative strategy for augmenting their finances through optimal use of their academic, research & development and physical infrastructure. The Government, on its part, needs to adopt new and time-independent approach for funding public universities."

The afore-mentioned Draft-document further clearly provides, outlines the importance and adoption of ICT in higher educational system, in its clause 10 on pages 22-23, which read:-

"(10) encourage the use of ICT in teaching & learning process: One more aspect that needs attention is the need to adopt new delivery methods for imparting education. The strengths of the face-to-face and the ODL have been enormously enhanced because of the use of ICT for education. It is essential to strengthen the process of learning and understanding, which is at the core of all education processes. It is here that interactive multimedia is of significance. The term "interactive multimedia' is a catch-all phrase to describe the new wave of computer uses that primarily deal with the proviso of information in the learning process. The "multimedia" component is characterized by the presence of text, graphics, pictures, sound, animation, and video; some or all of which is organized into a coherent teaching-aid package. The "interactive" component refers to the process of empowering the user to control the environment usually with a computer. A teacher can make classroom teaching an enriching experience by use of the interactive multimedia. This is what is referred to as a blended approach in education. If the blended-education approach is to become successful then we need to address four issues: Awareness, Availability, Accessibility and Affordability. The awareness relates to knowing what can be achieved with ICT whereas availability means having access to ICT hardware and software. The accessibility relates to ability to use ICT and affordability is the cost of having ICT. The use of ICT requires access to computing, connectivity, content and human capacity. The tenth plan initiatives by the UGC focused on creation of connectivity (UGC INFONET), capacity building for the teachers and supporting the research by giving access to research journals in e-format. These activities were further strengthened in the XIth plan. The knowledge commission has talked about creating a national information grid. This has created a vibrant environment that is conducive to effective, relevant and quality education. However, there is a need to make this movement stronger so that it creates a meaningful impact on Indian higher education. We need to continue to deploy ICT technologies in the education sector because education empowered by ICT is in today's world the best investment. We have created an independent Authority entitled The Board for Integration of Technology in Academics, Finances & Administration (BITAFIA) to create and to maintain ICT network on the Campus of the University and also to establish a network connecting all the affiliated colleges with the main campus of the university."

"The functions of the Boards of Studies, the Faculty and the Academic Council have been given the clear task of taking such steps in, the new Act, so as to enhance the use of ICT in classrooms. We have also created an independent division in MAHED to empower teachers with learning & technology skills to create e-learning objects. MAHED is expected to work as an umbrella structure to ensure seamless integration of technology in all the functions of the University."

Thus, the Nigvekar (2011) committee with its vision and dedicated mission strongly stressed the significance, deployment of and adoption of ICT culture in HEIs in Maharashtra State to make them stronger and transparent.

MAJOR SUGGESTIONS

Undoubtedly, ICTs are potentially a useful tool for both managing education and teaching. Application of ICT in managing educational institutions should be encouraged, as should use by instructors to gain access to educational materials. By teaching computer skills to youngsters, they may influence inward investment for the future society as well. ICTs are most likely to be cost effective when used to reach very large numbers of students; when used for research; and when used by administrators irrespective of time and place. Following are some major suggestions for ICT penetration in HEIs in rural, semi-urban areas, small cities, small scale Colleges of Arts, Commerce and Social Sciences etc.:

- Assess skills of ICT professionals and meet gaps with targeted training programs to overcome the short-term skills shortage in the ICT industry and adopt continuing education and professional skills assessment and enhancement programs.

- Encourage closer collaboration between academia and industry to align curriculum with market needs. Establish an ICT Center of Excellence with necessary long-term funding to teach and conduct research in advanced ICTs. Boost use of ICT tools in all levels of education, including ECDP, mass literacy, and lifelong learning.

- Ensure access to education and research for people with disabilities and special needs using ICT tools. Establish multimedia institutes. Initiate diploma and trade courses to enable ICT capacity building for teachers. Teacher training institutes to be empowered with ICT capacity to meet the challenges. Create reliable and accessible national databases. Promote the use of ICT for training in the public sector. Initiate development of a sizable resource of globally competitive ICT professionals in order to meet local and global market requirements.

- Develop seamless telecommunication network for the unhindered implementation of ICT policy.

- Ensure public access to information through setting up of kiosks. Encourage the participation of private sector for ICT implementation.

- Create an e-Education Cell for coordinating and mainstreaming ICTs in education system.

- Training for all levels of teachers, assistants who are involving in educational institutions. Establishment of lab facilities and internet availabilities for all the students, teachers and assistants is necessary. Basic ICT course should be compulsory in all form of educations. Personnel with basic ICT knowledge should be appointed in all form of educational institutions. Use of ICT and multimedia in the education makes it interesting and fruitful Website of the institution should be compulsory along with regular updates.

- Central registration system for the students should be implemented mandatorily. Use of student database, automated account in the institutions for faster administration should be employed. Facilitating electronic professional research journal and periodicals access to foster the level of technology savvy mind of the people and more importantly featuring the educators and students to access the emerging arena of knowledge.

- Establishment of digital libraries or information repository may also be done by the educational institutions, which may provide invaluable materials to the researchers, educators and students as well as other interested people.

- In disseminating ICT and new technologies, which may improve the overall life style of the mass people, may be acquainted through conferences, workshops and other technical gatherings arranged by the educational institutions in collaboration with other agencies.

- Focusing on blended learning, rather than insisting on teaching students at my place at my pace using an industrial model that is now becoming obsolete is what they need to look at. Universities need to leverage their competitive advantage in term of the ICT revolution and the new model of e-education has to be relied upon in the future (DIGITAL-Learning, 2012).

- Recognizing the importance of ICT in education, the integration of ICT in education curriculum, intrusion ICT culture in entire system and organization has no option, shortcut, or alternative. The empirical studies and experiences strengthen the opinion that there is need for chalking out a curriculum including ICT.

- Technology is never an alternative for teaching. Without trained instructors, no electronic deliveries can accomplish good results; hence, the trained staff availability for ICT is prerequisite for penetration of ICT culture in the educational institution.

- Only audiovisual facility is not sufficient. Development of Computer Laboratory is minimum bare essential step in this endeavor. Computer Laboratory helps in developing scientific temper. Virtual laboratory is necessarily required to be developed using ICT. Lab facility maintenance of the computers, sizable classroom and computer lab for ICT and availability of one computer/student are minimum requirements. Charts, the students outside prepare Posters used as teaching aids, Power Point presentations etc. necessary during their courses the institutions. Various skills of using new technology such as presentation of the content of seminars using Power Point, or demonstrating content through Flash or sending assignment papers to moderators still need to be introduced and practiced during the sessions. Web browsing is usually done outside the campus.

- Our Higher Education system, in the rural and semi-urban areas, small and medium level cities, is still to exploit the full potential of ICT for optimizing human learning on one hand and its use for educational management, i.e. e-governance on the other hand. Availability of educational web portals, blogs and wikis, face-books (where teachers and administrative staff can actively participate both as a beneficiary and benefactor), will be instrumental in development of ICT culture in admissions, teaching, learning, evaluation, educational management, financial management, general administration, etc. ICT can optimally play its role only when it is a part of Institutional Culture and that there are three broad dimensions that can generate ICT culture in education, namely:-[a] ICT Literacy and Skills for All in the Sector of Higher Education; [b] ICT Integrated Higher Education; and [c] ICT Supported Educational Management (ICICT, 2012).

- It is necessary to minimize the 'DIGITAL-DIVIDE'. To ensure digital empowerment, Students teaching and skill training should encompass ICT skills along with a full understanding and complete mastery of ICT s as pedagogical tools. HEIs in Maharashtra should be ensured with financial and human resources with training for successful incorporation of ICTs. It is also necessary to extend a stronger understanding of future learning needs and future

environments for ICT skills. A constructive atmosphere must be there to provide an occasion for all stakeholders to form a part of the information society. Efforts should be taken to promote broadband, computers and internet access down the cost. Progress and planning is still needed in providing attractive learning content and learning technologies.

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AN ASSESSMENT OF THE IMPLEMENTATION AND CHALLENGES OF BUSINESS PROCESS REENGINEERING (BPR) IN HAWASSA UNIVERSITY

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ABSTRACT

This research project aims at assessing the implementation and challenges of Business Process Reengineering (BPR) in Hawassa University. In order to address persistent problems of inefficiency, ineffectiveness and non- responsiveness in delivering organizational services, BPR proposes a fundamental and radical shift in organizational logics from task-based to process-based thinking (Hammers and Champy, 1993). Survey research design qualitative and quantitative approaches were used. From 1261 administrative staffs sample of 228 respondents were calculated using Calmorin's sample size formula 99% CI. Both probability (simple random) and non-probability (judgmental) sampling techniques were used to acquire the required information from respondent using structured questioner and interview. To identify equitable sample size from each stratum (support and core process) stratified sampling method were used.

The researcher used pilot-test (Cronbach alpha) reliability value of 0.94. SPSS 15.0 were used to analyze data. Moreover cross-tabulation X^2(Chi-squire) using CI=95% to test the relation among dependent and independent variables. Using thus methods, the survey finding confirmed, extent of BPR implementation did not exceed average value of (65 percent) which recommendations of BPR are not successfully accomplished which needs further effort in the future. Less attention for empowerment, improper application of management system, lack of change management accomplishment and insufficient management support critical challenges implementation of BPR in Hawassa University. While, information technology infrastructure, information technology usage, educating employees and comfort on the redesign process were critical success factors of BPR in Hawassa University. Therefore, for successful BPR implementation the university shall be strong and committed to support employees in different issues. In addition, it is important to adopt new compensation, motivation system, allocating adequate budge for BPR execution, and changing organizational structure and values in the implementation are task of the University to implement and benefit from the project as expected.

KEYWORDS

BPR, Implementation, Challenges, Success and Evaluation, Higher Education etc.

INTRODUCTION

Business Process Reengineering is one of the most important implementations of competitive strategy today, most often simply called reengineering. It is a fundamental rethinking and radical redesign of the business process to achieve dramatic improvement in cost, quality, speed and service (O'Brien, 2002:59). Beside to this, Fisher (2001) stated that educational institutes, in pursuit of improved performance and quality could use any or all of the above-mentioned tools to overcome inefficiencies. On the other hand, Davenport (1993) said that, every organization ventures in to reengineering for three "C's" and they are customer, competition and change.

Several authors (Benjamin, 1998; Davis and Meh, 1997; Gales, 1994) highlight the importance of undertaking BPR initiatives in the education sector to reduce costs and improve services. Walker and Black (2000) have identified three reasons for business schools to adopt BPR initiatives – to face the challenges of the industry thereby responding to the demands of the customers, to achieve efficiency, flexibility, and to have an understanding of all variables that directly affect organizational or individual performance. Another qualitative study undertaken in the further education sector in Northern Ireland (McAdam and Bickerstaff, 2001) revealed similar results were the emphasis was based on the customer's needs, designing and improving key business processes and identifying critical success factors [as sited in Balaji, M. (2004)].

The research finding of Balaji, M. on education institutions (2004), shows that; Education institutes function similar to any other business organizations and therefore the tools used by most business organizations can be implemented by them too. Several improvement tools and techniques such as change management, total quality management, downsizing, restructuring, benchmarking, design and systems development and process mapping have been adopted by businesses in various industries to sustain growth and to achieve gains in service and costs (Mangenelli and Klein, 1994; Jacka and Keller, 2002). In this view, Business process reengineering is the implementation of dramatic and radical change in quality service delivery, cutting cycle time and cost of business process operations in the organization.

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In relation to this, Hawassa University started to implement Business Process Reengineering (BPR) to contribute a lot in providing quality service delivery for customers, improve efficiency and effectiveness of the University in cost, quality and speed by replacing traditional work in the new redesigned process. With respect to this, Zigiaris (2000), Business Process Reengineering involves changes in structures and in processes within the business environment. The entire technological, human, and organizational dimensions may be changed in BPR. Information Technology plays a major role in Business Process Reengineering as it provides office automation; it allows the business to be conducted in different locations, provides flexibility in manufacturing, permits quicker delivery to customers and supports rapid and paperless transactions. In general, it allows an efficient and effective change in the manner in which work is performed. Furthermore, Mengesha and Common (2007) stated that in the country the reform agenda revolves around not only redefining the role of institutions but also laying down the basis for new forms of organization, governance and steering.

Public institutions and universities in Ethiopia have implemented this reform since 2009. Nevertheless, the orientation the government pursued in implementing the new reform is quite different from the top-down approach it had traditionally been pursuing. Instead of arriving at a set of centrally predetermined reform plans, its approach to the BPR reform is based on an atomistic theme in which the restructuring of an institution is assumed to relate to the sector's nature and an individual institution's contextual reality. In view of this Hawassa University is currently undertaking Business Process Re-engineering (BPR) on different core and Support processes of the university in order to achieve its academic, research and extension mission. The University's processes, which are undergoing redesigning activities, are organized into three core and three Support processes; these are Research and Development core process, Hospital service core process, Teaching learning core process, Human Resource Management support Process, Procurement and property management support process and Resource Mobilization support process. Each of the processes passes through two stages: the first phase is AS-IS (study of the existing process) and TO-BE (the redesigning and proposed new process) (HU BPR, 2008). In view of this, the study will assess whether the University has been fully implement Business Process reengineering (BPR) and lastly it will assess the challenges and its caciques for the organization.

METHODOLOGY OF RESEARCH

General Objective of Study

The general objective of the study is to assess the implementation and challenges of Business Process Reengineering (BPR) in Hawassa University.

Specific Objectives of study

- To assess extent of Business Process Reengineering implementation (BPR) in HU.
- To assess challenges of Business Process Reengineering (BPR) in HU.
- To assess success factors of Business Process Reengineering (BPR) in HU.

Research Design and Approach

To conduct this study a survey research design were used to collect data concerning the variables related to the level of implementation, failure and success factors of BPR in Hawassa University. As Swanson and Holton (2005), claimed, the purpose of survey research in organizations is to collect information from one or more people on some set of organizationally relevant constructs. Thus, to gather data relevant for the identification of various factors that affect BPR implementation, the study employed survey strategy to gather data from BPR project redesign and implementation team members of the university. In addition, data were collected one point in time (cross-sectional) from the respondents. The rationales to adopt survey strategy were the economy of the design and the rapid turnaround in data collection.

Sampling Design & Sample Size

Since it is difficult and time taking to take all administrative staffs of the University as whole, the researcher used Calmorin's sample size determination formula since it is one of the best methods in determining the sample size when the total number of the population is finite. By using this formula, the study assumes that; sampling error of 1% and 99% reliability, a sample of approximately 228 respondents are stratified with different departments to select equitable sample from each departments the researcher will use a formula. The standard value at 1% level of probability is 2.58 with 99% reliability and a sampling error of 1% or 0.01.

Sampling Techniques

The researcher used both probability and non-probability sampling techniques. The researcher uses probability-sampling techniques for the questioner and non-probability sampling technique to interview respondents. Since both of sampling techniques used to acquire the required accurate information from respondents and the study population is categorized in to different

category, first the investigator used stratified sampling technique to find equitable distribution of sample size between the categories, then simple random sampling technique was used to identify the intended samples from those categories which is known as stratified random sampling. The technique gives respondent in the population an equal probability of getting into the sample. In addition to this the researcher used judgmental sampling for five respondents of the University, since it gives the researcher to selecting items which is important to investigate information from representatives of the population.

Reliability Test

According to Hair, et al., (2006), if α is greater than 0.7, it means that it has high reliability and if α is smaller than 0.3, then it implies that there is low reliability. To meet the reliability of the study, a questionnaire of 25, which are approximately 10.96 percent of the sample groups before the actual data collection, has been conducted; the result of Cronbach's alpha was found to be 0.94.
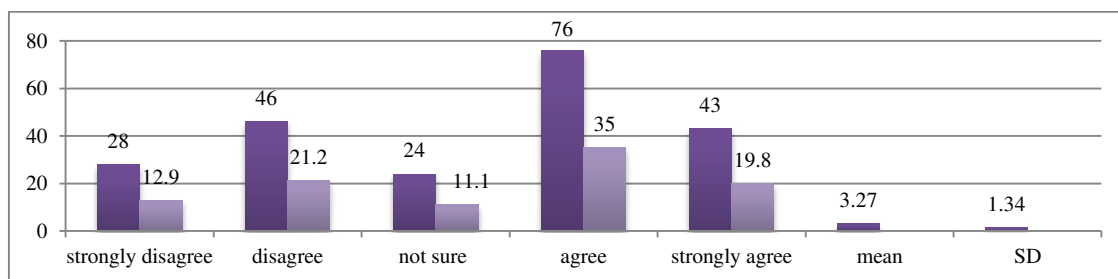
DATA ENTRY AND ANALYSIS

The investigator used field editing to review what have been written in attributions and eligible forms after respondent's completion of response soon / in the field. Analysis of data gathered from respondents with the questionnaire was carried out through the Statistical Package for the Social Sciences (SPSS) version 15.0.

Assessment of BPR implementation and the challenge were described using tables, graphs, frequencies, means and standard deviation. Moreover, the effect of possible factors on the implementation process was analyzed using cross tabulation of dependent and independent variables. X^2 (Chi-Square) values, and p-values were calculated, using CI=95%, the associations between variables indicated. Inferential statistics chi-squire was used to test the significance (relationship) between dependent and independent variables.

About BPR Implementation, Failures and Success

Graph-1: Extent of BPR Implementation Managed Time, Cost and Quality Service of Job / Task Demanded

Sources: Authors Compilation

Graph-1 describes that, the mean value (3.27) and standard deviation (1.34) indicates there was not significant changes in the extent of accomplishments of BPR objectives through reasonable process cycle time, cost and quality service of the work/task demanded in newly redesigned process.

Challenges

Table-1: Management Support

S. No.	Descriptive Analysis	Mean	SD
1	BPR transition team identifies roles and responsibilities.	3.14	1.32
2	Efforts are made to raise staff commitment on BPR.	2.73	1.21
3	The BPR implementation creates a means of monitoring.	2.93	1.20
4	The University arranges workshops and training on BPR.	2.34	1.29
5	Performance measurement correspond job description.	2.50	1.09
6	BPR creates means of collecting solutions for problems.	2.56	1.10
	Average	2.56	1.11

Note: M = Mean, SD = Standard deviation.
Sources: Survey (2014)

As per the data indicated in the above table 1 item 1; the mean values of (3.14) and standard deviation (1.32) implies that the transition team has slight problem related to identification of roles and responsibilities of the new work process redesigned.

The data in table 1 item 2 shows that, the mean value (2.73) and standard deviation (1.21) indicate that average respondents feel that the leader's effort to raise employee's commitment, the efforts of leaders was not satisfactory to raise employee's commitment in the organization.

In table 1 item, 3 outlined that, the mean value (2.93) and standard deviation (1.20) indicates that the availability of monitoring and support is not significant for successful level of BPR implementation in Hawassa University.

The above table 1 item 4 describes, The value of mean (2.29) and standard deviation (1.29) indicates that the University has not arrange enough workshops and training programs related to BPR for employees of the University in order to improve their efficiency and effectiveness through creation of awareness.

The data in table 1 item 5 explained that, the value of mean (2.50) and standard deviation (1.09) indicates that most of the employees feel there is no significant relationship between performance measurement system and the task responsibility designed under BPR implementation in the University.

As shown in table 1 item 6, the mean value (2.66) and standard deviation (1.14) indicate average respondents feels that the organization does not properly implement means of collecting solutions for the existing problems within the newly redesigned work-process of Hawassa University. Generally, the mean value and percentage of level or degree of redesign process implementation in the university rated by the respondents implies that there is more or less moderate extent of means of collecting solutions for the existing problems BPR implementation in the university, which needs further potential for success implementation in administrative staffs.

Table-2: Change Management

S. No.	Descriptive Statistics	M	SD
1	The organization structure changed to flat.	2.67	1.14
2	Awareness is given on the change being done (BPR).	2.67	1.28
3	Organizational structure based on the new process to reduce cycle time and cost.	2.57	1.19
4	Leaders communication for employees	2.68	1.10
5	Immediate supervisors support employees.	2.50	1.31
6	Leaders communicate organizational vision and goal.	2.45	1.19
7	Change management plan facilitate cultural changes	2.75	1.17
	Average	1.92	1.06

Note: M = Mean, SD = Standard deviation.
Sources: Survey (2014)

As the table 2 item 1 depicted, The mean value (2.66) and standard deviation (1.14) indicate that average respondents feels that modification of organizational structure to flat /simple / structure for quality service delivery, employees empowerment and to avoid resource, time and cost of the University within the newly redesigned work-process employees needs further improvement.

The data in table 2 item 2 explained that, the mean value (2.66) and standard deviation (1.27) indicate that most of respondents feel that there is no awareness creation program about the change being done through BPR implementation of the University to the newly redesigned work-process employees.

As the data described in the above table .2 item 3, The mean value (2.57) and standard deviation (1.19) indicate that most of respondents agreed that there is no organizational structure modified (flat structure) based on the new work process to reduce cycle time and cost through redesign implementation in Hawassa University.

The above table 2 item 4 outlined that, the mean value (2.68) and standard deviation (1.10) indicate that most of respondents feel that slightly there is no leader's open communication for employees in the implementation process of the newly redesigned work-process.

As the data explained in the table 2 item 5; the mean value (2.50) and standard deviation (1.31) indicates that most of respondents agreed that there is no immediate supervisors and leaders' commitment to support and openly communicate with the newly redesigned work-process employees.

As the data show in table 2 above item 6; The mean value (2.45) and standard deviation (1.18) indicates that most of respondents agreed that there are no immediate supervisors and leaders' openly communicate the vision, mission and goals of the University to the newly redesigned work-process employees.

The data in table 2 item 7; shows that the mean value (2.75) and standard deviation (1.17) indicates that change management plan slightly facilitate needed cultural change across the University newly redesigned work-process employees. This implies that the change management plan has no facilitate the expected organizational cultural change in Hawassa University.

Table-3: Organizational IT usage

S. No.	Descriptive Statistics	M	SD
1	Flow of accurate and timely information using IT.	2.72	1.16
2	There is online registration for students.	2.74	1.41
3	Departments on Students interest online selection.	2.42	1.25
4	There is 24/7 internet access for university community.	2.66	1.26
	Average	2.66	1.26

Note: M = Mean, SD = Standard deviation.
Sources: Survey (2014)

As per the data indicated in table 3 item 1 shows that, the mean value (2.718) and standard deviation (1.158) indicate that most of employees feel there is timely, accurate and reliable information flow from every direction of the University.

Table 3 item 2, indicates that the mean value (2.737) and standard deviation (1.410) indicate that there is slight problem of student's online registration in the University.

As per the data on the above table 3 item 3, the mean value (2.424) and standard deviation (1.252) indicates that there is significant problem of student based department selection in the University.

The data on the above table 3 item 4, the mean value (2.65) and standard deviation (1.29) indicates that there is slight problem of internet access for the University community.

Success Factors

Table-4: Empowerment and Management System

S. No.	Descriptive Analysis	*Mean*	SD
1	BPR brought HRD program to promote future career.	2.54	1.41
2	BPR provides job security.	2.45	1.22
3	Employees use of power and authority on newly work process.	2.40	1.08
4	Leaders use participative decision-making.	2.27	1.27
5	Salary structure is revised based on the new work process workload.	1.96	1.22
6	The required fund release for BPR implementation.	2.16	1.23
7	Availability of new motivation system for employees.	2.00	1.90
8	New compensation management system improves efficiency.	1.92	1.06
	Average	1.92	1.06

Note: M = Mean, SD = Standard deviation.
Sources: Survey (2014)

Table 4, items 1 outlined that, the mean value (2.42) and standard deviation (1.25) indicates that there is problem of human resource development program to promote career structure of employees in the University.

Item 2 of the table 4, above shows that, the mean value (2.45) and standard deviation (1.22) indicates that there is problem of job security during BPR implementation in the University.

Data in table 4, item 3 outlined that the mean value (2.40) and standard deviation (1.08) indicates that there is significant problem in use and practice of job related power and authority of employees in the University.

In the above table 4, item 4 data shows that, the mean value (2.40) and standard deviation (1.08) indicates that there is problem of employee's empowerment, participative decision-making and teamwork in the University.

As showed in table 4 item 5, respondents about the mean value (1.96) and standard deviation (1.22) indicates that there is problem on proportionality of salary structure and work volume of job in the University that needs further study on the management and BPR teams.

As shown in the table 4 above item 6 depicts that, the mean value (2.15) and standard deviation (1.22) indicates that there is significant problem of adequate budget allocation for BPR implementation in the University work process, which needs improvement for future successful implementation of BPR.

The data in the table 4 above item 7 shows that, the mean value (2.15) and standard deviation (1.22) indicates that there is significant problem on implementation of motivation system for employees in the University, which lacks attention to improve employee's performance, energy and to get success in the change implementation.

The above table 4 item 8 indicates that, the mean value (1.91) and standard deviation (1.05) indicates that there is a problem on implementation of good compensation management system in the University.

Table-5: IT Infrastructures

S. No.	Descriptive Analysis	Mean	SD
1	Adoption of IT makes work easier and convenient.	2.74	1.25
2	Work-process has adequate software for the job efficiency.	2.53	1.11
3	Sufficient IT infrastructure to support teaching learning.	2.87	1.15
4	Adequate software for BPR purpose in the organization.	2.63	1.29
5	Timely training on system software for employees.	2.55	1.16
6	System integration of IT in service areas.	2.60	1.11
7	Use of update IT as per the requirement.	2.68	1.10
8	Online grade submission in the university.	2.68	1.14
	Average	2.68	1.16

Note: M = Mean, SD = Standard deviation.
Sources: Survey (2014)

As per the data indicated in table 5 item 1, the mean value (2.74) and standard deviation (1.25) indicates that there is slight problem on the adoption of IT infrastructure to improve BPR implementation and to make service delivery easier and convenient in the University.

Table 5 item 2, indicates that, the mean value (2.62) and standard deviation (1.29) indicates that there is slight problem on the adoption of adequate software for work-process (job) in the University.

As per the data on the above table 5 item 3, the mean values of IT support for redesign process (2.87) and standard deviation (1.14) shows that, Hawassa University have adequate IT support for teaching learning process.

The data on the above table 5 item 4, the mean value of availability of adequate software (2.62) and standard deviation (1.29) indicates that employees of Hawassa University were satisfied with the existing software for the newly redesigned work process.

Table 5 item 5 outlined that, the mean value of (2.55) and standard deviation (1.16) indicates most of the employees feel that the existing training program about software usage is not appropriate for administrative staff of the University.

Item 6 in the above table 5 shows that the mean value of system integration of IT throughout the University is (2.69) standard deviation (1.10) indicates most of the employees feel that the existing system integration is not appropriate for administrative staff of the University to improve efficiency effectiveness and customer satisfaction.

The data in table 5 item 7 outlined that, the mean value of usage of updated information as per the requirement (2.68) and standard deviation (1.10) indicates most of the employees feel that there are some problems on using updated technology to improve competitiveness, quality service delivery, reduce cost and time of service delivery.

In the above table 5 item 8 data shows that, the mean value of online grade submission for students (2.68) and SD (1.14) indicates most of the employees feel that there is no online/on the web/ grade submission in HU to minimize cost of time and improve customer satisfaction.

Table-6: Comfort, Feedback and Access to Education

S. No.	Descriptive Statistics	M	SD
1	Comfort on new work process and environment.	2.58	1.21
2	BPR brought access to HR education.	2.70	1.25
3	Availability of citizen's charter.	2.62	0.99
4	Leaders use constructive ideas of subordinates'.	2.62	1.16
	Average	2.62	1.16

Note: M = Mean, SD = Standard deviation.
Sources: Survey (2014)

As shown in table 6 item 1, the mean value of comfort corresponding to the new work process and environment (2.58) and standard deviation (1.21) indicates most of the employees feel that there no is comfort corresponding to the new work process and environment to sustain implementation of BPR in the University.

As shown in the table 6 item 2 depicts that the mean value of access to education and development (2.70) and standard deviation (1.25) indicates some of the employees feel that there is access to education and development with the proportion of number of staffs to do jobs with competent employees in the University.

The data in the table 6 item 3, the mean value of availability of citizen's charter in the newly redesigned work process (2.62) and standard deviation (0.99) indicates some of the employees feel that there is adoption of citizen's charter.

The above table 6 item 4 indicates that, The mean value of leaders use ideas (feedbacks) of employees as an input of decision making (2.62) and standard deviation (1.16) indicates some of the employees feel that there is some sort of problems related to leader's usage of ideas from employees as an input of decision making in the implementation of change in the University.
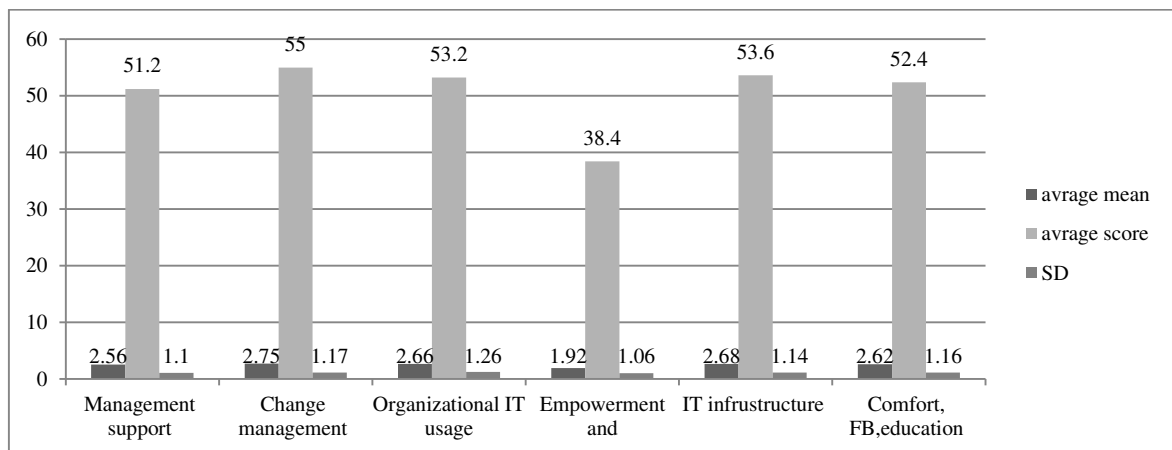
DISCUSSION USING INFERENTIAL STATISTICS

Table-7: Result of Descriptive and Pearson Chi-Square Test of Association

S. No.	Factors	Descriptive Statistics			Inferential Statistics			Level of Significance
		Weighted mean	Average score	SD	X^2 value	D.f.	Two Sided sig.	
	Extent of (BPR) Implementation	3.27	65.4	1.34	-	-	-	-
1	Management support	2.56	51.2	1.10	36.81	16	.002**	Significant
2	Change management	2.75	55.0	1.17	46.5	16	.024*	Significant
3	Organizational IT usage	2.66	53.2	1.26	3078	16	.059	Not significant
4	Empowerment and management system	1.92	38.4	1.06	40.06	16	.028*	Significant
5	IT infrastructures	2.68	53.6	1.14	34.17	16	.062	Not significant
6	Comfort, feedback and access to education	2.62	52.4	1.16	40.60	16	0.58	Not significant

Dependent Variable: Extent / Degree of BPR Implementation

Graph-2: Mean, Average Score and Standard Deviation

Sources: Own Survey (2014)

In this section, the results of the inferential statistical techniques used in the study are presented. Pearson Chi-Square Asymptote Sig. (2-sided) was calculated using (SPSS version 15.0) to see the relationship between the dependent and independent variables and to see that which among the independent variables is most important for successful implementation of the redesign process. The respondents are asked to rate the degree of BPR implementation, challenges and success factors of the redesign process in the university using questions related to management support, change management, IT usage, empowerment and management system, IT infrastructure, and educating employees.

The respondent rate the extent of BPR implementation a weighted mean of (3.27) this implies that the about 65 percent of the redesign process is accomplished in HU. In relation to this interview was held, most of the respondents explained that "to examine the level of customer satisfaction, cost reduction and minimizing cycle time of the process the employees are doing their jobs but it's not possible to say all customers are satisfied."

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THE CHALLENGES OF MATRIX ORGANIZATION SYSTEM IN IT OUTSOURCING INDUSTRY

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ABSTRACT

Matrix organization is the well-known concept, which is being used in IT outsourcing companies. This research paper attempts to explain why matrix organization is being used in IT outsourcing companies. We examine the advantages and disadvantages of the matrix organization in the IT industry. We use the literature review and narrative view based on the experience and come up with the challenges that exists in the IT outsourcing industries with respect to usage of matrix organization.

KEYWORDS

Matrix Organization, IT Outsourcing Industry, Matrix Management, Service Delivery, Dual Reporting etc.

INTRODUCTION

The structure in which the company adopts the reporting relationships as a grid or matrix is said to be matrix organization structure (MOS). The employees in this structure have dual reporting relationships (Sometimes exceeds two). In general, the employees in MOS, report to both functional manager and a product manager or a project manager. Now a day the traditional hierarchy system is almost being replaced by the matrix organization because of the advantages of using the resources efficiently and to provide the employees an opportunity to connect themselves with many people, share the information, learn the new concepts and techniques speed up the process and make quick decisions. However, there are few limitations and challenges for the MOS in general. The advantages and disadvantages of MOS are well known but the same does not perfectly fit with the IT industries.

MATRIX ORGANIZATION HISTORY

The concept of MOS is there from around 50 years. The literature review reveals that this concept was used in aerospace industries in 1960s and as well as in second world war. Now a day the concept is very widely used in almost all the industries but the rate of success is not consistent**.**

IT Outsourcing

IT companies usually come across the projects in which complication are found in multitasking. Hence, IT industries have a practice of transferring portion of their work to the outside companies in order to reduce the cost. This practice is said to be IT outsourcing. Hence, "*IT outsourcing* is the concept of seeking resources or leasing outside of an organization for the information technology needs. It could be complete outsourcing or part of an information technology function". Organizations are wanted to go for complete outsourcing because it is cheaper as they do not have to own not even a single piece of the technology with them since all are owned and supported by the IT outsourcing companies (ITO industry). Most large organizations only outsource a portion of any given IT function. The IT outsourcing includes the workplace services, network services, server support, web management, data center management, database management, service desk support, hands and eyes support.

MOS in IT outsourcing industry

The matrix organization concept is adopted by most of the IT outsourcing companies, as it is advantageous to both an industry and the employees and thereby indirectly benefits the customers too. Some of the IT companies adopting this concept are IBM, HP, Accenture, AT&T, Cisco, CTS, TCS, and Xerox Corp. etc.

REVIEW OF LITERATURE

The literature review reveals that the most of the researchers are favorable for matrix organization firm, though they have few demerits.

Cleland in 1968 [1] said that the matrix management has been described as a system based upon 'deliberate conflict' between the project and functional managers who must continually negotiate the use of organizational resources. Wilemon in 1971 [2] said

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that the matrix is all about the diversity among experts, unspecified objects, ambiguous roles, lack of agreement on top management goals and low project manager authority all induced conflict.

Galbraith in 1971 [3] said that the matrix structure lies in the center of a continuum of organizational structures. Tjosvold in 1974 [4] said that the threats have been found to have quite a contrasting effect on bargaining depending on whether the threatened person felt he/she had appeared ineffective or effective. Kolodny in 1981 [5] said that the project or business groups make up one side of the matrix and the functional groups the other side. Dennis in 1986 [6] said that the motivation and satisfaction are negatively influenced by ambiguous, dual authority of a matrix.

Larson and Gobeli in 1987 [7] defined three matrix types: functional, balanced and project, explained as below:

Functional Matrix (Weak): In this Model, people involved in the assignment remains controlled by a functional manager, while a project manager with only limited authority is assigned to oversee the cross functional aspects of the project. Ultimately, functional manager gets more authority and a project manager gets less authority.

Functional Matrix (Balanced): In this practice model, a project manager is delegated or assigned to oversee the project. Both project manager and functional manger shares the authority equally. It brings the best aspects of functional and projected organizations. However, this is not so easy to maintain because of delicate proposition.

Project Matrix (Strong): A project manager primarily holds a majority of the responsibility on the project. Functional managers supplies technical expertise and assign technical manpower based on the requirement.

Lewis, D in 2003 [8] said that the employees within the functional divisions of an organization tend to perform a specialized tasks, this leads to operational efficiencies within that group. However, it also could lead to communication issues between the functional groups within an organization, making the organization slow and inflexible.

In 2006 [9] Martin Richenhagen (CEO, AGCO CORP) mentioned some of the disadvantages: Uncertainty about who is to receive recognition for good performance and who is to be addressed for poor performance, insufficient clarity concerning who is in charge, as well as decisions and direct authority. In addition, he had mentioned that matrix positions and functional positions are delegating responsibilities each other, this is very crucial point in matrix organization system, which is key for conflict management.

In 'Matrix is the ladder to success' magazine, Jay R. Galbraith in 2009 [10] said that many companies are intended to use matrix organizations by learning concepts. These companies operate with multiple business units in multiple countries. In addition, he mentioned that the matrix organizations blur responsibilities. Executives need to make decisions and accept responsibility. Matrix organizations, however, often suffer fear of making mistakes in the face of the growing size of an organization.

ADVANTAGES AND DISADVANTAGES

Based on the literature review of reasonable number of researchers, we list the advantages and disadvantages of matrix organization system. However, there will be a slight variation from industry to industry based on their practices. We also note that the following advantages and disadvantages are partially applicable to the IT outsourcing industry. We acknowledge the researchers for the inputs on this area: Susan G turner & Dawn R. Utley (1998), John A. Kuprenas (2001), Eric Krell (2011), Jeffrey barker et al (1988), Nelson Leung (2014))

Advantages

- Promotes career continuity and professional growth .For instance an engineer can be trained and swap the job to another technology;
- Human resources can be used in multiple shared capacities. This supports the level and full loading of each individual, versus partial loading expanded to fill a full-time load requirement;
- Flexibility in the use of human and capital resources;
- Increased individual motivation, job satisfaction, commitment and personal development;
- The creation of lateral communication channels that increase frequency of communication in the organization;
- Better overview of a product manufactured in several areas or is sold by various subsidiaries in different markets;
- The matrix position is a direct and helpful source of cross-information;
- Matrix organization is well-suited for development of new business areas;
- Coordination of complex processes with strong dependencies.

Disadvantages

- Dual accountability of personnel. This is perhaps the biggest threat to this type of structure;
- There are continuously changing priorities, especially on the part of the academic units who control the resources;
- Employees may feel confused about loyalty;
- Functional side of the organization becomes more powerful that the project side; functional managers do not gain a project focus;
- A development program specific to project managers is needed to establish a common language and understanding of management processes;
- The dual authority of a matrix requires people who are adaptive and comfortable with ambiguity to prevent negative influences to motivation and job satisfaction;
- Numerous interfaces inherent in a matrix structure require strong communication skills and an ability to work in teams;
- Functional manager politicization of assignment of scarce resources between projects leading to project delays/changes and to changes in project prioritization;
- Confusion over roles and responsibilities between functional managers leading design teams and project managers overseeing project performance;
- A cross-foundational structure is are more costly for the organization in terms of overhead and staff, more meetings, delayed decisions, and information processing;
- Creates conflict among individuals who must work together but have different backgrounds and perspectives on work, time horizons, and goals;
- Creates ambiguity over resources, technical issues, pay, and personnel assignments;
- Unclear responsibilities (if no areas of results are established) thus complicating governance;
- Matrix positions and functional positions delegate responsibilities to each other, Uncertainty about who is to receive recognition for good performance and who is to be addressed for poor performance;
- Insufficient clarity concerning who is in charge, as well as decisions and direct authority;
- Potentially greater stress for employees;
- Employees spend more time in meetings and coordinating.

CHALLENGES IN MATRIX ORGANIZATION IN IT OUTSOURCING INDUSTRIES

The matrix organization system has helped the IT outsourcing industries to perform better and reach higher level. However, it is obvious an inevitable to have some demerits and face the challenges. Again, the challenges vary from one ITO organization to other; below we list the general challenges of IT outsourcing industries due to the MOS.

Lack of Ownership on Employee

When we talk about an employee who works in IT outsourcing company, based on the project or assignment, he/she may be having two or more boss who is controlling and getting delivery from the employee who works under matrix organization model. For example, if an employee based at Bangalore, India, his/her people manager who may be from the same location / country who is responsible for people management activities who takes care of learning & development, pay, resource assignment, leave, performance rating, transport etc..

From the technical perspective, there should be a functional manager or account delivery manager who takes care of technical things which includes work assignment, identifying right resources, Identifying skill level, analyzing technical ability, interacting with the employees' local/people manager, etc. He/she is the one who owns from the project from the technical perspective. In other words, "Functional managers often assign projects and ensure they align with the company's particular goals and vision. They gather information from project managers and evaluate the departments they oversee on a regular basis. Functional managers may also evaluate individuals in their division, discussing how well the employees are doing and helping them set and reaches career goals".

Every outsourcing company is deputing a person as service delivery manager or customer support manager who is interacting with the customer and technical team. She/he is responsible for initiating new projects, cost factors, quick attention on business impact, service level agreement, finalizing service level catalogue, restoring services from major incident, coordinating with various team for service delivery and most of the time he/she will involve with employees or managers who works on matrix delivery model.

Parallel to all the managers or leaders, a project manager is assigned to the entire new or existing project. A project manager is the person who has the overall responsibility for the successful initiation, planning, design, execution, monitoring, controlling and closure of a project. The specific duties of a project manager vary from industry to industry, company to company, and sometimes even from project to project, but in IT outsourcing industry he majorly deals with the technical delivery teams, delivery managers, customer's SPOC and infrastructure architects. Therefore, from the above scenario, an employee gets an opportunity to work with various managers in order to complete the assignment. However, when an employee gets in to an issue from technical or people

management perspective, question comes in picture that which boss is going to own and assist the employee to overcome the issue. However, there are more hands in the system who owns the burden during crisis?

Employee Job Security

This is the most critical part in every outsourcing company, In an organization when things are going smooth like employee able to perform the assignment, no issues in resourcing alignment, no issues in cost overhead, low attrition rate, Project performance is good, teams are able to meet the expectation from organisations or customer, no work force reduction, no question of cost Factors, an employee(s) safe and no question of getting support from any mid-level leaders, but when an employee get in to an issue like an employee have done something wrong by mistake, when an organization wanted to reduce work force due to cost savings, when an employee lacking with promotion for long time, when an employee thinks to leave from the company, when an employee getting inappropriate ratings and salary hike, when an organization refuses an employee fundamental rights, it is very important to note that who is going to own and assist an employee in order to overcome the difficulties.

Since every manager involving an employee based on the need, he/she also supporting the managers according to the requirement but when he/she is in to trouble, let us consider a management wanted to separate an employee from the company, when he approaches managers in order to stop the separate activity by explaining his performance, an employee gets different version from every manager. Local people manager tells it is related to technical things and hence it has to be taken care by the functional or account delivery manager and things are based on their feedback. When an employee approaches technical manager, update from him/her is that this kind of issues related to HR functionality and it is in scope people manager and nothing can be done by the technical or project manager.

When an employee attempting to get a support from the service delivery manager who has got a delivery from an employee in the past, officially he/she has no rights with respect to human resources related things since he/she is one who is purely involving on delivery related things and his/her responsibility more like a mediator and satisfies the customer to have better satisfaction level, but when it comes to resource deployment and work force increase or deduction they are helpless. In addition, a project manager is the one who is more on process related and maintaining time limits; he too does not play any role in management human resources related things. With this scenario we should be able to understand how an employee struggle to justify himself in order to protect the job.

Performance Rating

Performance rating is the step in the work measurement where manager or management analyzes an employee for past one year. Performance rating is very important for every employee because it helps people do their jobs better, motivates an employee, it gets promotion, it shows a path to get better salary hike. In general, the rating is measured based on the quantity, quality of the work, professional maturity, cost effective, customer satisfaction, improvement shown on technical ability & others. When an employee works on traditional management system, a controlling (Functional)manager is the one who takes care of work assignment, monitoring the progression, need of technical improvement, absenteeism, customer satisfaction, honest on his/her work, quantity of the work, quality of the output, time effectiveness, cost effectiveness ,level of interest on the job, etc..

In an IT outsourcing companies, most of the time an engineer or employee works on matrix organization where he/she has two or more managers, based on the requirements or project nature. It varies from company to company, sometime varies from project to project. From the time resource deployment assigning an employee to a specific account, he / she reports to a people manager who takes all people management related things which includes rating, leave, salary hike, promotion, training and transfer, where he has no vision on employee's work ability, effectiveness, quality of the work, how she / he satisfying the customer but measures an employee at end of the year without any concrete evidence. Whereas, a functional manager or account delivery manager who has directs involvement and interaction with an employee throughout the year, he/she knows in and out of employees work and performance related factors. However, unfortunately, she/he does not measure the employee's performance, assign a rating, because his responsibility ends with the technical assignment, and monitor the progression, etc. and he does not have role on people management and he cannot give rating or direct someone to assign a specific rating.

Most of the times companies play a game citing that they have consulted the respective managers for ratings and accordingly given, but in actual this will not happen. When an employee gets a bad rating this strategy helps to put an employee in to silent mode, it is purely a blame game & showing finger on other managers who is involved in project where he does not involve in ratings. An employee has to be silent sufferer because there is no centralized and transparent system, which is open to everyone.

Diversity Issue and Ethnic Variance

IT outsourcing companies are being operated across the world; there is no limitation with respect to geographical boundary. Earlier days a company used to operate from a specific location and most of the employees are localities, where they have same kind of language, life style, food habit, culture, etc. Even now days, it works with Non-IT companies because they have regional

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limitations though they have multiple units. Interaction happens only at top level. However, when it comes to IT industry, virtual organizations plays a vital role and geographical factors does not matter in order to perform the delivery.

When IT outsourcing companies gets a project, they distribute the work to various countries based on various factors like technical ability, cost factors, legal factors, social factors, and disaster recovery requirements. Practically it is not possible to run all service delivery from a single location and it is not advisable too. Due to all these factors, the companies prefer to deliver from different countries like India, Philippines, Mexico, UK and USA. Hence, in order to perform the assigned activity, managers and employees has to engage each other via email, telephone calls, chat system and sometime in person based on the need. So when the employees are engaging each other they come across various diversity issues, Diversity refers to differing moral standards and differing customs from one culture to another like different languages, different religions, different morals, etc. Global diversity widens the perspective. Laws, customs, religions, property, finance, music, art, all of these plays a role. For an example: An American used to call his friend or colleague by using a work called "hey" which is acceptable in American countries but if we use the same word in India, we do not accept because we like people calling by using the words "Hi" and "Hello". The word "hey" may not have any bad meaning but sounds disrespect.

Similarly the citizens of USA & other advanced countries maintains a time limit, If their shift ends at 5pm they logoff at the right time and they do not extend their working hours even by 5mins, It is because of their life style and also the labor laws support them in the same fashion. If an Indian project manager working with them, he/she cannot expect the same style in working hours. In USA or UK, if someone has to extend the working hours, none of the manger can force the employees, as they have to follow many legal procedures. However, here in India we are habituated for doing over time which is very normal and do not have culture of saying no. The requested work to complete by extending the working hours.

Philological / Communication Issues

In this current internet world everything is so quick and has removed the geographical edge, now it is possible to communicate from one corner of the world to another. In order to complete any assigned task or project, it is mandatory to work together; an interaction could be in person, by email, by phone call. Language is an important factor when someone wants to communicate something to other person. Language can convey the happiness, sadness, question, answer and thoughts. If we communicate by using improper language, an attempt what we do towards the completion of the work may not be successful.

In this computer era, most of the professional uses English as a communication language, since it is believed that English is the collectively accepted language where the people from different continent or country can understand. Though it is a common language the way it is used, utilized, pronounced are varying from one place to another. Spoken English at Australia is completely different from what we use here in India. Though we see few similarities between the UK and USA, still we can make out so many differences. Even within a continent, we can see huge difference in the same language and the way it is being spoken or written. When people working in IT outsourcing company they need to interact with the various managers, customers, technical teams and majorly they need to use English as a communication language in order to explore the thoughts or ideas, express the concern, ask questions. Getting clarification for the existing doubts may be from technical point of view or from management point of view. However, when we talk, the speed of the language is important which allow others to understand correctly, pronunciation is very important which allows others to understand the right meaning. For an example: In India if people does not understand the person's narration, then it is obvious to call "Come again". However, this is not acceptable in UK and it gives entirely a different meaning. Not only in spoken English, has it also reflected in writing. The email communication, a major communication method in IT industry, plays a vital role in this regard.

Fight for Appreciation

Appreciation is the recognition and enjoyment of the good qualities of a particular person with respect to a particular work and an expression of gratitude towards it. Appreciation is the one, which makes people happy and motivates them with the positive energy towards the better result with more commitment with the highest quality. As an ordinary human being every individuals expect an appreciation for their hard work. It is sometimes s the indication for better performance rating, salary hike and promotion.

In an IT industry, the matrix organization model deal with the technical teams such a project management, hardware specialists, hands &eyes, Platform team, database team that may spread across the globe. For Instance, consider a case in which level I is in manila and level II in India and level III in Mexico. All the teams & various levels take put in the completion of the project.

Upon completing the work, it is a big question that who deserves an appreciation on the completed work. If it is between the team that can be easily identified based on the effort, time consumption on activity, contribution on critical situation, quality of the work but sometimes from the same technology platform there is a chance for multiple team based on the level they are working. Here everyone contributed, all have attempted to give their best and that was the trigger for best outcome. When management tells that specific platform team performed well, the now the question the recognition and rewards goes to whom, how? In addition,

what is the percentage? & on what basis. Everyone is willing to claim the contribution to success. However, the deciding factors are still questionable.

Ownership on Delivery & Mistakes

IT Business delivery model is very specific and it has a time limit to complete the activity. Unlike all other projects, IT projects or assignment has to be done within the period and hence it is important that some individual or the team should own the task. By owning the task, he/she is accountable and has to address any queries to the stakeholders. Unlike Non-IT projects, IT projects needs resources from various technology teams and the team managers, technical experts and a project manager who can deal with the teams and projects.

The moment project started based on the need meeting will happen in either person or any other technological method like tele-meeting, video conference, and online conference chat. Once the roles and responsibilities identified for various teams, the requirement, sequence and order of the implementation should be created. A project manager always try to push the ownership to the technical or functional managers since they are from technical background and they own the technical expertise, at the same time functional managers attempts to push to the project managers as he is the one who needs to own the project from end to end. Sometime even the service delivery managers get into the project; people try to push them the responsibilities. It is a very serious issue in IT outsourcing industry, when it is a matter of authority everyone tries to pull it, but when comes to responsibility or ownership everyone wants to be away from it.

Responsibility without Authority

The technical teams and its members are presumed to take responsibilities right from the moment a project is agreed. Based on the enterprise policy a project manager has to own the end-to-end project related activity from the initiation to completion. But he owns things from the process perspective but to be honest he has no rights to control people, he/she deserves to assign or allocate or ask for update but when it comes to people management, officially he can't question an employee who is part of the project and he has to direct his concerns to the people manager who is taking care of human related things. Though it goes to the people manager he does not have any role to play here, as he/she do not have any technical clarity and it has to be further redirected to functional manager who is taking care of day to day technical delivery operations with the technical resources.

Project manager or service delivery may ask the technical resources to spend more time in order to complete the work, as there is a pressure from customer end, extending the support may be in an hour or in days. However, upon completion when an employee finishes his work and look for the compensation leave or pay, the project manager is helpless and an employee himself has to approach the people manager for approval. When it was not requested by the people manager he may not be willing to approve the request or he may approve if the request is justified, if the relationship is good between both the managers then the things will be smooth else a questions is unanswered. An employee may be spending few months with one project manager and switch over to another manager for some time. In this scenario, no one can support an employee about his behavior/conduct or technical abilities. In some scenarios, functional manager from foreign countries and people manager are from the same location. When the salary hike happens, most of the times it is decided based on the local delivery center performance and human resources team decision, though the functional manager is aware about an employee performance, he/she cannot simply interfere in another country HR related operations.

Opportunity for Conflict

If a kingdom ruled by more than one king, obviously conflict arises between two power centers. For sure, two different minds cannot think the same as thought process varies from one person to another. Same way when there are many bosses, who can direct or control people from various perspectives, though the scope of managers is different but ultimately the goal and procedure to obtain the result is same. Based on the process knowledge, technical expertise, management skills, time management ability every manager try to get the work done from the employees in a different way, so there is an opportunity for conflict between the managers and the conflict can be transferred or inherited to the employees also which may slow down the work and it leads to the project delivery quantity and quality.

Global Position and Pay Alignment

The HR policies may vary from company to company, if the employee stays in the same company, we can foresee what happen to him after 5 years, 10 years & 20 years. His designation will obviously proportional to the number of years of completion and the pay scale in accord with. However, an employee with some years of experience (say 5 years) with reasonable technical expertise joins another company for a particular pay and package then there will be disturbance in the system, which leads to dissatisfaction, demotivation and demoralization.

Virtual organization vs. Matrix Organization

Earlier days, an organization located in a specific area with multiple departments and people in a department used to work from the same physical location with more personal interaction, Majority of them are from same region, language. They got an opportunity to interact more, share the technical abilities, and improve the relationship. Where as in IT industry most of the organizations are virtual organization they are spread across the world and the members for a single team are from various geographical location like India, Singapore, USA and UK where the interaction happens virtually most of the times via email, phone and chat. To get a better result the matrix organization model, virtual organization needs to be considered in such a way that at least the same technology team can work from the same location.

Dual / Multiple Authority

When there are many managers it becomes multiple authorities and every manager's tries to own in order to get organizational benefits, which brings conflict in place, and it affects an employee and customer who are involved in the delivery. Sometimes it will lead people towards a pressurized situation and sometimes things will be unattended.

CONCLUSION

Enjoying the benefits of matrix organization system in IT industry, we have come across the challenges, the IT industries has to face due to MOS. The above listed challenges should be made aware to the IT outsourcing industry and if possible, every employee under this system should be trained to fit in to the system with minimal disadvantages.

PROPOSAL FOR FUTURE STUDY

The exhaustive study in this paper has paved way for the following areas of research:

- The well-designed remedies can be structured to overcome the challenges.
- One can verify, if the same set of challenges exist in Non-IT industries as well.
- Once can also think to quantify the challenges mentioned above and probably use the statistical tool to overcome the challenges.

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TECHNOLOGICAL STRATEGIC PRACTICES
FROM INDIA'S LEADING COMPANIES IN FUTURE

Dr. D. Nabirasool[7] P. Shabana[8]

ABSTRACT

Technology is the important driver of the economic development to any country in the world. Modern industry is driven by technology and lack of access to technology can stunt economic growth. In all the cases of rapid economic growth, observed in the late twentieth century economic development of Korea, Taiwan, and Singapore - technology played an important role. The objective of this paper is to document the "future practices" followed by Indian companies in the area of Technology Strategy as they seek to improve their competitive position in global markets. The paper starts with the underlying conceptual framework, and then identifies seven "future practices" based on specific company data. The research paper is conceptual in nature. In order to develop basic insight regarding the concept, the researcher has made use of secondary data. The researcher explained simple framework has been expanded to a 5-stage model - learn to produce, learn to produce efficiently, learn to improve production, learn to improve products and learn to design new products.

KEYWORDS

Technology, Strategies, Companies, Future, Competitive Position etc.

INTRODUCTION

An important driver of the economic development of nations is the acquisition of technological capabilities. Modern industry is driven by technology and lack of access to technology can stunt economic growth. In all the cases of rapid economic growth, observed in the late twentieth century – Korea, Taiwan, and Singapore - technology played an important role.

To start with, firms need a production capability – the ability to run a plant that produces a particular product. The process of acquiring a production capability is initiated by importing a plant from another country or having a new plant built by an engineering contractor to the specifications provided by a technology provider. Through training and "learning by doing", the firm learns how to operate the plant, and gradually improve the yield from it. In the second stage, firms develop an investment capability – the ability to create a new plant of a chosen capacity and specifications. Finally, firms develop an innovation capability – the ability to create new products, and the manufacturing infrastructure to produce these products. These three stages can be viewed as understanding the "know- how", "know-why" and "create new" of the particular product category.

METHODOLOGY OF RESEARCH

The research paper is conceptual in nature. In order to develop basic insight regarding the concept, the researcher has made use of secondary data. The researcher has referred books, journals, magazines, and newspapers in addition to visits to various websites. The earlier researchers study in the area of rural marketing has led to the conceptualization of this research.

OBJECTIVES OF STUDY

- To examine the conceptual framework of Technology Strategy by Indian leading companies.
- To identify the future practices followed by Indian companies to improve competitive position.
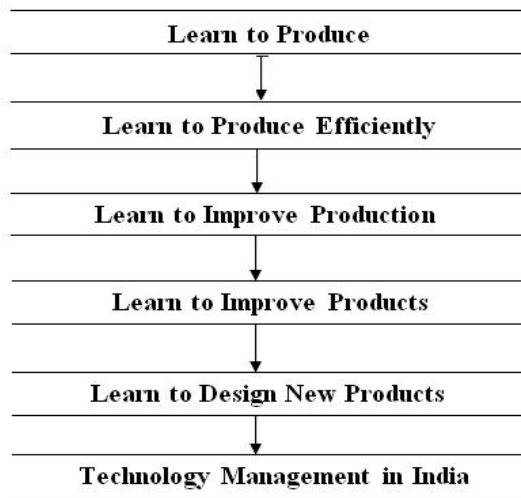
CONCEPTUAL FRAMEWORK OF TECHNOLOGY STRATEGY

This simple framework has been expanded to a 5-stage model that further elaborates the steps. The first stage is to "learn to produce". To be competitive the manufacturer needs to be able to produce efficiently, at least on par with others operating similar plants. The second stage is therefore "learn to produce efficiently" – this stage involves subtle, tacit knowledge, learnt essentially by doing that may not have been part of the technology transfer agreement covering the initial acquisition of technology. In the third stage, firms move away from following the process as originally prescribed – they make their own changes to the plant design and processes, i.e., they "learn to improve production." Once the process skills are mastered to a degree, attention is shifted to the products being manufactured. Stage 4 is to "learn to improve products" through incremental modifications often through value engineering, material changes, and product enhancements. Finally, firms "learn to design new products", i.e. they develop

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the capability to innovate. These stage models describe quite well the process by which firms in developing countries in industries as diverse as steel, fertilizers, electrical equipment, and petrochemicals have developed the technological capabilities to compete in domestic and global markets.

The technology management challenges faced by Indian firms in the past were closely related to the first three stages of this technological capability-building process. Indian firms took decades to catch up with global productivity levels. In the import substitution regime, particular emphasis was placed on using locally available raw materials and intermediates. This often implied changes in the production processes from the originally sourced process. For example, Indian coals have high ash content, so Indian steel plans had to learn how to modify their steel- making process to use local coal yet not compromise the quality and yield of the product.

An alternate source of technology for firms was the wide network of government research laboratories. Here the technologies were often demonstrated at the laboratory-scale but both the laboratory and industry lacked the funds to scale-up the technology. Design and engineering capabilities in the laboratories were weak, and this impeded the scaling-up process. The transfer of technology from laboratory to the firm thus became a serious management challenge.

Post-liberalization, Indian firms have been under tremendous pressure to improve their competitiveness to survive. This accelerated the process of technological absorption. Several companies also pushed ahead in improving production and improving their products to be able to add value to their products and improve profitability.

More recently, in the last decade, the emphasis has been shifted to innovation and product development. Several industries, particularly the automobile, two-wheeler, and pharmaceutical industries have seen a high level of product innovation activity.

This focus on innovation poses new challenges for Indian companies. Indian companies lack experience in managing innovation and there are no easy recipes to follow. Intellectual Property Rights (IPRs) play an important role in protecting innovations from being copied by others and companies now have to formulate IPR strategies that complement their competitive strategies.

FUTURE PRACTICES OF LEADING INDIAN COMPANIES

Against this backdrop, leading Indian companies are devising new technology strategies to drive technology- led innovation. Prominent among these practices are:

Structured Market-driven Product Development Processes

The product development literature has emphasized the importance of structured product development processes for many years now.[4] However, the use of structured product development processes is a relatively recent phenomenon in Indian companies. The development of the light commercial vehicle- Ace by Tata Motors[5] is a good example of how the use of structured product development processes and other product development practices improves the profitability of product.

In the development of the Ace, the first important step was the identification of a sizeable opportunity. With increasing traffic congestion and curbs on the movement of heavy vehicles in India's cities, the company realized the need for a safe and comfortable "last-mile" vehicle to transfer goods. The company decided to create a 4-wheel vehicle as against the commonly used three-wheelers that currently service this application. At the same time to be competitive, the vehicle could not afford to be more expensive than 3-wheelers.

The identification of user needs was a market-driven process involving interviews with 600 drivers, owners, end- users, mechanics and opinion- makers over six months. These user statements were translated into specifications rather than starting with technical specifications. Throughout the process, the key design objectives such as cost per ton per kilometer were emphasized to ensure that the product would have a good acceptability in the market.

The Ace project had impressive results. 30,000 units were sold within 8 months of launch. Buoyed by the demand, Tata Motors decided to set up a new factory to produce the Ace. The Ace enhanced organizational dynamism, and provided the impetus for Tata Motors' ambitious new small car project.

Use of Advanced Product Development Tools

Product Lifecycle Management (PLM) tools enable companies to enhance repeatability (leverage intellectual property assets; enforce standardized, repeatable work methods), ascend steeper learning curves and synchronize development through concurrent work efforts on different components.[6]

Crompton Greaves' transformer division has adopted PLM in an effort to hasten pre-sales activities, cut down time taken on short-notice jobs that require quick response, and achieve faster product commercialization.[7] The company achieved a reduction of 40% in the presales enquiry to order time and a reduction of 30% in design cycle time. The company has reported substantial cost savings as a result.

Acquisition of New Technologies through Acquisition of Companies

Technological capabilities are more than designs and drawings, or plant and machinery. The transferee company often misses the organizational practices and culture that go along with continuously improving the technology. Acquiring entire companies for their technology helps overcome this problem. In January 2004, one of India's leading automobile component manufacturers, Bharat Forge Ltd., acquired Carl Dan Peddinghaus GmbH & Co. (CDP) in Germany.[8] Founded in 1839; CDP is renowned for its product design and development capabilities. It has historically worked very closely with BMW and other German automobile companies to develop suspension components for their new vehicles. Through the acquisition of CDP, Bharat Forge got access to the superior design capabilities of CDP.

Acquisition of Foreign Companies for their Intellectual Property

Various forms of intellectual property protection patents, trademarks, copyrights, design registrations are used to achieve the purpose of protecting the copyrights. Companies working on new technologies also have to ensure that their technologies are not infringing patents already obtained by others, or that the patents that they obtain on their technologies are not challenged later by others citing prior art. Technology companies therefore sometimes acquire the patents of other companies or the companies themselves as a defense against future holdup.[9]

India's leading biotechnology company, Biocon, is working on human oral insulin drugs.[10] The advantage of oral insulin drugs is that they mimic the way the human body uses insulin to control glucose and are therefore potentially more effective. In early 2006, Biocon acquired Norbex, a US-based company that had developed a first generation human oral insulin drug, HIM2, and licensed it to Glaxo Smithkline (GSK). Biocon acquired Norbex even though HIM2 was finally never commercialized because the acquisition of Norbex gave it access to more than 300 patents/patent applications related to oral insulin. These would help Biocon in mounting both defensive and offensive strategies in the field of human oral insulin drugs.

Acquisition of Foreign Companies for New Formats and Standards

In network industries, companies compete on formats and standards in addition to products. The legendary story of the videocassette format wars between Sony's betamax and the VHS format promoted by Philips, Panasonic and others has underlined the importance of getting wider acceptability of a particular standard or format. Content producers will make their content available only in the format, which seems poised to win the battle to become the de facto standard in the industry.

Combining Technological Innovation with Legal Innovation

Indian pharmaceutical industry used their superior process skills to develop alternate processes for existing drugs that enabled them to produce the drugs at a fraction of the cost. In the 1990s, Indian pharmaceutical companies made an effort to enter developed, patent-protected markets, including the United States. To bring down the costs of health care, the United States has policies in place to encourage generic drug producers. Ranbaxy has thirty-plus technical specialists in different time zones working together in a mutually dependent relationship. Their tasks include the preparation and execution of patent applications, preparation and clearance of product formulations, analysis and development of patent non-infringement and invalidity positions, support for worldwide patent litigation efforts, search for new product opportunities, monitoring competitors' litigations, evaluation of IP aspects of business deals, and operating in the area between patent law and FDA regulatory law.

Innovation across the Value Chain Leading to Affordable Products that can Grow the Market

The Indian market has a large number of consumers with limited purchasing power but the aspiration to participate in the growth of the economy. Products designed to meet their unique needs have large demand in volume terms but need to be priced aggressively. They also need to be packaged in shapes and sizes that suit the consumption and spending patterns of the consumers. Meeting these needs involves innovation across the value chain. All six levers of innovation – the value proposition, supply chain, target customer, product/service, process technologies and enabling technologies – need to be addressed.

The Indian mobile services market is the fastest growing in the world. Companies such as Bharti Airtel and Reliance Communications that have used multiple levers of innovation effectively have enabled this growth. The lifetime prepaid service that offers consumers mobile access for incoming calls "for life" at a price of Rs. 999 (recently reduced to Rs. 495) payable in installments offered a unique value proposition of life- long, low-cost telecommunication services to a target customer.

CONCLUSION

In all the cases of rapid economic growth, observed in the late twentieth century economic development of Korea, Taiwan, and Singapore - technology played an important role. Researcher identified the Indian leading companies are devising new technology strategies to drive technology- led innovation. Prominent among these practices/strategies are- Structured Market-driven Product Development Processes, Use of Advanced Product Development Tools, Acquisition of new technologies through acquisition of foreign companies, Acquisition of foreign companies for their Intellectual Property, Acquisition of foreign companies for new formats and standards Combining technological innovation with legal innovation and Innovation across the value chain leading to affordable products that grows the Market.

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FREEDOM OF EXPRESSION IN SOCIAL NETWORKING SITES: LEGAL IMPLICATIONS

Dr. M. Rabindranath[9]

ABSTRACT
The nature of communication has undergone a substantial change in the past twenty years and everyday new media allows us to communicate in a different way, with a diverse audience. The way individuals and organizations use technology to enhance their communications strategy has evolved exceptionally fast, with many including social networking or blogs in their communications campaigns and to keep in touch. SNS are the expressions used to describe any web site (Facebook, twitter, orkut), that enables users to create own profiles within that web site and form relationships with other users of the same web site who access their profile. It is a new means of communication and sharing information between two or more individuals on a virtual community called as 'Online community'. The question arises are citizens are free to express anything on SNS or not. This paper critically discusses in detail about the Freedom of Expression in SNS which was given under Article 19 (1) (A) of Indian Constitution. It says that all citizens have the right to freedom of speech and expression with some restrictions. Freedom of Speech and expression means the right to express one's own convictions and opinions freely by words of mouth, writing, printing, pictures or any other mode. It thus includes the expression of one's idea through any communicable medium or visible representation, such as gesture, signs, and the like. It also discusses about the landmark cases of Freedom of expression as around 130 million people are using SNS and it is likely to touch 300 million in the next few years. This paper critically analyses the legal implications involved with Freedom of Expression in Social Networking Sites.

KEYWORDS
Freedom of Expression, Speech, Social Networking Sites, Legal Considerations etc.

INTRODUCTION

The nature of communication has undergone a substantial change in the past twenty years and everyday new media allows us to communicate in a different way, with a diverse audience. It all started with email, which had a profound effect on the way people keep in touch. When some people still getting used to using email effectively, the nature of communication continues to change. The 'Virtual world' of Social Networking Sites has opened doors for organizations or individuals to communicate their key messages to a new audience. It is cost effective and easily implemented into a greater communications strategy.

Social Networking

A **social network** is a social structure made up of individuals (or organizations) called "nodes", which are tied (connected) by one or more specific types of interdependency, such as friendship, kinship, common interest, financial exchange, dislike, sexual relationships, or relationships of beliefs, knowledge or prestige. Social networking is defined as the bringing individuals together into a specific group, often like a small community or a neighborhood. Although social networking is possible in person, especially in schools or in the workplace, it is most popular on the internet. Social networks are online service platforms or site that focuses on building and reflecting of social networks or social relations among people who share common interest or activities. It is a new means of communication and sharing information between two or more individuals on a virtual community called as 'online community'.

In 1954, J.A. Barnes started using the term systematically to denote patterns of ties, encompassing concepts traditionally used by the public and those used by social scientists: bounded groups (e.g., tribes, families) and social categories (e.g., gender, youth). The websites offer people a new and varied ways to communicate via Internet through computer or mobile phone. The sites allow people to create their own profile and online network contacts. In an online social networking, websites are commonly used. These are called as 'Social sites', or 'Social Media'. Some of the social networking sites are My Space, Friend Finder, YouTube, Facebook, Orkut, Linkden etc. Social networking sites lets connect people with friends, relatives and share idea, thoughts, photos, videos etc. SNS sites users in India are 164.81 million users Upto March 31 2013.

SNS were developed by the end of 1999. The social networking site Friend star was started in 2002, My Space, LinkedIn in 2003, Bebo, Google 360, Face book in 2004. My Space has emerged as the largest social networking site in the world. Social networking sites use web-based technologies to turn communication into interactive dialogues. Hence, social media can be described as a group of internet-based applications that build on the ideological and technological foundation of Web2.0, which allows the creation and exchange of user generated content. Social media is called as computer generated media as it blends technology with social interaction.

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Advantages of Social Networking Sites

- People with common interests, activities, across the political, economic and geographical borders can inter communicate with each other and form online communities.
- Small organizations, fragmented industries can connect with each other and with a broad range of audience for their business transactions.
- Social networking sites have become great tools for creating brand awareness and brand image.
- Social networking sites are used as platforms for discussion and exchange of scientific knowledge.
- At present social networking is used as a tool for social activism, to build campaigns, influence opinions and for organizing mega events.
- The sites are being increasingly used for finding internships and interviewing and recruitment.
- Messaging is cheaper in social networking sites.
- Today Social networking sites are used not only for socializing but also for meeting new business partners and clients and increase business relations.
- Social media develop social authority i.e. an individual using the network and expressing opinion in a given field of area can become popular and can turn into an expert.

Social Networking Strategy

In recent months, there has been many webinars and websites discussing the value added reasons in combining communications, a key social strategy for your online presence. Social networking is a key tool to build your resources and promote your expertise or marketing ideas in easy and effortless way.

Article 19 (1) (A) Meaning and Scope

Indian Constitution says that all citizens have the right to freedom of speech and expression. Freedom of Speech and expression means the right to express one's own convictions and opinions freely by words of mouth, writing, printing, pictures or any other mode. It thus includes the expression of one's idea through any communicable medium or visible representation, such as gesture, signs, and the like. This expression connotes also publication and thus the freedom of press is included in this category. Free propagation of ideas is the necessary objective and this may be done on the platform or through the press. This propagation of ideas is secured by freedom of circulation. Liberty of circulation is essential to that freedom as the liberty of publication. Indeed, without circulation the publication would be of little value. The freedom of speech and expression includes liberty to propagate not one's views only. It also includes the right to propagate or publish the views of other people; otherwise, this freedom would not include the freedom of press.

Freedom of expression has four broad special purposes to serve: It helps an individual to attain self-fulfillment, it assists in the discovery of truth, it strengthens the capacity of an individual in participating in decision-making, it provides a mechanism by which it would be possible to establish a reasonable balance between stability and social change, all members of society would be able to form their own beliefs and communicate them freely to others. Freedom of speech and expression should, therefore, receive generous support from all those who believe in the participation of people in the administration. Explaining the scope of freedom of speech and expression Supreme Court has said that the words "freedom of speech and expression" must be broadly constructed to include the freedom to circulate one's views by words of mouth or in writing or through audiovisual instrumentalities. It therefore includes the right to propagate one's views through the print media or through any other communication channel e.g. the radio and the television. Every citizen of this country therefore has the right to air his or their views through the printing and or the electronic media subject of course to permissible restrictions imposed under Article 19(2) of the Constitution.

Freedom to air one's view is the lifeline of any democratic institution. The modern communication mediums advance public interest by informing the public of the events and development that have taken place and thereby educating the voters, a role considered significant for the vibrant functioning of a democracy.

The various communication channels are great purveyors of news and views and make considerable impact on the minds of readers and viewers and our known to mould public opinion on vitals issues of national importance. The freedom of speech and expression includes freedom of circulation and propagation of ideas and therefore the right extends to the citizen to use the media to answer the criticism leveled against the views propagated by him.

Legal Implications - Commercial Advertisements

The court held that commercial speech (advertisement) is a part of the freedom of speech and expression. The court however made it clear that the government could regulate the commercial advertisements, which are deceptive, unfair, misleading and untruthful. Examined from another angle the Court said that the public at large has a right to receive the "Commercial Speech".

Art. 19(1)(a) of the constitution not only guaranteed freedom of speech and expression, it also protects the right of an individual to listen, read, and receive the said speech.

Right to Information

The right to know, 'receive and impart information has been recognized within the right to freedom of speech and expression. A citizen has a fundamental right to use the best means of imparting and receiving information and as such to have an access to telecasting for the purpose. The right to know has, however, not yet extended to the extent of invalidating Section 5 of the Official Secrets Act, 1923 that prohibits disclosure of certain official documents. One can conclude that 'right to information is nothing but one small limb of right of speech and expression'.

New Dimensions of Freedom of Speech and Expression

Government has no monopoly on electronic media. The Supreme Court widened the scope and extent of the right to freedom of speech and expression and held that the government has no monopoly on electronic media and a citizen has under Art. 19(1)(a) a right to telecast and broadcast to the viewers/listeners through electronic media television and radio any important event. The government can impose restrictions on such a right only on grounds specified in clause (2) of Art. 19 and not on any other ground. A citizen has fundamental right to use the best means of imparting and receiving communication and as such have an access to telecasting for the purpose.

Grounds of Restrictions

Clause (2) of Article 19 contains the grounds on which restrictions on the freedom of speech and expression can be imposed:

- **Security of State:** Under Article 19(2), reasonable restrictions can be imposed on freedom of speech and expression in the interest of security of State. The term "security of state" refers only to serious and aggravated forms of public order e.g. rebellion, waging war against the State, insurrection and not ordinary breaches of public order and public safety, e.g. unlawful assembly, riot, affray. Thus, speeches or expressions on the part of an individual, which incite to or encourage the commission of violent crimes, such as, murder are matters, which would undermine the security of State.

- **Friendly Relations with Foreign States:** This ground was added by the constitution (First Amendment) Act, 1951. The object behind the provision is to prohibit unrestrained malicious propaganda against a foreign friendly state, which may jeopardize the maintenance of good relations between India, and that state. No similar provision is present in any other Constitution of the world. In India, the Foreign Relations Act, (XII of 1932) provides punishment for libel by Indian citizens against foreign dignitaries. Interest of friendly relations with foreign States, would not justify the suppression of fair criticism of foreign policy of the Government. It is to be noted that member of the commonwealth including Pakistan is not a "foreign state" for the purposes of this Constitution. The result is that freedom of speech and expression cannot be restricted on the ground that the matter is adverse to Pakistan.

- **Public Order:** The test for determining whether an act affects law and order or public order is to see whether the act leads to the disturbances of the current of life of the community to amount to a disturbance of the public order or whether it affects merely an individual being the tranquility of the society undisturbed. Anything that disturbs public tranquility or public peace disturbs public order. Thus, communal disturbances and strikes promoted with the sole object of causing unrest among workers are offences against public order. Public order thus implies absence of violence and an orderly state of affairs in which citizens can peacefully pursue their normal avocation of life. Public order also includes public safety. Thus creating internal disorder or rebellion would affect public order and public safety. However, mere criticism of government does not necessarily disturb public order. In its external aspect, 'public safety' means protection of the country from foreign aggression. Under public order, the State would be entitled to prevent propaganda for a state of war with India. The words 'in the interest of public order' includes not only such utterances as are directly intended to lead to disorder but also those that have the tendency to lead to disorder. Thus a law punishing utterances made with the deliberate intention to hurt the religious feelings of any class of persons is valid because it imposes a restriction on the right of free speech in the interest of public order since such speech or writing has the tendency to create public disorder even if in some case those activities may not actually lead to a breach of peace. However, there must be reasonable and proper nexus or relationship between the restrictions and the achievements of public order.

- **Decency or Morality:** The words 'morality or decency' are words of wide meaning. Sections 292 to 294 of the Indian Penal Code provide instances of restrictions on the freedom of speech and expression in the interest of decency or morality. These sections prohibit the sale or distribution or exhibition of obscene words, etc. in public places. No fix standard is laid down until now as to what is moral and indecent. The standard of morality varies from time to time and from place to place.

- **Contempt of Court:** Restriction on the freedom of speech and expression can be imposed if it exceeds the reasonable and fair limit and amounts to contempt of court. According to the Section 2 'Contempt of court' may be either 'civil contempt' or 'criminal contempt.'

- **Defamation:** A statement, which injures a man's reputation, amounts to defamation. Defamation consists in exposing a man to hatred, ridicule, or contempt. The civil law in relating to defamation is still un-codified in India and subject to certain exceptions.

- **Incitement to an Offence:** This ground was also added by the constitution (First Amendment) Act, 1951. Obviously, freedom of speech and expression cannot confer a right to incite people to commit offence. The word 'offence' is defined as any act or omission made punishable by law for the time being in force.

- **Sedition:** As understood by English law, sedition embraces all those practices whether by words, or writing which are calculated to disturb the tranquility of the State and lead ignorant person to subvert the government. It should be noted that the sedition is not mentioned in clause (2) of Art. 19 as one of the grounds on which restrictions on freedom of speech and expression may be imposed.

Freedom of speech and expression is one of the most important fundamental rights. It includes circulating one's views by words, in writing, or through audiovisual instrumentalities, through advertisements and through any other communication channel. It also comprises of right to information, freedom of press etc. From the above case law analysis it is evident that the Court has always placed a broad interpretation on the value and content of Article 19(1)(a), making it subjective only to the restrictions permissible under Article 19(2). It can also be comprehended that public order holds a lot of significance as a ground of restriction on this fundamental right. However, there should be reasonable and proper nexus or relationship between the restriction and achievement of public order.

IMPORTANT CASES ON FREEDOM OF SPEECH AND EXPRESSION AND SOCIAL NETWORKING SITES

Romesh Thapper vs. State of Madras AIR 1950 SC Freedom of speech and expression is the most basic of all freedoms granted to the citizens of India. Justice Patanjali Shastri has said in this case that freedom of speech and that of the press lay at the foundation of a democratic society, for without free political discussions, no public education is possible, which is so important for the proper functioning of the govt. It allows us to freely express our ideas and thoughts through any medium such as print, visual, and voice. One can use any communication medium of visual representation such as signs, pictures, or movies. Freedom of speech would amount to nothing if it were not possible to propagate the ideas. Thus, the freedom of publication is also covered under freedom of speech. Freedom of speech serves 4 purposes - allows an individual to attain self-fulfillment, assists in the discovery of truth, it strengthens the capacity of a person to make decisions, and it facilitates a balance between stability and social change. This right is not only about communicating your ideas to others but also about being able to publish and propagate other people's views as well. Thus, freedom of speech and expression is linked to the people's right to know. Freedom of speech and expression is a broad term and encompasses several things. The following are important cases that have determined the extent of this right from time to time.

SNS-Case: Professor Ambikesh Mahapatra vs. State of West Bengal arrested because of forwarding of cartoons of Ms. Mamata Banerjee and Mukul Roy. Cartoon shows a spoof which is being widely circulated on the internet, has lines from the film, in which a boy called Mukul is duped by two criminals into believing that they caused a wicked man who is actually a good person to vanish. In the spoof, the wicked man who has vanished is former Railway minister Dinesh Trivedi, forced out of the office by Ms. Banerjee in March. He was released on bail later, but only after a written statement, which the Professor said, he was forced to write, that he was an active member of the Communist Party of India (Marxist). The West Bengal Human Rights Commission, headed by former Supreme Court judge, Justice Ashok Kumar Ganguly, has recommended that the State Govt. should pay Rs. 50,000 each to former Jadavpur University Prof. Ambikesh Mahapatra and his neighbor Subroto Roy for their arrest in the middle of the night for circulating a cartoon of CM -Ms. Banerjee. The state government has contended that the police rescued Prof Mahapatra and his neighbor from being assaulted by a mob and took them to a police station for their own safety.

SNS-Case: Police has arrested two girls for their statements on Social Networking sites against Late Bal Thakery's death Bandh in Mumbai. Later Press council of India Chairman Justice Markandeya Katju has ordered to suspend two police officers who arrested the girls, as it is a violation of Freedom of Expression.

Case: Maneka Gandhi Vs. Union of India 1978: The CBI took the Passport of Mrs. Maneka Gandhi. In the Land Mark Judgment the Honorable Supreme Court held that the Freedom of Speech and Expression has no geographical limitation and it carries with it the right of a citizen to gather information and to exchange thought with others not only in India but abroad also and asked the CBI to return her passport back.

SNS-Case: Ravi Srinivas Twitter SNS-Case: Posted a tweet to his 16 followers saying that Karti Chidambaram a politician belonging to India's ruling party congress and Son of India's finance minister had "A massed more wealth than Vadra". Later Karti

PEZZOTTAITE JOURNALS

tweeted "free speech is subject to reasonable restrictions. I have a right to seek constitutional remedies over defamatory tweets". Mr. Srinivasan did make an unverified allegation. Mr. Chidambaram could have used the libel and defamation laws. However, Indians libel laws are complex. The plaintiffs have to prove that you were defamed. The Burden of proof is responsibility of the person who filed a case.

SNS-Case: Hennas Bakshi: Hennas Bakshi's SUV was stolen from Chandigarh and after a month, police still had not registered a case. Frustrated Ms. Bakshi posted a strongly worded note on city polices Facebook page in September. Police slapped a case against Henna. Ms. Bakshi as a 10-year-old received bravery award from the Prime Minister.

SNS-Case: Ms. Chinmaya Sripada: She ignored years of trolling and online harassment. Finally files a complaint for vulgar tweets. An Associate Professor in a private fashion institute and a government employee were arrested. However, here Ms. Chinmayis status helped her but in case of ordinary citizen is it possible?

SNS-Case: Azad Maidan Clashes (2012): Circulation of a fake video (with origins in Myanmar) showing how 'Muslims' were 'ill-treated' by Bodos in Assam lead to the clash in Mumbai.

SNS-Case: North East Exodus (2012): Fake online video egged a community to attack people from Northeast, leading to mass exodus from Mumbai, Bangalore, Pune, Hyderabad and Chennai. Special trains were arranged to move people to North East safely. This is because of Fake online video on Social Networking Sites.

SNS-Case: Muzaffarnagar mayhem (2013) Morphed video on the Internet showed how Hindus were being ill-treated by Muslims. Around 50 people were killed in the riots. BJP MLA under scanner for uploading the video, arrested. Other MLAs also arrested.

Case: Advertising Case- Tata Press Ltd. vs. MTNL SCC 1995 SC: In this case, Supreme Court held that commercial advertisement is protected under freedom of speech.

Case: Ranjit Udeshi vs. State of Maharashtra AIR 1965 SC: In this case, a bookseller was prohibited from selling book containing obscene material.

Case: Hamdard Dawakhana vs. Union of India AIR 1960 SC: In this case, SC held that obnoxious and fraudulent advertising is not protected under freedom of speech.

*Test of reasonable restrictions***:** Spanning several cases, SC has laid down the following guidelines:

- It is the courts and not the legislature that will decide whether a law is reasonable or not.
- Reasonable means that the law is not arbitrary and the restriction is not beyond what is required in public interest. The time and duration of the restriction cannot be unlimited.
- There is no fixed standard for reasonableness. Each case must be decided on its own merits.
- The restriction must be reasonable from substantive as well as procedural standpoint.
- Restrictions imposed due to implementation of Directive Principles may deemed to be reasonable.
- The test of reasonability must be objective in the sense that it does not matter what a Judge or Court thinks what is reasonable but what a normal reasonable person would think.
- The restriction must have a relation to the object that is sought through the law and must not be excessive.
- It is the reasonableness of the restriction that a count has to determine and not the reasonableness of the law itself.
- Restriction may amount to prohibition.

Critical Analysis

Freedom of speech and expression is indeed the most important of all freedoms. However, today, this right is being routinely suppressed under the guise of morality and decency or public order. Any book that talks about problems in a religion is banned in the name of public order. It is extremely unfortunate that the executive, instead of the upholding peoples' right to speech and expression by preventing unscrupulous element from hurting the author, is more interested in stifling the voice by banning their works. The spirit of free speech is the ability to think and speak freely and to obtain information from others through publication and public discourse without fear of retribution, or repression by the government. It is through free speech, people could come together to achieve political influence, to strengthen their morality, and to help others to become moral and enlightened citizens. Revelations about global surveillance by the US National Security Agency (NSA) has made other governments think about their national security. It is now well known that the critical internet resources like domain name servers, global routers, and the control of ICANN for internet governance give a natural advantage to the US in global cyber surveillance. These platforms are used by all countries, and their traffic largely passes through the US, thereby exposing it to surveillance. Social media platforms further expose the nationals of other countries to the risks of such surveillance by the US government. Most are American, but it is the

citizens of other countries whose personal data, under NSA scrutiny, is at risk of US surveillance. At the same time, the law enforcement agencies (LEAs) of India, for example, cannot access content or the coordinates of suspects, even in terrorist and serious crime cases, because these may not be considered crimes under US law.

What are the lessons we learned. Every nation has to fend for itself. We have to make indigenous capabilities in chip design, telecom equipment, operating systems and databases, along with preferential market access for these products and systems for reasons of security. Anonymity in cyberspace gives everyone a chance to air their views. It can promote harmony or disharmony. Since this medium is going to expand, it is important that India create its own platforms, much like our newspapers and magazines. The content will remain within the territorial jurisdiction of India and be subject to national laws. Likewise, search engine data about Indians will also remain in India. Advertising revenue from these platforms will increase. The potential of increased revenue from social media platforms is obvious. Facebook and Google + are the top two social networks. This is important for our own national security and to protect the privacy of Indian citizens. Even European countries are seized of the issue now. Encouraging Indian companies to set up social media sites and launch a search engine will go a long way to enhancing cyber and national security.

Former Minister of Communication and IT Mr. Kapil Sibal said if SNS do not cooperate then it is the duty of the government to think of other steps. We have to take care of the sensibilities of our people. He advocated for self-regulation to solve such problems. Most of the experts are against of defamatory, offensive and dangerous content on SNS but they also forcedly opposed the idea of censorship.

It has become most powerful medium of expression especially for youth. Some of the major issues in SNS are Dictating terms, Negativity, Avoidance, Censoring, Abusive and vulgar comments, Emotional manipulation, Digression (posts were independent of the posts), Aggression than discussion.

On the one hand, SNS is enormously empowering because it is the source of information. On the other hand the very same medium is bigoted, is full of prejudice. It is a medium, which can destroy. A medium can speed anarchy. Therefore, it is constructive and destructive at the same time, evocative and depressing at the same time. We cannot discipline the technology. We have to go along with it. It is a reality with which we have to live it. It is a great instrument of expression and at the same time irresponsible character in this social media. It is up to the users to understand what to exclude and what to include within their own system. The SNS today is perhaps the largest ungovernable space in the world. Now within this space everybody is learning to try to live with this new phenomenon.

It is the amplifier of your mainstream media if you want to use it properly. Two, it is providing you a two-way communication which usually we will never have with our readers. Still the conventional media is not taking back seat still people have confidence in the conventional media and they believe in it. There is conflict of opinion between national security and social media. It has very fast self-correcting mechanism. There is a completely new relationship out there between two citizens. One who is a victim, the other who is actually spreading the information? Where is the justice for the victim? Unless the anonymity factor is dealt with, we cannot really have an evolved media. Legally we have Freedom of Speech at the same time so many other factors also we have to consider before we write in social media.

How can we leave Social Networking Sites above the law of the country because mainstream media operates within the law? That is the question to be discussed. Government also knows how to control social media to some extent. Sometimes it helps the terrorists' links also. Right, netiquette is important not censorship. SNS is like a wild fire sometimes rumors spread very fast on SNS there are several cases and recent case of communal violence on these sites fabricated photos that led to riots. The users of SNS must be aware of the legal implications and they must know the strong impact on the society of the messages and must be careful when they are posting.

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'INTERNET' IN INDIAN PERSPECTIVE: A DESCRIPTIVE STUDY

Gurnam Singh Rasoolpur[10]

ABSTRACT

The study is undertaken with the objective to highlight the overall perspectives of internet in the Indian context. For achieving the objectives of the undertaken study, global status regarding internet users by language is shown along with internet users in the developing as well as developed countries, growth of internet subscribers in the Indian context, state wise status of internet subscriber base and internet service providers with services offered by them are presented through tabulation. The study shows that the most used languages on the World Wide Web are English (27 percent) followed by Chinese (25 percent), Spanish (8 percent), Japanese (5 percent), German (4 percent) and Portuguese (4 percent), Russian (3 percent), French (3 percent) & Arabic (3 percent), and Korean (2 percent) whereas region-wise, 42 percent of the internet users in the world belong to Asia, 24 percent to Europe, 14 percent to North America, 10 percent to Latin America and the Caribbean taken together, 6 percent to Africa, 3 percent to the Middle East and 1 percent to Australia/Oceania. The study also shows that the number of internet subscribers excluding internet access by wireless phone subscribers in India as on 31st of March 2013 are standing at 21.61 million (2,16,06,681) against the number of internet subscribers to 19.51 million (1,95,05,916) as on 31st of March 2012 thereby showing a net addition of internet subscribers to the extent of 2.10 million which further showing an annual growth rate of 10.77 percent from 31st of March 2012 to 31st of March 2013. The total number of broadband subscribers has reached to the level of 15.05 million (1,50,50,023) as on 31st of March 2013 against the total number of broadband subscribers to 13.81 million (1,38,10,362) as on 31st of March 2012 thereby showing a net addition of broadband subscribers to the extent of 1.24 million which further showing a growth rate of 8.98 percent during the financial year 2012-13. As per the TRAI report June 2013, total number of internet subscribers in India are 19.83 crores in which UP is having highest number of internet subscribers i.e. 1,99,20,985. BSNL is the leading internet service provider by capturing 63.70 percent market share in India with 9.36 million subscribers alone. Other top internet service providers are Bharti Airtel, MTNL, Hathway, You Broadband, Sify and Tikona, which provide internet services to the customers in India. The technology used by internet service providers for the subscribers for providing broadband services is DSL (Digital Subscriber Line) which is capturing 84.38 percent broadband subscribers.

KEYWORDS

Internet Service Providers, Broadband, Internet Subscribers etc.

INTRODUCTION

Communication is a process of exchange of thoughts, ideas, opinions, feelings, attitudes, emotions, knowledge, facts, figures, data, messages, words etc. between two or more persons and ensuring the feedback for accomplishing the organizational goals. Communication means the imparting, conveying or exchange of ideas, knowledge, etc. whether by speech, writing or signs (Oxford English Dictionary).Communication is the lifeline of a business. It is performed at every level of management. Therefore, communication is an important function of management. Nothing happens in management until communication takes place. It is hard to name a human activity in which communication does not play an important role. It enables us to understand others and make ourselves understood. The working and maintenance of the relationships is possible only through communication, which provides for exchange of information and sharing of ideas. The first major model for communication was introduced by Claude Shannon and Warren Weaver for Bell Laboratories in 1949, which is based on information theory. Shannon and Weaver argued that there were three levels of problems for communication within this theory. The technical problem: how accurately can the message be transmitted? The semantic problem: how precisely is the meaning 'conveyed'? The effectiveness problem: how effectively does the received meaning affect behavior? In 1960, David Berlo expanded Shannon and Weaver's (1949) linear model of communication and created the SMCR Model of Communication. The Sender-Message-Channel-Receiver Model of communication describes the model into clear parts, which presents communication as a dynamic interactive process. Barnlund (2008) proposed a transactional model of communication. The basic premise of transactional model of communication is that individuals are simultaneously engaging in the sending and receiving of messages. Secondly, it recognizes that communication affects all parties involved in it. Therefore, communication is a fluid/simultaneous. Communication may be formal or informal, upward or downward, written or oral or gestural, horizontal or vertical or diagonal. A number of new methods of communication are being used at present for communicating the messages. These methods include internet, World Wide Web, e-mail, broadband, social networking, fax, telephone, cellular phone, pager etc. A number of new methods of communication are being used at present. These methods include internet, World Wide Web, e-mail, broadband, social networking, fax, telephone, cellular phone, pager etc. Internet was introduced in India started in Laxmi Nagar, Delhi on 15 August 1995.

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Internet is a worldwide network of tens of thousands of computers, all connected to each other. A collection of interconnected networks is why it is called 'internet work' or 'internet'. It is a means used for communication over large distances using computers. In simple words, internet means everything you can access from your computer. The internet is a global network of computers that allows people to send email, view web sites, download files such as mp3 and images, chat, post messages on newsgroups and forums and much more. The internet was created by the Advanced Research Projects Agency (ARPA) of the U.S. government in 1960's and was first known as the ARPANet. At this stage, the internet's first computers were at academic and government institutions and were mainly used for accessing files and to send emails. The actual term "internet" was finally defined in 1995 by FNC (The Federal Networking Council). According to Federal Networking Council (FNC) Internet refers to the global information system that:

- Is logically linked together by a globally unique address space based on the internet Protocol (IP) or its subsequent extensions/follow-ons.
- Is able to support communications using the Transmission Control Protocol/Internet Protocol (TCP/IP) suite or its subsequent extensions/follow-ons, and/or other IP-compatible protocols.
- Provides, uses or makes accessible, either publicly or privately, high-level services layered on the communications and related infrastructure described herein.

It has become indispensable in modern life. Millions of computers around the world can communicate with each other through the internet. A person or an organization can open an account with any Internet Service Provider (ISP) who will have an account number for a monthly or yearly fees basis. After getting the number, the subscriber has access to internet. The user should have a computer with modem and telephone connection to send and receive the messages. The subscriber has access to world-wide-web (www). The internet has enabled entirely new forms of social interaction, activities, and organizing and widespread usability and access. Internet has the following advantages:

- Messages can be exchanged with different internet users.
- Information stored on computers through internet can be accessed.
- Newspaper, magazines, books can be seen and read on internet.
- Information about stock and trade markets can be seen on internet.
- Any type of information available on sites may be downloaded.
- E-banking has become possible with the help of download.
- Internet-based electronic procurement helps to reduce costs by decreasing the use of paper and labour time, reducing errors, providing better ordering of purchase orders and delivery of goods, organizing ordering processes, and cutting acquisition cycle times.
- By reducing selling costs and attraction costs for customers, more time can be spent on per transaction. Dell estimates that it yields 30 percent greater profit margins on Internet sales as compared to telephone sales.
- Internet allows near instantaneous transfer of information between various links in the supply chain, which produces real-time information regarding the status of orders and production.

OBJECTIVES OF STUDY

The study is undertaken with the objective to highlight the overall perspectives of internet in the Indian context.

RESEARCH METHODOLOGY

For achieving the objectives of the undertaken study, global status regarding internet users by language is shown along with internet users in the developing as well as developed countries, growth of internet subscribers in the Indian context, state wise status of internet subscriber base and internet service providers with services offered by them are presented through tabulation.

GLOBAL PERSPECTIVE

The most used languages on the World Wide Web are English (27%), Chinese (25%), Spanish (8%), Japanese (5%), German (4%) and Portuguese (4%), Russian (3%), French (3%) & Arabic (3%), and Korean (2%). The number of non-English pages is increasing fastly. The growth rate of use of English is 281% from the year 2001 to 2011, a lower rate growth than that of Spanish (743%), Chinese (1,277%), Russian (1,826%) or Arabic (2,501%) over the same period. Region-wise, 42% of the internet users in the world belong to Asia, 24% to Europe, 14 % to North America, 10% to Latin America and the Caribbean taken together, 6% to Africa, 3% to the Middle East and 1% to Australia/Oceania. Overall, internet usage has revealed incredible trends and developments. Globally the internet users have increased from 394 million during the year 2000 to 1.858 billion during the year 2009. A significant portion of world population i.e. 22% has access to computers with 1 billion Google searches every day, 300 million internet users reading blogs and 2 billion videos viewer on YouTube every day during the year 2010. The internet users stood at 43.60% of world population i.e. 3 billion during the year 2014 where two-third of the users came from richest countries, with 78.0% from the population of European countries followed by 57.4% from the Americans. During 2011, Iceland, Norway

and the Netherlands have the highest internet penetration by the number of users, with more than 90% of the population with access. Euromonitor states that two-fifth of the world population i.e. 43.70% will be internet users by the year 2020.

Table-1: Estimates of Internet Users by Language as on 31st of May 2011

Rank	Language	Internet Users	Percentage	Rank	Language	Internet Users	Percentage
1	English	565,004,000	27 %	6	German	75,423,000	4 %
2	Chinese	509,965,000	25 %	7	Arabic	65,365,000	3 %
3	Spanish	164,969,000	8 %	8	French	59,779,000	3 %
4	Japanese	99,182,000	5 %	9	Russian	59,700,000	3 %
5	Portuguese	82,587,000	4 %	10	Korean	39,440,000	2 %
				11-36	Others	350,557,000	17 %

Sources: Authors Compilation

Table-2: Worldwide Internet Users

Population/Users	Year		
	2005	2010	2013*
World Population	6.5 Billion	6.9 Billion	7.1 Billion
Not Using Internet	84%	70%	61%
Using Internet	16%	30%	39%
Users in Developing World	8%	21%	31%
Users in Developed World	51%	67%	77%

Sources: International Telecommunication Union

Note: *Estimates

INDIAN PERSPECTIVE

The number of internet subscribers in India as on 31st of March 2012 stood at 22.86 million against the number of internet subscribers to 19.67 million as on 31st of March 2011 thereby showing a net addition of broadband subscribers to the extent of 3.19 million which further showing an annual growth rate of 16.19% from 31st of March 2011 to 31st of March 2012. The total number of broadband subscribers has reached the level of 13.81 million as on 31st of March 2012 against the total number of broadband subscribers to 11.89 million as on 31st of March 2011 thereby showing a net addition of broadband subscribers to the extent of 1.92 million which further showing a growth rate of 16.15% during the year 2011-12. The number of internet subscribers excluding internet access by wireless phone subscribers in India as on 31st of March 2013 stood at 21.61 million (2,16,06,681) against the number of internet subscribers to 19.51 million (1,95,05,916) as on 31st of March 2012 thereby showing a net addition of internet subscribers to the extent of 2.10 million which further showing an annual growth rate of 10.77 % from 31st of March 2012 to 31st of March 2013. The total number of broadband subscribers has reached to the level of 15.05 million (1,50,50,023) as on 31st of March 2013 against the total number of broadband subscribers to 13.81 million (1,38,10,362) as on 31st of March 2012 thereby showing a net addition of broadband subscribers to the extent of 1.24 million which further showing a growth rate of 8.98 % during the year 2012-13. The total number of internet subscribers consisting of narrowband (<256Kbps speed) and broadband (>256Kbps speed) for the last six years is shown in Figure-1. The internet service providers (UAS/CMTS) report that there are 143.20 million (1,43,200,797) internet subscribers who are accessing internet through wireless phone which excludes BSNL, MTNL, Quadrant and Videocon due to non-reporting while there are 164.81 million (164,807,478) internet subscribers who are accessing internet through wire line and wireless technology in March 2013.

Figure-1

Internet Subscirbers

	Mar-08	Mar-09	Mar-10	Mar-11	Mar-12	Mar-13
Total	10.55	12.84	15.22	17.73	19.51	21.61
NarrowBand	6.68	6.62	6.45	5.84	5.7	6.56
BroadBand	3.87	6.22	8.77	11.89	13.81	15.05

Figure 1

Sources: Authors Compilation

STATE-WISE INTERNET SUBSCRIBERS

As per the TRAI report June 2013, total number of internet subscribers in India are 19.83 crores in which UP is having highest number of internet subscribers i.e. 1,99,20,985 followed by Maharashtra (including Goa) and Delhi with 1,66,78,558 and 1,54,00,355 internet subscribers. Himachal Pradesh is having lowest number of internet subscriber's i.e.14,99,767 followed by:

Table-3: State Wise Internet Subscriber Base Including Internet Access by Mobile Device

Serial No.	Name of State	Total Number of Internet Subscribers
1	Uttar Pradesh (including UP(E), UP(W) & Uttaranchal)	19920985
2	Maharashtra (including Goa)	16678558
3	Delhi	15400355
4	Mumbai	14479659
5	Andhra Pradesh	14479630
6	Gujarat (including Dadar and Nagar Haveli)	12769438
7	Tamil Nadu (including Pondicherry)	12182400
8	Karnataka	11613235
9	Madhya Pradesh (including Chhattisgarh)	10750127
10	Bihar (including Jharkhand)	10020659
11	Rajasthan	9789938
12	Kerala	9021211
13	Punjab (including Chandigarh)	8230235
14	West Bengal (including Sikkim & A&N)	6377383
15	Kolkata	5040012
16	Chennai	4732163
17	Haryana	4420720
18	Orissa	3447858
19	Assam	3231600
20	North East (including Arunachal Pradesh, Meghalaya, Mizoram, Nagaland, Manipur and Tripura)	2285651
21	J & K	2017131
22	Himachal Pradesh	1499767
Total		**198388715**

Sources: Indicator Report-TRAI, June 2013

Jammu & Kashmir. Actually Uttar Pradesh, Maharashtra (including Goa), Delhi, Mumbai, Andhra Pradesh, Gujarat including Dadar & Nagar Haveli, Tamil Nadu including Pondicherry, Karnataka, Madhya Pradesh including Chhattisgarh and Bihar (including Jharkhand) are having more than one crore internet subscribers each. Rajasthan, Kerala, Punjab (including Chandigarh), West Bengal (including Sikkim and A & N) and Kolkata are having more than fifty lakhs but less than one crore internet subscribers each. The rest of the states are having less than fifty lakhs internet subscribers each. Himachal Pradesh is having lowest number of internet subscribers i.e. 14, 99, 767 followed by Jammu & Kashmir with 20,17,131 internet subscribers. The North Eastern states (including Arunachal Pradesh, Meghalaya, Mizoram, Nagaland, Manipur and Tripura) are having total number of 22, 85,651 internet subscribers their region.

INTERNET SERVICE PROVIDERS IN INDIA

According to TRAI, 156 internet service providers were providing internet services to the customers in India during July 2012. Some internet service providers are providing high-speed mobile internet services and some are providing wired line internet services. The following table shows important internet service providers with services offered. BSNL is the leading internet service provider in India by capturing 63.70 percent market share with 9.36 million subscribers alone. The share of market of Bharti Airtel is 9.30 percent with 1.37 million subscribers while the share of market of MTNL is 7.30 percent with 1.08 million subscribers. Top ten internet service providers are having almost 94 percent internet subscriber base in the total market share in India. Sify, Tikona, You Broadband and Hathway also offer internet services to the customers as ISPs. The technology used by internet service providers to the subscribers for providing broadband services is DSL (Digital Subscriber Line) which is capturing 84.38 percent broadband subscribers followed by Ethernet LAN by capturing 6.54 percent broadband subscribers and Cable Modem by capturing 5.28 percent of the broadband subscribers. Wireless constitutes 2.83 percent, Fiber .54 percent, Leased Line .25 percent and others .18 percent of the broadband subscribers.

Table-4: Internet Subscriber Providers in India

S. No.	Name of Company	Services Offered
1	BSNL - Bharat Sanchar Nigam Limited	Wired Line with Telephone - ADSL, VDSL, 3G, EVDO, Wi-Max, GPRS
2	MTNL - Mahanagar Telephone Nigam Ltd	Wired Line with Telephone - ADSL, 3G, GPRS
3	Airmesh	4G LTE
4	Airtel	4G LTE, 3G, ADSL, EVDO, GPRS
5	Skynet Broadband	ADSL
6	Aircel	3G, GPRS
7	Hathway	ADSL
8	Idea	3G, GPRS
9	MTS India	3G, EVDO, GPRS
10	Reliance Communications	3G, ADSL, EVDO, GPRS, Wi-Max
11	Sify	ADSL
12	Spectranet	ADSL
13	Tata DoCoMo	3G, GPRS
14	Tata Indicom	ADSL, EVDO, GPRS, Wi-Max
15	Tikona Digital Networks	Wireless 4G Broadband(OFDM)
16	Vodafone	3G, GPRS
17	YOU Broadband	ADSL

Sources: Authors Compilation

SUM UP

Internet was introduced in India started in Laxmi Nagar, Delhi on 15 August 1995. It is a means used for communication over large distances using computers. The study is undertaken with the objective to highlight the overall perspectives of internet in the Indian context. For achieving the objectives of the undertaken study, global status regarding internet users by language is shown along with internet users in the developing as well as developed countries, growth of internet subscribers in the Indian context, state wise status of internet subscriber base and internet service providers with services offered by them are presented through tabulation. The study shows that the most used languages on the World Wide Web are English (27 percent) followed by Chinese (25 percent), Spanish (8 percent), Japanese (5 percent), German (4 percent) and Portuguese (4 percent), Russian (3 percent), French (3 percent) & Arabic (3 percent), and Korean (2 percent). Region-wise, 42 percent of the internet users in the world belong to Asia, 24 percent to Europe, 14 percent to North America, 10 percent to Latin America and the Caribbean taken together, 6 percent to Africa, 3 percent to the Middle East and 1 percent to Australia/Oceania. Euromonitor states that two-fifth of the world population i.e. 43.70 percent will be internet users by the year 2020. The study also shows that the number of internet subscribers excluding internet access by wireless phone subscribers in India as on 31st of March 2013 are standing at 21.61 million (2,16,06,681) against the number of internet subscribers to 19.51 million (1,95,05,916) as on 31st of March 2012 thereby showing a net addition of internet subscribers to the extent of 2.10 million which further showing an annual growth rate of 10.77 percent from 31st of March 2012 to 31st of March 2013. The total number of broadband subscribers has reached to the level of 15.05 million (1,50,50,023) as on 31st of March 2013 against the total number of broadband subscribers to 13.81 million (1,38,10,362) as on 31st of March 2012 2011 thereby showing a net addition of broadband subscribers to the extent of 1.24 million which further showing a growth rate of 8.98 percent during the year 2012-13. As per the TRAI report June 2013, total number of internet subscribers in India are 19.83 crores in which UP is having highest number of internet subscribers i.e. 1,99,20,985 followed by Maharashtra (including Goa) and Delhi with 1,66,78,558 and 1,54,00,355 internet subscribers. BSNL is the leading internet service provider in India by capturing 63.70 percent market share with 9.36 million subscribers alone. The share of market of Bharti Airtel is 9.30 percent with 1.37 million subscribers while the share of market of MTNL is 7.30 percent with 1.08 million subscribers. Top ten internet service providers are having almost 94 percent internet subscriber base in the total market share in India. Sify, Tikona, You Broadband and Hathway also offer internet services to the customers as ISPs. The technology used by internet service providers to the subscribers for providing broadband services is DSL (Digital Subscriber Line) which is capturing 84.38 percent broadband subscribers.

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THE MATERIALIZATION OF ARTICULATION BETWEEN
SOFTWARE ENGINEERING AND ARTIFICIAL INTELLIGENCE

Dr. Ranjeeta Popli[11] Ashima Wadhwa[12]

ABSTRACT

Software Engineering and Artificial Intelligence are two grounds of computer science have matured without much correspondence of research results. Both deal with representing the real world's objects like business techniques, expert knowledge or operation models. Now a day's Software Engineering and Artificial Intelligence are correlated and contradicted in terms of issues they solved the mechanism they adapt and approach that are applied. These both areas of computer science have lots of benefits and problems, so this scenario emerge many fusions between both the fields. One possibility can be when researchers implement the procedures and techniques of AI on to SE so that benefit of both fields is encapsulate and problems will diminished. In the method of implementing techniques of AI to SE, an articulation area is developed between AI and SE, which leads to the relation between AI and SE. In this paper, we have tried to investigate the area of articulation, feature and elements on which both fields relate with each other and study the methods designed in artificial intelligence (AI) from the viewpoint of their usage in software engineering. Although the articulation areas between AI and SE are presently rare but they are multiplying and developing .Today methods and techniques from both discipline are in practice and giving an area to research in both the fields.

KEYWORDS

Automated Programming, Computational Intelligence, Knowledge Discovery in Database, Artificial Intelligence etc.
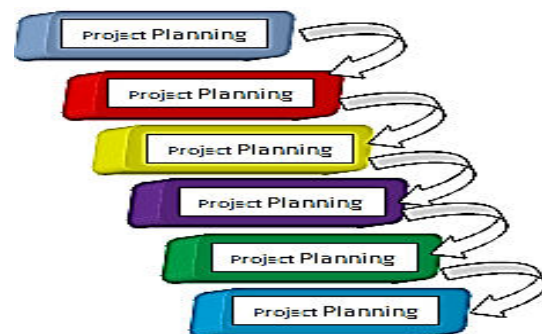
INTRODUCTION

The area of Software Engineering was born in 1968 at an NATO conference in Garmisch – Partenkirchen, Germany where the term Software Engineering crisis was coined. Software Engineering is the standardized and scientific way to develop, prompt, sustain and to depart the software product. The goal of software engineering is to be discipline that provides models and processes that lead to the production of well-documented maintainable software in a manner that is predictable. For a mature process, it should be possible to determine in advance how much time and effort will be required to produce the final product. This can only be done using data from experience, which requires that one measure the software process. On the other hand, Artificial Intelligence was born at the Dartmouth conference in 1956. Artificial Intelligence is the discipline of computation that makes it feasible to recognize reason and act. It is related with the study and formulation of computer systems that show some form of intelligence and attempt to assign such knowledge to the design of computer based systems that can interpret a natural language. AI differs from most of psychology because of its greater emphasis on computation, and it differs from most of computer science because of its greater emphasis on perception reasoning, and action.

PERSPECTIVE OF SOFTWARE ENGINEERING AND ARTIFICIAL INTELLIGENCE

Perspective of Software Engineering

Software engineering is the commencement of conventional engineering principles to the origination and formulation of software. This is an experimental or legitimate method replaces the might more classical unstructured approach. Software engineering needs cognizance and application of engineering principle, design proficiency, sound management practice, computer science and mathematical Interpretation. It is the job of software engineering to design together these isolate fields of competence and bring them to tolerate upon the requirements elicitation, specification, design, verification, implementation, testing, documentation and maintenance of difficult and massive software systems. The software engineer thus fulfills the role of creator of a difficult system, taking accomplish of user requirements and needs, feasibility, cost, quality, reliability, safety and time constraints.

Figure-1: Phases of Software Engineering

Sources: Authors Compilation

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Requirement analysis is the most crucial and basic phases in SDLC. The planning for the quality support requirements and recognition of the risks related with the project is done in the first phase. Once the project planning is done the next step is to precisely describe and record the project requirements and get them authorized from the client. The design phase specifically describes all the anatomical functions of the project with its transmission and data flow illustration with the foreign and third party modules. In this phase of SDLC, the absolute development initiates and the product is constructed. Once the product is constructed it went through testing phase where all defects and errors removed from the project and then it is released formally in the relevant market .Last phase of SDLC is maintenance which is a continuous activity which assures the quality and applicability of the project.

Perspective of Artificial Intelligence

Artificial Intelligence is that domain of computer application which try to build data processing mechanisms for processes that are designed to enforce intelligence when implement by humans.

In the present moment domain of computers in engineering, the recent tool is to accumulate the various job of a given obstacle. Depending on the type of job, the knowledge and processing acquired may involve application of numerical models, visualization techniques, database systems, and decision-making models to produce solutions that require human proficiency. Thus to abode extensive spectrum of base, AI and expert system domains produce the abundant software techniques to accumulate the variance methods to construct knowledge-based systems for computer based engineering.

AI practice knowledge substantially than data to regulate the solution procedure. Knowledge engineers construct systems by felicitating knowledge from experts, coding, that knowledge in an suitable form, certifying the knowledge, and finally building a system using a variance of building tools. The main phases of AI development processes are: a) Planning, b) Knowledge Acquisition and Analysis, c) Knowledge Design, d) Code, e) Knowledge Verification, and f) System Evaluation.

Planning phase incorporate feasibility estimation, resource appropriation, job phasing and organizing Requirements analysis. Knowledge acquisition is the most significant phase in the development of AI. During this phase the knowledge engineer, implement with the field expert to acquire, organize and analyze the field knowledge for the AI. The aim of knowledge analysis is to analyze and organize the knowledge acquired during the knowledge acquisition phase. After knowledge analysis is over, we start the knowledge design phase, where we get the knowledge definition, detailed design, and decision of how to present knowledge decision of a development technique. Last phases include the verification and testing activities for knowledge and ultimately the system is evaluated.

ARTICULATION OF SE AND AI

Computer science is the study of computing machinery as well as the general process and the nature of underlying machinery: The hardware - has played an important role in SE and could play an even more crucial part in the realization of 'intelligent' machine behavior. Software engineering and Artificial intelligence are compared and contrasted in terms of the problems they attempt to solve, the methods they employ, and the tools and techniques that are used. It is argued that a fusion of the two disciplines will be needed for many new software demands. AI has developed models, notations techniques and a methodology that could be useful to SE, while the later has provided both formal and informal methods that could contribute to the development of AI software.

Analogue between SE and AI

Today, methods and techniques from both disciplines support the practice and research in the respectively other research area. This analogue has two different cases:

a) Reasons for applicability of AI in to SE

- Automated programming in Artificial Intelligence is similar with software engineering and this opens a new research area of SE.
- Expert system technology is adequately successful and develops to provide convincing solutions to certain matter of SE process and problem.
- AI development and maintenance situation are suitable for direct application to the SE process.
- AI methodologies and techniques can be enforced to the software design process.
- The AI rapid prototyping model is used as a SE model.

b) Reasons for Non-applicability of SE to AI

- Mostly process models in SE practice the sequential path and fix faces. Hence, not appropriate to AI.
- It is very tough to mimic the human behaviors with the help of SE.
- The computer cognizance is not possible with SE.

- Expert systems cannot be described properly and thus SE techniques do not useful in Expert system.
- AI intensely distributed into subcategories that often abort to interact with each other so difficult to communicate with SE.

Structure of Articulation between AI and SE-This structure has four primary fields of articulation between AI and SE such as:

Description of each field is done concisely. These four fields relate with the way the articulation affects the software development process of both traditional SE and AI systems:

a) Software Based Environment

The Software support system is the field of articulation that encircles work on diminishing the adequate. Complexity of software development for the human developer. This reduction of complexity is accomplished by making the computer system to do more task than human and provide support for the software development process.

b) AI Approaches and Methods in Software

The software being matured need not to be AI software but the support environment might alike to be with AI. The logic to include this class is that the most schemes designed to provide more than elementary support to the struggling programmer, hurriedly arrive at the point where knowledge is needed within the support environment and interrogative decision making also becomes necessary. The knowledge needed in this field is the application domain knowledge and software development knowledge both in general and system specialized approach. The need for interrogative decisions comes from an aspiration to issue timely caution and specialized types of assistance to the programmer without staggering and misleading him with either the inaccurate or the obvious. The description of the second class of articulation is more obvious and important. If AI brought up with good ideas, it makes sense to use them, when it is relevant, in traditional software systems. AI has promoted the notion of splitting fixed, logical relationships from the fluctuation of processing.

c) Application of Traditional Software Mechanism in AI Systems

In the third field of articulation, the traditional software world has enlarged a lot of attempt on finding well-defined ways to generate powerful and stable products surely. AI systems developers, although conversing somewhat different complications, still face many of the same hurdles to the production of quality software. Much of the traditional wisdom collected in the SE world can be imported into AI software development.
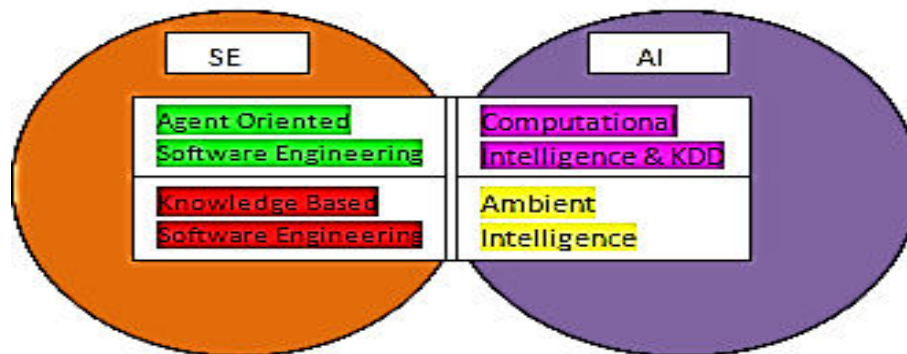
d) Discrete Application

Traditional SE and the development of practical AI software have much in common, but they also have some vital l differences which ruinously in the respective methodologies. The main point is that they are all answered individually which depends upon whether the considering   a conventional software system or AI one. The individual sets of solutions point to different development methodologies. Hence, the interest in methodological consideration issues in the overlap area.

ASSOCIATION BETWEEN SE AND AI

These days' techniques and methods from both fields assist he practice and research in the respectively other areas. This association can be described in following four research areas:

Figure-2: Association between SE and AI

Sources: Authors Compilation

a) Agent Oriented Software Engineering

Agent-Oriented Software Engineering (AOSE) is focused around systems where objects in a model of a software system are intelligent, autocratic, and intense. Recently the systematic development and illustration of software agents is researched and languages for their representation during development, like the Agent UML. Agents and AOSE are enforced in many areas like intelligent and agent-based user interfaces to enhanced system utility, trading agents in ecommerce to increase profits, or helping agents in everyday work to automate common tasks

b) Computational Intelligence & KDD

The next association area is CI & KDD has currently detected an improving interest from researchers of both fields. Techniques like fuzzy logics, neural networks & evolutionary algorithms are rapidly enforced and supported for particular SE problems. They are used to calculate the development of projects to assist t software project management, for the Invention of erroneous modules to provide software quality. Now a days, many application areas for Knowledge discovery in database in SE have been developed in areas like project management, quality management, software reuse, risk management, or software maintenance.

c) Knowledge-Based Software Engineering

SE is a highly productive area in terms of research and knowledge, and it depends densely upon the participation of experts for the development and improvement of its methods, tools, and techniques. For example, the habit to define and represent "finest practices" or "lessons grasped" is quite distinctive in the literature. As a result, the SE area where an institution, the Experience Factory, was introduced was absolutely accomplished to methodically deal with experience.

d) Ambient Intelligence

The concept behind Ambient Intelligence are delicate, additive, and reactive systems that are acquainted about the user's demand, tendency, and sentiments in order to assist them in their routine task. Therefore, techniques for supreme, prosperous, Intelligent and self-study systems are needed to enable transmission between systems   or users and systems Aim is based on certain fields, like universal and comprehensive computing, intelligent systems, and domain understanding.

CONCLUSION

The growth of Artificial Intelligence and Software Engineering have enriched disjoint without the much variation of research outcomes and their design. Because of few merits and drawback in both areas, researchers try to integrate benefits of both by implementing the techniques of AI to SE and vice versa. Besides the basic concepts for Software Engineering and Artificial Intelligence we have described the association between both the fields covering Agent oriented Software Engineering, Computational Intelligence and KDD ,Knowledge based software Engineering and Ambient Intelligence. The articulation of Artificial Intelligence and software engineering is so enormous that it needs modification of framework described in this paper and to be surveyed in future.

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SURVEY OF TOOLS USED IN DISTRIBUTED ENVIRONMENT FOR BIG DATA ANALYTICS

Archana V. Shinde[13] Dr. H. T. Dinde[14]

ABSTRACT
Big data are comprised of large and complex data sets that are difficult to process. The term "big data" was defined as data sets of increasing volume, velocity and variety (Mayer-Schönberger, 2012), (Beyer, 2011). Big data sizes are ranging from a few hundreds terabytes to many petabytes of data in a single data set. The big data challenges include capture, storage, search, sharing, transfer, analysis, and visualization. Big data analytics can process huge amounts of data to uncover hidden patterns, correlations, and other useful information. The technologies associated with big data analytics include NoSQL databases, Hadoop, and MapReduce.

KEYWORDS
Technology, NoSQL Databases, Hadoop, and MapReduce etc.

INTRODUCTION

Big Data analytics is the process of analyzing and mining big data. The need to control and analyses data collected by businesses is one of the main drivers for Big Data analysis tools. Due to use of advanced technology in analysis, storage and processing of Big Data the following results are obtained (a) the elasticity and cost-effectiveness of data centers and cloud computing for flexible computation and storage (b) cost of CPU power and storage is reducing in recent years (c) the development of new frameworks such as Hadoop, which allow users to take advantage of these distributed computing systems storing large quantities of data through flexible parallel processing. Web companies, such as Yahoo!, need to obtain useful information from big data streams, i.e. large-scale data analysis task in real-time. In this research paper, the various methods for catering to the problems in hand through integrating Hadoop with R framework, which is popular software used for statistical computing and data visualization. Integration of R with Streaming, Rhipe and RHadoop along with their advantages and disadvantages are presented.

RESEARCH HIGHLIGHTS

In order to simplify programming for a distributed environment, several tools have been developed, such as the MapReduce programming model, which has become popular, because of its automatic parallelism and fault tolerance. In any reasonably complex analytical scenario context can change at any time. Changes can occur on the level of data the analysis or the representation and visualization of results including output devices. This means the completely analytical process has to be adaptive to cope with such possibly unforeseen changes. Given this level of complexity and the fact that human users are typically not experts in analytics a certain level of automation is required. In this paper, we presented three ways of integrating R and Hadoop for processing large-scale data sets: R and Streaming, Rhipe and RHadoop. We have to mention that there are also other ways of integrating them like ROBDC, RJBDC or Rhive but they have some limitations. Each of the approaches presented here has benefits and limitations. While using R with Streaming raises no problems regarding installation, Rhipe and RHadoop requires some effort in order to set up the cluster. The integration with R from the client side part is high for Rhipe and Rhadoop and is missing for R and Streaming. Rhipe and RHadoop allows users to define and call their own map and reduce functions within R while Streaming uses a command line approach where the map and reduce functions are passed as arguments. Regarding the licensing scheme, all three approaches require GPL-2 and GPL-3 for R and Apache 2.0for Hadoop, Streaming, Rhipe and *RHadoop*
.

METHODOLOGY OF RESEARCH

Map / Reduce

Map/Reduce framework must be used for joining datasets as part of database query processing. This can be done due to fact that the rate at which information is exploding in today's world has forced us to look at database query processing from a different outlook. In this connection, use of distributed processing has become necessity rather than being option. Map/Reduce was developed at Google for simple computations. These computation, though simple, required very large inputs and thus demanded the use of distributed processing to get results in reasonable amounts of time. Map/Reduce was soon picked-up by the open source community and developed into an open source framework and implementation called Hadoop .One of the main queries performed over a database (or a dataset) is a Join. Here are options explored for joining datasets using Map/Reduce particularly Hadoop

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[1][2]. The aim is to merge and extend the existing algorithms, propose new ones and quantitatively evaluate and analyze their performances. The algorithms is broken into two categories with three algorithms discussed in both categories each [3]:

Two-way joins - joins involving only 2 datasets:

    a)   Reduce-Side Join
    b)   Map-Side Join
    c)   Broadcast Join

Multi-way joins - joins involving more than 2 datasets:

    a)   Map-Side Join (for multi-way joins)
    b)   Reduce-Side One-Shot Join
    c)   Reduce-Side Cascade Join

Optimization for Reduce-Side Cascade Join exploiting the output cardinality of smaller joins involved in the algorithm is also possible. The first thing that impressed us while undertaking this project was the ease with which one could program a distributed application using Map/Reduce or Hadoop. Without any considerable prior knowledge about distributed systems, we were able to easily install and configure Hadoop on our development machines. Being an open-source produce and free to download, it is an inexpensive solution for someone looking to harnessing the power of a distributed system for solving problems. It is indeed an in-expensive and simple, yet powerful solution for exploiting the potential of parallel processing.

Rhipe

Rhipe stands for "R and Hadoop Integrated Programming Environment". Rhipe permits the user to carry out data analysis of big data directly in R, but installation of Rhipe is difficult task.it needs that Google Protocol Buffers to be built and installed on each node R should be built as a shared library on each node and to install the Rhipe itself. The advantages of using Rhipe consist in its integration with Hadoop that provides a data distribution scheme with Hadoop distributed file system across a cluster of computers that tries to enhance the processor usage and delivers fault tolerance. The Protocol Buffers are needed for data serialization, growing the productivity and providing interoperability with other languages. The Rhipe is an R library, which allows running a MapReduce job within R[3]. The user should write specific native R map and reduce functions and Rhipe will manage the rest: it will transfer them, invoke them from map, and reduce tasks. The map and reduce inputs are transferred using a Protocol Buffer encoding scheme to a Rhipe C library which uses R to call the map and reduce functions.

Rhadoop

RHadoop is an open source project, which provides client-side integration of R and Hadoop developed by Revolution Analytics. RHadoop and Rhipe work similarly as Rhipe as it permits user to define the map and reduce operation. The licensing scheme needed for this approach implies an Apache 2.0 license for Hadoop and RHadoop and a combination of GPL-2 and GPL-3 for R. Like Rhipe it allows running a MapReduce jobs within R just and consist in a collection of four R packages:

- rmr – a collection of functions providing and combination of R and MapReduce model of computation;
- rdfs – an interface between R and HDFS, providing file management operations within R;
- rhbase - an interface between R and HBase providing database management functions for HBase within R;
- plyrmr - plyr-like data processing for structured data, providing common data manipulation operations on very large data sets managed by Hadoop; Working with RHadoop infers installing R and RHadoop packages with dependencies on each Data node of the Hadoopcluster. Even if RHadoop has dependencies on other R packages Installing RHadoop is not difficult task [9]. RHadoop has a wrapper R script called from Streaming that calls user-defined map and reduce R functions.

R and Streaming

Streaming is a technology integrated in the Hadoop distribution that allows users to run Map/Reduce jobs with any script or executable that reads data from standard input and writes the results to standard output as the mapper or reducer. This means that we can use Streaming together with R scripts in the map and/or reduce phase since R can read/write data from/to standard input. In this approach, there is no client-side integration with R because the user will use the Hadoop command line to launch the Streaming jobs with the arguments specifying the mapper and reducer R scripts. R should be copied to the distributed cache a made available to the map tasks and causes the reduce. R script to be transferred to the cluster machines where the map-reduce job will be run.

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ApachePig_Jurmo

Pig is a large-scale data analysis platform with a high-level data description and manipulation language. Pig was originally a research project at Yahoo! Inc. and later became an independent subproject of Apache Software Foundation's Hadoop project. It was designed to make use of the MapReduce programming model implemented in Hadoop [12]. From September 2010, Pig is no longer a Hadoop sub-project, but a top-level Apache project [11]. Pig abstracts away from the MapReduce model by introducing a new high-level language for data aggregation. A common use of MapReduce is aggregating information from large text files such as log files or HTML documents. Pig acts as a uniform interface for many common data aggregation tasks (counting, filtering, finding records by certain parameters etc.). This means that the programmer no longer has to write MapReduce programs in Java, but instead can write shorter Pig Latin queries or batch scripts to accomplish the data manipulation tasks needed. The Pig platform then generates, optimizes and compiles MapReduce tasks from the Pig Latin statements and commits them to Hadoop for execution. Pig Latin queries can also be run in local mode without parallelism [11].

CONCLUSION

On exploring practicality of using Map/Reduce for joining datasets it is found quite easy to use and implement over different sizes of cluster. First important thing would be to test all the algorithms discussed on clusters of much larger size, with much larger data sizes. Especially the multi-way joins since the authors in [6] did conduct experiments on two-way joins on a cluster containing 100 nodes. Another idea would be to try to use a combination of the algorithms for better performance. One of the software tools successfully used for storage and processing of big data sets on clusters of commodity hardware is Hadoop. Three ways of integrating R and Hadoop for processing large-scale data sets: R and Streaming, Rhipe and RHadoop. Each way presented here has benefits and limitations.

There are also other ways of integrating them like ROBDC, RJBDC or Rhive but they have some limitations. While using R with Streaming raises no problems regarding installation, Rhipe and RHadoop requires some effort in order to set up the cluster. The integration with R from the client side part is high for Rhipe and Rhadoop and is missing for R and Streaming. Rhipe and RHadoop allows users to define and call their own map and reduce functions within R while Streaming uses a command line approach where the map and reduce functions are passed as arguments. Regarding the licensing scheme, all three approaches require GPL-2 and GPL-3 for R and Apache 2.0for Hadoop, Streaming, Rhipe and RHadoop.

We have to mention that there are other alternatives for large-scale data analysis: Apache Mahout, Apache Hive, commercial versions of R provided by Revolution Analytics, Segue framework or ORCH, an Oracle connector for R but Hadoop with R seems to be the most used approach. For simple Map-Reduce jobs, the straightforward solution is Streaming but this solution is limited to text only input data fi les. For jobs that are more complex the solution should be Rhipe or RHadoop. Pig provides a useful abstraction on top of MapReduce. It allows writing data manipulation statements and queries in a high-level language and thanks to its underlying MapReduce model it is able to automatically parallelizing and scaling the operations performed providing support for work with very large data sets. This makes the framework applicable to the problems SciCloud deals with. Pig also has some disadvantages, e.g. its current support for XML based formats, which are incomplete, and it is difficult to work with date and time formats.

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A STUDY OF CLOUD ENABLED E-HEALTH CENTRES (eHCs) AND THEIR FEASIBILITY IN RURAL AREAS OF UTTARAKHAND

Rajeshwari Trivedi[15] Abhay Saxena[16]

ABSTRACT

e-Health Center (e-HC) is the buzzword in the healthcare IT industry. Hewlett Packard (HP), one of the leading IT Company announced on the world Health Day in 2014 that we want to imagine a world where healthcare is not geographically biased and residents of remote areas can receive the same care as those who live in larger cities and where access to basic medical treatment is mile away. It can be achieved by working with the government and NGOs to bring technology enabled healthcare to remote locations. To fulfill this dream, HP started initially 4 e-Health Centers. According to HP, e-Health Centers (e-HC) are powerful cloud enabled healthcare solutions that connect resident in remote areas with quality medical care. E-HCs also can be housed in shipping containers so they can be quickly transported to remote areas by air, rail or land.

In India, through current four e-HCs more than 2 billion people have received access to quality medical care. However, it is just initiation and many poor rural Indians are waiting for health services. In India almost 65% of population lives in rural areas and only 2% of nation's total doctors live there, so need is there. This paper is to study and analyze current e-HCs and to suggest the cloud based e-Health Centers for providing quality healthcare in rural areas of Uttarakhand who is having geographically diversified and hilly mountain areas and weekly connected via ICT.

KEYWORDS

Cloud, e-Health Centers, Rural Areas etc.

INTRODUCTION

In the today's developing world, Healthcare delivery is constrained by lack of appropriate infrastructure, medical personnel, and electronic medical records. To provide proper healthcare especially in rural areas is very difficult task for government. People have to go to nearby cities even for basic treatment, which takes time and money. Hewlett and Packard (HP), one of the leading IT Company has designed cloud-based e-Health Centre to overcome this problem for rural areas of India. The e-Health Centre (e-HC) is an innovative cloud-enabled healthcare infrastructure that can be rapidly rolled out to provide affordable preliminary healthcare along with tele-health services in rural areas. It leverages the power of cloud technology, directly integrating medical equipment with health. [1]

Millions of people in India do not have access to basic health services and rural areas are especially isolated from formal healthcare. About 89% of the rural patients have to travel an average of 8 kilometers to access basic medical treatment. The e-Health Center solution is efficient, affordable and rapidly deployable infrastructure enabling access to quality healthcare The e-Health Center is expected to provide remote healthcare services through a fully integrated cloud technology solution designed by HP to approximately 20,000 people across 10 villages in the district. The solution will connect the medical equipment from the e-Health Center and collect basic patient health data to enable better medical diagnosis. The e-Health Center will also provide remote consultation using built in videoconferencing options tapping into specialist expertise worldwide. The main target group of eHCs is people with poor or no accesses to healthcare those who are living in remote and rural areas. [2].

In India HP launched its first eHC in 2012 at Chausala Haryana. After successful implementation of first eHC, 3 more eHC was launched in Myinapur (Uttar Pradesh), Jamshedpur (Jharkhand) and Ailabad (Andhra Pradesh). More 28 eHCs are willing to be launched during the year 2015. Uttarakhand is the state where the main problem is infrastructure. To create medical infrastructure in rural areas is very costly because of diversified geography and hilly mountain area. Cloud based eHealth Center can be easily replicated in this area and can improve healthcare facilities in the state.

The eHealth Center (eHC)

World Health Organization (WHO) awarded Narayana Health on World Health Day 1ˢᵗ April, 2015 for providing e-Health Centres with HP. According to WHO, e-health centers provide technology enabled innovative primary healthcare services to people living in resource-deprived locations of India. The e-Health Center solution enables the collection, analysis, and tracking of

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individual and community-wide data on disease patterns and risk factors to derive regional health and disease burden profiles with high potential to influence the quality of life of many people in India. [3]

HP describes each e-health center as a "*powerful, cloud-enabled, healthcare solution housed in a standard shipping container which can be quickly transported to remote areas of the country by air, rail or land.*" They are easily movable and can provide many healthcare services through a combination of trained staff and cloud-based medical equipment. At the sites, physicians make use of diagnostic equipment that can access cloud data. They are also able to videoconference with other medical professionals who can give them second opinions or help them to obtain medicine for any individual patient. Skilled doctors may not always be available in the remote regions where the e-health centers are located, so any paramedic acting as staff can synchronize his or her knowledge with physicians who normally reside in larger cities.

HP created the diagnostic equipment that medical professionals use in the remote centers. The equipment is not only useful for diagnosing current ailments, it can also help patients who seek help during repeated visits because the equipment uploads each patient's demographics, medical history, and diagnostics into a centralized database. Therefore, if the same patient visits any other e-health center, physicians will have their personalized information at hand. [4]

Technology used in e-Health Center (e-HC)

Current e-Health Centers have been designed to transform an existing rural health center into an e-Health Center by deploying a fully integrated cloud technology solution. This technology will connect the medical equipment at the e-HC with an e-Health Cloud that collects basic patient health data to enable better medical diagnosis. Following are the basic facilities available in e-HC.

- Two (20ft x 8ft) shipping containers as a base and is rapidly deployable by road/rail/sea.
- Cloud technology to provide super-specialist medical consultation to patients in rural areas.
- Integrated medical diagnostic equipment to a cloud hosted electronic medical records (EMR).
- Remote monitoring of medical records, healthcare provider, and eHC equipment.
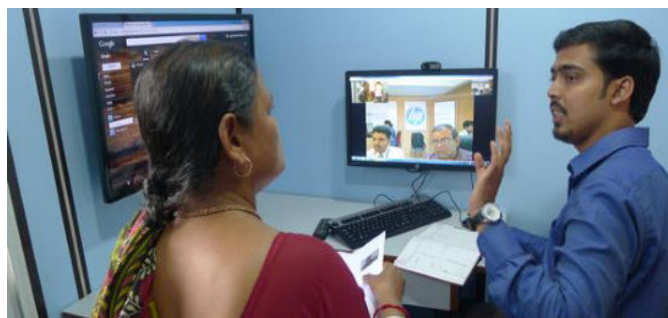- Real time and time sequence disease surveillance, allows monitoring of disease in rural areas.

e-Health Centers are easily replicable as they are:

- Housed in shipping containers that is robust, hermetically sealed, and rapidly deployable.
- Open Source EMR creates digitized health records that can be accessed from anywhere.
- Device Integration implies that only regular nursing skills are required to run the e-HC.
- In India, it is integrated with Government of India's healthcare delivery Program.
- Strictly adheres to the international Occupational Safety and Health Administration (OSHA) standards.

These facilities make e-Health Centers scalable:

- The e-HC is being viewed as a source for Big Data Analytics on healthcare by Government of India
- The biometric solution can link e-HC to Unique Identification (UID) Authority of India.
- E-HC is built on the guidelines of Government of India's Primary Healthcare (PHC) facility
- Comes with its own electricity and Internet connectivity & does not depend on local infrastructure.
- E-HC can be scaled up, as it does not need medical labor at the rural location to run. [5]

Figure-1

Sources: http://www8.hp.com/us/en/hp-information/social-innovation/ehealth-center.html#.VSjYki4prYo

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Benefits of e-Health Centers (e-HCs)

e-Health Centers are rapidly deployable health care facilities specially developed for rural areas in India. Using cloud facilities, the patients can be tested and diagnosed / analyzed in real time. It integrates healthcare delivery and health data collection for improved medical diagnostics and research and provides efficient, affordable and deployable health services by:

- Advance features to connect with Physicians, Surgeons and super specialists,
- Centralizing patient information,
- Well equipped with latest medical gadgets and cloud enabled diagnostic equipment,
- Providing health profiles of the region and monitoring daily usage,
- Delivering comprehensive analytics through e-HC dashboard, and
- Transparent and efficient monitoring,
- Informing health care policy makers with valuable data,
- Real time analysis and treatment. [6]

Current e-Health Centers in India

Electronics manufacturer HP has teamed up with India healthcare provider Mediciti and research group Council of Scientific and Industrial Research (CSIR) and some social medicare institutes like Narayana institute. The first eHealth Centre was officially launched on December 11, 2012 and in just six months was rolled out in three different locations, Chausala, Jamshedpur and Aliabad, which together recorded more than 18,000 patient visits in a year. HP was subsequently approached by Narayana Hrudayalaya Hospital to roll out eHCs in Calcutta and Guwahati, taking the concept to new states. Current e-Health centres are in **Chausala (Haryana), Myinapur (Uttar Pradesh), Jamshedpur (Jharkhand), and Aliabad (Andhra Pradesh).**

Figure-2

eHealth center- Chausala, India
Sources: https://www.youtube.com/watch?v=4BCZq8hBxmE#t=10

The e-Health Center initiative has already made great progress. In its pilot phase in Chausala, India, the initiative successfully integrated such technologies as automated health data collection cloud based analytics and remote consultation, monitoring, and accessible EMR systems. The Chausala location recorded more than 4,000 patient visits in the first 100 days of operation. **[8]**

Mediciti Hospitals in collaboration with Hewlett Packard (HP) and SHARE India, an NGO, launched an innovative fully integrated cloud based e-health centre at Aliabad village near Hyderabad in March 2014. This e-HC centre is fourth of its kind of centre established in India. Located 45 kilometers from Hyderabad, the centre is expected to cater the healthcare needs of the rural areas. With the launch of this e-health centre, it is expected to provide healthcare services to remote areas, which would benefit approximately 20,000 people across 10 villages in the district. The e-health Centre would boast modern equipment to carry out simple tests like X-Ray, ultrasound, ECG and Echo. There will be videoconferencing facility to consult specialists attached with Hospital. Installation of equipment and other logistic aids will cost Rs. 60 lakh. Initially, the Centre will be open from 9am to 5pm. Gradually, the hours may be increased depending on the footfall. **[9]**

According to Dr. Krishnaiah, CEO, Mediciti Institute of Medical Sciences, "Providing access to quality healthcare in rural areas is the main goal and Aliabad e-health Centre is one step forward in this direction. The e-HC health cloud integrates the process of healthcare delivery and health data collection. This centralized patient information sets the platform for data-driven research such as disease surveillance by tracking disease patterns and risk factors. The health profile of the region as well as monitoring of the daily usage of the e-HC is enabled by an integrated e-HC dashboard, providing comprehensive yet digestible analytics that will help health policy makers. **[10]**

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With successful deployment and benefits gained by these e-HCs, cloud based e-Health centers can be suggested for the other states of India to empower rural health.

e-Health Centers for Uttarakhand

Current scenario in healthcare sector in Uttarakhand is below par. Public health service run by Government is overburdened and still out of reach for the common man. Hilly geographical size, increase population density, lack of transport, inaccessibility, illiteracy, poverty, poor nutritional status, diversity in food habit and life style are various impediments. Government is making sincere efforts to bring ICT and e-Governance together [11]

Uttarakhand is having 53,483 sq. km area which has been divided in 13 districts divided in two divisions" Kumaun and Garhwal. Out of these 13 districts, 3 districts are plain and remaining 10 are hill districts. Geographically the state can broadly be divided into 3 zones: Upper Hills, Middle Hill and Foot Hills. According to 2011 Census of India, [12]
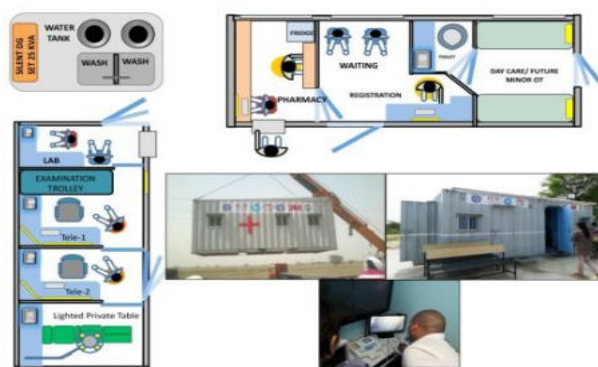
Table-1

Total Population	1.01 Crore 10,116,752
Male	5,154,178
Female	4,962,574
Rural Settlements	16,826
Population of less than 500	12,699 or 81%
500-1999	17 %
Population of more than 2000	2.7 %

Sources: Authors Compilation

These facts show that Uttarakhand is the rural state with 10 hill districts with upper hills and foothills. Healthcare facilities in these areas are not satisfactory yet. However, government has so many plans but at the main problem is infrastructure. It is very costly and tuff to set up fully medical infrastructure on hills. Another main problem is human resources. Doctors and medical staff do not want to go on hilly areas because of less facilities and risk. Government has made it compulsory for all medical students to work in rural areas for 2 years then only they can do private practice. However, after this also most of the doctors are found absent.

e-HC can solve all this problem. It provides easy and its own infrastructure assistance, which can be easily deployed at any village or existing health care center, can be converted in e-HC. Another problem of medical staff can be solved by providing staff at e-HC with basic training and getting expert suggestion and treatment from the remote locations. Uttarakhand also require such facilities where medical services can be replicated on natural disaster. E-HCs have such facilities also. They can be easily replicated, having their own cloud based network, which can be easily connected with remote network and start working for the victims of the disaster.
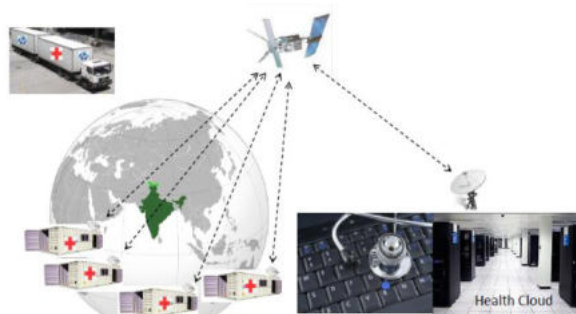
Figure-3

Sources: Authors Compilation

Proposed Infrastructure for e-HC

Two containers are used in the proof-of-concept e-HC. The telemedicine container (left) has provision for a small laboratory. The second container (top) is used for registration and pharmacy and has space for a future minor operation theatre. The infrastructure will be fixed with basic equipment such as ECG and labour room. It will be connected to Health Cloud via Satellite. Initially 30 e-HC can be designed for the rural areas where nearby five villages can share the facilities over 1500-2000 population. That e-HC

will be connected with the district headquarters and all district headquarters will be connected with main centre of capital city Dehradun. The e-HC will have all basic equipment for testing connected with district headquarters and the medical person at that place will diagnose and will give suggestion by telemedicine and video conferencing. The trained person at the e-HC will get the print out prescription and describe it to the patient.

Figure-4

Sources: Authors Compilation

It will help to increase the reach of healthcare, as it will be available at very low cost. Other benefits are remote monitoring of PHC, addressing basic healthcare issues and delivering preventive health care and at last, valuable data will be available for research in medical field.

CONCLUSION

e-Health Center (e-HC) is the best utilization of the latest cloud technology for the healthcare sector of India. Some states are already working on and getting benefit for rural healthcare. Uttarakhand is the rural state where medical facility is very poor on hills. e-HC can be set up in the rural areas between 5-8 small villages with all basic equipment and can be replicated according to the need. So that people of the rural areas do not have to travel far or the basic treatment and they can get expert doctors' treatment at their own place. They can get one unique identity by which they can get treatment from any place and at last one central database or repository for health can be prepared for analyzing healthcare system of the whole country, which can help in making decision for the improvement of health care sector.

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CLOUD COMPUTING FOR E-LEARNING

Shipra Kalra[17]

ABSTRACT

E-Learning stands for electronic learning, which means delivering a course in a school, college, for training programs or for distance learning through computer. It is the intentional use of networked information and communication technology (ICT) in teaching and learning. The growth of e-learning is directly related to the growth of ICT and is favorable because of the decreasing hardware and software costs. There are other costs as well which have to be kept in account like the cost of infrastructure support, its maintenance, training of staff and many other which is causing more damage than good to the teachers, students and the overall learning experience. In addition, the e-learning systems need to keep the pace with the technology, so the best solution is cloud computing.

Cloud Computing provides a platform to support e-learning as it delivers the computing resources both hardware and software as a service over the internet. There are many cloud service providers that support the educational system like Amazon, Google, Yahoo, Microsoft etc.

Cloud Computing is the "on-demand information technology services and products". Cloud computing allows to move the processing effort from the local devices to the data center facilities. The software is seen as a service and the applications and data are stored on multiple servers that can be accessed from the Internet. However, in traditional web-based e-learning mode, system construction and maintenance are located in interior of educational institutions or enterprises, which results in many problems existed. Cloud computing has many advantages such as expected performance, reduced upfront investment (i.e., software, hardware, and professional staff to maintain servers and upgrade software), high availability, reduced launching time, infinite scalability, tremendous fault-tolerance capability, and accessibility, enhanced collaboration, and mobility, allow users to use any device, such as a mobile phone, personal computer (PC) etc. because of all these advantages cloud computing is the new solution for e-learning environment.

In this paper brief knowledge of e-learning and cloud computing will be given and how cloud computing will be used for the application of e-learning systems with some issues and benefits of cloud based e-learning.

KEYWORDS

E-learning, ICT, Cloud Computing, Information Technology, Learning etc.

INTRODUCTION

E-learning is defined as an Internet-enabled learning. It is the use of networked information and communications technology (ICT) in teaching and learning. With the growing trend of information technologies, e-learning is the IT new research and exploited platform. There are several universities who are running their e-learning programs like Khan Academy (www.khanacademy.org), "free online course "of the Stanford University, online courses offered by Harvard University and many more.

The courses that are offered by the e-learning approach usually have many enrollments worldwide (because there are no physical boundary limitations in e-learning approach) as compared to the physical classroom attendance group. For example, the "Machine Learning" course of Stanford has got more than 160,000 worldwide students registered. Therefore, e-learning systems have high infrastructure requirement that are necessary to provide concurrent service to that amount of students which actually succeeds the capabilities of a conventional web server. E-learning systems require quiet superior infrastructure than that required for the regular working of the institutions. Therefore, the alternative is to provide the services of an e-learning system on demand and pay only for the resources that are actually used. Therefore, the new direction is to use Cloud Computing.

Cloud Computing is a new paradigm in which the resources of an IT system are offered as services to the user and the users can avail these services through the Internet. Cloud Computing provides a pool of computing resources with its dynamic scalability and usage of virtualized resources as a service through the Internet. The resources can be network servers, applications, platforms, infrastructure segments and services. Cloud computing deliver services based on demand and provides sufficient network access, data resource environment and effectual flexibility. This technology is used for more efficient and cost effective computing by centralizing storage, memory, computing capacity of PC's and servers. With the tremendous advantages of cloud computing, we expect this technology to revolutionize the field of e-learning education.

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There is several cloud computing services providers that offer support for educational systems. Among them are Amazon, Google, Yahoo, Microsoft etc.

Thus cloud computing provides two distinct features: first is the on demand service and the other is scalability in such a way that the computational resources are assigned in a dynamic and accurate way when they are strictly required without the need to understand the infrastructure from user's view point.

This paper focuses on cloud computing concepts and the benefits of cloud computing for e-learning solutions. In addition, the impact on e-learning solutions based on cloud computing project management is analyzed. This is very important for the development of e-learning solutions based on cloud computing.

CLOUD COMPUTING

Cloud Computing, commonly referred as "the cloud" is the delivery of on demand computing resources-everything from applications to data centers—over the Internet on a pay-for-use basis. Cloud computing allows consumers and businesses to use applications without installation and access their personal files at any computer with internet access. This technology allows for much more efficient computing by centralizing data storage, processing and bandwidth.

The NIST (National Institute of Standards and Technology) definition lists five essential characteristics of cloud computing: on-demand self-service, broad network access, resource pooling, rapid elasticity or expansion, and measured service. It also lists three "service models" (software, platform and infrastructure), and four "deployment models" (private, community, public and hybrid) that together categorize ways to deliver cloud services.

Cloud computing employs a service driven business model. Cloud offers services that can be grouped into the following categories:

- Infrastructure as a service (IaaS): IaaS provides companies with hardware as a service, which includes servers, data centers, net technology, storage, computing power on a pay-per-use basis. This helps businesses to rent these resources instead of spending money to buy dedicated servers and networking equipment. Examples of infrastructure as a service includes Amazon1 which offers S3 for storage, EC2 which offers computing power, and SQS offers network communication for small businesses and individual consumers

- Platform as a service (PaaS): this refers to providing not just the infrastructure, but also an integrated set of software, which a developer needs to build applications. PaaS provides the entire support for building an application including design, implementation, debugging, testing, deployment, operation and support of rich Web applications and services on the Internet. Thus, PaaS does not provide access to infrastructure directly but to use the services of IaaS, it presents the tools that a developer needs. Thus, PaaS indirectly access IaaS services and ultimately the infrastructure.

- Software as a Service (SaaS): In this, software's or we can say software applications are provided as service on the Internet to the user. The companies or businesses need not to buy expensive software packages from the market. SaaS was one of the first implementation of Cloud services. Example is the Customer Relationship Management application provided as a service Salesforce.com.

TECHNOLOGICAL CHALLENGES IN CLOUD COMPUTING

Although cloud computing comes out to be a very effective paradigm because of its key characteristics like on demand self-service because the customers are able to make use of computing resources without any human intervention; scalability and elasticity via on-demand service; network access from heterogeneous client platforms; resource sharing across a large pool of users and pay-per-use business model. Despite of all these benefits, there are some issues in the Cloud computing Model. They are:

- Security Issues: While the cloud may be flexible and cost-efficient, but since the data is distributed on different servers and it is "out of control" of the customer, lack of data safeguards and compliance standards makes security the largest hurdle. There will always be issues of data privacy and confidentiality in cloud environment. Critical business data might be at risk.
- Lack of internet access leaves data out of reach.
- Reliance on third parties to run your IT**:** Firms can, of course, make savings by cutting job in their IT departments, but this will also mean that they do not have easy and quick access to people on the ground if things go wrong. It is great having access to an online helpdesk, but what if the Wi-Fi has gone down.

E-Learning

E-learning is an Internet-based learning process, using Internet technology to impart learning, which will not replace traditional education methods, but will greatly improve the efficiency of education. [2]

E-learning is electronic learning, which means usage of electronic media and information and communication technology (ICT) in education. E-learning can occur in and out of the classroom. E-learning includes and is also synonymous with computer-based training (CBT), internet based training (IBT), web based training (WBT), Computer-aided instruction (CAI), online education, technology enhanced learning (TEL), virtual learning environments (VLE).

E-learning is the computer and network enabled transfer of skills and knowledge. The content is delivered using Internet, audio tape, video tape, CD ROM, satellite TV. The base requirement for e-learning is that everyone must be equipped with basic knowledge of technology and e-learning can be used for regular academic courses or continuous education, company trainings, online tests. E-learning has many benefits. First, one is no physical boundaries- Students are not restricted to a physical location. All they need is the internet connection and they can attend online classes, take exams, send feedbacks, and download course materials. Second, one is no time restrictions- student can take online course at any time as per his/her convenience. They do not have to follow the conventional timetable. The last benefit is that the student can easily collaborate and communicate with their classmates and their teachers.

CHALLENGES OF E-LEARNING

E-learning or web-based learning offers several benefits over conventional classroom-based learning. Its biggest advantages are the reduced costs since a physical environment is no longer required and therefore it can be used at any time and place for the convenience of the student. Additionally, the learning material is easy to keep updated and the teacher may incorporate multimedia content to provide a friendly framework and to ease the understanding of the concepts. Finally, it can be viewed as a learner-centered approach that can address the differences among teachers, so that all of them may check the confidence of their material to evaluate and re-utilize common areas of knowledge [1]. However, there are some challenges of e-learning systems. Most prevailing among these is that currently, e-Learning systems are still weak on scalability at the infrastructure level. Several resources can be deployed and assigned just for specific tasks at the time of high workloads, making the cost and resource management very expensive. This is also related to the efficient utilization of these resources. For example, in a typical university scenario, PC labs and servers are under-utilized during the night and semester breaks. In addition, these resources are on high demands mainly towards the end of a semester, following a dynamic rule of use. The physical machines are hold even when they are idle, wasting its full potential. Finally, we must understand that there is a cost related to the computer (and building) maintenance, but that the educational center must pay for the site licensing, installation and technical support for the individual software packages [1].

CLOUD COMPUTING FOR E-LEARNING

The e-learning system cannot completely replace teachers; it is only a usage of technology to deliver lectures, giving new contents, concepts and method for education, so that the role of teachers cannot be replaced. As per Fernandez [1], E-learning in the Cloud can be understood as Education Software-as-a-Service. It can be implemented quickly because the hardware requirements of the user are low.

As specified by A. Fernandez in [1], following are the suitability of developing e-learning services within cloud computing:

- Accessed via Web: Students or teachers can access from anywhere, anytime the browser-based applications through various devices like mobile, laptop and desktop computers provided internet access is available.
- No client-side software needed: Since the system construction and maintenance are not located in interior of educational institutions or enterprises, it has reduced many costs like installation cost (as there is no installation), maintenance cost, deployment and server administration cost, total lower ownership cost, IT staff cost.
- Pay per usage: Because of this, one can gain access to more sophisticated application, as one has to pay according to usage.
- Scalability: Since the application is running on a server farm, the scalability is inherent to the system SaaS server may support many educational institutions. Therefore, as the students or teachers' need grows, the software performance will not degrade.
- Improved Improbability: It is almost impossible for an intruder to determine where the machine is located that stores some wanted data like tests, exam papers, results.
- Crash recovery is not needed at client side. If a client computer crashes there is no loss of data s nothing is there on client side, everything is on the cloud.
- No need for back up.
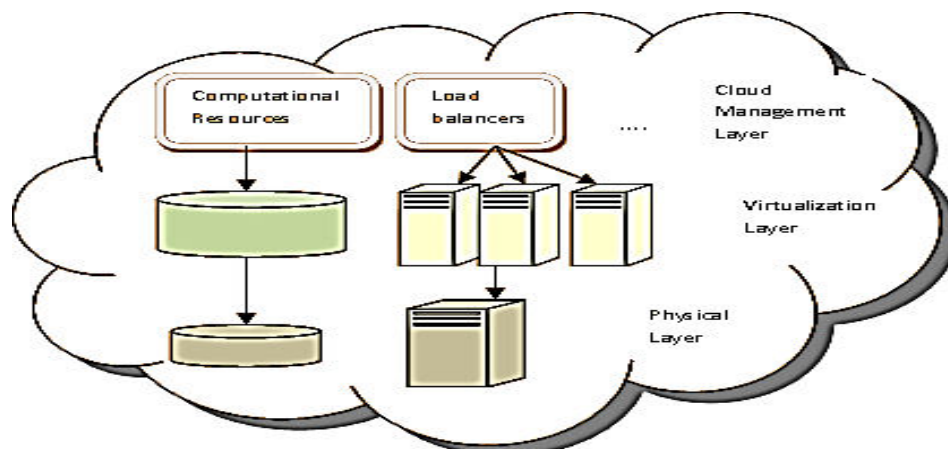- Virtualization: it is not difficult to replace a damaged cloud located server without major costs.

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- Centralized Data Storage: Since the main application and data is stored on the cloud, it is very easy to connect client to the cloud.
- Easy Monitoring of data: Monitoring of data is simple because all the data is stored at one place and not in thousands of geographically distributed computers. Security testing can also be easily done and any security change can be easily implemented.
- Instant Software Updates: Since the cloud based application for e-learning runs with the cloud power, the software's are automatically updated in cloud source. Therefore, always e-learners get updates instantly.
- Improved document format compatibility: Since some file formats and fonts do not open properly in some PCs/mobile phones, the cloud powered e-learning applications do not have to worry about those kinds of problems. As the cloud based e-learning applications open the file from cloud.
- Benefits for students: Students get more advantages through cloud based e-learning. They can take online courses, attend the online exams, get feedback about the courses from instructors, and send their projects and assignments through online to their teachers.
- Benefits for teachers: Teachers also get numerous benefits over cloud based e-learning. Teachers are able to prepare online tests for students, deal and create better content resources for students through content management, assess the tests, homework, projects taken by students, send the feedback and communicate with students through online forums.

CLOUD BASED E-LEARNING ARCHITECTURE

Cloud based e-learning architecture [1] as shown in Fig. 1 is divided into following layers:

- **Cloud management Layer**: This layer act as the interface with the cloud environment, which consist of cloud management subsystems that determine the user necessities in terms of computational resources, capacity planners, load balancers, which manages the distribution of the execution load among the various virtual machines.

- **Virtualization Layer**: The second layer consists of the virtual machines implemented within the system. Physical servers, network and storage can be expanded dynamically through virtualization in order to provide fluent services for cloud based e-learning systems.

- **Physical Layer:** this layer includes all the physical architecture of the system. It contains Internet/Intranet, system software, information management system and some common software and hardware. This layer is the lowest level of cloud service middleware and this layer provides the basic computing power like physical memory, CPU, memory.

Figure-1: Cloud based E-Learning Architecture [1]

Sources: Authors Compilation

As shown in Fig. 2, we can also specify the e-learning features provided by IaaS and SaaS cloud as follows [1]:
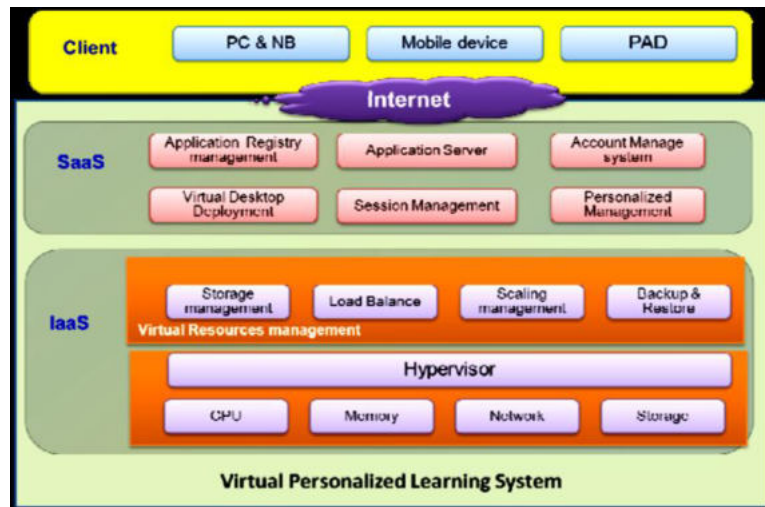
By IaaS Cloud:

- Load Balancing Storage,
- Management for all learning systems,
- Scale Management for virtual machines,
- Backup and Restoring.

By SaaS Cloud:

- Application Registry Management – to register the applications,
- Application Server – management and deployment of the subscribed learning contents to the user,
- Account Management System – for managing the account of authorized users,
- Virtual Desktop Deployment – for providing personalized desktop including the subscribed learning contents,
- Session Management- for managing the virtual desktop used by the authorized users,
- Personalized Management – for managing subscription of the favorite learning contents.

Figure-2: The Architecture of Virtual Personalized Learning Environment [4]

Sources: Authors Compilation

CONCLUSION

Cloud computing is an effective paradigm from education perspective. Learners can have the opportunity to gain quick and economical access to various applications and resources. Cloud computing reduces the organizational expenses like software license cost, hardware costs and maintenance costs. In this paper, cloud based e-learning has been discussed. The e-learning system cannot completely replace teachers; it is only a usage of technology to deliver lectures, giving new contents, concepts and method for education, so that the role of teachers cannot be replaced. E learning in the Cloud is the migration of cloud computing technology in the field of e-learning, which is a future e-learning infrastructure, including all the necessary hardware and software computing resources engage in e-learning. It can be implemented quickly because the hardware requirements of the user are low. In the end, a cloud based e-learning architecture has been described from the perspective of two services of the cloud (IaaS and SaaS).

As the cloud computing technologies become more and more sophisticated and the applications of cloud computing become increasingly widespread, e-learning will certainly usher in a new era of cloud computing.

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IMPACT OF SOCIAL NETWORKING SITES ON BUSINESS AND INDIVIDUALS

Chethan Shettigar[18] Jeshma Melita Rodrigues[19] Archana T.[20]

ABSTRACT
SNS can be a boon or a ban… it is all depended on how an individual uses it. Internet was established for the benefit of individuals and thus it is the servant of humankind and for the smooth living servant should not become master. The paper talks about the impact of social sites in development of business activities.

KEYWORDS
Social Networking Sites, Business etc.

INTRODUCTION

The social networking sites are gaining a lot of popularity these days with almost all of the educated youth using one or the other such site. These have played a crucial role in bridging boundaries and crossing the seas and enabling them to communicate on a common platform. It has become a popular and a potential mean for them to stay friends with the existing ones and to grow up their social circle at least in terms of acquaintances.

The question regarding the safety, privacy and the legal issues have been cropping up all this time. In this paper, we have thrown a light on the impact of these networking sites on the Business and individuals.

Subsequent to this is the Introduction to the networking sites along with a brief description of the most popular sites. Then the issues of concern, which have come up along the way in all these years since these sites gained popularity, are discussed. The next is the literature surveys, which are the articles we took up from the published reports. We then analyzed and interpreted the data at length. The last part deals with the suggestions and recommendations we have come up with after carefully analyzing and incorporating the opinion of all concerned.

OBJECTIVES OF STUDY

In this age of globalization, the world has become too small a place thanks to the electronic media and portals. Communication has become effective as never before thanks to the advent of internet. The social networking sites have also played a crucial role in bridging boundaries and crossing the seas and bringing all people at a common platform where they can meet likeminded people or find old friends and communicate with them. It has become a potential mean to relation building and staying in touch with all known.

OBJECTIVE OF RESEARCH

The objective that we wanted to achieve through our research is:

- To understand the Impact of social networking sites on the Business.
- To evaluate the impact of social networking sites on individual's lifestyle.

SOCIAL NETWORKING SITES

At the most basic level social networking sites are sites, which allow users to set up online profiles or personal homepages, and develop an online social network. The profile page functions as the user's own webpage and includes profile information ranging from their date of birth, gender, religion, politics and hometown, to their favorite films, books quotes and what they like doing in their spare time. In addition to profile information, users can design the appearance of their page, and add content such as photos, video clips and music files.

Users are able to build a network of connections that they can display as a list of friends. These friends may be offline actual friends or acquaintances, or people they only know or have met online, and with whom they have no other link. It is important to note that the term 'friend', as used on a social networking site, is different from the traditional meaning given to the term in the

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offline world. In this report, we will use the term as it is used on a social networking site: anyone who has invited, or been invited by, another user, to be there 'friend'.

- In a more collaborative and peer-to-peer manner,
- Users communicate and collaborate while at the same time contribute and participate,
- Is shaping the way you work and interact with information on the web,
- Mindset change towards collaborative participation,
- Shifts the focus to the user of the information,
- User can search, choose, consume and modify the relevant content.

BUSINESS APPLICATIONS

The use of social network services in an enterprise context presents the potential of having a major impact on the world of business and work (Fraser & Dutta 2008).

Social networks connect people at low cost; this can be beneficial for entrepreneurs and small businesses looking to expand their contact bases. These networks often act as a customer relationship management tool for companies selling products and services. Companies can also use social networks for advertising in the form of banners and text ads. Since businesses operate globally, social networks can make it easier to keep in touch with contacts around the world.

One example of social networking being used for business purposes is LinkedIn.com, which aims to interconnect professionals. LinkedIn has over 40 million users in over 200 countries.

Company now using social networking sites as marketing channel to promote its product, also called as viral marketing

SOCIAL NETWORK SITES (SNS): A DEFINITION

We define social network sites as web-based services that allow individuals to:

- Construct a public or semi-public profile within a bounded system,
- Articulate a list of other users with whom they share a connection, and
- View and traverse their list of connections and those made by others within the system. The nature and nomenclature of these connections may vary from site to site.

While we use the term "social network site" to describe this phenomenon, the term "social networking sites" also appears in public discourse, and the two terms are often used interchangeably. "Networking" emphasizes relationship initiation, often between strangers. While networking is possible on these sites, it is not the primary practice on many of them, nor is it what differentiates them from other forms of computer-mediated communication (CMC).

What makes social network sites unique is not that they allow individuals to meet strangers, but rather that they enable users to articulate and make visible their social networks. This can result in connections between individuals that would not otherwise be made, but that is often not the goal, and these meetings are frequently between "latent ties" (Haythornthwaite, 2005) who share some offline connection. On many of the large SNSs, participants are not necessarily "networking" or looking to meet new people; instead, they are primarily communicating with people who are already a part of their extended social network. To emphasize this articulated social network as a critical organizing feature of these sites, we label them "social network sites."

HOW DOES 'SNS' WORK

While SNSs have implemented a wide variety of technical features, their backbone consists of visible profiles that display an articulated list of Friends who are also users of the system. Profiles are unique pages where one can type oneself into being. After joining an SNS, an individual is asked to fill out forms containing a series of questions. The profile is generated using the answers to these questions, which typically include descriptors such as age, location, interests, and an "about me" section. Most sites also encourage users to upload a profile photo. Some sites allow users to enhance their profiles by adding multimedia content or modifying their profile's look and feel. Others, such as Face book, allow users to add modules ("Applications") that enhance their profile.

The visibility of a profile varies by site and according to user discretion. By default, profiles on Orkut or hi5.com are crawled by search engines, making them visible to anyone, regardless of whether or not the viewer has an account. Alternatively, sites like MySpace allow users to choose whether they want their profile to be public or "Friends only." Face book takes a different approach—by default, users who are part of the same "network" can view each other's profiles, unless a profile owner has decided

to deny permission to those in their network. Structural variations around visibility and access are one of the primary ways that SNSs differentiate themselves from each other.

After joining a social network site, users are prompted to identify others in the system with which they have a relationship. The label for these relationships differs depending on the site popular terms include "Friends," "Contacts," and "Fans." Most SNSs require bi-directional confirmation for Friendship, but some do not. These one-directional ties are sometimes labeled as "Fans" or "Followers," but many sites call these Friends as well. The term "Friends" can be misleading, because the connection does not necessarily mean friendship in the everyday vernacular sense, and the reasons people connect are varied (Boyd, 2006).

The public display of connections is a crucial component of SNSs. The Friends list contains links to each Friend's profile, enabling viewers to traverse the network graph by clicking through the Friends lists. On most sites, the list of Friends is visible to anyone who is permitted to view the profile, although there are exceptions.

Most SNSs also provide a mechanism for users to leave messages on their Friends' profiles. This feature typically involves leaving "comments," although sites employ various labels for this feature. In addition, SNSs often have a private messaging feature similar to webmail. While both private messages and comments are popular on most of the major SNSs, they are not universally available.

Beyond profiles, Friends, comments, and private messaging, SNSs vary greatly in their features and user base. Some have photo-sharing or video-sharing capabilities; others have built-in blogging and instant messaging technology. There Are mobile-specific SNSs (e.g., Dodge ball), but some web-based SNSs also support limited mobile interactions (e.g., Face book, MySpace, and Cyworld). Many SNSs target people from specific geographical regions or linguistic groups, although this does not always determine the site's constituency. Orkut, for example, was launched in the United States with an English-only interface, but Portuguese-speaking Brazilians quickly became the dominant user group. Some sites are designed with specific ethnic, religious, sexual orientation, political, or other identity-driven categories in mind.

Table-1

% Companies successfully using Business Social Networking for new customer acquisition - 2010	
India	52%
Mexico	50%
Spain	50%
Netherlands	48%
China	44%
South Africa	43%
Germany	41%
Australia	41%
USA	35%
Canada	34%
France	33%
UK	33%
Japan	30%
Belux	27%

Sources: Authors Compilation

Facebook

Facebook is an online social networking service founded on February 4, 2004 by Mark Zuckerberg with his college roommates and fellow Harvard University students Eduardo Saverin, Andrew McCollum, Dustin Markowitz and Chris Hughes. The founders had initially limited the website's membership to Harvard students, but later expanded it to colleges in the Boston area, the Ivy League and Stanford University. It gradually added students at various other universities before it opened to high-school students, and eventually to anyone aged 13 and over. Facebook now allows anyone who claims to be at least 13 years old to become a registered user of the website.

In 2012, Facebook was valued at $104 billion, and by January 2014, its market capitalization had risen to over $134 billion. At the end of January 2014, 1.23 billion users were active on the website every month, while on December 31, 2013, the company identified 945 million of them as mobile users.

WhatsApp

WhatsApp is an early stage technology startup; a publicity-shy 55-person outfit based down the road from Facebook. It offers the WhatsApp Messenger, which is a cross-platform instant messaging service for smart phones. In addition to text messaging, users can send each other images, video and audio media messages as well as their location using integrated mapping features. Unlike many companies in Silicon Valley, which drink up as much funding as possible, it was run leanly on funding of about $60m, half

as much as the much smaller Snap chat. Unlike most internet companies, it does not take advertising, instead charging a modest subscription fee of $1 a year from users, but quietly, over four years; it grew to almost half the size of Facebook. Lured by the promise of a cheap and fast alternative to text messaging, 450 million users log on every month with a million more joining each month. As of January 2014, 400 million photos are shared each day, and the messaging system handles more than 10 billion messages each day.

Facebook Acquires WhatsApp: 3 Key Benefits

Face book's $19 billion deal to buy messaging service WhatsApp may raise eyebrows, but it is a smart move. Here is why?

10 Famous Facebook Flops

Facebook agreed to buy messaging service WhatsApp for $19 billion in cash and stock, making it one of the largest acquisitions in tech history. According to a filing with the Securities and Exchange Commission, Facebook will acquire WhatsApp for about $4 billion in cash and 183 million Facebook shares, which are worth an estimated $12 billion. The deal also includes an additional $3 billion in restricted stock units for WhatsApp employees that vest in four years. Facebook CEO Mark Zuckerberg said in a conference call yesterday that WhatsApp would continue to operate independently.

WhatsApp is a messaging service particularly popular in Europe, India, and Latin America. Users are not charged text-messaging fees; instead, the app transmits text and photo messages via the user's Internet data plan, even if the messages are sent internationally. The app is free to download and free for the first 12 months. After that, it costs 99 cents annually.

With a decade under its belt, what is in store for Facebook during the next 10 years?

The app, which launched in 2008, has more than 450 million active users, gaining 250 million in just the last nine months, according to Sequoia Capital, the Valley venture firm that invested $8 million in the app in 2011. In comparison, Facebook had fewer than 150 million users after its fourth year, one-third of WhatsApp's user base in the same time. Even more astounding: Sequoia Capital said that more than 1 million people sign up to use WhatsApp every day. That rapidly growing user base is what piqued his interest, Zuckerberg said.

"We believe WhatsApp is on a path to reach 1 billion people worldwide in the next few years," Zuckerberg said in yesterday's conference call. "Eleven days ago I proposed that if we joined together, that would help us connect the rest of the world."

IMPACT ON SOCIETY AS WHOLE

Social networking is a topic that divides opinion - some people think it's an amazing tool but others are worried about the impact it has on people's lives.

From students to journalists, One Direction to the Prime Minister - lots of people use social media sites for both work and pleasure.

School Reporters from across the UK have reported on **staying safe online** and the perils of **Twitter 'addiction'** in the last few months.

Students from **The Crest Girls' Academy** in London are also interested in the topic and recently polled parents, careers and teachers at their school to get their views on social networking.

The survey found that 37% of those questioned had been left sleep-deprived because of social networking and 75% did not like the idea of phones being kept close by while they slept. Other School Reporters have also looked into **the issue of technology and its effect on teenagers' sleeping habits**.

The students decided to explore the issue further and have been taking a closer look at the benefits - and potential risks - of using social networks. Here are some of their conclusions as to the main benefits and drawbacks of social media.

NEGATIVES

- Not everyone in the 21st century thinks about the negative effects of having social networking accounts - but simple things like not setting your privacy settings properly or liking someone's photo can have bad results.

- Cyber bullying can be a problem as people can take advantage of the fact that there is no one who can effectively stop the bullying when it happens, due to everything being performed behind a screen. The only way for a bully to be stopped is if they are reported and victims may be too intimidated to do it.

- Social networking can also ruin relationships, as people may get jealous if they find out their boyfriend or girlfriend is exchanging messages with other people.

- It can also be a waste of time as people can visit a site to check on thing and end up spending the whole day 'behind the screen' and as a result, not doing anything useful with their lives.

POSITIVES

Social networking has many good points:

- You can express yourself, showing off your favorite song lyrics or posting pictures of your new outfit. It is a lot harder to feel embarrassment over the internet than in person, so people find it easier to vent their feelings on sites like Facebook.
- In fact, it has become so much a part of people's lives that you can learn someone's life story just by checking their page. Their friends, likes and dislikes, relationship status, phone number, address…everything.
- You can share your feelings and your mental stresses - and it is a great way to entertain yourself after a busy daily routine.
- It also makes it a lot easier to keep in touch with family and friends, especially if they live far away. However, you can also make new friends by connecting with friends of friends that you might not know.

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AN APPROACH FOR SENTIMENT ANALYSIS OF PUNJABI TEXT

Er. Parul Arora[21] Er. Brahmaleen Kaur[22]

ABSTRACT
Sentiment Analysis is to distinguish and group the assessments / feelings / opinions in composed content. Until date, English Language incorporates the majority of the examination work around there. In this paper, we talked about the different methodologies used to finish the opinion investigation and exploration work accomplished for Indian Languages like Hindi, Bengali and Telugu. Sentiment analysis is needed to be performed in Punjabi language because of the increase in Punjabi data on the web. Separate positive and negative condensed results are created which is useful for the client in choice making. We contrasted the outcomes and right now existing methodologies.

KEYWORDS
Sentiment Analysis, Punjabi Language, Senti Word Net etc.

INTRODUCTION

The time of Web 2.0 has brought about era of inconceivable measure of client created substance. The creating innovation without breaking a sweat of reach ability and better integration has led to broad utilization of sites, discussions, e-news, and surveys channels and the long range interpersonal communication stages, for example, Face book, Twitter. This informal communication stages have exponentially expanded the measure of data produced on consistent schedule.

SENTIMENT ANALYSIS

Sentiment Analysis manages examining feelings, sentiments, and the mentality of a speaker or an author from a given bit of text. "Sentiment investigation or presumption mining alludes to the application of regular dialect handling, computational semantics, and content examination to recognize and concentrate subjective data in source materials". Sentiment Analysis includes catching of client's conduct, likes and abhorrence of a single person from the produced web content. There is no solid meaning of "Sentiments", however as a rule they are considered as considerations, views and state of mind of an individual emerging for the most part focused around the feeling rather than a reason. Slants are considered as the indication of our sentiments what more feelings are. This field of software engineering manages analyze punch and anticipating the shrouded information put away in the content. This shrouded data give significant experiences about client's aims, taste and likeliness. Sentiment Analysis concentrates on sorting the content at the level of subjective and target nature. Subjectivity demonstrates that the content contains/bears presumption content. Objectivity shows that the content is without sentiment content. Sentiment Analysis concentrates on sorting the content at the level of subjective and target nature. This undertaking is commonly characterized as grouping a given content (normally a sentence) into one of two classes: objective or subjective.

- **Subjectivity** demonstrates that the content contains/bears presumption content.
- **Objectivity** shows that the content is without sentiment content.

In this review will focus on five specific problems within the field of sentiment analysis:

a) Document-Level Sentiment Analysis

This is the simplest form of sentiment analysis and it is assumed that the document contains an opinion on one main object expressed by the author of the document. There are two main approaches to document-level sentiment analysis:

Supervised Learning

- The supervised approach assumes that there is a finite set of classes into which the document should be classified and training data is available for each class.
- The simplest case is when there are two classes: positive and negative. Given the training data, the system learns a classification model by using one of the common classification algorithms such as SVM, Naïve Bayes, Logistic Regression, or KNN.
- This classification is then used to tag new documents into their various sentiment classes.

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PEZZOTTAITE JOURNALS

Unsupervised Learning

- Unsupervised approaches to document-level sentiment analysis are based on determining the semantic orientation (SO) of specific phrases within the document.
- If the average SO of these phrases is above some predefined threshold, the document is classified as positive and otherwise it is deemed negative.
- There are two main approaches to the selection of the phrases: a set of predefined POS patterns can be used to select these phrases or a lexicon of sentiment words and phrases can be used.

b) **Aspect Based –Sentiment Analysis**

Aspect based sentiment analysis is the most fine-grained analysis of review articles and social media snippets with respect to specific objects and their aspects.

c) **Sentence Based-Sentiment Analysis**

Natural Language Syntax

- Describes relationships among words Automatic syntactic analysis,
- Revealing inter-word relationships on various levels,
- Detection of noun (prepositional, verb,...) phrases, clauses,
- Starting point for intelligent natural language applications,
- Extraction of facts & question answering,
- Logical analysis,
- Punctuation Detection & Grammar Checking,
- Natural text generation,
- Authorship Detection,
- Machine Translation.

Sentence Level Analysis

- Detection of phrases and inter-word relationships,
- Their further processing applications,
- Grammar checking,
- Information analysis of text,
- Text generation.

d) Sentiment Lexicon--Sentiment Analysis

Bing Liu maintains and freely a sentiment lexicon consisting of lists of strings.

Use properties: Includes miss-spellings, morphological variants, slang and social media mark-up. It is used for academic and commercial purposes. ***Other Sentiment Lexicon:***

- Senti Word Net: Attaches positive and negative real-valued sentiment scores to Word Net Synsets.
- Harvard General Inquirer: Attaching syntactic, semantic and pragmatic information to part-of-speech tagged words.
- Linguistic Inquiry and Word Counts (LIWC): It is a proprietary database consisting of many categorized regular expressions. Its classifications are highly correlated with those of the Harvard General Inquirer.

RELATED WORK

ZHU Nanli1et.al.[1] (2001) in this Sentiment investigation has stimulated the enthusiasm of numerous scientists as of late, since subjective writings are valuable for some applications. Specifically, supposition investigation on online audits has turned into a hot examination field. Studies on notion investigation predominantly concentrate on system and vocabulary development, characteristic extraction, and extremity determination. This paper exhibits a review on the most recent improvement in assumption examination, and makes an inside and out presentation of its exploration and application in business and Blog circle. The routines utilized as a part of momentum examination are particularly accentuated and the current issues of those studies are talked about. Finally, some conceivable future headings of examination are called attention too.

Bo Pang [2] advanced this idea in 2002; the scholastics have embraced a different scope of related examination, because of its common sense in supposition observing and business focused insights. Slant investigation on online audits has ended up

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progressively well known. A multidisciplinary exploration field in nature, assessment investigation incorporates numerous fields, for example, regular dialect transforming (NLP), computational phonetics, data recovery, machine learning and manmade brainpower and so on.

Zhang Jing et.al. [3] can enhance the building of the subjectivity dictionary and the proficiency of the estimation investigation. The innovation of the Chinese word subjectivity and objectivity judgment is examined and broke down, the subjectivity lexicon is characterized and the subjective gimmick model is secured by the utilization of the feeling extremity of the statement and the subjectivity power list of capabilities. The machine learning strategy connected in the subjective list of capabilities accomplishes the subjectivity classifier to consequently judge the expression subjectivity and to think about and streamline. Considering the contrast in the middle of Chinese and English word (no root), the section of the Chinese subjectivity vocabulary is characterized as per the estimation investigation concerning the slant subjectivity of the common dialect.

Lizhen Liu et.al. [4] An essential task of sentiment mining is to concentrate individuals' feelings on peculiarities of an element. Nevertheless, for the same peculiarity, individuals can express it with a wide range of words or expressions. To deliver a valuable outline, these words and expressions, which are area equivalent words, need to be gathered into the same peculiarity bunch. In addition, the assessment relatedness between the gimmicks and conclusions is normally confused. For some cases, item gimmick words are inferred by the conclusion words in surveys. A novel technique is proposed to manage the gimmick level assessment mining issues. ***More Specially:***

- The proposed system considers the explicit features and the implicit features,
- The opinion words are isolated into two classes, obscure opinion words and clear sentiment words, to distinguish the verifiable gimmicks and group the peculiarities. Next, we will examine the foundation of two word references via naturally and enhance the accuracy and review for the little scale corpus.

Jeonghee Yi.et.al. [5] In this Sentiment Analyzer (SA) that concentrates estimation (or feeling) around a subject from online content reports. As opposed to grouping the notion of a whole record around a subject, SA identifies all references to the given subject, and decides opinion in each of the references utilizing common dialect preparing (NLP) procedures.

Our sentiment analysis consists of:

- A topic specific feature term extraction,
- Sentiment extraction, and
- Subject, sentiment association by relationship analysis.

The linguistic resources used by sentiment analysis:

- Define the scope of sentence structures that SA is dealing,
- Sentiment phrase identification and Sentiment assignment,
- Relationship analysis.

Raisa Varghese.et.al. [6] In [7] the statement level feature extraction is carried out utilizing Naive Bayesian Classifier. The semantic introduction of the individual sentences is recovered from the relevant data. This machine learning approach overall cases and exactness rate of 83%. An alternate huge work is the execution of both Natural Language comprehension and generation in Sentiment investigation [8]. Supposition Analysis Model is depicted in this research paper.

Jintao Mao.et.al. [9] Sentiment classification has pulled in expanding enthusiasm from Natural Language Processing. The goal of sentiment classification is to automatically identify whether a given piece of text expresses positive or negative opinion towards a topic of interest. We display the viewpoint that uses a human model focused around arbitrary methodology to focus content extremity arrangement. Experiment results showed that on movie review corpus, the human modeling approach has a relatively higher accuracy than that of SVMs and Naïve Bayes Classifier. In the experiment, our method to determine text polarity classification has many advantages.

- The method automatic extracts the semantic features without semantic word dictionary.
- The accuracy of the method will be higher when more prior knowledge is added. In the future research, we will apply the sentiment features in the Sentence Similarity Computing. Sentence Similarity Computing is the most critical technology in QA system, and the sentiment of sentences influences the similarity of sentences.

Deepak Ravichandran et.al. [10] A far-reaching study on the issue of locating extremity of words. We consider the extremity of a saying to be either positive or negative. For instance, words, for example, great, wonderful, and sublime are considered as positive words; while words, for example, terrible, revolting, and pitiful are viewed as negative words. We treat extremity identification as a semi-regulated mark proliferation issue in a diagram.

PEZZOTTAITE JOURNALS

In the diagram, every hub speaks to a statement whose extremity is to be dead set. Each one weighted edge encodes a connection that exists between two words. Every hub (word) can have two marks: positive or negative. We examine this structure in two distinctive asset accessibility situations utilizing Word Net and Open Office thesaurus when Word Net is not accessible. We report our results on three separate dialects: English, French, and Hindi. In this show, that name spread enhances essentially over the benchmark and other semi directed learning routines like Min cuts and Randomized Min cuts for this task.

V.K. Singh et.al. [11] In this paper presents experimental work on a new kind of domain specific feature-based heuristic for aspect-level sentiment analysis of movie reviews. They have devised a perspective-arranged plan that examinations the text based audits of a film and dole out it an assumption name on every viewpoint. The scores on every angle from different audits are then collected and a net estimation profile of the film is produced on all parameters. We have utilized a Senti Word Net based plan with two distinctive etymological gimmick choices including modifiers, qualifiers and verbs and n-gram characteristic extraction. We have likewise utilized our Senti Word Net plan to register the record level assumption for every motion picture looked into and contrasted the results and results got utilizing Alchemy API. The slant profile of a motion picture is additionally contrasted and the archive level notion result. The results got demonstrate that our plan delivers a more exact and centered supposition profile than the basic record level estimation investigation.

There are extensively three sorts of methodologies for assessment arrangement of writings: (a) Using machine learning based text classifier -such as Naïve Bayes, SVM or kNN - with suitable feature selection scheme;(b) Using the unsupervised semantic orientation scheme of extracting relevant n-grams of the text and then labeling them either as positive or negative and consequentially the document; and(c) Using the Senti Word Net based publicly available library that provides positive, negative and neutral scores for words. Some of the relevant past works on sentiment classification can be found in [12], [13], [14], Christos Troussas et.al. [15] With the quick advancement of E-business, more online surveys for items and administrations are made, which structure a vital wellspring of data for both venders and clients. Research on assessment and conclusion digging for online audit investigation has pulled in progressively more consideration in light of the fact that such study helps power data from online surveys for potential monetary effect. In this paper, we apply notion examination and machine learning techniques to study the relationship between the online surveys for a film and the motion picture's film industry income execution. We demonstrate that a rearranged rendition of the notion mindful Autoregressive Model can deliver great exactness for foreseeing the movies deal utilizing online audit information. Our improved form considers just positive and negative opinions, and uses an exceptionally straightforward set of peculiarities with 14 full of feeling pivotal words for speaking to the assessments in a survey. Along these lines, we acquire a less difficult model, which could be more productive to prepare, and utilization. Experiments indicate that the autoregressive model using both review sentiment data and the previous days' sale data results in higher accuracy than just using previous sale data alone. In addition, we create a classification model using Naïve Bayes Classifier for predicting the trend of the box office revenue from the review sentiment data. In the study, a classification model is created with the reviews from the Internet.

Christos Troussas [16] the developing extension of substance, put on the Web, gives a huge gathering of printed resources. Individuals impart their encounters, feelings or speak pretty much, whatever concerns them on the web. The large amount of available data attracts system developers, studying on automatic mining and analysis. In this paper, the essential and hidden thought is that the certainty of knowing how individuals feel about specific themes can be considered as an order errand. People's sentiments can be sure / positive, negative or unbiased/ neutral. Hence, we present how sentiment analysis can assist language learning, by stimulating the educational process and experimental results on the Naive Bayes Classifier. The specific objectives of our study are to develop our own corpus through a Face book application, to properly train the system to accept inputs in the form of status updates from the corpus, disregarding updates that do not contain words or face emotions. The ability of the system to classify the polarity of an opinion per status update basis, during the testing phase, Our Face book application, which is used to gather data for the corpus, can be used by Face book users worldwide. Corpus will be limited in quantity, 5000 for positive sentiments and the other 5000 for the negative sentiments. The study will focus on the users' Face book status updates.

The study will not include Face book posts like photo stories, application stories or other similar stories.

Face book is used in our study, as the main user interface. Rahim Dehkharghani et.al. [17] Sentiment Analysis refers to the programmed extraction of sentiments from natural dialect content. We examine the impact of subjectivity-built feature with respect to conclusion characterization on two vocabularies further more propose new subjectivity-based gimmicks for assessment arrangement. The subjectivity-based gimmicks we explore different avenues regarding are in light of the normal word extremity and the new feature that we propose are in view of the event of subjective words in audit writings. Trial results on hotel and motion picture audits demonstrate a general precision of around 84% and 71% in hotel and film audit spaces individually; enhancing the baseline utilizing simply the normal word polarities by around 2% focuses.

A. Agarwal et. al. [18] Sentiment analysis deals with identifying and classifying opinions or sentiments expressed in source text. Social media is generating a vast amount of sentiment rich data in the form of tweets, status updates, blog posts etc. Sentiment analysis of this user-generated data is very useful in knowing the opinion of the crowd. Twitter sentiment analysis is difficult compared to general sentiment analysis due to the presence of slang words and misspellings. The maximum limit of characters that are allowed in Twitter is 140. Knowledge base approach and Machine learning approach are the two strategies used for

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analyzing sentiments from the text. In this paper, we try to analyze the twitter posts about electronic products like mobiles, laptops etc., and using Machine Learning approach. By doing sentiment analysis in a specific domain, it is possible to identify the effect of domain information in sentiment classification. We present a new feature vector for classifying the tweets as positive, negative and extract peoples' opinion about products. Classification techniques were used in it: Nave Bayes classifier SVM classifier Max entropy classifier, Ensemble classifier. There are different Symbolic and Machine Learning techniques to identify sentiments from text. Machine Learning techniques are simpler and efficient than Symbolic techniques. These techniques can be applied for twitter sentiment analysis. There are certain issues while dealing with identifying emotional keyword from tweets having multiple keywords. It is also difficult to handle misspellings and slang words. To deal with these issues, an efficient feature vector is created by doing feature extraction in two steps after proper pre-processing. In the first step, twitter specific features are extracted and added to the feature vector. After that, these features are removed from tweets and again feature extraction is done as if it is done on normal text.

Khin Shein et.al. [19] There are many text documents on the Web, which contain opinions or sentiments about an object such as software reviews, product reviews, movies reviews, music reviews, and book reviews etc. Opinion mining or sentiment classification aim to extract the features on which there viewers express their opinions and determine they are positive or negative. In this paper, we proposed an ontology based combination approach to enhance the existing approaches of the sentiment classification. We also used the supervised learning techniques for classification of the sentiments in the software reviews.

This paper proposed the combination of using Natural Language Processing techniques (NLP), ontology based on Formal Concept Analysis (FCA) design, and Support Vector Machine (SVM) for classifying the software reviews are positive, negative or neutral. Opinions are also important when someone wants to hear others' opinions before they make a decision. Ms. K. Mouthami et.al. [20] In this paper, web Blog Mining Application for Classification of Movie Reviews was explained. With the increasing use of Web 2.0 platforms such as Web Blogs, discussion forums, Wikis, and various other types of social media, people began to share their experiences and opinions about products or services on the World Wide Web. In turn, great interest in blog mining has arisen, specifically due to its potential applications, such as in opinion or review search engine applications the ability to collect and analyze data. In this study, we introduce an architecture, implementation, and evaluation of a Web blog mining application, called the Blog Miner, which extracts and classifies people's opinions and emotions (or sentiment) from the contents of weblogs about movie reviews.

PROBLEM FORMULATION

Sentiment Analysis is a regular language preparing errand that arrangement with the extraction of conclusion from a bit of content as for a point. Countless businesses and suggestion frameworks chip away at comprehension loving and detesting of the individuals from their audits.

There are 100+ million speakers of Punjabi dialect spread over the world. The scope zone of this dialect is likewise expanding over the web. Website pages contain vital data identifying with corporate and government. For the examination on Sentiment Analysis, Punjabi dialect does not contain much work. On genuine applications, to give a much-mechanized arrangement is a definitive coveted objective of all the slant examination research. A shrewd framework ought to sufficiently brilliant to total all the scattered wistful data from the different websites, news article and from composed audits.

The part of any programmed framework is to minimize human client's exertion and produce a decent sensible yield. There is no such application accessible that orders the surveys as positive, negative and unbiased for Punjabi dialect. There is a need to break down the Punjabi dialect content and get understanding of assessments communicated by individuals and different groups. The work focuses on dissecting opinions for Punjabi dialect.

The fundamental center lies on understanding the difficulties, issues while taking a shot at Punjabi dialect and the methodologies emulated while performing assumption arrangement for the client produced substance. With not very many devices and commented corpora accessible, it is a testing undertaking to perform notion examination for Punjabi dialect. The work done includes asset era, which includes building of annotated datasets and subjective vocabulary. There are a few limitations and potential issues with the current version:

- To handle adjectives, which were present in reviews and were missing from our lexicon, we performed stemming. If an adjective was missing from our lexicon, we stemmed the adjective to get its root word. Instead of using a stemmer if a morph is used, then we expect results to improve.

- The current version of this algorithm does not perform Word Sense Disambiguation (WSD).

- Scope of the system proposed above is dependent on the initial seed list used to populate the Word Net. If we choose, the seed list in a HINDI SUBJECTIVE LEXICON GENERATION 37 careful manners with the help of linguistic experts, the results and scope of the Lexicon thus generated would be better.

PEZZOTTAITE JOURNALS

FUTURE SCOPE AND CONCULSION

In India, there are 22 official languages and 13 languages have more than 10 million speakers. With multiple sources of data available for each language, it is easy to gather data and analyze them. In context to Indian Languages, earlier work done for sentiment analysis has been on Bengali and Hindi, rest all the languages are unexplored. Through a deep study of existing research papers, it has been found that one of the unexplored languages is Punjabi. The things that will be included in this study will consist of algorithm, which has not been implemented yet but proposed.

The Punjabi database (Word Net) has also not been used in the existing works. In future, we can try to come up with more focused approach and other heuristics to develop subjective lexicon for the Punjabi language, which does not utilized a have, word net but a proposed algorithm. The same will be implemented to translate English to Punjabi language. Then we can explore and dig in depth regarding the task of sentiment classification for the web text and improve over it. Once we have sufficient data to experiment with, various machine-learning techniques can be easily used and applied to learn from the text more effectively.

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SEMANTIC BASED SEARCH ENGINE

Er. Tanjyot Aurora[23] Er. Brahmaleen Kaur[24]

ABSTRACT
The World Wide Web (WWW), helps to share information globally, the amount information has outgrown billions of databases. To search information on World Wide Web a tool known as Search Engine is used. The search results are shown as line of results. The information may be a mix of web pages, images, and other types of files. It has become increasingly difficult to locate meaningful results from the mind-boggling list of returns typical of returned search queries. Keywords, alone cannot capture the intended concept with high precision. These associated issues with the current search engines call for a more powerful and holistic search engine capability. The amount of information available on Web is unstructured, so to derive meaningful results we use semantic based approach, which has been presented in the paper through which recall rate of the engine can be lowered.

KEYWORDS
Information Retrieval, Search Engine, Semantic Based Search Engine, World Wide Web(WWW) etc.

INTRODUCTION

Information retrieval is the activity of obtaining information resources relevant to an information need from a collection of information resources [1]. Web search engines are the most evident IR applications. The moment user enters query into the system the process of information retrieval begins. Queries are formal proclamations of information needs, for example search inputs in web search engines. In information retrieval a query does not distinguish a single object in the collection. Instead, several objects may match the query, may be with different degrees of pertinence.

An entity is a real world object that is represented by information in a database. User queries are assessed against the database information. Contingent upon the use the data objects may be, for instance, content archives, pictures, sound and features. Frequently the archives themselves are not put away straightforwardly in the IR framework, however are rather stored in framework in metadata form. Most IR systems calculate a numeric score on how well each object in the database matches the query, and rank the objects according to this value. The top ranking objects are then shown to the user. The methodology might then be iterated if the user wishes to refine the query.

When the human computer interactive interface was implemented, the query expansion technology started to be used in information retrieval system. It has relation with command language, menu selection, diagram operation, natural language communication and all other information retrieval methods. [2] Queries by users are constricted to operations and knowledge of users. A Query can be complicated or simple which is dependent on user.

Search Engine

A Search engine is a useful tool for searching documents on web where user provides input. The interface used is the browser to search through search engine, the engine searches by using input from user and ranks the result by their relevance. Most of the search engines have top ten results of greater quality. Technically, it is a software tool to help search from World Wide Web. The first tool used for searching on the Internet was Archie [3]. A traditional search engine consists of four essential modules:

Document Processor: These modules helps in preparing process and get input about the documents, web pages or sites for which user searches. It performs almost all of the functions such as normalizing the document stream to predefined format, division of document stream into units which are retrievable, identifying elements in documents that are index able, eliminates stop words, stem terms, extracts index entries, creation and updating of inverted file which search engine searches in order to fulfill queries of client.

Query Processor: This module performs functions, which include: Tokenizing terms, Elimination of stop words, Stem terms, create query representation, expansion of query. This module shares many of its functions with document processor module.

Search and Matching Function: To meet the requirements of query the search engine searches through the inverted file for documents this is known as "Matching". The more Simple the document representation, query representation and the matching

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algorithm, the less are relevant results, excluding the simple queries which seek the most general information. Afterwards a similarity score is calculated between query and on each webpage/document based on scoring algorithm.

Ranking Capability: After the computation of similarity score, the system presents an ordered list to user. The ranking of web pages depend upon the model the system uses, the result list is given to users who can then click on links and follow internal pointers to select document/page.

Architecture of Search Engine

The system consists of crawler, repository, Pre-processor, indexer, Query transformation and retrieval. These are explained below respectively. A crawler is a software program that helps in fetching web pages. It incorporates automatic web page discovery and retrieval system to build index of available web pages. The web pages fetched are then sent to store server or the repository that now contains processed documents then these are converted into form that can be utilized by pre-processing phase. In this phase tasks such as Punctuation removal, filtering Stop words, content word extraction, finding parts of speech and finding stem words. The indexer then comes into picture it parses the repository and each document is converted into set of word occurrences called hits. The hits are recorded representation of word, its position in document and its font size approximation. During this phase, links in documents are parsed and stored in anchor file. The searcher is run through web server and index is used to answer queries. When finally results are retrieved, the document identifier is matched with URL in document index and name of URL is shown as output.

SEMANTIC SEARCH

Semantic search seeks to improve search accuracy by understanding searcher intent and the contextual meaning of terms as they appear in the searchable data space, whether on the Web or within a closed system, to generate more relevant results [4]. Semantic search systems consider various points including context of search, location, intent and variation of words, synonyms, generalized and specialized queries, concept matching and natural language queries to provide relevant search results.

Rather than using ranking algorithms such as Google's Page Rank to predict relevancy, semantic search uses semantics or the science of meaning in language, to produce highly relevant search results. In most cases, the goal is to deliver the information queried by a user rather than have a user sort through a list of loosely related keyword results. The Web is growing as the quickest communication medium. This innovation in mix with most recent electronic stockpiling gadgets, empower us to stay informed concerning tremendous measure of information accessible to the public. Information present in web is available in diverse dialect like English, Arabic, Bengali, and Hindi many people more. The Web is brimming with unstructured data and customary web engines hone a keyword -oriented search that prompts the issue of retrieving various unessential data. Such search technique with a particular keyword may eventuate to unsuitable but considering its synonym to relevant results. A hefty portion of the results recovered for general questions are immaterial to the subject of investigation and different archives are missing in light of the fact that the query does exclude the careful key phrases. users are not certain about the dialects used to plan their inquiries, refined questions with restrictive Boolean operators may bring about a couple of or even no records .This inspires the utilization of regular dialect interfaces as an adequate method for communicating with web engines. There are two major forms of search: navigational and research [5]. In navigational search, the client is utilizing the web engine as a navigation tool to navigate to a particular intended document. Semantic search is not applicable to navigational searches. In research search, the user feeds the search engine with an expression, which is planned to mean an item about which the user is attempting to assemble/research data. There is no specific document, which the client thinks about and is attempting to get to. Rather, the client is attempting to place various archives, which together will give the relevant data

RELATED WORK

According to research accomplished by Senthil J. et.al. [6] Semantics is the study of meaning. It is centralized on relationships like words, phrases, symbols etc. and proposed a methodology for semantic search engine which included handling polysemy, decision inputs ,k-nearest paradigm, decision boundaries, decision trees, Nodes as vectors of tags, and Semantic similarity. When a user inputs a search query, it may have many possible meanings, which were represented in form of assumptions.

The search results were made more relevant and accurate as compared to usual search engines by further involving key factors such as query generalization and specialization and concept matching and result was an artificially trained search engine, which was able to make intelligent inferences. The search engine developed was fact and knowledge oriented. Rather than displaying the web links as results, it presented only the information intended by user.

Junaid Mohamed Kassim et. al. [7] stated that a typical web engine consists of three parts, which includes:

- A database of web documents,
- A search engine operating on that database,
- A series of programs that determine how search results are displayed.

Different from traditional search engines, semantic search stores semantic information about web sources .It combines the technologies of semantic web and search engine to improve the search results gained by traditional search engines. The process consists of following steps:

- The user query is interpreted, extracting the relevant concepts from sentences,
- That set of concepts is used to build a query that is launched against ontology,
- Results are presented to user.

Qazi Mudassar IIyas et. al. [8] Emphasized the utility of semantic web, which makes it possible to successfully execute the query as it, allows for associating formal meaning with content. The focus of semantic web is to make the web machine understandable where automated agents will be able to understand the content on Web. A layout was proposed for semantic search engine, which encompassed the creation of ontologies in plain text format and its translation into database translator. The Crawler would find new Ontologies, then after annotation queries sent to inference engine which then reasons on queries by using database and finally sent to user to be viewed on web. For semantic search engine to become a reality all content on web must be annotated with data, which is a major issue yet to be resolved.

D. Schneider et. al. [9] addressed the issue to develop a semantics enabled multimedia search engine by representing multimedia content as textual results. It considered the fact that multimedia documents like PowerPoint Presentations or flash documents are widely used in internet and there is no way to explore and search for content .The system was named "Fulgeo". FLAME (Flash Access and Management environment) was the only existing search engine. The new system developed would consider the initial keyword based query and match the text extracted from flash files as well as semantic concepts related, a thumbnail of the result was shown, such that results with larger thumbnail seem to be more important to user.

Azilawati Azizan et. al. [10] made a survey on existing semantic search engine so that the predominant features of interface can be unleashed. Eight semantic search engines were selected and list of all features used by current Semantic search engine was presented these included: Hakia, Bing, Cluzz, Le xxe, SenseBot, Kngine, Factbites, Duck DuckGo. A good quality of user interface depends upon usability, which further depends upon the following factors: learn ability, efficiency, memorability, errors, satisfaction. Design of Search engine result page may influence trustworthiness of user, Display can also influence on how many tasks can be completed correctly and how fast they can complete their tasks. A sample of interface design was proposed based on some guidelines. Many studies about search engine has been done but the prime focus was on improving relevance of results, very little has been done in evaluating the interface of search engine. The research revealed that elements used in semantic search engines such as simple search box, clean and clear search screen, question answering approach, highlighted keywords are mostly used in current Semantic search engines. Nandkishor Vasniket al. [11] adopted a method to improve the relevancy of retrieved results by expanding the user query with more relevant words. Sometimes, the domain of query is unpredictable so enhancing keywords is difficult. The output of search engine is dependent upon the database present and how structured is the database. The proposed query expansion model included three methods for query enhancement: The first method utilized Lexical resource, second method utilized user context and the last method devised was a combination of both. An experiment was conducted with 30 queries in four modes of search, which consist of: (1) Simple Google search, (2) Method-I (Query enhance with HWN) (3) Method-II (Query enhance with user context) (4) Method-III (Expansion with HWN and user context). Precision values were calculated considering the uppermost retrieved documents by experiment, which showed that a combination of Method-Method-II and I could enhance the information retrieval.

D. Manjulaet al [12] suggested that current search engines index documents only by words so due to its low relevancy are achieved in results. To improve the relevancy a semantic search engine was proposed which indexed documents by both words and senses, which lead to reduced irrelevancy. The query was also disambiguated and results are retrieved by combining and matching both sense and word. The performance was assessed against traditional search engine which used word based indexing. The results obtained reflected increase in precision for semantic search engine compared to other search engines. Architecture of semantic search engine was presented which indicated that adding semantics to search engine solved the problem of low precision and low recall by using synonyms corresponding to word, which improved the recall performance.

Semantics was introduced as three modules:-indexer, query dis-ambiguator and retriever. A WSD algorithm was proposed which disambiguates and eliminates incorrect disambiguation. The improvement scope under consideration is to be able to perform indexing at coarse grain level. The system operates at level of WordNet, which is fine grained making distinctions of sense coarser will improve the effectiveness of retrieval process.

A comparative analysis of various existing Semantic Web Search engines was made by G.Anuradhaet.al. [13] Which illustrated the use of semantic Web as a tool to enhance quality and changing its content into machine understandable form? The semantic web information is described using RDF, OWL, and XML. A tabular summary of comparison of various semantic web search engines was presented.

It was concluded that existing search engines lack in time response, accuracy of results, and importance of results and relevancy of results.

Santos et. al. [14] defines the query expansion technique as a procedure in which query is expanded with the goal that it matches more documents thus conceivably expanding no. of significant result. This is done by spell correcting the query and adding synonyms. For instance, expand automobiles with 'car' or car with 'cars'. The query expansion component concentrates on spell correcting and expanding the query with synonyms, morphological variations and other related terms. Daniel E. Rose et. al. [15] emphasized the need of understanding the user goals in web search. Previous searches concentrated on the fact how people searched and what they intend to search for, so it is a necessity to describe a framework for defining user goals which included the manual query classification. The manual query classification specified that user goals could be inferred by looking at user behaviour to search engine, which consists of: query, the results, results clicked and further. The search concluded that the navigational searches are less prevalent as compared to resource retrieval goal, which is more prevalent.

Eakansh Manglik et. al. [16] provided a solution to two problems of information system i.e. Polysemy and Synonymy simultaneously. The ontology was constructed to support to web searching. When user would enter the query, keywords are extracted and multiple contexts are displayed if any of it exists and displays the results accordingly. Thus, the methodology makes the search more focused and specific. The web repository was created, architecture of onto builder was presented, and a Pseudo code of the methodology of searching was built. The architecture can be further refined by making search effective and defining word at more specific level by using tools such as semantic networks.

DU Zhi-Qiang et. al. [17] proposed a search engine to overcome the shortcoming of understanding users intention about query, a framework based on ontology was proposed in order to solve the shortness of understanding. We can quickly get information relevant by utilizing the concept of ontology. A prototype of engine was built using Lucene which runs in server of AMD with double CPU and result obtained was relevant than before. If the semantic requirement of search engine is beyond the range of ontology, the results will not be effective. To measure similarity was another issue discovered. Ai Yokoyama et.al. [18] stated that these days, Internet users are acquainted with the Web searching process; and seeking is the most widely recognized undertaking Nonetheless, the web) pursuit is particularly troublesome for fledglings when they attempt to use a keyword word inquiry language. Consequently, beginners normally attempt to discover data with unclear questions. Users get non-applicable data in light of questions. The motive was is to make the inquiry process more helpful for them. It was discovered that, equivalent words and hypernyms for the terms of the user question was obtained using Japanese WordNet. The previously stated words were joined together and this stretched question is then submitted to the web search tool. These operations were carried out consequently by proposed model. The trial results demonstrated that the query expansion development strategy used increases the performance.

MaleeratSodani et. al. [19] conducted an experiment for subjective query expansion, which considered that the quality of searching is most important. There are numerous strategies to enhance the quality search, the query expansion (QE) is considered to enhance the query terms with regard to fulfill user query requirements. The expansion method utilized the keyword-based query. These semantic terms are added to the first query to reformulate query before sending it to the searching module. The tests were tried on twitter information accumulated. The results demonstrated that the retrieval adequacy is impressively higher than utilizing just original query. Contrasted with the baseline system, this technique gives higher execution regarding review and accuracy recall and user satisfaction.

PROBLEM FORMULATION

The Web is growing as the quickest communication medium. This innovation in mix with most recent electronic stockpiling gadgets, empower us to stay informed concerning tremendous measure of information accessible to the public. Information present in web is available in diverse dialect like English, Arabic, Bengali, Hindi many people more.

The Web is brimming with unstructured data and customary web engines hone a keyword -oriented search that prompts the issue of retrieving various unessential data. Such search technique with a particular keyword may eventuate to unsuitable but considering its synonym to relevant results.

A hefty portion of the results recovered for general questions are immaterial to the subject of investigation and different archives are missing in light of the fact that the query does exclude the careful key phrases. Users are not certain about the dialects used to plan their inquiries, refined questions with restrictive Boolean operators may bring about a couple of or even no records .This inspires the utilization of regular dialect interfaces as an adequate method for communicating with web engines.

The traditional search engines they search the web using keyword-oriented schemes. It does not consider the meanings but just matches the keywords and page is retrieved according to page rank algorithm of the particular search engine. Thus, the results produced are irrelevant and have low accuracy. The major issues include:

- Lacks proper structure,
- Ambiguity of information,
- Automatic information is lacking.

Many Engines have been developed for English language, which has evolved as semantic search engines, but there is no such search engine for Punjabi language. The existing search engines in Punjabi dialect revolve around the previous concept of keyword matching. Due to keyword matching approach used by search engine, we get the links whose Meta tag is the keyword specified by user as query.

For Example: Query: ਝੂਠਾ

Expected Output: its meaning in context of sentence "ਗਵਾਹ

ਦ ਝੂਠ ਬਿਆਨ ਨਾਲ ਬਨਰਦਸ਼ ਨ ਫਾਸੀ ਦੀ ਸਜਾ ਹਈ"

FIGURE 1. Output of Query on GOOGLE.

Sources: Authors Compilation

COMPARISON WITH TRADITIONAL SEARCH ENGINES

The traditional search engines they search the web using keyword-oriented schemes. It does not consider the meanings but just matches the keywords and page is retrieved according to page rank algorithm of the particular search engine. Thus, the results produced are irrelevant and have low accuracy. Semantic webs' features affect search process. The Distinguishing features are listed below [20]:

- All objects of real world are involved in the search process.
- Knowledge is understandable for machine as well as human.
- Semantic web languages are well structured than HTML.
- A single concept can be represented by distributed knowledge.

These features cause fundamental differences to traditional Search engines. They are listed below [20]:

- Intelligent retrieval is provided by using a logical framework.
- In documents metadata maintenance, update and more complex ranking is resulted by complex relations.
- Visualization techniques are required for visualization of search results by specifying relationships among objects.

The traditional search engines have been studied and the issues related to them have been acknowledged. The existing semantic based search engines have been studied from which it is evident that the semantic based approach produces more relevant results than traditional search engines.

The future work for the study involves developing an algorithm for implementing semantic based search engine for Punjabi dialect and to compare its results with traditional search engine in terms of precision and recall rate curves. The search engine developed will help the users to search and retrieve relevant results in a more efficient and effective manner. This would enhance the productivity and precision for the users of the search engine. With support for duplicate terms, users will now get results that are more relevant for queries with duplicate terms.

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AN ASSESSMENT OF THE IMPLEMENTATION AND CHALLENGES OF IMPACT OF THE INTERNET IN BRIDGING THE GAP BETWEEN THE DEVELOPED NATIONS AND THE DEVELOPING NATIONS

Saksham Kumar Kotiya[25] Samarth Pundir[26] Pratibha Giri[27]

ABSTRACT

The line of difference between a developed and a developing nation or an underdeveloped nation relies on three basic factors; Education, Living standards and industrialization. Internet is the linchpin of the developed nations. Since the time the internet was first used to impart education and improve the living standards of the people the developed nations have grown stronger and healthier by leaps and bounds. Internet has been a boon for the rural parts of the developing countries and has emerged as an effective tool for bridging the gap between the developed and the underdeveloped nations.

The practise of the technique called 'Telescundaria' has proved to overcome barriers such as teacher absenteeism and lack of infrastructure in the underdeveloped nations. Internet is the place from where one can easily extract information as most of the information that exists on this planet is digitalised. In terms of money making the internet has opened several portals for even a layman to make money. WORK FROM HOME was a concept that started in the developed nations and now is deep rooting its tentacles in the very existence of mankind. Research has highlighted the fact that internet can surely be used to reduce the gap between the developed and the underdeveloped nations because be it education or health the word internet has a solution for all sorts of problems.

Mobile health communication tools and Telemedicine have an effective impact in the underdeveloped nations by curing the diseased agglomerations with the help of the internet. The hindrances of transport and fee of the doctors can be minimised to a great extent by the proper usage of the internet. Even in terms of Industrialization the internet has helped the underdeveloped nations to make their economy boom by the help of Business Process Outsourcing. It has reduced the problem of unemployment in a much better way than any other tool. From paper use to a paper- less environment the internet has enveloped the entire globe. Even the developing nations like India are now using Electronic Governance to make their administration work of the companies easy and better. Internet thus, can be overviewed as one of the most effective ways of calling an underdeveloped nation a developed one. The paper attempts to study and analyse the impact of the internet in bridging the gap between the developed nations and the developing nations of the world. It also highlights the recommendations that might be useful in bridging the digitalized gap between nations.

KEYWORDS

Education, Industrialization, Telescundaria, Internet, Telemedicine etc.

INTRODUCTION

UN former Secretary General Kofi Anan had said "People lack many things, jobs, shelter, food, healthcare and drinking water. Today, being cut-off from basic telecommunication services is a hardship almost as acute as these other deprivations and may indeed reduce the chance of finding remedies to them."

Internet has transformed much more from just sending an email to a friend five feet away as this is a global era of globalisation, liberalisation and privatisation. Internet has rooted its tentacles across the globe and has emerged as the linchpin of any successful organisation or an individual. Man has aroused from being a Homo-Sapien and has transformed into a tech savvy being that has strived from time to time for the betterment of the society by the usage of the internet. The statistical data unfolds the secret behind the gap between the rich and poor agglomerations of the world.
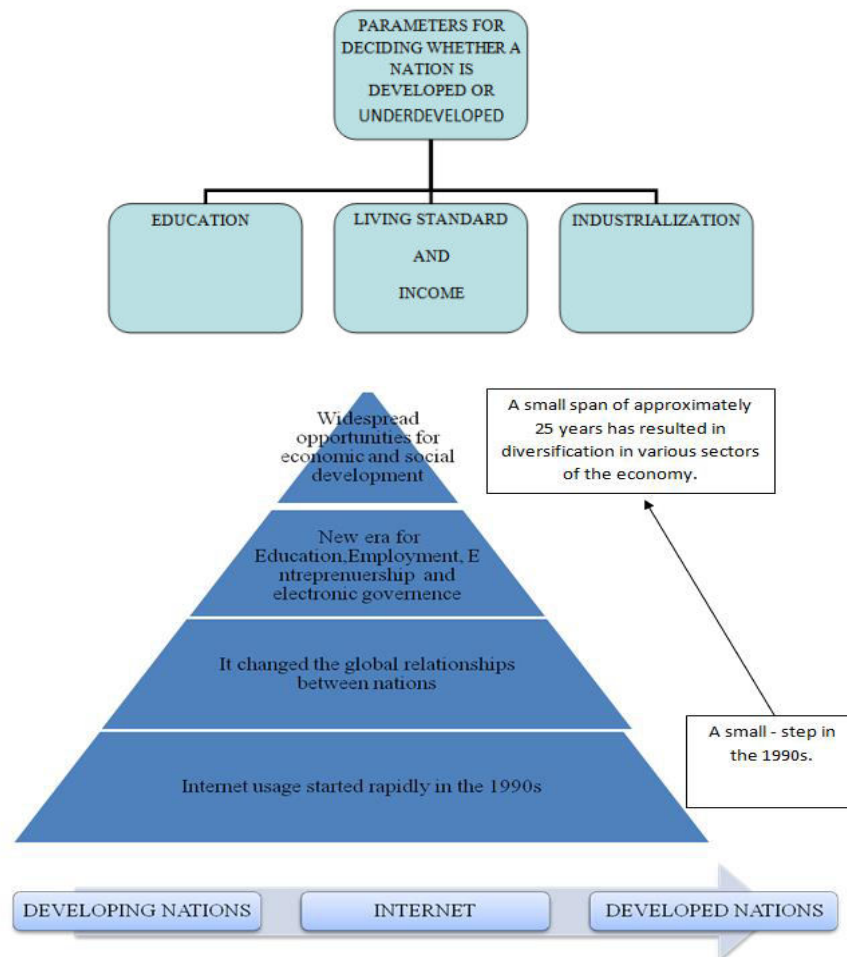
The richest 20% of the world's population accounted for 93.3% of internet users, the poorest 20% accounted for 0.2% of internet users. Internet has paved a way for global development and has salvaged the mankind from time to time from falling into the hands of uncertainty by perpetually giving it the gifts of more and more innovations in the world of information and communication technology (ICT). Although, there is no specific definition of the developed nations but talking in a meticulous manner the developed nations are the ones that have better standards of living, digitalization of the education and governance and high per capita income. The developing nations are the ones in which most of the structure of governance is characterised by a large amount of paper work, time consuming tasks and a large number of explicit control and approvals.

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Figure-1

Sources: Authors Compilation

EDUCATION

Imparting Education has always been a problem for the developing or the underdeveloped nations. "Teachers need to integrate technology seamlessly into the curriculum instead of viewing it as an add-on, an after-thought or an event," in the words of Heidi-Hayes Jacobs. Ireland in 1998 had 14% of its primary schools connected to the internet but the proportion reached 95% in the year 1999. The impact of literacy also multiplied because of the vast usage of the internet.

Table-1

Sectors	Less Developed Regions	More Developed Regions
Population	5000 million	885 million
Education Expenditure, US$	248 billion	1100 billion
Higher education enrolment	8.8%	59.6%
Number of R&D scientists and engineers per million population	Ed Salvador 19 Nigeria 15	Japan 6309 US 3732

Sources: UNESCO, 1998

The above data reveals that a large gap exists between the less developed regions and the more developed nations. The population is more in the less developed regions due to illiteracy and fewer options available for the entertainment of people compared to the more developed nations. Higher education enrolment is almost five times more in the more developed nations. This gap can be reduced by the widespread use of the internet. According to the World Bank,"…in more developed countries the great majority of secondary schools and growing number of primary schools are now connected to the internet. In some countries, the majority of the schools become connected within a single year." The following equation shows the backbone of a developed nation.

Figure-2

Sources: Authors Compilation

The developed nations have understood, absorbed and mastered the art of using the internet. Be it the stock markets or the advertisements of an organisation the internet has always remained the prime tool for the success of a company or an organisation.

WORLD INTERNET PENETRATION RATES BY THE GEOGRAPHIC REGIONS -2014

Q2 has given the statistical data which reveals that 87.7 % is the penetration rate of North America and Africa accounts for the least penetration rate of 26.5 %. The world's average penetration rate is 42.3%. The literacy rate of North America in the year 2014 has been far more than Africa. This shows a direct relationship between the usage of internet and the rate of literacy. Schools in many parts of the world are poorly equipped, classes are overcrowded and the teachers are poorly trained, thus it appears that education is one of the first sectors to be turned in the national budget. Distance learning education, preference material and valuable resources one can download books and journals thus internet helps in finding out the alternative teaching methods. However, education and information can raise people awareness of the problems stemming from poor hygiene and unsafe water. Education information can act as a remedy.

 TELESCUNDARIA was an initiative to serve the graduates of elementary education in rural areas that were unable to continue their studies for lack of secondary schools in their areas. Telescundaria started at 304 classrooms and a teacher for each one of these in the states of Veracruz, Morelos, Puebla, Oaxaca and Federal District. The initial number of students was 6549. Originally, Telescundaria transmitted black and white lessons through public television channels but nowadays the lessons have been pre-recorded to ensure higher quality and the image display is coloured and satellite- transmitted. Each facility has at least one television set, satellite dish and a set top box with a low noise amplifier. In 1990 the percentage of students attending classes in Mexico was 86%. With the widespread use of Telescundaria the percentage rose to 95% in 2010. The real instruction time is 1195 hours in South Korea, 1172 in Finland, 875 in France and 710 hours in USA, whereas on the other hand the Mexican students get 562 hours of instructions per year.

The Mexican Prime Minister justifies it by saying that most of the Real Instruction Time is wasted due to preparation for parades and festivals, teacher absenteeism and school closures. As per the data only 1 % of Mexican 15 year student holds the knowledge and the capability needed for the full participation in the modern society, compared to the 30% in Hong Kong and 26 % in South Korea. According to the study published by Martin Hilbert in science (Hilbert and Lobez, 2011), 95% of all information existing in the planet is digitized and most of it is accessible on the internet and other computer networks. It is very difficult to stop the teacher absenteeism and providing quality teachers in a place where almost everyone is illiterate but the internet can serve as a boon here.

The internet has the potential to develop and grow the skills in the students of even the rural areas at a lower cost as compared to the cost which includes the cost of building schools and salary of learned teachers. The digitalisation of the education by means such as Telescundaria has emerged out to be successful in the underdeveloped nations and the right and profound use of the internet can serve as a means to bridge the gap between the developed and the underdeveloped nations. A number of video called interviews, digital libraries and digital information has been continuously minimising the gap between the developed and the underdeveloped nations. How do you think that a person who lives in some rural parts of an undeveloped country will get the information relating to sports? How do you think that the news of something going wrong in one of the countries can be instantaneously transmitted to another country? How do you think that one can have a video chat with one of his cousins in another country? The scope and advantages of the internet are so vast that we do not even realise them when we use them.

Internet has abolished the hindrances of place and transport and has one of the factors for transforming the underdeveloped nations into the developing nations. The internet has provided a platform for sites such as Facebook and twitter so people have become globally connected. The internet is one of the best ways to bridge the gap between the underdeveloped and the developed nations. It is true that developed countries have immense stock of knowledge that the underdeveloped countries lack. However with continuous access to the knowledge in a digitalized manner can definitely help to overcome this barrier. It may be further noted that the cost of using the internet will be far less than providing it with constructed buildings and top quality instructors. The hope is widespread that the internet will provide a powerful new tool in the battle against global illiteracy. Internet has always been observed as a vehicle of transmitting ideas, observations and results from places where they are recorded to places where they are never even heard of.

LIVING STANDARD

The British dictionary defines the standard of living as a level of subsistence or material welfare of a community, class or person. The standard of living of a country broadly covers:

Income

The disparity among countries in levels economic development is by far the greatest source of global inequality. The studies reveal that the average developed nation's per capita income is almost seven times than that of the average developing country.

The income in the developing countries comes from exploitation of the primary sector of the economy that is agriculture. In developing country such as India most of the rural agglomerations depend on agriculture and forestry to meet their basic needs. They have access to a large number of old technique that require a lot of human efforts and extra time consumption which ultimately leads to lower crop outcome and thus reducing the per capita income.

It may be further noted that the services of the internet are not at all penetrated into the rural hubs and even if they to some extent then their usage is limited to a bunch of literate people only. The uncertainty of weather conditions worsens the condition and reduces the standard of living of people residing in these areas. The liberalisation of the framers from their basic domestic ways of earning is need of the hour as it has been incarcerated since the beginning of evolution.

WORK FROM HOME is a concept that these people have never even heard of. For them the only path of making money is by doing physical labour which limits their income to such an extent that it becomes almost impossible for them to even buy their basic amenities. The difference between the rural masses and urban agglomerations is that the urban ones know how to make money using various sources at the same point of time. How is it that a person makes a profit of one lakh rupees by the use of the use of stock market? How it is possible for a person to sell his old car to a customer whom he hardly knows? How it is possible for a person to buy goods online, saving his time and ruling out the cost of middle man and extra transportation facilities. The only answer to the above mention question is 'INTERNET'.

Lack of technical know- how and equipment are fundamentals obstacles to internet access in poor countries it is difficult for the people in the underdeveloped nations to even have a meal for two times a day therefore, thinking of making the internet available to each individual would be an unrealistic task. What we should try is to cater to the illiterate hub of underdeveloped nations by establishing public access point from where the illiterates can use the services of the internet at a comparatively lower price.

USING AND NOT BUYING might be a possible solution for them. One of the ways of distributing the digitalized knowledge is by printing the matter in a language that prevails in a particular area. This is one of the ways of reaching people who may never even have seen a computer. The internet is an increasingly significant driver of job creation and economic growth in the developing world. The World Bank report states that an internet access to rural communities in the developing and the underdeveloped countries provides important access to new services such as real time information on the price of agricultural products.

The farmers who have no internet access are often unaware of the current prevailing price of high yielding variety (HYV) seeds and fertilizers thus are exploited by the knowledgeable sellers. Indeed, there's evidence that every 10% point increase in the penetration of broadband services leads to a 1.3% increase in an economic growth. There is a lot more scope of the growth because of a large digital device that exists between the developed and developing world.
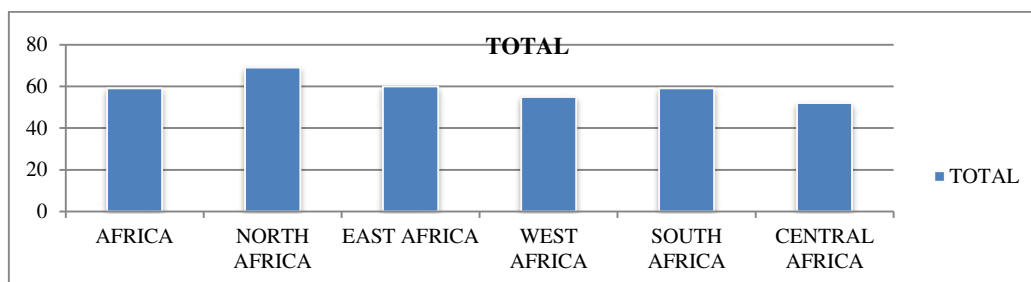
Mobile commerce has been define as buying and selling of goods and services through wireless hand held devices such as mobile phones, personal digital equipment's and game consoles. M-commerce has become possible with the integration of mobile phones and the internet. In order to exploit the M-commerce market potential hand set manufactures such as Nokia, Motorola and Sony working with carriers such as AT&T wireless and sprint to developed WAP enabled smart phones. The increasing competition among these technical giants has resulted in a monopolistic competition where the firms can enter freely and there are many firms selling closely related but un-identical commodities.

It is the most prevalent form of market organisation in the manufacturing sector of an economy. Increase in competition has reduced the cost of the mobile phones with the internet facility. If he rural masses are made familiar with the broadband services then the per capita income will increase to a great extent thus reducing the income disparity that prevails between the developed and underdeveloped nation. For instance, all most 80% of North American population has internet access only 15% of Africa is connected to the internet.

Thus, making North America one of the countries among the top five countries to have a high real per capita income and Africa a poor continent with a very low per capita income. Thus, it can be concluded that low per capita income is related to the usage of the internet in some or the other manner.
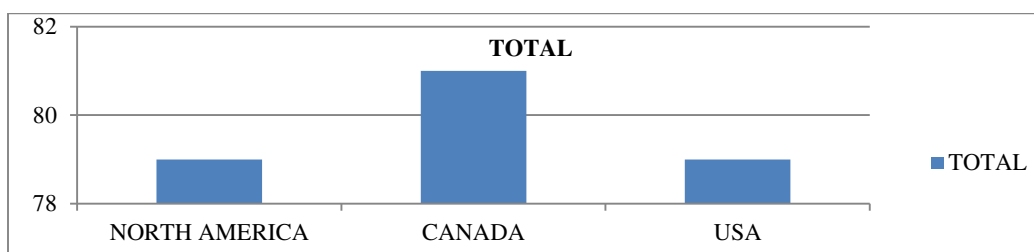
Health Care

Graph-1

Sources: Statista, 2015

The above data shows the life expectancy in Africa for those born in 2013.

Graph-2

Sources: Statista, 2015

The above data shows the life expectancy in America for those born in the year 2013.

Have you ever imagined how can an internet be a useful tool in bridging the gap between developing and developed nation? The average life expectancy in developed nation is comparatively higher than the percentage of life expectancy in the underdeveloped nations. The main parameter that has to be taken into consideration when talking about life expectancy is the number of doctors available in that particular area along with the technological advancement that are needed to fight new borne diseases. United nation development program on human development in 1996 stated that only 50% of the population in the least developed countries has access to health services and only 38% has access to safe drinking water. It is difficult to provide the facilities of good sanitation and clean drinking water to the under development masses because of large number of direct or indirect difficulties faced by a underdeveloped nation, but has anyone thought how internet can be a measure of relief to improve the health condition in the underdeveloped countries?.
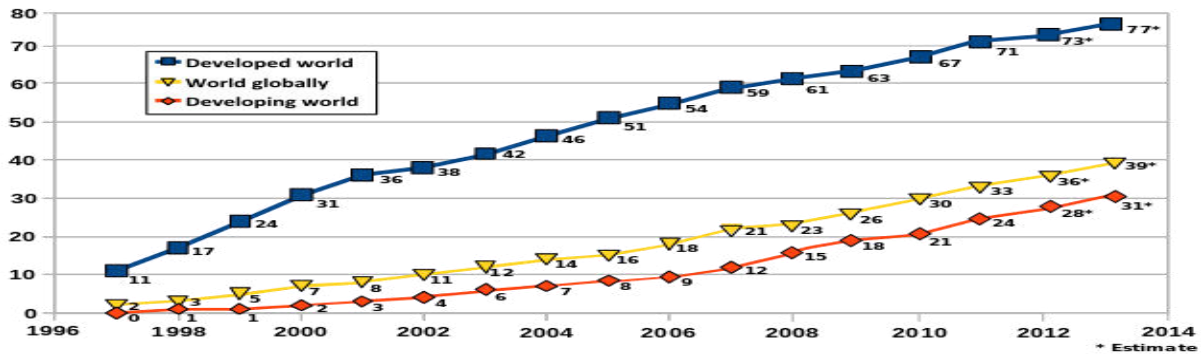
In the recent World Health Organization global M-Health survey, 60% of high-income countries and 30% of low-income countries reported some use SMS messages and mobile health communication tools for improving treatment compliance. In developing countries the average doctor to patient ratio is 1 doctor for every 2,50,000 patients. Mobile alliance for maternal action is a great illustration of how mobile phones are making a difference along with a proper usage of internet to promote the health. Telemedicine can be defines as a delivery of medical care at the distance. It can reach to even the remotest part of a nation and enable the health professional to communicate faster, widely and more directly with patients no matter where they are. It has been prove that telemedicine can be an important tool for the developing countries as compare to the developed ones.

Satellite stations in Uzbekistan have been an example that the internet can reach in remote areas as well. Whenever the internet comes in a particular area, it carries several other seeds such as Email, web browsing, video calling and several chat lines so that the people in the remotest areas can communicate with ones who are sitting in far of countries. Telemedicine is beginning to have an important impact in the developing countries with respect to several aspects of health care. People in these nations do not have enough money to pay the fee of a doctor. If telemedicine is implemented well then it can lead to the betterment of healthcare and can increase the level of nutrition of the people residing in the underdeveloped nation by leaps and bounce. People in the developed nations use the internet served sites to know the symptoms of the diseases and free medical advice from the online sites to minimize the cost that they spend at the time of visiting the doctor. Telemedicine support to promote maternal and newborn health in remote provinces of Mongolia that started in September 2007 has recorded a success rate of only two maternal deaths out of eight hospitals involved in the program. Thus, it can be concluded that the internet has been an important measure that has provided relief to the masses of underdeveloped nations.

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"Telemedicine support contributes to protecting people in rural areas from financial risks associated with travelling to Ulaanbaatar to obtain tertiary level maternal and new born care."

- **Midterm review report summary, June 2009**
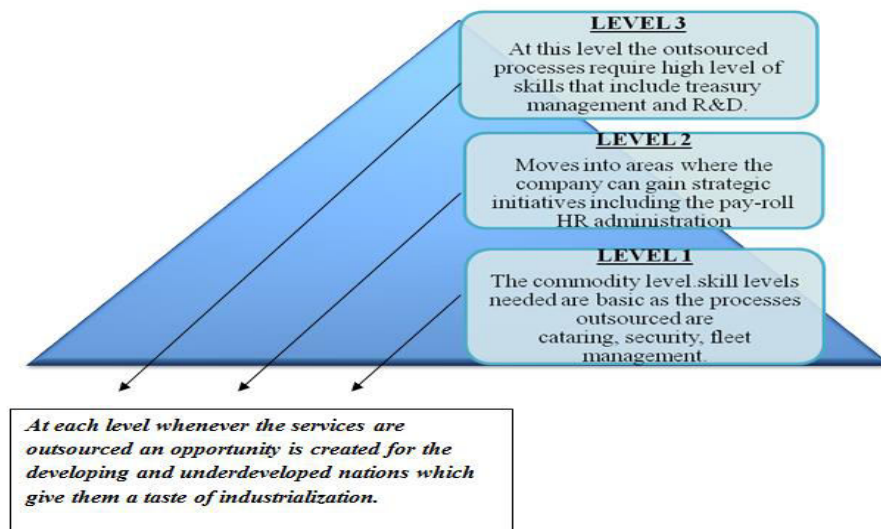
Graph-3

Sources: Authors Compilation

The above data shows the percentage of users in the developed world as compare to the developing world. It is the need of the hour to bridge the gap between the number of internet users between the developed and the developing world. Thus, internet with tools such as telemedicine will minimize the gap between the developed and the developing nation.

Industrialization

The internet is bringing the revolution with it. Demand and supply are now globally called an unlimited access to information is reconstituting the already established conventions. It is the new era where the internet revolution is regarded as a new industrial revolution. East man Kodak Inc. in 1889, coins the term outsourcing. It means having an external vendor who provides on recurring basics a service that would normally be performed within the organization. Business process out sourcing is an important tool that has made the developing countries witnesses the taste of industrialization. For example if a foreign company wants to out sources it advertising services for its clothing brands than it appoints some company in a developing or an underdeveloped nation. The main types of services that are outsources by the developed nation by the underdeveloped ones are the financial services, advertising services, and courier services. In developing countries like India, there is a lot of a low cost and highly qualified English speaking labor therefore; BPO is accelerating with a rapid pace in India (Developing nation)
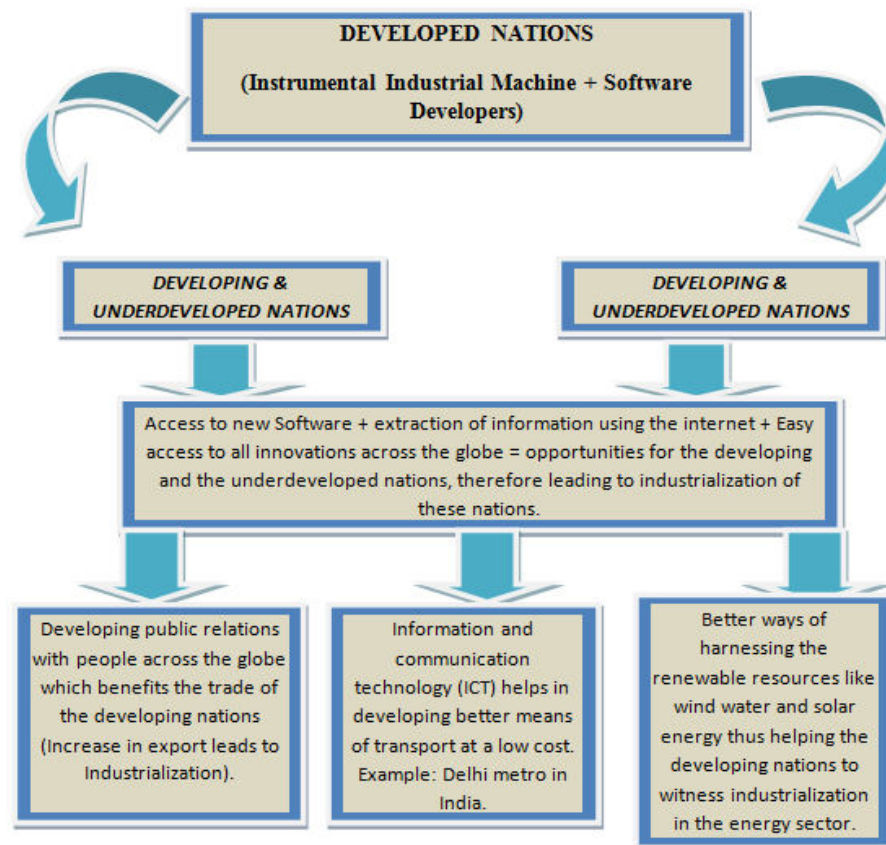
THE OUTSOURCING PYRAMID

Figure-4

Sources: Business World, August 19, 2002

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E-Services will be one of the major growth areas on the internet over the next few years. About 46 percent of the global economy or $32.3 trillion in global output can benefit from the industrial internet as per the World Bank 2011 and general electric report.

Figure-5

Sources: Authors Compilation

The above diagram portrays that the internet helps the developing and the developed nations to gain the power of developing industry wise. Industries are required in every sector of the economy. It has been proved from time to time that even small advancements in the field of technology in any country have made a great impact in all countries across the globe. Be it the Microsoft or the Google every company in the field of information and technology has made it big. These companies have hired several employees from the developing countries.

Satya Nadela, the current CEO is an example of a person who is working in a developed nation who himself is from a developing nation (India). Internet has always worked to make the differences small that exist between the north south polarizations and largely it has been able to do so. One example from the railway system is movement-planning software. These tools can deliver real time overview of network operations from a single display by providing the information from the operators to make decisions that are more appropriate. Several services of the internet such as the GPRS and mobile tracking software have helped the people in the developing nations live the life witnessed by the developed nations. The internet has been the prime factor in minimizing the gap between the developing and the developed nations.

ELECTRONIC GOVERNANCE in the countries like India has helped them to make use of the internet to make the works more feasible and time saving. In this era, the government is trying to adopt new and better cost effective ways to install a paperless environment that has already been prevailing in the developed nations from a long time. MINISTRY OF CORPORATE AFFAIRS (MCA-21) is an E-Governance initiative of the Ministry of Corporate Affairs, which mandates and facilitates on-line filing of statutory documents by companies in India. These types of functions are already in progress in the developed countries and adoption of these techniques by the developing countries like India is a powerful example of the impact that internet is making by making this globe almost one nation that knows and communicates in only one language and that is "THE LANGUAGE OF THE INTERNET."

SUGGESTIONS FOR BRIDGING THE DIGITALIZED GAP BETWEEN THE NATIONS

It has been explained clearly that internet is an impressive tool to bridge the gap between the developed and the underdeveloped nations. The solution might not be as easy as it seems to implement but for sure if internet access is provided to the developing or the underdeveloped nations then this solution will be worth implementing. However, the following recommendations might be useful to bridge the digitalized gap between nations.

- Create awareness among the people about the internet in the underdeveloped nations with a positive attitude so that they can adapt to this new technology with ease. Government policies should be implemented to increase the internet traffic in these countries. Government sponsored workshops and conferences and round tables must be held to make the agglomerations more familiar with the word internet.
- Help to the underdeveloped countries by the developing countries. The developed countries can assist the underdeveloped countries by providing them with the infrastructure and low cost easy internet access.
- Every underdeveloped country must practice the 1% investment policy, where any company in that country makes its profits more than 100 crores must be asked to implement 1% of its profit in internet sector thus enabling the people in the rural areas understand and witness the power of the internet. This will help the underdeveloped countries grow strong in the field of information technology over the years to come.
- Initiate the practice of TELESCUNDARIA and TELEMEDICINE in the rural areas of the underdeveloped nations. This will make the youth of the underdeveloped nations educated and the diseased population easy access to medicinal treatment.
- International organizations such as the United Nations must be asked for help so that it can provide the financial assistance to the underdeveloped nations for carrying out a sustainable development with employment of internet facilities to competently deal with the complex issues involved.

CONCLUSION

The wide spread gap between the developed and the underdeveloped nations has been a major concern of all times. Internet has been a major factor that can be utilized to bridge this digital divide. However, there might be various hindrances that might be faced by the underdeveloped nations to provide easy internet access to its people but access to internet can be one of the most vital tools to bridge this gap. Research shows how cans the internet by use of services such as Telescundaria and Telemedicine can help the underdeveloped nations transform into a developed nation. The major difference that lies between the developing and the developed nations is of "ACCESS TO POWER + OPPORTUNITY." Both these parameters come from having access to relevant knowledge or information wherever and whenever instantaneously. The only source that widens this approach is having unlimited access to the internet. Time has gone when the success of a nation and an individual was measured by the amount of accumulated wealth. Today, knowledge in an electronic form has a better hold over the society than the capital accumulation. The outsourcing pyramid describes how the internet can be an effective tool for building the infrastructure of an underdeveloped nation.

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ETHICAL SALES CHALLENGE: A CASE STUDY ON COMPUTER SELLING

Amir Hafizullah Khan[28]

ABSTRACT

The case emphasizes on the importance of sales strategies and tactics required to negotiate with customers and competitors. The case is based on the ethical sales challenge faced by young and newly joined sales executive of well-known computer manufacturing firm dealing with one of the largest education group of Vidarbha region having huge requirement of 2000 desktop computers. The hypothetical situation was created on unethical moves of competitors to snatch the deal. The case is designed on a situation where a senior sales manager of competitor's firm offers a bribe to a sales executive of another company to quote a high price for the deal. Case explores the challenges faced by the sales executive in adverse situation and ability to deal with the situation.

The case attempts to presents a real life challenge for young and newly joined sales executive while handling the situation by keeping ethical code and conduct of the company intact. The case presents two types of situations to a sales executive. The first situation deals with the ability to take decision related to bribe offered by a competitor while the second situation deals with the selection of proper negotiation strategy to convince buyer for the deal.

KEYWORDS

Ethics, Deal, Prospecting, Negotiation etc.

INTRODUCTION

The hot days of summer have already set records in Nagpur but the highest temperatures are yet to come. The season has marked a heated negotiation between eight big computer manufacturing companies and Shiksha Group. The group has invited many companies for the deal, which was roughly around one crore for 2000 desktop computers.

Shiksha Group

Shiksha Group is the largest group of Educational Institutes in Vidarbha Region. Shiksha group has been delivering the highest quality academic programmes since 1960. The Education group is a collaborative of Nursery, High schools, Commerce, Science, Arts, Engineering, Management and Medical programmes. This Sanstha was formed with the purpose of developing a network of educational institutes for providing quality education in various disciplines of study in Vidarbha.

The group has self-funded deemed university also in the region. Every year group requires large number of computers to fulfill the need to improve administration work, academic performance and to cope with technological advancement in the field. This year, Shiksha Group has invited proposals from all big computer-manufacturing companies for the requirement of 2000 desktops. Shiksha group follows the auction strategy for inviting proposals from the companies. Group invites all sellers for final negotiation at their place and tries to get best product & service at competitive price. They believe that calling all sellers at one place and negotiating with them may help to achieve best product at competitive cost with excellent service.

Proposal Submission

Almost all big companies have submitted the proposal for the deal including Technocruzer Pvt. Ltd, ARIS, DOSS, HIPL, KIPRO, and ABPL. Business proposal is a written document offer from a seller to a prospective buyer. It is a key step for any seller to offer range of its products and services with special price for buyer to choose from best option available for company. Each company has prepared a special price and specification as required by Shiksha group. Every company has its own unique selling proposition (USP) and proposals are also prepared on the same USP to create an impact on buyer. Technocruzer Pvt. Ltd seems to be the biggest contender in terms of his experience, contacts and tactics to clinch a deal.

Mr. Rahul Rai was very nervous because it was the biggest and first deal of his career. It was a very good chance to get a head start of his career. He has recently joint as sales executive of BPC Incorporation and seems to be the biggest competitor of technocruzer in terms of offering competitive price.

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BPC Incorporation

BPC is one of the biggest computer manufacturing companies by market capitalization and sales revenue of Rs. 2000 Crore as on 2012-13. It holds the top rank in India. BPC Incorporation bagged the "Innovative 20" prestigious award in introducing latest technology in the Industry. The company has advanced lab for making technology driven products. BPC has a successful line of laptops, printers, scanners, home and business use computers. The company has a decade of existence in the market and the company is absorbing almost 25% of market share. BPC Incorporation has implemented the code of conducts to ensure excellence in supervision by developing and fostering professionals. Some of the codes of conduct related to sales are:

- Be committed to the responsibilities assigned by the company.
- Establish the trust among buyers.
- Affirm the fair deal and clear communication with buyer and company.
- Be required to intact the ethical code of conduct of the company.

Company has recently promoted Mr. Grupal Singh to a position of Sales Manager and transferred him to Madhya Pradesh Territory. Earlier, he was working as sales executive of Nagpur territory. So, BPC Incorporation has recruited Rahul to handle complete sales division of Nagpur, which includes Industrial, Institutional and consumer division. His responsibilities include identifying potential buyers who have need for the products and qualify prospects from the suspects. Rahul is expected to done prospecting to increase business. Rahul is an ethical person and wants to establish his reputation in the market. He knows the importance of this deal because he was not able to open a single account yet for the company since his joining.

Rahul has also submitted the proposal with the price list of BPC Incorporation Ltd. (for Price List See Exhibit 1). BPC Corporation stated terms and conditions as part of the deal clearly in the proposal (See Exhibit 2). Rahul has also mentioned the specifications and price as required by Shiksha group (See Exhibit 3).

Table-1: Price offered to Shiksha Group of Institutes by BPC Incorporation

Model	Price
BPC Business Desktop W55	Rs. 31,505/-VAT Inclusive, Octroi as applicable

Sources: Authors Compilation

Table-2: Situation based Discount Slab offered by BPC Incorporation

Situation	Conditions	Discount Scheme
1	If customer is not convinced on special price offered by BPC Incorporation.	10% Discount + Taxes Extra.
2	If customer is not convinced in situation 1	15% Discount + Taxes Extra.
3	If customer is not convinced in situation 2	15% Discount VAT Inclusive + Octroi Extra

Sources: Authors Compilation

Technocruzer Pvt. Ltd

Technocruzer is a very big name in the Computer manufacturing sector of India. The company has a strong tie up with the Government sector. Their selling efforts are largely supported by pushing product through sales executive. Sales executive are given the entertainment allowance to convince purchase officers for the deal. Mr. Sanjay Mehra, Sales manager in Technocruzer, is known for its unethical practices in the market.

Mostly he offers bribe to purchaser and in some cases in the purchase officer do not convince then he tries to offer bribe to the closest competitor to withdraw from the deal by quoting high prices. This time the deal is huge and therefore the commission would be high, so there is very high possibility that Technocruzer's manager would try to leave no stone unturned.

Final Negotiation Day

Management of Shiksha group was ready with all the decision makers in round table conference room to call each executive one by one. Shiksha group has a tradition of inviting all the members of main body of his Sanstha to negotiate with the seller. The purpose of this approach is to make proper decision and de-motivate unethical practices in the organization.

All companies, which were called up by Shiksha group, had arrived for the final negotiation. Shiksha Group was calling up each Sale executive one by one for negotiation. At the same moment, a Sales Manager of Technocruzer Pvt. Ltd. approached Rahul. The Technocruzer Sales Manager, Sanjay Mehra was very well aware of the fact that Rahul has a very competitive price for the deal and he could turn the deal in his favour. Sanjay started discussing difficulties of getting the deal and unethical practices of

other competitors with Rahul. He was trying to pressurize and demotivate Rahul. After catching hold on the discussion, he offered Rs. 10 Lakh bribe to Rahul to quote high price for the deal. It was very easy for Sanjay to manage 10 lack rupees from the commission of such a big deal.

Sanjay had already read the body language of Rahul during the discussion and assumed that Rahul knows nothing about the tricks and tactics of the industry. Sanjay had also analyzed that other players are not competitive enough to get the deal and only Rahul has a good offer in terms of price to compete with him.

Rahul was speechless in the situation because of such offer from the senior person of the industry. The deal and the bribe both can be equally attractive for any sales person. This is a real test of Rahul's ethical values and his talent to handle such situation with proper tactics. These kinds of situations are very common in high margin industry, where in some sales executive get involved in unethical practices and some proves his talent and loyalty towards the company. Numbers of dilemmas in such situation, which tests their talent like, surrounds executives:

- Why should I get into the rivalry with the powerful competitors by rejecting their offer?

Or

- If I reject his offer, what is the certainty that I would clinch a deal, at least I am getting a chance to earn and who knows what I did.

Or

- I should stick to the ethical principal at any cost and try to clinch a deal with a proper tactics.

Or

- Honesty is the best policy.

QUESTIONS

- What are the possible solutions for Rahul Rai to clinch a deal?
- Suggest proper negotiation strategy for Rahul to get a deal.
- Suggest proper tactics for Rahul to deal with Sanjay Mehra.
- "Rahul Rai must try to get the deal through ethical behaviour only". Comment and suggest How?

REFERENCES

1. Retrieved from http://en.wikipedia.org/wiki/Proposal_(business)

2. Retrieved from http://idioms.thefreedictionary.com/leave+no+stone+unturned

APPENDIX

Exhibit-1: Proposal for Business Desktop

Product Code	BPC Business PC W55
Motherboard	Chipset Motherboard with V-PRO Support
Memory	Standard 1GB DDR2 Upgradeable to 1 TB
Hard Drive	160 GB SATA-II Upgradeable to 1TB
Graphic Card	Onboard Graphics Card, Integrated; supports Direct X 10.0; supports Dual Display with 1VGA +1DVI-D
Audio/Sound	Onboard 5.1 channel High Definition audio CODEC
LAN	Ultra®10/100/1000 LAN
Expansion Slot	One PCIEX1 and One PCIEX16-slots and Two32Bit PCI Slot
I/O Ports	1 parallel port, 6 USB Ports and support for additional 2 USB Ports, Display & Audio Ports, PS/2 Keyboard & Mouse Ports.
Cabinet Power Supply	Alfa ATX Case with 250 Watts Power Supply
Keyboard Mouse	107 keys Keyboard Optical Mouse
Certifications	UL
Warranty	One Year Comprehensive Warranty
Price	Rs. 13, 230

Sources: Authors Compilation

Exhibit-2: Options as per Requirement

CPU		Monitor	
Delta Core, F3200, 2.5 GHz	3,780	15.6'' Wide TFT	6,825
Delta Duo, F6500 2.93 GHz	7,980	18.5'' Wide TFT	8,085
Ultra, F9500 3 GHz	11865	19'' Wide TFT	8, 925
Alfa 9800 2.33 GHz	9, 975	22'' Wide TFT	10, 500
Memory		**Others**	
For Every 1 GB Add	1, 680	Graphics Card with 512 MB RAM	2,310
Hard Disk		**Cabinet**	
320 ILO 160 GB	210	Standard ILO Alfa ATX	1,050
500 GB ILO 160 GB	1, 260	**Operating System**	
1 Terabyte ILO 160 GB	3,150	Silver X	4, 725
Optical Drive		Silver Z	8,610
DVD Writer	1, 470	Cloud 4x	7,999
		Clod 10x	12,999
Notes:			
1. Options Prices are valid only when bought along with the Machine.			
2. Software Orders Should is separate or it should be a separate line item.			
Three Year Warranty: Rs. 2, 000 Additional			

Sources: Authors Compilation

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