

INTERNATIONAL JOURNAL OF RESEARCH IN COMPUTER APPLICATION & MANAGEMENT

IJRCM



A Monthly Double-Blind Peer Reviewed (Refereed/Juried) Open Access International e-Journal - Included in the International Serial Directories

Indexed & Listed at:

Ulrich's Periodicals Directory ©, ProQuest, U.S.A., EBSCO Publishing, U.S.A., Cabell's Directories of Publishing Opportunities, U.S.A.,

Open J-Gate, India [link of the same is duly available at Inlibnet of University Grants Commission (U.G.C.)],

Index Copernicus Publishers Panel, Poland with IC Value of 5.09 & number of libraries all around the world.

Circulated all over the world & Google has verified that scholars of more than 2840 Cities in 164 countries/territories are visiting our journal on regular basis.

Ground Floor, Building No. 1041-C-1, Devi Bhawan Bazar, JAGADHRI – 135 003, Yamunanagar, Haryana, INDIA

<http://ijrcm.org.in/>

CONTENTS

Sr. No.	TITLE & NAME OF THE AUTHOR (S)	Page No.
1.	THE LEADERSHIP PRACTICES OF COMBINED ARMY ACADEMY'S DEAN <i>MATEBE TAFERE</i>	1
2.	ELECTRONIC GROCERY SHOPPING: MODELS AND METHODS FOR THE URBAN CONSUMER DELIGHT <i>AMOL RANADIVE & DR. HRUDANAND MISHRA</i>	6
3.	STUDY ON IMPLEMENTING ASSOCIATION RULE MINING IN PARTICLE SWARM OPTIMIZATION <i>T. BHARATHI & DR. P. KRISHNAKUMARI</i>	10
4.	KEY FACTORS TO DEVELOP WOMEN ENTREPRENEURS IN NELLORE (DT), ANDHRA PRADESH <i>A.M.MAHABOOB BASHA, P.SRI SUDHA & V.MADHAVI</i>	18
5.	LAND USE AND LAND COVER DETECTION FOR THREE DECADES USING GIS AND RS -A CASE STUDY OF ERODE DISTRICT <i>C. LALITHA & DR. S. P. RAJAGOPALAN</i>	21
6.	APPRAISAL OF LIQUIDITY PERFORMANCE IN LANCO INDUSTRIES LIMITED: A CASE STUDY <i>N. K. PRADEEP KUMAR & P. MOHAN REDDY</i>	25
7.	ORGANIZATIONAL CULTURE AS A DETERMINANT OF CUSTOMER SERVICE DELIVERY IN LOCAL AUTHORITIES IN KENYA <i>ROBERT K.W. EGESEA, PETER KIBAS & THOMAS CHERUIYOT</i>	30
8.	EMPLOYEE JOB SATISFACTION: A CASE STUDY ON ONGC <i>DR. MEGHA SHARMA</i>	35
9.	SUPPLY CHAIN MANAGEMENT: A STUDY OF PADDY IN ANDHRA PRADESH <i>DR. I. SAI PRASAD</i>	39
10.	PERFORMANCE APPRAISAL PROCESS AT ANDHRA PRADESH STATE ROAD TRANSPORT CORPORATION (APSRTC) <i>RAKHEE MAIRAL RENAPURKAR & DR. SUDHAKAR B INGLE</i>	44
11.	DETECTION OF BRAIN TUMOR USING THRESHOLDING AND MORPHOLOGICAL OPERATIONS <i>SHRIJA MADHU & T.M.SIRISHA</i>	51
12.	ANTECEDENTS OF CUSTOMER RELATIONSHIP MANAGEMENT AND ITS IMPACT ON CUSTOMER LOYALTY IN BANKING SECTOR <i>V.KRISHNAMOORTHY & DR. R. SRINIVASAN</i>	54
13.	ASSESSMENT OF CUSTOMERS' SERVICE EXPECTATIONS AND PERCEPTIONS IN GEM HOSPITAL: GAPS MODEL <i>V. KANIMOZHI & DR. R. ANITHA</i>	60
14.	IMPACT OF CLOUD COMPUTING ON INDIAN SMEs: ADOPTION, BENEFITS AND FUTURE SCOPE <i>NAZIR AHMAD & JAMSHED SIDDIQUI</i>	64
15.	A STUDY ON THE EFFECTIVENESS OF TRAINING AND DEVELOPMENT PRACTICES ON THE BASIS OF LEVEL OF TRUST, COMMUNICATION AND MORALE OF EMPLOYEES AT LIBERTY SHOES LIMITED <i>DR. VANDANA KHETARPAL & REETI ATREJA</i>	67
16.	A SURVEY OF THE DIMENSIONALITY REDUCTION TECHNIQUES IN DATA MINING: A REVIEW PAPER <i>TARANMEET KOUR, AMITPREET KOUR & DR. SANDEEP SHARMA</i>	73
17.	AN IMPERATIVE STUDY ABOUT HUMAN COMPUTER INTERACTION: TRENDS AND TECHNOLOGIES <i>DR. ASHU GUPTA & SAKSHI DUA</i>	76
18.	A REVIEW ON THE COST MANAGEMENT STRATEGIES ADOPTED BY AIRLINES GLOBALLY <i>DR. BINDU NAIR</i>	81
19.	APPLICATION OF ARTIFICIAL BEE COLONY ALGORITHM TO INDEPENDENT COMPONENT ANALYSIS <i>AMRESH KUMAR SINGH</i>	84
20.	ACTIVITY BASED COSTING & TRADITIONAL COST ACCOUNTING SYSTEM: A COMPARATIVE STUDY OF OVERHEAD COST ALLOCATION <i>MONIKA KHEMANI</i>	93
21.	E-MARKETING: CHALLENGES AND OPPORTUNITIES <i>RUCHIKA NACHAAL</i>	97
22.	PERFORMANCE EVALUATION OF TURKISH PENSION FUNDS BY USING ELECTRE METHOD <i>HASAN UYGURTÜRK</i>	100
23.	FROM CHANGE MANAGEMENT TO CHANGE READINESS: KEYS TO SUCCESSFULLY IMPLEMENTING CHANGE <i>AJIT KUMAR KAR & LOPAMUDRA PRAHARAJ</i>	108
24.	A STUDY TO MAXIMIZE INTERPERSONAL EFFECTIVENESS TO OVERCOME GENERATION GAP USING AURA AS A TOOL <i>V. VAIDEHIPRIYAL & DR. N. RAMKUMAR</i>	113
25.	APPLICATION OF ROLE OF PROFESSIONAL MARKETING MANAGERS IN A DYNAMIC BUSINESS ENVIRONMENT <i>DR. ABDULSALAM JIBRIL & DR. MUHAMMAD ISA BAZZA</i>	118
26.	ANALYSIS OF CORPORATE SOCIAL DISCLOSURE PRACTICES IN ANNUAL REPORTS: AN EXPERIENCE WITH THE PRIVATE COMMERCIAL BANKING SECTOR OF BANGLADESH <i>SHARMIN SHABNAM RAHMAN</i>	122
27.	M-LEARNING CONTEXTS COUPLED WITH CONNOTATION OF 4G CONNECTIVITY <i>B.AYSHWARYA & M.DHANAMALAR</i>	130
28.	IMPORTANCE OF OPEN ACCESS IN FLOW OF INFORMATION: WITH SPECIAL EMPHASIS ON RESEARCH <i>A. SIVA KESAVULU & B.DEENADHAYALU</i>	133
29.	VIRTUAL LEARNING ENVIRONMENT: ISSUES AND SUGGESTIONS <i>SUNIL KUMAR SHARMA</i>	136
30.	THE IMPACT OF INTEREST RATES ON THE PERFORMANCE OF BANKS: A CASE STUDY OF CANARA BANK AND HDFC BANK <i>MANASA ELURU, SAHLE YEIBIYO ASGHEDE & SHIFERAW MITIKU TEBEKA</i>	139
	REQUEST FOR FEEDBACK	142

CHIEF PATRON

PROF. K. K. AGGARWAL

Chairman, Malaviya National Institute of Technology, Jaipur

(An institute of National Importance & fully funded by Ministry of Human Resource Development, Government of India)

Chancellor, K. R. Mangalam University, Gurgaon

Chancellor, Lingaya's University, Faridabad

Founder Vice-Chancellor (1998-2008), Guru Gobind Singh Indraprastha University, Delhi

Ex. Pro Vice-Chancellor, Guru Jambheshwar University, Hisar

FOUNDER PATRON

LATE SH. RAM BHAJAN AGGARWAL

Former State Minister for Home & Tourism, Government of Haryana

Former Vice-President, Dadri Education Society, Charkhi Dadri

Former President, Chinar Syntex Ltd. (Textile Mills), Bhiwani

CO-ORDINATOR

DR. SAMBHAV GARG

Faculty, Shree Ram Institute of Business & Management, Urjani

ADVISORS

DR. PRIYA RANJAN TRIVEDI

Chancellor, The Global Open University, Nagaland

PROF. M. S. SENAM RAJU

Director A. C. D., School of Management Studies, I.G.N.O.U., New Delhi

PROF. S. L. MAHANDRU

Principal (Retd.), Maharaja Agrasen College, Jagadhri

EDITOR

PROF. R. K. SHARMA

Professor, Bharti Vidyapeeth University Institute of Management & Research, New Delhi

EDITORIAL ADVISORY BOARD

DR. RAJESH MODI

Faculty, Yanbul Industrial College, Kingdom of Saudi Arabia

PROF. PARVEEN KUMAR

Director, M.C.A., Meerut Institute of Engineering & Technology, Meerut, U. P.

PROF. H. R. SHARMA

Director, Chhatrapati Shivaji Institute of Technology, Durg, C.G.

PROF. MANOHAR LAL

Director & Chairman, School of Information & Computer Sciences, I.G.N.O.U., New Delhi

PROF. ANIL K. SAINI

Chairperson (CRC), Guru Gobind Singh I. P. University, Delhi

PROF. R. K. CHOUDHARY

Director, Asia Pacific Institute of Information Technology, Panipat

DR. ASHWANI KUSH

Head, Computer Science, University College, Kurukshetra University, Kurukshetra

DR. BHARAT BHUSHAN

Head, Department of Computer Science & Applications, Guru Nanak Khalsa College, Yamunanagar

DR. VIJAYPAL SINGH DHAKA

Dean (Academics), Rajasthan Institute of Engineering & Technology, Jaipur

DR. SAMBHAVNA

Faculty, I.I.T.M., Delhi

DR. MOHINDER CHAND

Associate Professor, Kurukshetra University, Kurukshetra

DR. MOHENDER KUMAR GUPTA

Associate Professor, P.J.L.N. Government College, Faridabad

DR. SAMBHAV GARG

Faculty, Shree Ram Institute of Business & Management, Urjani

DR. SHIVAKUMAR DEENE

Asst. Professor, Dept. of Commerce, School of Business Studies, Central University of Karnataka, Gulbarga

DR. BHAVET

Faculty, Shree Ram Institute of Business & Management, Urjani

ASSOCIATE EDITORS**PROF. ABHAY BANSAL**

Head, Department of Information Technology, Amity School of Engineering & Technology, Amity University, Noida

PROF. NAWAB ALI KHAN

Department of Commerce, Aligarh Muslim University, Aligarh, U.P.

ASHISH CHOPRA

Sr. Lecturer, Doon Valley Institute of Engineering & Technology, Karnal

TECHNICAL ADVISOR**AMITA**

Faculty, Government M. S., Mohali

FINANCIAL ADVISORS**DICKIN GOYAL**

Advocate & Tax Adviser, Panchkula

NEENA

Investment Consultant, Chambaghat, Solan, Himachal Pradesh

LEGAL ADVISORS**JITENDER S. CHAHAL**

Advocate, Punjab & Haryana High Court, Chandigarh U.T.

CHANDER BHUSHAN SHARMA

Advocate & Consultant, District Courts, Yamunanagar at Jagadhri

SUPERINTENDENT**SURENDER KUMAR POONIA**

CALL FOR MANUSCRIPTS

We invite unpublished novel, original, empirical and high quality research work pertaining to recent developments & practices in the areas of Computer Science & Applications; Commerce; Business; Finance; Marketing; Human Resource Management; General Management; Banking; Economics; Tourism Administration & Management; Education; Law; Library & Information Science; Defence & Strategic Studies; Electronic Science; Corporate Governance; Industrial Relations; and emerging paradigms in allied subjects like Accounting; Accounting Information Systems; Accounting Theory & Practice; Auditing; Behavioral Accounting; Behavioral Economics; Corporate Finance; Cost Accounting; Econometrics; Economic Development; Economic History; Financial Institutions & Markets; Financial Services; Fiscal Policy; Government & Non Profit Accounting; Industrial Organization; International Economics & Trade; International Finance; Macro Economics; Micro Economics; Rural Economics; Co-operation; Demography; Development Planning; Development Studies; Applied Economics; Development Economics; Business Economics; Monetary Policy; Public Policy Economics; Real Estate; Regional Economics; Political Science; Continuing Education; Labour Welfare; Philosophy; Psychology; Sociology; Tax Accounting; Advertising & Promotion Management; Management Information Systems (MIS); Business Law; Public Responsibility & Ethics; Communication; Direct Marketing; E-Commerce; Global Business; Health Care Administration; Labour Relations & Human Resource Management; Marketing Research; Marketing Theory & Applications; Non-Profit Organizations; Office Administration/Management; Operations Research/Statistics; Organizational Behavior & Theory; Organizational Development; Production/Operations; International Relations; Human Rights & Duties; Public Administration; Population Studies; Purchasing/Materials Management; Retailing; Sales/Selling; Services; Small Business Entrepreneurship; Strategic Management Policy; Technology/Innovation; Tourism & Hospitality; Transportation Distribution; Algorithms; Artificial Intelligence; Compilers & Translation; Computer Aided Design (CAD); Computer Aided Manufacturing; Computer Graphics; Computer Organization & Architecture; Database Structures & Systems; Discrete Structures; Internet; Management Information Systems; Modeling & Simulation; Neural Systems/Neural Networks; Numerical Analysis/Scientific Computing; Object Oriented Programming; Operating Systems; Programming Languages; Robotics; Symbolic & Formal Logic; Web Design and emerging paradigms in allied subjects.

Anybody can submit the **soft copy** of unpublished novel; original; empirical and high quality **research work/manuscript anytime** in **M.S. Word format** after preparing the same as per our **GUIDELINES FOR SUBMISSION**; at our email address i.e. infoijrcm@gmail.com or online by clicking the link **online submission** as given on our website ([FOR ONLINE SUBMISSION, CLICK HERE](#)).

GUIDELINES FOR SUBMISSION OF MANUSCRIPT

1. **COVERING LETTER FOR SUBMISSION:**

DATED: _____

THE EDITOR
IJRCM

Subject: SUBMISSION OF MANUSCRIPT IN THE AREA OF

(e.g. Finance/Marketing/HRM/General Management/Economics/Psychology/Law/Computer/IT/Engineering/Mathematics/other, please specify)

DEAR SIR/MADAM

Please find my submission of manuscript entitled '_____ ' for possible publication in your journals.

I hereby affirm that the contents of this manuscript are original. Furthermore, it has neither been published elsewhere in any language fully or partly, nor is it under review for publication elsewhere.

I affirm that all the author (s) have seen and agreed to the submitted version of the manuscript and their inclusion of name (s) as co-author (s).

Also, if my/our manuscript is accepted, I/We agree to comply with the formalities as given on the website of the journal & you are free to publish our contribution in any of your journals.

NAME OF CORRESPONDING AUTHOR:

Designation:

Affiliation with full address, contact numbers & Pin Code:

Residential address with Pin Code:

Mobile Number (s):

Landline Number (s):

E-mail Address:

Alternate E-mail Address:

NOTES:

- a) The whole manuscript is required to be in **ONE MS WORD FILE** only (pdf. version is liable to be rejected without any consideration), which will start from the covering letter, inside the manuscript.
- b) The sender is required to mention the following in the **SUBJECT COLUMN** of the mail:
New Manuscript for Review in the area of (Finance/Marketing/HRM/General Management/Economics/Psychology/Law/Computer/IT/Engineering/Mathematics/other, please specify)
- c) There is no need to give any text in the body of mail, except the cases where the author wishes to give any specific message w.r.t. to the manuscript.
- d) The total size of the file containing the manuscript is required to be below **500 KB**.
- e) Abstract alone will not be considered for review, and the author is required to submit the complete manuscript in the first instance.
- f) The journal gives acknowledgement w.r.t. the receipt of every email and in case of non-receipt of acknowledgment from the journal, w.r.t. the submission of manuscript, within two days of submission, the corresponding author is required to demand for the same by sending separate mail to the journal.

2. **MANUSCRIPT TITLE:** The title of the paper should be in a 12 point Calibri Font. It should be bold typed, centered and fully capitalised.

3. **AUTHOR NAME (S) & AFFILIATIONS:** The author (s) **full name, designation, affiliation (s), address, mobile/landline numbers**, and **email/alternate email address** should be in italic & 11-point Calibri Font. It must be centered underneath the title.

4. **ABSTRACT:** Abstract should be in fully italicized text, not exceeding 250 words. The abstract must be informative and explain the background, aims, methods, results & conclusion in a single para. Abbreviations must be mentioned in full.

5. **KEYWORDS:** Abstract must be followed by a list of keywords, subject to the maximum of five. These should be arranged in alphabetic order separated by commas and full stops at the end.
6. **MANUSCRIPT:** Manuscript must be in **BRITISH ENGLISH** prepared on a standard A4 size **PORTRAIT SETTING PAPER**. It must be prepared on a single space and single column with 1" margin set for top, bottom, left and right. It should be typed in 8 point Calibri Font with page numbers at the bottom and centre of every page. It should be free from grammatical, spelling and punctuation errors and must be thoroughly edited.
7. **HEADINGS:** All the headings should be in a 10 point Calibri Font. These must be bold-faced, aligned left and fully capitalised. Leave a blank line before each heading.
8. **SUB-HEADINGS:** All the sub-headings should be in a 8 point Calibri Font. These must be bold-faced, aligned left and fully capitalised.
9. **MAIN TEXT:** The main text should follow the following sequence:

INTRODUCTION

REVIEW OF LITERATURE

NEED/IMPORTANCE OF THE STUDY

STATEMENT OF THE PROBLEM

OBJECTIVES

HYPOTHESES

RESEARCH METHODOLOGY

RESULTS & DISCUSSION

FINDINGS

RECOMMENDATIONS/SUGGESTIONS

CONCLUSIONS

SCOPE FOR FURTHER RESEARCH

ACKNOWLEDGMENTS

REFERENCES

APPENDIX/ANNEXURE

It should be in a 8 point Calibri Font, single spaced and justified. The manuscript should preferably not exceed **5000 WORDS**.

10. **FIGURES & TABLES:** These should be simple, crystal clear, centered, separately numbered & self explained, and **titles must be above the table/figure. Sources of data should be mentioned below the table/figure.** It should be ensured that the tables/figures are referred to from the main text.
11. **EQUATIONS:** These should be consecutively numbered in parentheses, horizontally centered with equation number placed at the right.
12. **REFERENCES:** The list of all references should be alphabetically arranged. The author (s) should mention only the actually utilised references in the preparation of manuscript and they are supposed to follow **Harvard Style of Referencing**. The author (s) are supposed to follow the references as per the following:
 - All works cited in the text (including sources for tables and figures) should be listed alphabetically.
 - Use (ed.) for one editor, and (ed.s) for multiple editors.
 - When listing two or more works by one author, use --- (20xx), such as after Kohl (1997), use --- (2001), etc, in chronologically ascending order.
 - Indicate (opening and closing) page numbers for articles in journals and for chapters in books.
 - The title of books and journals should be in italics. Double quotation marks are used for titles of journal articles, book chapters, dissertations, reports, working papers, unpublished material, etc.
 - For titles in a language other than English, provide an English translation in parentheses.
 - The location of endnotes within the text should be indicated by superscript numbers.

PLEASE USE THE FOLLOWING FOR STYLE AND PUNCTUATION IN REFERENCES:

BOOKS

- Bowersox, Donald J., Closs, David J., (1996), "Logistical Management." Tata McGraw, Hill, New Delhi.
- Hunker, H.L. and A.J. Wright (1963), "Factors of Industrial Location in Ohio" Ohio State University, Nigeria.

CONTRIBUTIONS TO BOOKS

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

JOURNAL AND OTHER ARTICLES

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

CONFERENCE PAPERS

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

UNPUBLISHED DISSERTATIONS AND THESES

- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

ONLINE RESOURCES

- Always indicate the date that the source was accessed, as online resources are frequently updated or removed.

WEBSITES

- Garg, Bhavet (2011): Towards a New Natural Gas Policy, Political Weekly, Viewed on January 01, 2012 <http://epw.in/user/viewabstract.jsp>

THE LEADERSHIP PRACTICES OF COMBINED ARMY ACADEMY'S DEAN

MATEBE TAFERE
EXECUTIVE DIRECTOR (ACADEMIC AFFAIRS)
BAHIR DAR UNIVERSITY
ETHIOPIA

ABSTRACT

The main purpose of this case study was to assess the leadership practices of the Combined Army Academy's Dean. This academy is one of the recently established higher educational institutions in the Ministry of National Defense of Ethiopia, and it is found in the eastern part of Ethiopia, at Awash Arba, 250 kms away from Addis Ababa. In studying the Dean's leadership practices, the perspectives of academic staff members were the focus of the study. The methods used to gather the data were an informed conversational interview approach, personal observation, and document analysis. These approaches helped much in collecting responsive and detailed information on the issues pertinent to the leadership practices of the Dean under focus. For the academy is a recently established one and for it is established with the target of producing limited number and highly qualified military graduates, there were a total of only 38 students attending their education. Hence, there were a total of only 10 academic professionals excluding the Dean. So, four of the academic staff members (two civilians and two military) were purposely selected as interviewees because of their seniority and their closeness to the job. The collected raw data were first transcribed, coded and then categorized. Based on the categories made, patterns were formulated in line with themes originated from the categories formed. So, a thematic analysis was conducted, and further interpreted with respect to the patterns formed. According to the analysis and interpretations made, the research findings show that: the personal characteristics of the Dean requires immediate adjustments if he is to continue with that leadership career; the situational factors were not favorable for the dean to lead, and in fact, he was accountable for making the situation unfavorable; no motivational mechanisms were designed and employed to reinforce the work force; decision making efforts were made to rely on only one person, the Dean; and it was also found out that the academic staff members had recently been getting organized in challenging the inappropriate actions of the Dean. Hence, based on the above findings, it was concluded that the Dean of that Academy lacks the necessary leadership orientations, without which leadership is really difficult, and it also seemed that even the Academy's higher military commandments lack the necessary orientations of what academic leadership is. Finally, based on the major findings obtained and conclusions drawn, it was reflected as it seems sound for the Academy to revisit the academic leadership practices that had been exercised, and to genuinely see how much the academic leadership had been responsive to the group and institutional factors.

KEYWORDS

Leadership, Academy, Dean, Defense.

1. INTRODUCTION

The study was conducted at Combined Army Academy which is one of the recently established higher educational institutions in the Ministry of National Defense of Ethiopia. The Academy is situated at Awash Arba, the eastern part of Ethiopia, which is 250 kms from Addis Ababa.

The Ethiopian Ministry of National Defense in its five year strategic plan, has revealed that it will make concerted effort to strengthen the tank (mechanized) capacity of Ethiopia in terms of both hardware as well as qualified professional power believing that lifting the capacity of the tank (mechanized) units has become detrimental to increase deterrent by dissuading military action by countries that otherwise might be inclined to attack the sovereignty of the country and interfere with its national interest.

The vast peripheral plain lowland area of Ethiopia has comparative advantage for the use of tank (mechanized) force than other means in case any danger emerges that threaten the interest and security of the country across the border areas. Deploying tank (mechanized) units in these areas can have much better return than conventional warfare dependent on massive deployment of personnel.

Currently, the Ethiopian army has tank (mechanized) unit and the commanders of the unit have some limitations to lead their units to the standard the task demands. Hence, opening Combined Army Academy has become eminent to upgrade the professional competency of the tank (mechanized) unit commanders so that they can discharge their responsibility effectively by using the knowledge and skill they got from training and education during their stay in the Academy. Thus, from its background and its rational for establishment, we can understand that special focus has been given for the Academy in building the capacity of the professional army that we have today. However, the establishment of the Academy by itself does not guarantee the accomplishment of the missions assumed to be addressed at the end. Instead, it calls for the provision of an organized and responsive leadership systems.

The leadership needs to be purposeful and intentional. On a more profound level, the leadership should be practiced in such a way as to be socially responsible. This kind of social responsibility is involved both in the outcomes and content of the groups' purpose, as well as in the group's process. Leadership effectiveness begins with self-awareness and self understanding and grows to an understanding of others (Harling, 1989). Moreover, leadership happens through relationship among people engaged. As a relational process, leadership requires the highest possible standards of credibility, authenticity, integrity, and ethical conduct. Ethical leaders model positive behaviors that influence the actions of others (Komives et. al, 1998).

Leadership is a concern to all of us. As individuals and groups, we have a responsibility to contribute effectively as members of organization, local communities, nations, and in the world community (Bush, 1986). That is, organizational leadership effectiveness involves the participation of all involved in the process. Moreover, though leadership is our day-to-day practice, it demands to reflect core issues related to leading people. To lead others, primarily we need to be clear where we are going? what is our vision? What are the critical success factors? How do we relate them to the realities of people? What are the basic situations that affect effectiveness? Etc...The answers to these questions are the concerns of leaders (Bennis, and Townsend, 1995). Provision of responsive leadership practice or services for the academy, therefore, involves the commitment and orientation of the different stakeholders in the academy, one of which is the Dean, who is assumed to pave the way for the desired promotion of the academy.

Taking the active role of the Dean in promoting the Academy in to consideration, the study was channeled to focus on the leadership practices of the Dean in terms of the perspectives of the academic staff members. So, this study is assumed to play a great role in adding some inputs to the efforts employed in ensuring the production of competent mechanized unit commanders which is assumed to be effected through sound and responsive leadership at the Academy under study.

2. METHODOLOGY

2.1. PARTICIPENTS

As it was mentioned earlier, there were ten professionals in the academy with similar academic background. The study participants, composed of two civilians and two military personnel, were selected purposefully taking their seniority and management experience in to consideration. All the respondents had also similar years work experiences in working at that academy in addition to their desired educational background. So, they were hoped to provide meaningful information on the leadership practices of the Dean under study. To this end, they were informed about the purpose of the study and what is expected of them. Fortunately, all were very much interested to take part in the interview, and hence, they willingly gave information related to the topic under focus.

2.2. INSTRUMENTS

An informal conversational interview approach, document analysis and personal observation were used in gathering the data. The informal conversational approach helped much in making the data gathering process more responsive to individual respondents. Accordingly, issues related to the personal

characteristics of the dean as an academic leader, the motivational mechanisms employed by the dean in reinforcing the academic staff members, the extent of the situational characteristics in either promoting or affecting the Dean's leadership practice, the decision making practices that had been employed or exercised by the Dean, and the actions or measures that had been taken by the academic professionals in response to the leadership practices of the Dean were raised, and all the issues were addressed by the respondents adequately.

Before the interview, the respondents were given orientations about the purpose of the study and they were not made to get restricted to limited prescribed issues. The orientations and the data gathering activities were conducted by the researcher himself, and hence, it was possible to have a detailed and reliable description of what was interviewed for it was supported with the researcher's personnel observation and supportive official documents confirming the validity and reliability of the interview data. To this end, the response sets were found to be by far relevant to the purpose of the study and in addressing the particular issues that need to be raised with leadership practices in general.

2.3. PROCEDURES

The researcher, having the purpose of the study in mind, went to Combined Army Academy. Then, he tried to have the full lists of the academic staff members and found out that there were no significant disparities among the staff members in terms of sex, age, academic background, and work experiences. This helped the researcher to take representative respondents, and these respondents or study participants were selected using purposive sampling technique. Right after selecting the respondents, what the researcher did was orienting those respondents about the purpose of the study and its possible relevance. Fortunately, the respondents all together were interested to be interviewed, and then the researcher started interviewing with the time frame set for each of the respondents.

A battery operated tape recorder was used during interviewing. Apart from the tape recordings, personal observations were taken as field notes so as to make the data more reliable. After the end of the data gathering process, all the recorded interviews and field notes were transcribed and was given to respondents to assure them that the information was taken by the researchers as it was clearly reported by the respondents. The respondents saw it and confirmed that it was the actual information on what had been happening as it was reported by themselves.

Apart from the personal observations conducted, the researcher wanted to ensure the validity and reliability of the data collected, and hence, asked for evidences of official documents. Fortunately, he had a chance to see petition of the academic staff members against the Dean which was reported to the higher officials of the institution. That petition document was a direct reflection of the data collected from interview and personal observation. This helped the researcher to be sure on the validity and reliability of the data, and to proceed to the next stages of the study.

After having collected, the raw data were transcribed, coded, and categories were made. From the categories made, patterns were also formulated based on the themes originated from the categories so as to make the data ready for analysis. The analysis was made in line with the categories or patterns formed. Based on the analysis conducted, interpretations of data were also undertaken to come up with some sort of findings. Finally, based on the findings obtained, conclusions were drawn, and reflections were forwarded accordingly.

3. RESULTS AND DISCUSSIONS

This is a section where the data are presented and discussed in an organized pattern, which is formed based on the possible themes emanated from the raw data. Accordingly, the following five themes have been drawn from the raw data: personal characteristics of the Dean, motivational mechanisms employed in his leadership practices, situational factors associated in his leadership (leader-member relations, position power, and the task structure), decision making practices and the communication system in practice, and the actions taken by the staff members. Hence, the relative descriptions of the leadership practices in line with the themes (patterns) formulated for data presentation and discussion is given in the following sections.

3.1. PERSONAL CHARACTERISTICS OF THE DEAN

The Dean under study graduated his second degree in curriculum and teacher education about fifteen years ago. He joined the academy a year ago, and he had been working in different government and non government organizations before he joined the academy under study. In the interviewees conducted, different interviewees had tried to point out some common personal characteristics of the Dean. Personal characteristics as is indicated by George and Jones(2005) includes: task relevant knowledge, which ensures that leaders know what should be done, how should be done, and what resources are required for a group and organization to achieve its goals; dominance, an individual need to exert influence and control over other to achieve organizational goals; self confidence, which helps leader influence followers and motivate them to pursue in the face of obstacles or difficulties; energy/activity levels which, when high, helps a leader deal with the many demands he or she faces in a day to day basis; integrity and honesty, which ensures that a leader behaves ethically and is worthy of his or her followers trust and confidence; emotional maturity, which ensures that a leader is not overly self-centered, can control his or her feelings, and can accept criticism; and intelligence, which helps a leader solve complex problems.

Hence, the categories of description with personal characteristics have been made to be in line with the above issues. Accordingly, interviewee "A" said that "I think the Dean must have some psychological problems". He also continued saying that "the Dean does not know what to do, and we don't know too." In expressing his energy or activity levels with managing the many demands he face on day-to-day basis, the interviewee said that "he usually complains on everything that happened to him in the Academy". With the efforts geared towards influencing or channeling the staff members, the interviewee also said that "he tries to act as a boss and want the staff members to develop fear towards him". The interviewee also associated the Dean's bossy feeling with confidence issues by saying "... he is not confident to convince the staff members on what to do and how to do", Moreover, the interviewee, referring the Dean's intelligence in solving problems said that "he asked release two times within four months duration, and gave a written warning for three staff members and got quarreled with almost all staff members within not more than five months since he got employed".

Interviewee "B", on his turn, also tried to pose some points which are related to the personal characteristics of the Dean. Accordingly, he said that "we have been going halfhazardly and we do not know where to stop our journey", and he associated the blame to the Dean's acts. In supporting the blame, he said that "...the Dean himself does not have an organized emotional adjustment. He doesn't know who he is and tends to act like children by complaining on everything that happen to him, and he usually tends to consider himself as the only matured person who knows everything, and hence, he doesn't want to listen any comments from others." The interviewee, in describing the Dean's emotional maturity, also went on saying that "what worries him is not the institutional performance rather his being accepted as a boss having control over everything." Besides, with respect to the Dean's institutional concerns, the interviewee further noted that "as far as I am concerned, I do not dare to say that we have been working for the institution, rather we have been defending ourselves from the Dean's attack." He also tried to associate the blame of this concern to the Dean's self-centered perspectives as already quoted above.

Interviewee "C" in describing the personal characteristics of the Dean, also tried to point out some issues in a consolidated manner. Accordingly, he said that "...our Dean is very autocratic and with no reasonable self-confidence; immature or gets upset for everything that happen to him; dishonest-reporting everything to the top officials, some fabricated and other exaggerated; he is the one who usually worries for sustaining his power but not for institutional merit." In describing the Dean's practices, in influencing the followers by having a meritorious vision and communicating it to the followers, the interviewees said that "we do not have the institutional vision, mission and goals, and hence, what we have been doing was simply doing what is right for him and defending ourselves from attack.

The last interviewee "D" was very eager to be interviewed, and raised so many details about the personal characteristics of the Dean under focus. Accordingly, he said that "he has been assassinating the characters of all staff members; he frequently gave written warnings, and threatening has become common to all; he is not ready to listen comments and when someone tells his weakness, he prepares himself for revenge; and he usually spends his time in fabricating imaginary happenings that can create gaps between staff members and students, between staff members and higher officials, and among staff members." Further, in describing his charismatic character, the interview also said that "he is too ambitious but unfit for administrative positions because he does not know even how to act and seem as an administrative body of an institution".

One important point in the practice of leadership is identifying those personal characteristics of a leader that help individuals, group, and organizations achieve their multiple goals (George and Jones, 2005). Accordingly, attempts were made to identify the personal characteristics of the Dean, as an academic leader. Unfortunately, all the interviewees characterized the Dean as an academic leader who: lacks the necessary intelligence in dealing with problems or

inconveniences; lacks the necessary intelligence in dealing with problems or inconveniences; lacks task relevant knowledge to set or establish a transparent system which clearly indicates the duties, responsibilities and accountabilities of the academic staff members; is very autocratic and ambitious for having control over everything irrespective of his weakness; lacks the necessary self confidence in sharing power among the academic staff members; lacks the necessary self confidence in sharing power among the academic staff members; lacks the energy level or tolerance for handling day-to-day irregularities; drives out trust and integrity in the institution; and does not have the necessary emotional maturity to plan and work for the institutional merit.

Hence, from the above description one can understand that the dean had not been exercising his authorities for institutional merits and no inputs had been added to institution in the presence of the Dean. Instead, it would be possible to say that had he not been there, the institution would have gone one step forward. Besides, it would also be possible to say that unless the Dean makes dramatic changes in his leadership characteristics or unless he is replaced, the institution is likely to fall in to big crisis not only in failing to achieve its objectives but also in losing the majority of its productive work forces.

3.2. MOTIVATIONAL MECHANISMS EMPLOYED

In this section, the motivational mechanisms being employed by the Dean in his leadership practices have been raised, and the interviewees all together confirmed as there was no any effort to motivate the staff members. According to the perspectives of the academic staff, the Dean has rather been employing demotivating mechanisms which were contrary to the institutional objectives. The detail description can be seen as it is presented and discussed in the following paragraph.

Interviewee "A", for example, said that "... what he is doing is simply creating problems and obstacles which de-motivate the academic staff members from working hard." Interviewee "B" on his part also said that "...the Dean must have some hidden agenda a part from the vision of the academy. Had it not been for that case, he would not have been creating confusions and discouragements with almost all academic staff members." Moreover, interviewee "C" added that "he does not have any good relationship with any of his subordinates because his daily activities are discouraging and upsetting for the academic staff members." Interviewee "D" further described the Dean's motivational mechanisms as " he contrarily revenges those academic staff members who tend to perform high".

It was also clearly described by the interviewees that no motivational mechanisms had been designed, and even no efforts had been made to encourage the academic staff members. Rather, all the efforts taken were geared to discourage the efforts of the academic staff members.

The accomplishment of the institutional objectives heavily lies on the motivation and commitment of its workforces. The motivation and commitment of the workforces are also likely to be strengthened when a leader positively reinforces subordinates' desirable behaviors. Leaders who notice when their followers do a good job and acknowledge with accomplishments of whatever form are likely to succeed in achieving institutional objectives (Bush, 1986).

In contrast to the above arguments, the Dean of the Combined Army Academy had not been employing any motivational mechanisms. Rather, all what he had been doing seemed a deliberate attempt to discourage the work forces of the institution stated. Perhaps, the need to motivate or reinforce the workforce emanates from the institutional perspectives of the leader. However, as was already indicated earlier, the Dean's priorities seemed to focus on ensuring personal gratification by having control over everything irrespective of institutional concerns. So, when one's exaggerated prior concern for self gratification fails, it is more likely that he or she would act against the interest of others and thereby the interest of the institution (Murgatroyd and Gray, 1984), and hence, it was all what happened to the Dean and what he had been doing in that institution.

3.3. SITUATIONAL CHARACTERISTICS ASSOCIATED TO HIS LEADERSHIP

In this section, the information related to the situational characteristics associated to the Dean's leadership practices is presented and discussed. Situational characteristics in this case would mean the extent to which the situation allows the leader to easily guide and channel subordinate behavior in the direction of high performance and goal attainment. When a situation is favorable or leading, it is easier for a leader to exert influence than it is when situation is unfavorable. As is indicated in Thomson (1993), and George and Jones (2005), situational characteristics are made to include three elements: leader-member relations, position power, and task structure. Accordingly, the collected data or results are presented in line with these three elements, and the corresponding discussions are made as can be seen in the following sub-sections.

3.3.1. LEADER-MEMBER RELATIONS

The interviewees, all together, confirmed that the leader-member relation was not encouraging. The Dean had not been working towards building positive relationship between the staff members and him as an academic leader. To understand the interviewee's individual perspectives, we can have a look at their respective quotations as they are presented below.

Interviewee "A" said that "...the dean does not communicate with, I can say, almost all the academic staff members and even with the cafeteria workers". Interviewee "B" on his part also said that "we have really been in a poisoned environment" and tried to throw the blame to Dean's activities. Interviewee "C" also added in indicating as the Dean was not communicating with them and said that "... no one was willing to give his ears for us." Adding emphasis, interviewee "D" noted that "violations of the academic members' rights has become a common event; and the Dean usually spends his time in fabricating imaginary happening that can create gaps between staff members and students, between academic staff members and administrative staff members, and among academic staff members." Thus, all these quotations tell us that there was no healthy relationship between the academic staff members and the Dean, as an academic leader.

When there is healthy relationship between the leader and followers, the situation is favorable for leading. Likewise, when the leader-member relations are poor, followers dislike or distrust their leader, and the situation is unfavorable for leading (Robbins, 2005).

Accordingly, attempts were made to see the leader-member relations of the institution under study. The result shows that the leader-member relation was very much poor, even worse. In fact, the blame went to the Dean's poor personal characteristics because relationship is highly dependent on one's personal characteristics. That is, the inappropriate use of his power in influencing the staff members, his lack of emotional maturity in handling day-to-day confrontation, his lack of the necessary intelligence in dealing with complex issues had resulted in the development of unhealthy relationships between the academic staff members and the Dean. So, it would be important to note that the Dean lost one key element of leaders that is the human relation skill, and without which leadership effectiveness is unthinkable (Komives, et al. 1989).

3.3.2. THE POSITION POWER

In any organizational setting, the position power given to the leader is likely to determine his effectiveness in influencing the followers towards the achievement of a common goal or organizational objectives. Accordingly, the extent of the formal position power given for the Dean in influencing the followers is presented as follows.

When I was asking interviewee "A" whether they have been informing the inconveniences with leadership practices to the Academy's commandant, he felt a bit annoyed and said that "in fact, we tried to inform the matter, but the commandant himself didn't want to give his ears to us for he has already given an absolute power for the Dean to do so what he feels right". Interviewee "B" on his part also said that " what surprised us was the perspectives of the academy's military commandants in that they have already set a mental framework that the Dean is the only person responsible. For this reason, they gave him a power to do everything." Moreover, interviewee "C" said that "... what we have been doing was simply doing what is right for the Dean because he was authorized to take actions on everybody." Adding emphasis, interviewee "D" also noted that "irrespective of all his evils, the top officials have given him the power to influence the academic staff members in a way he likes."

Attempts, as already indicated in the result section, were made to see the favorability of the situation for the Dean in line with those three elements. Position, for example, is the amount of formal authority that a leader has (Grint, 2000). Likewise, all the interviewees confirmed that the Dean had been given a strong power to have control over every decision in the situation. However, he was not using his power for channeling the staff members to achieve the desired institutional goals. Instead, he used his power to impose the academic staff with the interest to gratify his bossy feelings. That is, he was using his power as a means for threatening the academic staff members so as to get due respect and recognition irrespective of his personal qualities. However, he seemed to forget the principle that power operates under the same logic as love: the more he gives to others the more he receives in return. That is, leaders can maximize their own power and their own opportunities for success by enabling the employees they supervise also to achieve their own sense of power and success. In very

clear terms, if you are successful in giving your power to your followers, they will surely lift you on their shoulders to heights of power and success you never dreamed possible (Lunenburg and Ornstein, 1991). Hence, especially in an intellectual environment, the Dean's forceful manipulation and threatening would not have a place. Intellectuals would like to question for things they encounter, and hence, they are not suitable to get manipulated, and consequently, his leadership practices had fallen in to crisis.

3.3.3. THE TASK STRUCTURE

Task structure is the extent to which the work to be performed by a group is clearly defined. The situations to which the activities of the group are organized to some extent help us to know the effectiveness of the Dean's Leadership. Accordingly, the perspectives of the interviewees are presented and discussed as follows.

Interview "A" indicated that "he does not want to communicate about the plans, visions and activities of the academy with the academic staff members". Interviewee "B" on his part also said that "in our academy, issues related to planning, reporting, job description, accountability, and motivation are not clear; we have been doing half-hazardly and we don't know where to stop our journey." Moreover, interviewee "C" indicated that "...almost all of the staff members have not been informed about the task structure of the institutions." Interviewee "D", further said that "whatever smart or poor the staff members may be, they are all the same to the institution for there is no organized system which clearly indicates, the duties, responsibilities, accountabilities, and authorities of the academic staff members in that institution."

In this regard, from what the interviewees said, it seemed evident that, the Dean, as an academic leader, had not been exercising his leadership practices by communication with the academic staff members on issues related to responsibilities, accountabilities and power structure. The lack of a clearly set task structure is an important component to affect the effectiveness of one's leadership practices. Task structure, when conceptualized, is the extent to which the work to be performed by a group is clearly defined. When a group has a specific goal that needs to be accomplished and when every group member knows how to go about achieving the goals, task structure is high. When group goals are vague or uncertain and members are not sure on how to go about performing their jobs, task structure is low. Situations are more favorable for leading when task structure is high (George and Jones, 2005).

In contrast, as was already described in the result section, the academic staff members were not informed about what and how to do, and even where to stop. Communication about the vision, and goals of the institution had not been made. Issues related to job description, responsibility, accountability etc... were not taken in to account. Instead, all the activities had been performed halfhazardly.

So, it would be difficult to say that there was an academic leader in that institution. The leader is the one who sets common vision, communicate that vision to those concerned and paves the way for achieving that vision. However, the Dean had not been aware about not only how to lead but also how to be led, because there is an argument that a good follower is more likely to be a good leader.

3.4. DECISION MAKING PRACTICES

Allowing subordinates to participate in decision-making and problem solving can enhance leadership. Participation helps to ensure that subordinates will accept a decision that affects them or require support. Accordingly, the academic staff members' perspectives on the Dean's decision-making practices are presented and discussed as in the following.

Interviewee "A" said that "all the decisions have been made by him, and have been communicated to us through announcements posted on the notice board." Interviewee "B" on his part also said that "... what we have been forced to do was simply doing what we are told to do without asking how and why questions, and waiting to see the ultimate result." Adding emphasis, interviewee "C" indicated that "all the institutional decisions have been monopolized by the Dean." Similarly, interviewee "D" also noted that "the Dean, in any ways, does not want to share his decision-making powers."

Furthermore, it has clearly been reported by all the interviewees that almost all the institutional decisions were made by the Dean alone, and all the academic staff members had no any chances of participation rather than accepting the decisions made. That is, the necessary communication of the issues to be decided had not been made in that institution as can be seen from the respective quotations.

Allowing subordinates to participate in decision making and problem-solving can enhance leadership. Participation helps to ensure that subordinates will accept a decision that affects them or require their support. Participation may also result in better decision if, for example, subordinates have information pertaining to the decision that the leader does not have. Additionally, participation can help foster subordinates' growth and development and may result in higher performance levels and job satisfaction (Adams, 1986).

In the attempts made to see the decision making practices of the Dean under focus, it was reported that almost all the decision had been made by the Dean alone, and the decisions had been communicated to the staff members through the notice board. That is, the academic staff members had no any say on deciding issues even related to their duties and responsibilities. This ultimately resulted in creating dissatisfaction and resistance with staff members, and the Dean's leadership was challenged with group confrontation.

Today, more than else before, allowing subordinates to participate in decision-making has become an important issue. To this effect, organizations are organizing their employees in to self managed work teams with decision-making authority. So, the Dean under study must have been the one who had been dominated with classical orientation, and if his trend continues, the institution will ultimately fall in to big crisis.

3.5. ACTIONS TAKEN BY THE ACADEMIC STAFF MEMBERS

The actions taken by the subordinates either to support or to comment the leader can have a meritorious contribution in channeling the styles of leaders. Accordingly, the actions taken by the academic staff member towards the Dean's leadership practices have been assessed, and the details are presented and discussed below.

Interviewee "A", for example, said that "...what we have decided to do was simply getting organized and challenging him whatever obstacles he tends to create, and the teaching and learning process of the academy has been made to become our second priority." Interviewee "B" added that "in fact, we are getting organized, and challenging him in different means" Interviewee "C" on his part also said that "ultimately, we have been becoming successful in getting organized in assuring leadership void so as not to be attacked." Moreover, interviewee "D" said that "we are trying to challenge him through different ways like face-to-face confrontations in groups and with written group reports to the higher educational institutions' coordinating office, which is established in Addis Ababa." The interview result, then, seemed to indicate that the academic staff members have started to challenge the Dean in different ways. Besides, the document analysis, as it can be seen from the staff members' petition report, conducted shows that the academic staff members are challenging the Dean in a very organized manner.

The ultimate goal of education is reasoning, which is likely to be developed through having necessary behavioral changes. Reasoning involves providing justifications for happenings. To this effect, intellectuals or academic professionals are expected to reason out for the things they do though in relative sense. They are also expected to question for the things they confront with (Komives, et al. 1989). Accordingly, efforts were made to see how far the academic staff members in the context of the study challenges or question the action or decision of the Dean as an academic leader.

As already indicated earlier, the Dean was very autocratic in enforcing his monopolized decision on the staff members, who were not allowed for taking part in the decision making process. Fortunately, the data reveals that the staff members were more organized in challenging the Dean, and they had even gone one step forward in reporting the matter to higher educational institutions coordination office, which is in Addis Ababa. This action seems to reflect a true quality of professionals, who are supposed to bring change. Even this is the culture that we have to cultivate especially in developing countries otherwise our overall fate would fall in to the hands of some ill prepared leaders who seek to gratify their self interest irrespective of the biggest responsibilities they are supposed to hold. So, it would be possible to argue that the academic staff members in that institution, though late, had been exercising one of their responsibilities in bringing their leader to the right track, where group or institutional interest are reflected.

4. SUMMARY OF THE MAJOR FINDINGS, CONCLUSIONS AND REFLECTIONS

4.1. SUMMARY OF MAJOR FINDINGS

In the discussions made, the following major findings were obtained: the personal characteristics of the Dean requires immediate adjustments if he is to continue with that leadership career; the situational factors were not favorable for the Dean to lead, and in fact, he was accountable for making the situation unfavorable; no motivational mechanisms were designed and employed to reinforce the workforce; decision making efforts were made to rely on only one person, the Dean; and it was also found out that the academic staff members had recently been getting organized in challenging the inappropriate action of the Dean.

4.7. CONCLUSIONS

Based on the analysis conducted, the discussions made, and the findings obtained, it would be possible to conclude that the Dean of that Academy lacks the necessary leadership orientations, without which leadership is really difficult, and it seemed that even the Academy's Higher Commandants lack the necessary orientation of what academic leadership is. Because had it not been for their lack of the necessary orientation of academic leadership, the Commandants of the Academy would not have given an absolute power for the Dean to act in a way he likes irrespective of the group and institutional demands.

4.8. REFLECTIONS

Academic leaders are expected to influence their followers by intellectually stimulating them to become aware of problems in their groups and organization, and view these problems from new perspective-one consistent with the leader's vision. They are expected to cause followers to view problems differently and feel some degree of responsibility for helping to solve them. Generally, a desired academic leadership seems to occur as the leader: increases subordinates' awareness of the importance of their tasks and the importance of performing them well; makes subordinates aware of their needs for personal growth, development, and accomplishment; and motivates their subordinates to work for the good of the organization rather than exclusively for their personal gain or benefit.

Hence, it seems sound for the Academy to revise the academic leadership practices that had been exercised, and to genuinely see how far the academic leadership had been responsive to the group and institutional interests.

REFERENCES

1. Adams, J.D.(ed)(1986). *Transforming Leadership: From Vision to Results*. Virginia: Miles River Press
2. Bennis, W and Townsend R.(1995). *Reinventing leadership: Strategies to Achieve A New Style of Leadership and Empower Your Organization*. London: Judy Piatkus Publishers Ltd
3. Bush, T. and West-Burnham(eds) (1994). *The Principles of Educational Management*. Essex: Longman Group Ltd.
4. Bush, T.(1986). *Theories of Educational Management*. London:Paul Chapman
5. George, J.M. and G.R, Jones(2005). *Understanding and Managing Organizational Behavior*. New Jersey: Pearson Education Inc.
6. Grint K.(2000). *The Arts of Leadership*. Oxford: Oxford university press
7. Harling, P.(1989). *The Organizational Framework for Educational Leadership* in Bus, T.(ed) *Managing Education: Theory and Practices*. Milton Keynes: Open University press
8. Kirschman, R.E.(1996). *Educational Administration: A Collection of Case Studies*. New Jersey: Prentice Hall , Inc
9. Komives , R. Susan etal(1989). *Exploring Leadership for College Students who want to make a Difference*. Jossey Bass: A Wiley Company Inc.
10. Lunenburg and Ornstien(1991). *Educational Administration: Concepts and Practices*
11. Murgatroyd, S. and Gray H.L.(1984). *Leadership and the Effective School* in Hurling, p,(ed) *New Directions in Educational Leadership*. London: Falmer press
12. Robbins, S.P.(2005). *Organizational Behavior*(11th ed). *New Directions in Educational Leadership*. London: Falmer press
13. Robbins, S.P.(2005). *Organizational Behavior*(11th ed). New jersey: Pearson Education Inc.
14. Thomson S.D.(ed).(1993). *Principles for our changing Schools: The Knowledge and skill Base*. Fairfax, VA: National Policy Board for Educational Administration.

ELECTRONIC GROCERY SHOPPING: MODELS AND METHODS FOR THE URBAN CONSUMER DELIGHT

AMOL RANADIVE
ASST. PROFESSOR
NAVRACHANA UNIVERSITY
VADODARA

DR. HRUDANAND MISHRA
DIRECTOR & ASSOCIATE PROFESSOR
K. P. SCHOOL OF MANAGEMENT & COMPUTER STUDIES
KAPADWANJ

ABSTRACT

This paper deals with the issues related to computer-aided retailing. The paper reveals the "hidden topographical aspect" of e-commerce, considering how the outwardly easy act of delivering food and related items at the customer's doorstep is explained in urban form, and in transportation and communication infrastructures. The paper classifies Electronic Grocery Shopping (EGS) models into two types: "bricks and clicks", and the "infomediary", and scrutinizes how each type of function has been shown up in the urban setting, and the infrastructure upon which each draws. The paper then reflects on the strategies used during EGS operations to have used to compensate for the "killer costs" of logistics for e-commerce transactions. The paper wraps up by considering how electronic grocery shopping is connected to the consumer behavior trends, and how these trends are visible in the light of urban life. The paper put forwards the idea that online grocers are in the precursor of enterprises habituating customers to remote ordering and delivery of products to their homes. Through administering this "green mile", online retailers hope to extend the product offerings on a higher-margin and better manage the distribution of unprofitable products to the customers by combining the power of online medium like the Internet.

KEYWORDS

electronic groceries shopping, urban consumer.

INTRODUCTION

Delivering food to the customer's doorstep has now become a classic model in food retailing. Even prior to the advent of the Internet, several food stores especially in the supermarkets and hyper- malls in Europe and America have been offering the services to their customers, either at no cost or at something nominal. The next big wave that's hit the online retail business platforms has been the development of a new way of conducting business known as Electronic Grocery Shopping (EGS). Several attempts have been made. Services offered before the advent of E-Commerce were restricted to a few miles within the radius of the Supermarket. These services were either confined to providing limited services on some fixed goods or some quite expensive goods, the delivery cost of which can be easily compensated from the size or value of the order itself and were transacted largely over phone or fax machines. The internet emerged with a promise to evade the costs of order complexity and time that besieged earlier home delivery services offered via television or the telephone (Jones and Biasiotto, 1999; Management Horizons, 1997; Reynolds, 2000). A traditional grocer with a virtual presence could prospectively offer a broader range of items than even the biggest of the store(s), at a cost much lower than was previously possible given optimum order volume to offer economies of scale and scope (Murphy, 2004), seen in the example of Amazon.com's assurance to be the "largest bookstore on earth" (Dodge, 2001). Thus EGS, like other virtual undertakings, was thought to precursor the "end of country's physical borders" (O'Brien, 1992; Cairncross, 2001; Thrift, 2001). The EGS transactions which exponentially increased during the dot-com bubble assumed that space constraints could be kerbed, and that "first-mover advantages" can be applied for online ventures (Liebowitz, 2002). According to Shapiro and Varian (1999: 169), 'If you can establish an installed base before the competition arrives on the scene, you make it difficult for later entrants to achieve the scale economies necessary to compete'. This can be achieved by building quick frameworks, tapping in customers quickly and thus capturing an incontrovertible market share. Being a bit loss-making was a result of the need to put up the necessary delivery logistics, particularly devoted to order fulfillment centers, along with Customer Relationship Management, but also fetched its own benefit: attention from the media.

This paper throws light on how funds & resources, the continually flowing affluences available for investing into business practices and places, has been "stranded" in the urbanized retail system, with specific emphasis on electronic commerce. In other words, how last couple of decades have witnessed the increase in awareness and usability of the internet by customers and online businesses have smoothly manifested in the city. A customer ordering online from his workplace and then finding the product being delivered at his residence without being concerned about the finer details about the Ordering Process, Pickup and Delivery Process is a prime feature of Electronic Shopping. In accordance with Currah's (2002) investigation of the material framework "in the wake of the web store" for Canadian general merchandise retailers, this paper intends to reveal the "hidden topographical aspect" of e-commerce, taking into account how the ostensibly easy process of delivering food at the doorstep is elucidated in urban setup, and in transportation and communication infrastructures. As Graham (2001: 409) noted, a detailed introspection in 'the manner in which technologies practices and urban business practices are deviously intertwined' is required. This paper puts forward an overview about the typological frameworks of online grocery shopping models and customers. It depicts contents based on the case studies from the UK, US, Canada, New Zealand and a few other countries having developed frameworks for online shopping using interviews with core participants, industry reports and media coverage to unravel the usually hidden substantiality of Electronic Grocery Shopping. However, not all e-commerce businesses are made alike, and the differences in organizational form and business practices have resulting disparate geographies. Hence this paper begins by reviewing various organizational models experimented by virtual retailers, and then assesses how these models have been made material in the urban fabric, both in fixed and fluid terms.

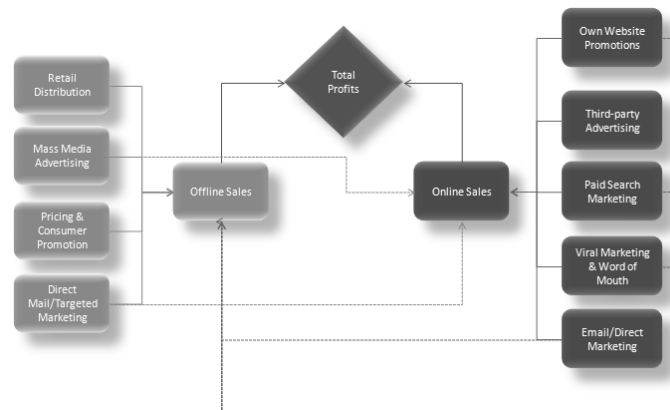
E-GROCERY BUSINESS MODELS

Two important and discrete computer-arbitrated retail formats can be determined from the numerous experiments that took place in the segment of internet-based home delivery of food during the late 1990s, although as always there are frequent variations (see Reynolds, 2000 for a nuanced view). Amongst all of these, the quickest and least expensive to implement is the so-called "bricks and clicks" method for in-store fulfillment, wherein an existing retailer makes use of its well established store network (Murphy, 2002, 2003; Currah, 2002; Oinas, 2002). The second option is for (generally small) existing retailers to sub-contract the web ordering and customer management functions to an intermediary (also termed an "infomediary", and in effect utilizes third-party logistics) (Mendelson, 2001a,b; Kämäräinen, 2001; Wrigley, Lowe and Currah, 2002) whose core function is to verify and approve the stock, order and deliver information between the customer and the retailer or its network of stores. A third and one of the most expensive methods is to build a custom-built e-commerce fulfillment warehouse (a "pure-play", if the retailer lacks the "bricks and mortar" store network) which is out of the scope of this paper.

1. THE 'BRICKS & CLICKS' MODEL

In the 'bricks and clicks' model the company integrates both offline and online presence for selling products or services. This model makes extensive use of telephone ordering. This model is an excellent option for companies which already have a very strong physical presence and image in the market and want to spread out their reach geographically to the customers by providing cost effective ordering and delivery services. The companies can also cut down on their capital expenditures of staffing and raising other office infrastructure by adopting such model. It has been seen that this model works better for organizations that are into selling of assorted goods like retail outlets and is less preferred by the others who have single or few offerings like car manufacturers. Figure 1 below depicts the integration of both, online and offline services and how they contribute to the organizations adopting the 'brick-and-click' formats.

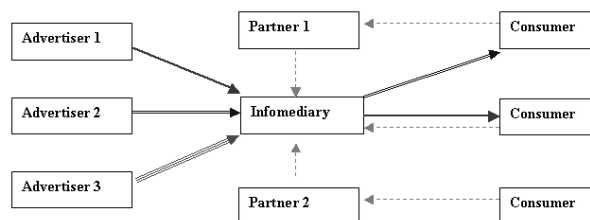
FIGURE 01: BRICKS-AND-CLICKS MODEL



2. THE 'INFOMEDIARY' MODEL

The second way of managing the electronic retailing business is the "infomediary" model (Hagel & Rayport, 1997; Kämäräinen, 2001; Wrigley et al, 2002). These are "pure-play" operations that do not actually handle the physical fulfillment, but they focus only on managing the link between customer and retailer. Infomediaries host the web applications and retail databases that lie behind the virtual storefronts, and pass on the orders to the retailer through email, fax or link to the store's database. The store then picks packs and delivers the goods. The benefit here to the store is the cost saved in developing own web presence and other marketing expenditures. The entire above process can be diagrammatically represented as shown in Figure 2.

FIGURE 02: THE INFOMEDIARY MODEL



LOGISTICS: THE 'KILLER COSTS' OF E-COMMERCE

The biggest challenge in the above two models lies in the logistical difficulties of getting products delivered to the customer's doorstep. EGS operators can provide two options to their customers for product delivery i.e. "In Attendance" or "Unattended"; the second option may come further with suboptions viz. "To the Home or Work Zone" or dedicated to a "Drop Zone". Aoyama (2001) elucidates the emergence of such nearby "Drop Zones" in Japan, where 7-11 stores play the role of receivers of goods, just as the local courier or postal outlets become the default outlet stores for Amazon.com and other bulky product shippers, if the customer is not present at home or wanting to get the product delivered to the third party destination. Currah (2002) and Wrigley et al. (2002) have taken a note of the case of www.empori.com, which acted as a counterpart of a post box outlet for hulking goods. Empori signed contracts with numerous e-tailers, who would in turn carry goods to a specific 'Secure Box' at the Empori outlet falling nearest to the customer's vicinity. The customer could then conveniently pick up the goods. Whereas this was a rewarding solution for computer products, music and books, although ultimately not an appropriate one – the company was forced to close down its operations by the year 2001 – it did not suit the transportation and delivery of perishable items. An unconventional alternative for unattended delivery was attempted by two companies' viz. Streamline of the US and Homeport from the UK, that involved setting up of 'Secured Box' at the customer's home location (Reynolds, 2000). The e-tailer would immediately add the selected items by the customer to an 'Insulated Box' and then deliver it to the customer at his convenience. Streamline would make the product deliveries during the night time, when the streets are less crowded; it would also lift and process clothes for dry cleaning, facilitate returning of rented video material etc. Homeport's systems turned out to be even more flexible, as additional 'Secured Boxes' can easily be added with no or little effort (but substantial expense). In spite of these significant efforts made, neither of these approaches is suitable for a bulky and an intermittent grocery shop. Nevertheless the company has connects with varied home delivery operators like FoodFerry, Sainsbury's, Greenwich Organics, Interflora and others.

To promote their quality of service and the necessities for food safety, most of the 'bricks and clicks' companies prefer or even resolute on attended delivery: this ensures that it becomes a paid delivery and also the frozen and preserved items do not blight out. However, talking directly to the customer and attentively getting the groceries inside significantly increases the "drop time" and declines the number of drops that can be achieved with a single delivery vehicle, to an average of 3-4 an hour (Kämäräinen, 2001; Mendelson, 2001; Caicco, 2001). Companies choosing the unattended method encounter more difficult choices: setup an insulated sealed box as done by Homeport, or find better ways to delay the spoiling of preserved food items. Companies like the Small Potatoes Urban Delivery of Vancouver has been partially able to surmount this problem by confining the categories of fresh foods sold upto frozen goods and very fresh organic produce, and offers chill-packs in plastic containers (both reusable) to cut down heat stress. This method may also not always be successful since few customers may just not unpack the containers even up to 8 hours after getting the delivery, for which an exact delivery slot cannot be specified.

THE GROCER AND THE CITY: MATERIAL EFFECTS

Food Retailers have been increasingly cautious about the distribution management part of their businesses, since it has direct financial implications on the margins (Mendelson, 2001; Caicco, 2001) for over two decades. As noted by Sparks (1994): 'logistics and systems became a significant frontier of cost-control activity and enhanced profitability in UK food retailing, as major firms progressed from simply being the innocent recipients of manufacturers' transport and storage whims, to controlling and organizing the supply chain, almost in its entirety'. "Bricks and mortar" food retailers have urbanized classily covertly "stranded"

infrastructure to play the role of an efficient mediator between the multiple suppliers and multiple customers. In the 1970s supermarkets required backroom areas to receive bulk-break and store product inventory prior to shelf restocking (Murphy, 2003; Wrigley and Lowe, 2002). Some of these inventories arrived directly from the manufacturers, but the bigger supermarket chains started putting together Distribution Centers (DCs) to serve groups of stores, for improving their net efficiencies. The augmentation of the size of stores in the mid 1980s and 1990s abridged the backroom space for individual stores, as DCs became more massive and advanced, designed to send single delivery vehicles to the retail stores to eliminate the job of coordinating with the manufacturer's deliveries. The present day regional level Distribution Centers cater to many stores through computerized "Continuous Replenishment" systems, and can range up to 700,000 sq. ft., which is over six times the size of the biggest hypermarket. The deliveries made by the manufacturers are captioned with the address of their destination stores and gross weights, with the pallet contents bulk-broken and re-routed to the store loading bays without onsite storage, through a process called "Cross-Docking" (Maloney, 2000; Wrigley and Lowe, 2002). Full-truck loads are then transported to the store, with preordered goods and pre-stacked for an effortless shelf display in roll-in cages. Hence the goods spent much lesser time in transit or in storage, thus fastening the turnover of retail capital and thickening retailer margins. The uniqueness of this business model lies in its economies of scale using larger trucks to deliver goods to larger stores using as few deliveries as possible at the fastest speed. Because of such a dedicated task being performed at the Regional Distribution Centers, they do not make up for any ideal assembly points for individual-customer orders to be home delivered. Thus for a single item, the entire range of products from the store may go through a series of multiple distribution centers.

In spite of all health and cleanliness measures, various frozen and preserved goods are co-transported (as evident in some DCs), along with meat, fish and bakery items, the breaking of bulk essential to supply to the individual customers may require all together separate sorting areas, with goods tied up in storage much longer. This would definitely be going against recent retail logistics trends (Murphy, 2003).

By introducing e-tailing fulfillment systems within their stores, existing retailers can capitalize on their already stranded infrastructure. Bricks and mortar retailers have devolved some of the most cumbersome and expensive processes of their businesses onto their customers: the picking, packing and delivery. Present day customers lack the know-how of calculating the full costs involved in actually getting to the grocery store (Kämäräinen et al., 2001), or the opportunity costs of their labour whilst there, which in many places includes bagging the groceries and in some even doing the scanning.

In the whole process of providing and extending these services to the customers, many e-tailers tend to add considerable fulfillment costs which many customers may be unwilling to pay. Customers tend to oppose the entrenchment of any delivery costs within elevated, since customers can easily cross verify the competitor's costs online or with any advertisements. The additional costs of home delivery must therefore be recovered by increased order sizes and/or by leveraging the virtual store to sell other products. As a part of building the "Customer Relationship", Tesco's well-diversified product line can be heavily promoted to the online customer. Tesco.com providing a wide range of services, it is also effectively an electronic commerce portal in its own way, wanting to become a "One-stop shop" for electronically-arbitrated consumption practices.

THE FUTURE OF ELECTRONIC GROCERY SHOPPING

In spite of closing down of a number of online grocers and retailers worldwide during the recessionary period in the year 2008, there are still good reasons to hope for continued existence and growth of online food retailing. A primary reason for a retarded growth in online grocery market is that grocery shopping is not a preferred or a privileged activity for many people. But still the whole phenomenon of ordering groceries online is lucrative for different market segments, viz:

1. The "time-poor": well-off family units that are engaged with time-intensive jobs and/or social lives
2. Couples with young children
3. People having difficult access to private or public transport facilities, or even due to choice or apartment living necessity, for whom physically carrying the groceries back home from a store can be strenuous
4. Physically disabled and elderly people for whom the getting to, from and around a store is very tiring;
5. "Technogeeks", who prefer using a computer over physical in-store shopping.
6. Lifestylers: Looking for highly specialized or hard-to-get goods not available in conventional stores.

An important reason why EGS can be a long-term solution is that the logistics are not unfathomable. As the number of customers scale up (even Webvan had shown steady growth just before it collapsed), the delivery logistics become easier and simpler, due to rise in drop density rises and economies of scale coming in action. In-store fulfillment might become a bit more chaotic, as customers contend for scarce shop-floor space and products, but additionally stores in the chain can be supplemented if the backroom space is appropriate. Warehouse fulfillment only becomes feasible with comparatively hefty turnover: Webvan's speculative breakeven point was approximately 2000 deliveries per day per centre, with a total capacity of 8000, which was never fulfilled (Guglielmo, 2000; Mendelson, 2001a; Ring and Tigert, 2002).

Grocery websites can offer a blend of intelligence and simplicity of use to abridge the weekly replacement shop. Tesco and Woolworths have been operating now for nearly a decade, time sufficient to find out what customers anticipate and are ready to pay for. They have constructed noteworthy databases of customer product searches, which confine the products that the customers are looking for that may not be stocked – information that physical stores just don't without an extensive market research. Unlike other e-commerce tasks, food customers have usual prompts for further custom, such as an empty fridge. Carrying out tests & trials with "smart" fridges, which comprise of a scanner and computer that can be used to take into account fridge and cupboard stock usage & handling, might put together the ordering process even simpler, although prevalent acceptance of this technology might be some years away, if at all. The sound conventional trend towards ready meals (Hughes, 1996) could be aided (or reversed) by the more intelligent integration of online planning of meals, including integrated recipes and ordering of ingredients. The grocery shop is a tough & challenging process, calling for outlay in consumers' time and equipment. The first online shop can take over an hour, as consumers make themselves acquainted with the virtual store design and ordering and delivery systems. Time can be considerably decreased throughout the reprocessing and revision of preceding online orders, standing orders of frequent purchases, and by connecting to in-store purchase behavior via loyalty card databases. Repetitive behavior is more probable if the experience is not monotonous, with ordering time supported by deeper penetrations of internet broadband services. The online grocery shop is a vital e-commerce purchase point for customers, both in promptness and in worthiness: a weekly food shopping of 100 or more immensely prevails over the infrequent acquisition of a book or even a flight ticket, only outperformed perhaps by virtual banking in transactional value. Creating acquaintances, fluency and trust in e-commerce transactions with online grocers may elevate overall comfort levels for online consumers, and thus lead to further e-commerce transactions in volumes, communication and entertainment, particularly if conveyed with faster embracing of broadband technologies.

CONCLUSIONS

In scale, and in hype, internet-fueled home delivery grocers pledged to offer something new to present day capitalism: the skill to familiarize customers to the remote ordering of a large range of products from their homes, and delayed delivery to it, on a customary basis. For customers this provides handiness, saving time and sweat, and possibly even money if prices are aggressive and impulse purchases can be shunned. Such online practices for the customers may also lead them to become intimate with technologies due to the gratification that comes from learning and mastering the complex software know-how for the successful home shop. These actions necessitate a range of material processes and places, of which customers may remain principally unaware. For material products like food the infrastructural necessities for the consistent and dependable delivery of the range of products asked for, at the time, place and price preferred, have proved to be considerable and disproportionate for many new start-up for online grocery. This paper is intended to reveal these commonly out of sight materiality of the online grocery shop, and to talk about the techniques and approaches, a number of online grocers have followed to make the virtual noticeable and viable.

Due to the use of automated distribution systems, in-store or stand-alone, as opposed to the use of old conventional mails or courier networks, online grocery is overall an urban experience. There is a discrete spatial ladder of provision, more or less utterly due to the solidity of the customer base (that being a function of population density). Whereas retailers may put in remarkable attempts to support distant and far off rural areas, this is usually at a much larger expenditure

and/or diminished frequency and product prerequisite. On the other hand these serviced pastoral pockets can be rewarding, or to prospective consumers whose nearest supermarket may be quite some distance away.

Online grocery is contingent on a number of networks, new and pre-existing, physical and virtual. Websites of such establishments may be maintained and administered by specialized webhosting facilities, perhaps at different locations. What is important is not where the server is based, but the its download speed to the customer and upload speed to the fulfillment centre. Since fulfillment centers (stores or warehouses) are not usually situated in prime internet backbone areas, it could be a good option to position the web server in a server farm in the CBD. Fulfillment centers need good transportation links, both for incoming replenishment (using large trucks from manufacturers or regional distribution centers) and for local delivery vans. The real 'task' in the wake of online grocery fulfillment may occur largely imperceptibly in distribution centers on the outskirts of a town or in the backrooms of supermarket stores, but the vans that barrage the roads to unite this 'virtual' world to consumers finger tips are a customary souvenir of the materiality of electronic commerce.

REFERENCES

1. Aoyama, Y., 2001. The Information Society, Japanese Style: corner stores as hubs for e-commerce access. In Leinbach, T., Brunn, S. (Eds), *Worlds of E-Commerce: economic, geographical and social dimensions*, Wiley, Chichester, pp. 109-128.
2. Coyle, D., 1997. *The Weightless World: strategies for managing the digital economy*. Capstone, Oxford.
3. Currah, A., 2002. Behind the webstore: the organizational and spatial evolution of multi-channel retailing in Toronto. *Environment and Planning A* 34(8), 1411-1441.
4. Davis, R., Buchanan-Oliver, M., 1999. Marketing relationships in a computer-mediated environment (CME). *Australian Marketing Journal* 7, 89-101
5. Davis, R., Buchanan-Oliver, M., 2000. Managing Out of Bounds: the case of E-Commerce Strategy. *University of Auckland Business Review* 3, 53-64.
6. Dodge, M., 2001. Finding the Source of Amazon.com: Examining the Store with the "Earth's Biggest Selection". In: Leinbach, T., Brunn, S. (Eds), *Worlds of E-Commerce: economic, geographical and social dimensions*. Wiley, Chichester, pp. 167-180.
7. Farmer, M., Sandoval, G., 2001. Webvan delivers its last word: Bankruptcy. *CNET News.com*, July 9
8. Graham, S., 1998. The end of geography or the explosion of place? Conceptualising space, place and information technology. *Progress in Human Geography* 22, 165-185
9. Graham, S., 2001. Information technologies and reconfigurations of urban space. *International Journal of Urban and Regional Research* 25(2), 405-410
10. Graham, S., Marvin, S., 2001. *Splintering Urbanism: networked infrastructures, technological mobilities and the urban condition*. Routledge, London.
11. Guglielmo, C., 2000. Can Webvan deliver? *ZDNet News*, February 4
12. Hagel, J., Rayport, J., 1997. The Coming Battle for Customer Information. *The McKinsey Quarterly* 3.
13. Hughes, A., 1996. Forging new cultures of food retailer-manufacturer relations? In: Wrigley, N., Lowe, M. (Eds), *Retailing, Consumption and Capital: Towards the New Retail Geography*, Longman, Harlow, pp. 90-115.
14. Industry Standard, 2000. "Biggest Online Grocer" Not Who You Think It Is. *Industry Standard*, February 10.
15. Jones, K., Biasiotto, M., 1999. Internet retailing: current hype or future reality? *International Review of Retail, Distribution and Consumer Research* 9, 69-79.
16. Kämäräinen, V., 2001. The reception box impact on home delivery efficiency in the e-grocery business. *International Journal of Physical Distribution and Logistics Management* 31(6), 414-426.
17. Kämäräinen, V., Småros, J., Jaakola, T., Holmström, J., 2001. Cost-effectiveness in the e-grocery business. *International Journal of Retail and Distribution Management* 29(1), 41-48.
18. Kutz, K., 1998. On-line Grocery Shopping on Track for Rapid Growth. *Andersen Consulting Newsletter*, January 20.
19. Liebowitz, S., 2002. Re-thinking the Network Economy: the true forces that drive the digital marketplace. *AMACOM*, New York.
20. Maloney, D., 2000. From the Web to your kitchen. *Modern Materials Handling*, May 15 [http://www.manufacturing.net/magazine/mmh/archives/2000/mmh0515.00/0502models.htm#Grocery]
21. Mendelson, H., 2001a. Webvan: the new and improved milkman. *MBA case notes EC-31*. Stanford University Graduate School of Business, Stanford.
22. Mendelson, H., 2001b. Tesco Delivers. *MBA case notes EC-32*. Stanford University Graduate School of Business, Stanford.
23. Murphy, A., 2002. The emergence of online food retailing: a stakeholder perspective. *Tijdschrift voor Economische en Sociale Geografie* 93(1), 47-61.
24. Murphy, A., 2004. The Web, the Grocer and the City. In: Graham, S. (Ed) *The CyberCities Reader*. Routledge, London, pp. 226-230.
25. Murphy, A.J., 2006. Grounding the Virtual – The material effects of electronic grocery shopping. *Geoforum at New Zealand*.
26. Murphy, A.J., 2007. Services and the Internet. In Bryson, J.R., Daniels, P.W. (eds), *The Handbook of Service Industries*. Edward Elgar, Cheltenham (in press)
27. Murphy, A.J., 2003. (Re)Solving Space and Time: Fulfilment issues in online grocery retailing. *Environment and Planning A*, 35(7).
28. O'Brien, R., 1992. *Global financial integration: The end of geography*. Royal Institute of International Affairs, London.
29. Oinas, P., 2002. Towards Understanding Network Relationships in Online Retailing. *The International Review of Retail, Distribution and Consumer Research* 12, 319-335.
30. Perman, S., 2000. eScout Pledge: I, George Shaheen, Promise to ... Beat the Living Crap out of the Competition. *Ecompany Now*, September 2000
31. Quah, D., 1999. The weightless economy in growth. *The Business Economist* 30(1), 40-53
32. Reynolds, J., 2000. eCommerce: a critical review. *International Journal of Retail and Distribution Management*, 28(10), 417-444.
33. Sandoval, G., 2000. Webvan bags HomeGrocer for \$1.2 billion. *CNET News.com*, June 26.
34. Sandoval, G., 2001. Webvan scales back, names CEO. *CNET News.com* April 26.
35. Tesco, 2006. *Tesco Annual Review*, April.
36. Thrift, N., 2001. "It's the romance, not the finance, that makes the business worth pursuing": disclosing a new market culture. *Economy and Society* 30(4), 412-432.
37. Tomlinson, R., 2000. A British e-grocer takes on Amazon. *Fortune*, June 12 Wrigley N, Lowe M. 2002. *Reading Retail*. Arnold, London.
38. Wrigley N, Lowe M, Currah A., 2002. Progress Report: Retailing and E-tailing. *Urban Geography*, 23(2), 180-197.

STUDY ON IMPLEMENTING ASSOCIATION RULE MINING IN PARTICLE SWARM OPTIMIZATION

T. BHARATHI
RESEARCH SCHOLAR
RVS ARTS AND SCIENCE COLLEGE
COIMBATORE

DR. P. KRISHNAKUMARI
DIRECTOR OF MCA
RVS ARTS AND SCIENCE COLLEGE
COIMBATORE

ABSTRACT

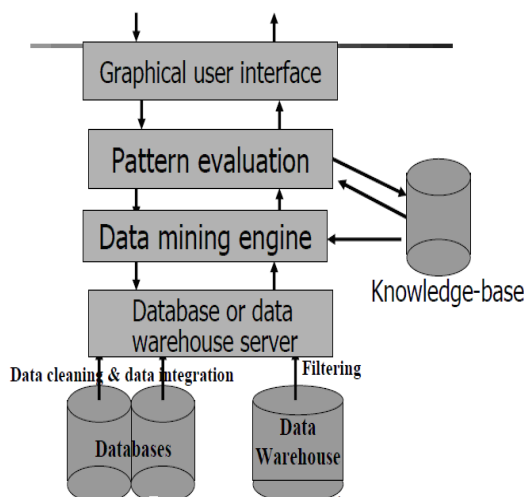
There is a great need to discover association rules which are an important database mining problem. In the area of association rule mining is focused on improving computational efficiency in previous research. Determination of the threshold value of support and confidence affect the quality of association rule mining up to great extent. This paper gives attention to effectiveness of algorithm for association rule mining in order to improve computational efficiency as well as to automatically determine suitable threshold values. The Particle Swarm Optimization algorithm first search for the optimum fitness value of each particle and finds corresponding support and confidence as minimal threshold values after the data are transformed into binary values. In this paper the particle swarm optimization algorithm compared with a genetic algorithm.

KEYWORDS

Association Rule Mining, Data Mining, Particle Swarm Optimization, Genetic Algorithm.

I. INTRODUCTION

Data Mining is process which finds useful patterns from large amount of data analysis is that the data mining is mine information and discover knowledge on the premise of no clear assumption.[1]. Generally data mining process is composed by preparation of data, data cleaning, data reduction and transformation, data mining, pattern evaluation and Knowledge presentation. Fig[1] shown the process of data mining.

FIGURE 1: PROCESS OF DATA MINING

Association rule mining is one of model among data mining several models. Association rule mining is used to searches for relationship between variables in database. Apriori algorithm is one of famous and oldest algorithm for discover the association rules. It consists of many modified algorithms to improving computational efficiency. The Support and Confidence is effect the quality of result and also it's used to decision making purpose. But thus previous algorithm doesn't consider that main two parameters. So this study mainly focused to improving algorithm can find minimum threshold value for support and confidence.

II. LITERATURE REVIEW**2.1 ASSOCIATION RULE MINING:**

Association Rule analysis is useful for discovering interesting relationship hidden in large data sets. The uncovered relationship can be represented in the form of association rules. Agarwal et al was introducing association rules in 1993. Retailers are interested in analyzing the data to learn about the purchasing behavior of their customers. Such valuable information can be used to support a variety of business-related application such as marketing promotions, inventory management, and customer relationship management. An association rule is an implication expression of the form $X \rightarrow Y$, where X and Y are disjoint item sets. The strength of an association rule can be measured in terms of its Support and Confidence. Support determines how often a rule is applicable to a given data set, while confidence determines how frequently items in Y appear in transaction that contains X .

$$\text{Support, } s(X \rightarrow Y) = \frac{\delta(XUY)}{N}$$

$$\text{Confidence, } c(X \rightarrow Y) = \frac{\delta(XUY)}{N}$$

2.2 ASSOCIATION RULE ALGORITHM

2.2.1. Apriori Algorithms: The classical apriori algorithm as suggested by Agrawal et al in [1993] is one of the most important data mining algorithms. It is an influential algorithm for mining frequent item sets for Boolean association rules. Frequent Item sets: The sets of item which has minimum support. Apriori property: Any subset of frequent item set must be frequent. Joint operation: To find L_k , a set of candidate K-Item sets is generated by joining L_{k-1} with itself.

2.2.2. FP-Growth Algorithm: J.Han et al [2000], it's for complete set of frequent patterns, by pattern fragment growth. Efficiency of mining is achieved with three techniques: 1. A large database is compressed into a condensed smaller data structure, FP-tree which avoids the costly, repeated database scans, 2. FP-tree based mining adopts a pattern – fragment growth method to avoid costly generation of large number of candidate sets, 3. A partitioning based, divide-and-conquer method is used to decompose the mining task into a set of smaller tasks for mining confined patterns in conditional database, which dramatically reduces the search space.[2]

```

Join Step:  $C_k$  is generated by joining  $L_{k-1}$  with itself

Prune Step: Any  $(k-1)$ -itemset that is not frequent cannot be a subset of a frequent  $k$ -itemset

 $C_k$ : Candidate itemset of size  $k$ 
 $L_k$ : frequent itemset of size  $k$ 
 $L_1 = \{\text{frequent items}\};$ 
for( $k=1; L_k \neq \emptyset; k++$ ) do begin
     $C_{k+1}$  = candidates generated from  $L_k$ ;
    for each transaction  $t$  in database do
        increment the count of all candidates in  $C_{k+1}$  that are contained in  $t$ 
     $L_{k+1}$  = candidates in  $C_{k+1}$  with min. support
end
return  $\bigcup_k L_k$ ;

```

2.2.3. Dynamic FP-Growth Algorithm: C.Gyorodi et al [2003], It has focused in improving the FP-Tree algorithm construction based on two observed problems: 1. The resulting FP-Tree is not unique for the same "Logic" database. 2. The process needs two complete scans of the database. The above problems solved by G.Gyorodi et al. An important feature in this approach is that it's not necessary to rebuild the FP-Tree when the actual database is updated. It's only needed to execute the algorithm again taking into consideration the new transaction and stored FP-Tree.[3]

2.2.4. Partition Algorithm: A.Savasere et al [1995], Partition algorithm based on apriori algorithm, but it requires only two complete scans over the database. The Partition algorithm divided into two phases: 1. the database is divided into a number of non-overlapping partitions and frequent item sets local to partition are generated for each partition. The database is scanned completely for the first time. 2. Local frequent item sets from each partition are combined to generate global candidate item sets. Then the database is scanned second item to generate global frequent item sets [4].

2.2.5. DIC Algorithm: S.Brin et al [1997], DIS is a further variation of the Apriori-algorithm. DIC is a softens the strict separation between counting and generating candidates. Whenever a candidate reaches minsup that is even when this candidate has not yet "seen" all transactions, DIC starts generating additional candidates based on it. For that purpose a prefix-tree is employed. In contrast to the hash tree, each node-leaf node or inner node of the prefix-tree is assigned to exactly one candidate respectively frequent item set. In contrast to the usage of a hash tree that means whenever it reach a node it can be sure that the item set associated with this node is contained in the transaction furthermore interlocking support determination and candidate generation decrease the number of database scans.[5]

2.2.6. Pincer Search Algorithm: This algorithm was proposed by Dao. I et al [1997]. The algorithm uses both the top-down and bottom –up approaches to Association rule mining. It is a slight modification to original Apriori algorithm. The main search direction is bottom -up expect that it conducts simultaneously a restricted top-down search. [6]

2.2.7. Pincer Search Algorithm: The concept of PSO was first suggested by Kennedy and Eberhart in 1995[5]. Particle swarm optimization (PSO) is inspired by the social behavior observed in flocks of birds and schools of fish. In nature, there is a leader who leads the bird or fish group to move, as illustrated in Fig. 2. Most members of the group follow the leader. In PSO, a potential solution to the considered problem is represented by a particle, similar to the individuals in the bird and fish group. Each particle travels in the solution space and attempts to move toward a better solution by changing its direction and speed based on its own past experience and the information from the current best particle of the swarm. [7]

2.2.8. The procedure of PSO is described as follows:

A. Particle initialization:

An initial swarm of particles is generated in search space. Usually, the population size is decided by the dimension of problems.

B. Velocity and position update:

In each iteration, a new velocity value for each particle is calculated based on its current velocity, the distance from its previous best position, and the distance from the global best position. The new velocity value is then used to calculate the next position of the particle in the search space. The particle's velocity and position are dynamically updated as follows:

$$V_{id}^{new} = w \times V_{id}^{old} + c_1 \times rand \times (P_{id} - x_{id}^{old}) + c_2 \times rand \times (P_{gd} - x_{id}^{old}),$$

$$x_{id}^{new} = x_{id}^{old} + V_{id}^{new}.$$

The new velocity of a particle, V_{newid} , is updated by taking into consideration of the particle's previous velocity, V_{oldid} , and previous position, x_{oldid} . $w = [0.5 + rand/2]$ is an inertia weight and $rand$ is a uniformly generated random number between 0 and 1. The cognition parameter, c_1 , and social parameter, c_2 , are acceleration coefficients that are conventionally set to a fixed value 0–2. P_{id} is the previous individual best position of this particle and P_{gd} is the current global best position then calculates the new position of the particle, x_{newid} . [8]

a) Both particle's position and the global best position are far from the optimum and the particle velocity is low compared to its distance to the optimum [9].

b) Global best position is close to the optimum and the particle position is far from them resulting in a small improvement region and a large next position region.

C. Evaluation and update of best locations:

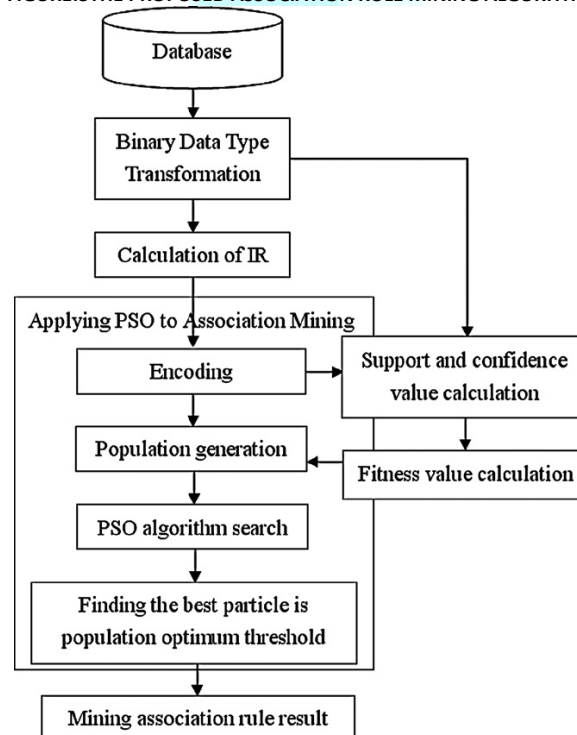
The fitness value of each particle is calculated by the objective function. The values of P_{id} and P_{gd} are then evaluated and replaced if better particle best position or global best position is obtained.

D. Termination:

Steps (2) and (3) are repeated iteratively until the termination condition is met.

III METHODOLOGY

FIGURE:3 THE PROPOSED ASSOCIATION RULE MINING ALGORITHM



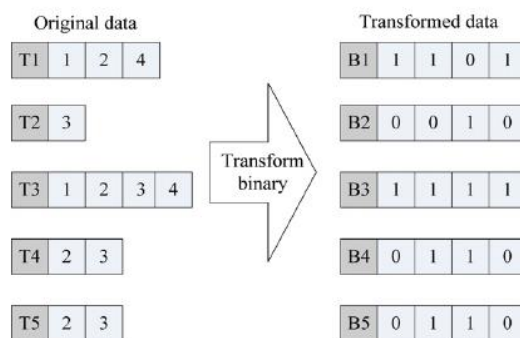
3.1. The proposed algorithm:

The proposed algorithm comprises two parts, preprocessing and mining. The first part provides procedures related to calculating the fitness values of the particle swarm. Thus, the data are transformed and stored in a binary format. In the second part of the algorithm, which is the main contribution of this study, the PSO algorithm is employed to mine the association rules. First, it proceeds with particle swarm encoding, this step is similar to chromosome encoding of genetic algorithms. The next step is to generate a population of particle swarms according to the calculated fitness value. Finally, the PSO searching procedure proceeds until the stop condition is reached, which means the best particle is found. The support and confidence of the best particle can represent the minimal support and minimal confidence. [10] Thus, it can use this minimal support and minimal confidence for further association rule mining. Fig.3 illustrates the algorithm structure.

3.2. Preprocessing of PSO association rule mining

Binary transformation: In this transform the transaction data into binary type data, each recorded and stored as either 0 or 1 [8]. This approach can accelerate the database scanning operation, and it calculates support and confidence more easily and quickly. The transformation approach is explained by an example in Fig. 4. In Fig. 4, there are five records, say T1 to T5, in the original data. Each of these records is transformed and stored as a binary type. For instance, there are a total of only four different products in the database, so four cells exist for each transaction. Take B4 as an example, this transaction only purchased products 2 and 3, so the values of cells 2 and 3 are both "1s," whereas cells 1 and 4 are both "0s." Conversion shown in figure 6. Fig. 4: Data type transformation

FIGURE 4: DATA TYPE TRANSFORMATION



3.3. Application of PSO to association rule mining

Applying PSO to association mining is the main part of this study. We use PSO as a module to mine best fitness value. The algorithmic process is quite similar to that of genetic algorithms, but the proposed procedures include only encoding, fitness value calculation, population generation, best particle search, and termination condition. Each of the steps in the PSO algorithm and the process of generating association rules are explained as follows:

Encoding: According to the definition of association rule mining, the intersection of the association rule of item set X to item set Y ($X \rightarrow Y$) must be empty. Items which appear in item set X do not appear in item set Y, and vice versa. Hence, both the front and back partition points must be given for the purpose of chromosome encoding. The item set before the front partition point is called "item set X," while that between the front Partition and back partition points is called "item set Y."

3.4. Fitness value calculation: The fitness value in this study is utilized to evaluate the importance of each particle. The fitness value of each particle comes from the fitness function. Here, employ the target function [11] to determine the fitness function value as shown in Eq.

$$\text{Fitness}(k) = \text{confidence}(k) \times \log(\text{support}(k) \times \text{length}(k) + 1)$$

Fitness (k) is the fitness value of association rule type k. Confidence (k) is the confidence of association rule type k. Support (k) is the actual support of association rule type k. Length (k) is the length of association rule type k. The objective of this fitness function is maximization. The larger the particle support and confidence, the greater the strength of the association, meaning that it is an important association rule.

3.5. Population generation: In order to apply the evolution process of the PSO algorithm, it is necessary to first generate the initial population. In this study, it has selected particles which have larger fitness values as the population. The particles in this population are called initial particles.

FIGURE 5: BINARY TRANSFORMATIONS

Transaction Id	Cat2	Cat3	Cat4	Cat34
3.483	0	0	0	0
3.483	0	0	0	0
3.661	0	0	0	0
5.370	0	0	0	0
6.570	0	0	0	0
10.386	0	0	0	0
10.424	0	0	0	0
14.559	0	0	0	0
19.553	0	0	0	0
20.372	0	0	0	0
26.658	0	0	0	0
28.384	0	0	0	0
28.654	0	0	0	0
30.448	0	0	0	0
30.495	0	1	0	0
30.570	0	0	0	0
36.616	0	0	0	0
36.686	0	0	0	0
39.495	0	0	0	0
39.586	0	0	0	0
40.466	0	0	0	0
41.448	0	0	0	0
41.836	0	0	0	0
43.427	0	0	0	0
44.470	0	0	0	0
44.564	0	0	0	0
44.585	0	0	0	0
44.659	0	0	0	0
44.720	0	0	0	0
45.412	0	0	0	0
45.524	0	0	0	0
49.509	0	0	0	0
49.567	0	0	0	0
49.652	0	0	0	0
50.561	0	0	0	0
50.628	0	0	0	0
62.552	1	0	0	0
64.428	0	0	0	0
74.412	0	0	0	0

Fitness value calculation is shown in figure 5

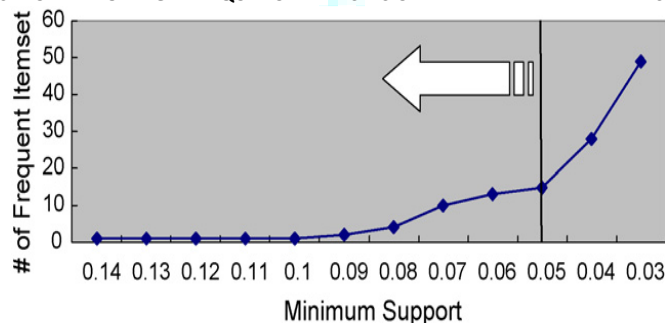
3.6. Search the best particle: First, the particle with the maximum fitness value in the population is selected as the "gbest." It designed a method to constrain this search. The constrained method is to calculate the distance between the particle's new position and all the possible particles inside the constrained range before the particle's position is updated. Definitely, the particle with the smallest distance will be selected and treated as the particle's new position. In the distance measuring function it uses traditional "Euclidean distance" as shown in Eq.

$$\text{dist}(x^n, y^m) = \sqrt{\sum_1^d (x_i^n - y_i^m)^2}$$

Where x_n is the position of the particle at nth update and y_m is the possible particle number min the constrained range. In addition, d is the dimension of the search space. The nearest possible particle is selected to be the target particle's new position. This method can prevent a particle from falling beyond the search space when its position is updated.

3.7. Termination condition: To complete particle evolution, the design of a termination condition is necessary. In this study, the evolution terminates when the fitness values of all particles are the same. In other words, the positions of all particles are fixed. Another termination condition occurs after 100 iterations and the evolution of the particle swarm is completed. Finally, after the best particle is found, its support and confidence are recommended as the value of minimal support and minimal confidence as shown in Fig[6]. These parameters are employed for association rule mining to extract valuable information. [10]

FIGURE 6: NUMBER OF HIGH-FREQUENCY ITEM SETS UNDER DIFFERENT MINIMAL SUPPORTS



IV. Model evaluation results and discussion

This section will use the database provided by Microsoft SQL Server 2000 to verify the feasibility of the proposed algorithm. A detailed discussion is provided as follows.

4.1. Experimental platform and database

This study's experiment was conducted in the environment of Microsoft Windows XP using an IBM compatible computer with Inter Pentium IV 1.60GHz and 512MB RAM. The algorithm was coded by Borland C++ Builder 6. In regard to the experimental testing database, its source was a FoodMart2000 retail transaction database embedded in a Microsoft SQL Server 2000, as illustrated in Fig. 6. Since there are different kinds of transaction databases in FoodMart2000, it only selects sales fact 1997 data table for assessment. The number of product items in this data table is 1560.

In order to effectively mine meaningful association rules, this experiment categorizes the products into groups according to the product category provided by the data table. Thus, products are classified into 34 categories, each with a corresponding product category id. In regard to data selection, 6000 customers' are randomly selected along with their corresponding transaction data at different times. After arrangement, there are a total of 12,100 transaction records for these 6000 customers.

FIGURE 7: THE DATA TABLE OF THE FOODMART2000 DATABASE

customer_id	time_id	product_category_id	product_category
5845	727	31	Snack Foods
5845	727	23	Meat
5845	727	23	Meat
5845	727	3	Beer and Wine
5845	727	29	Seafood
5846	386	14	Electrical
5846	386	15	Frozen Desserts
5846	386	19	Hygiene
5846	386	17	Fruit
5846	386	20	Jams and Jellies
5846	536	13	Eggs
5846	536	17	Fruit
5846	536	7	Canned Soup
5846	536	27	Pizza
5846	585	8	Hot Beverages
5846	585	26	Paper Products
5846	585	4	Bread
5846	585	6	Candy
5846	585	31	Snack Foods
5846	600	31	Snack Foods
5846	600	21	Kitchen Products
5846	600	2	Bathroom Products
5846	600	3	Beer and Wine
5846	600	1	Baking Goods
5846	720	15	Frozen Desserts
5846	720	18	Hardware
5847	439	34	Vegetables
5847	439	34	Vegetables

4.2. Mining results via PSO algorithm

In this experiment, every transaction record in the Food-Mart2000 has 1–13 items. After calculating the IR values, it is found that $R(1 \rightarrow 6) = 5.86822$ is the largest. Therefore, it can generate five different dimensions of encoding types for the particle swarm. They are two dimensions, 1→2, three dimensions, 1→3 and 2→3, four dimensions, 1→4, 2→4, and 3→4, and five dimensions, 1→5, 2→5, 3→5, and 4→5, and six dimensions, 1→6, 2→6, 3→6, 4→6, and 5→6. According to these five dimensions, it can implement the PSO mining process. An example of two dimensions is illustrated in Fig. 6. Since the computational results are different for each replication, a total of 30 replications are conducted in order to get the final experimental results. The results show that there are three possibilities as listed in Table 1.

Next, it can conduct the three-dimensional PSO association rule mining. The population size is 20. The computational results can be found in Appendix A. The results indicate that the maximal setup value is 0.03652 for the minimal support threshold value. Because the support threshold value is smaller than 0.05, the number of high-frequency item sets mined is too large. This means that more meaningless rules are generated. In the current experiment, since the maximal setup values of minimal support for three, four, five, and six dimensions are all smaller than 0.05, none of the mining results are used.

TABLE: 1 THE RESULTS OF THE TWO-DIMENSIONAL PSO ASSOCIATION RULES FOR FOODMART2000

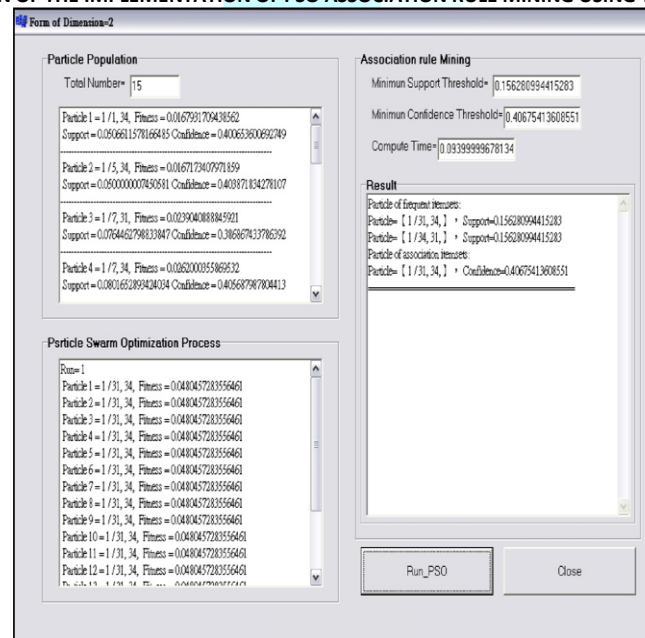
Possible results	High-frequency itemset(\geq minimal support)	Association itemset (\geq minimal confidence)
1	Minimal support = 0.15628 {Snack Foods, vegetables}	Minimal confidence = 0.40675 {Snack Foods \rightarrow Vegetables}
2	Minimal support = 0.15628 {Snack Foods, Vegetables}	Minimal confidence = 0.38497 {Snack Foods \rightarrow Vegetables} {Vegetables \rightarrow Snack Foods}
3	Minimal support = 0.09578 {Dairy, Vegetables} {Snack foods, Vegetables}	Minimal confidence = 0.40709 {Dairy \rightarrow Vegetables}
Final result	{Snack Foods, Vegetables} {Dairy, Vegetables}	Snack Foods \rightarrow Vegetables} {Vegetables \rightarrow Snack Foods} {Dairy \rightarrow Vegetables}

4.3. Performance evaluation analysis

4.3.1. Comparison of PSO and GA

Though Section 4.2 has shown that the proposed PSO algorithm can provide very promising results, further investigation is still necessary. Thus, it can compare with the genetic algorithm proposed in [9]. For both the PSO algorithm and genetic algorithm, the number of product items and the number of transaction records are 25 and 140,000, respectively. Basically, the two algorithms were implemented under the same conditions.

FIGURE: 8 A DEMONSTRATION OF THE IMPLEMENTATION OF PSO ASSOCIATION RULE MINING USING THE FOODMART2000 DATABASE



It attempt to ascertain whether or not computation time is related to the population size or number of evolutions, which are illustrated in Figs. 9 and 10, respectively. Figs. 9 and 10 clearly indicate that the proposed PSO algorithm out performs the genetic algorithm both in population size and number of evolutions. Table 2 also shows a similar outcome, showing that PSO can converge faster. This is very important as the database is very large.

4.3.2. Performance evaluation of the PSO algorithm's searching capability

This subsection intends to discuss the searching performance of the PSO algorithm. The first issue is the relationship between population size and speed. The parameter setup is as follows:

- (1) Number of dimensions: 2.
- (2) Number of data: 12,100.
- (3) Number of replications: 20.
- (4) Population size: 5, 10, 20, 30, 40 and 50 Particles.

The average running times for different population sizes are illustrated in Fig. 11. In addition, if most of the parameter setups are the same except that the size of population is 20, termination condition is 100 generations and the number of experimental replications is 50, then the relationship between the number of evolutions and running speed is presented in Fig. 12. In summary, though the proposed PSO algorithm for association mining requires more computation time with increasing population size, the increase is not significant. In addition, the numbers of evolutions mostly fall within the range from 1 to 10. This means that the convergence of computation is very fast. Thus, only a small number of evolutions are good enough for real application.

Furthermore, in regard to the selection of threshold value setup, this study can provide the most feasible minimal support and confidence. This dramatically decreases the time consumed by trial-and-error. Thus, the proposed PSO algorithm is better than the traditional Apriori algorithm since it does not need to subjectively set up the threshold values for minimal support and confidence. This can also save computation time and enhance performance.

FIGURE:9 RELATIONSHIP BETWEEN POPULATION SIZE AND COMPUTATION TIME FOR PSO AND GA

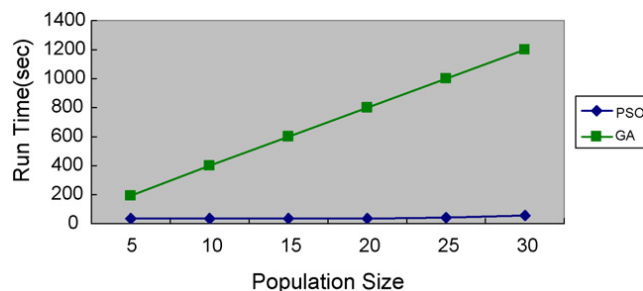


FIGURE:10 RELATIONSHIP BETWEEN NUMBER OF EVOLUTIONS AND COMPUTATION TIME FOR PSO AND GA.

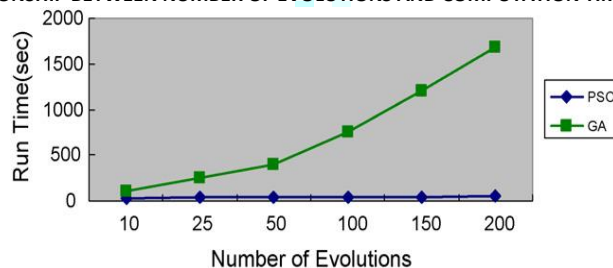


FIGURE: 11 RELATIONSHIP BETWEEN POPULATION SIZE AND COMPUTATION TIME USING THE FOODMART2000 DATABASE

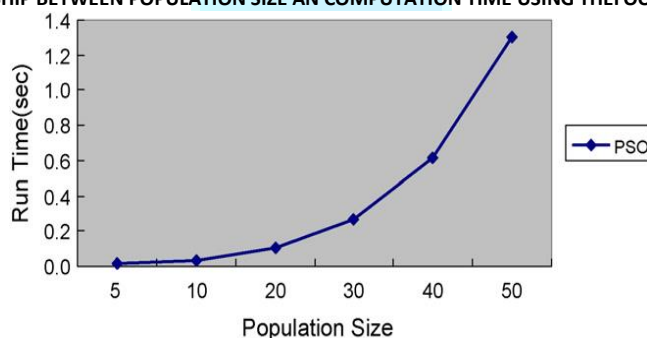
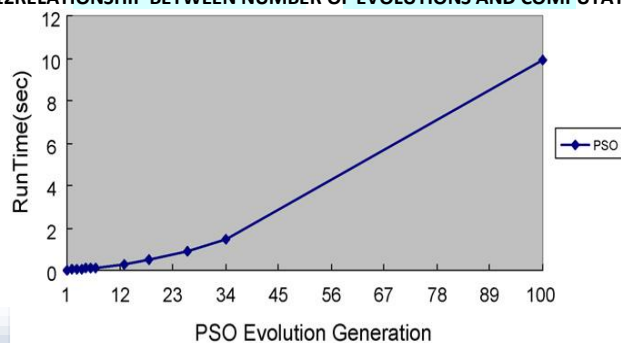


FIGURE: 12 RELATIONSHIP BETWEEN NUMBER OF EVOLUTIONS AND COMPUTATION TIME.



V. CONCLUSION

Following the development of information technology, searching for meaningful information in large databases has become a very important issue. That explains why association rules mining is the most popular technique in data mining. However, the traditional Apriori algorithm has a very critical drawback in that the minimal support and confidence is determined subjectively.

This study has demonstrated that using the PSO algorithm can determine these two parameters quickly and objectively, thus, enhancing mining performance for large databases by applying the FoodMart2000 database.

Future studies can focus on testing different updating rules. Moreover, different product items may have different importance. A weighted PSO mining algorithm could be further investigated in order to provide more practical approaches for industries.

REFERENCES

1. Ahamed Nickabadi, Mohammed mjchdi Ebadzadhe, Rezasafabakhsh "A novel particle swarm optimization algorithm with adaptive inertia weight" Applied soft computing 2011.
2. Chi-Yang Tsai, I-Wei Kao "Particle Swarm Optimization with selective particle regeneration for data clustering". Expert systems with Application 2010.
3. Cornelia Gyorodi, Robert Gyorodi, T. Cofeey & S. Holban- Mining association rules using Dynamic FP-trees", in proceedings of The Irish signal and systems conference university of Limerick, Ireland, 30th June 2nd July 2003. ISBN 0-9542973-1-8.
4. D. Lin and Z. M. Kedam, "Pincer Search: A new algorithm for discovering the maximum frequent set", In proceedings of Vi intl -Conference.
5. G. Jayalakshmi, Dr. K. Nageswara Rao "Mining association rules for large transactions using new support and confidence measures" Journal of Theoretical and Applied Information Technology, 2005
6. J. Han, J. Pei, Y. Yin. "Mining Frequent Patterns without candidate Generation", Proc. of ACM-SIGMOD 2000

7. J.Kennedy, and R.Eberhart, "Particle Swarm Optimization", Proceedings of the IEEE Conference on Neural networks-ICNN, 95, vol, iv, perth, Australia, 1995, pp.1942-1948
8. Ming –Syao Chen, Tiawei Han, Philip S Yu. Data mining: An Overview from a Database perspective[J].IEEE Transactions on knowledge and Data Engineering,1996, 8(6):866-833
9. PankajKandpal,"Association Rule mining In Partitioned Database: Performance Evaluation and Analysis", A Dissertation.
10. R.J.Kuo,CMChaob, Y.T.chiu" Application of particle swarm optimization to association rule mining", Applied soft computing 2011
11. S.Brini, R.Motwani, J.D.Ullam and S.Tsur," Dynamic item set counting and implication rules for market basket data. In Proc.of the ACM SIGMOD. Int'l conf.on Management of data, 1997.
12. S.H. Kung, "Applying Genetic Algorithm and Weight Item to Association Rule," Master Thesis, Department of Industrial Engineering and Management, YuanZe University, Taiwan, 2002.
13. S.Y.Wur,Y.Leu,"An effective Boolean algorithm for mining association rules in large database ", in proceeding of the 6th International Conference on Database system for Advanced Application s,1998,pp.179-186

APPENDIX

APPENDIX A. THREE-DIMENSIONAL EXPERIMENTAL RESULTS OF FOODMART 2000

Possible result	High-frequency item set (≥minimal support)	Association item set (≥minimal confidence)
1	Minimal support = 0.03652 {Dairy, Snack Foods, Vegetables}	Minimal confidence = 0.41424 {Dairy, Snack Foods → Vegetables}
2	Minimal support = 0.03239 {Can, snack foods, vegetables} {Dairy, Snack Foods, Vegetables}	Minimal confidence = 0.4237 {Can, Snack Foods →Vegetables}
3	Minimal support = 0.02950 {Can, Snack Foods, Vegetables} {Dairy, Snack Foods, Vegetables} {Fruit, Snack Foods, Vegetables} {Jams and Jellies, Snack Foods, Vegetables} {Meat, Snack Foods, Vegetables}	Minimal confidence = 0.4204 {Can, Snack Foods →Vegetables} {Fruit, Snack Foods →Vegetables} {Jams and Jellies, Snack Foods → Vegetables}
4	Minimal support = 0.025785 {Can, Snack Foods, Vegetables} {Beverages, Snack Foods, Vegetables} {Dairy, Snack Foods, Vegetables} {Fruit, Snack Foods, Vegetables} {Jams and Jellies, Snack Foods, Vegetables} {Meat, snack Foods, Vegetables}	Minimal confidence = 0.41106 {Can, Snack Foods →Vegetables} {Beverages, Snack Foods, Vegetables} {Dairy, Snack Foods, Vegetables} {Fruit, Snack Foods →Vegetables} {Jams and Jellies, Snack Foods → Vegetables}

KEY FACTORS TO DEVELOP WOMEN ENTREPRENEURS IN NELLORE (DT), ANDHRA PRADESH

A.M.MAHABOOB BASHA
RESEARCH SCHOLAR
VIKRAMA SIMHAPURI UNIVERSITY
NELLORE

P.SRI SUDHA
HEAD OF THE DEPARTMENT
S.CHAAVAN INSTITUTE OF COMPUTER APPLICATIONS
NELLORE

V.MADHAVI
ASST. PROFESSOR
S.CHAAVAN INSTITUTE OF COMPUTER APPLICATIONS
NELLORE

ABSTRACT

*Entrepreneurship is back bone of every nation. Womens can manage things well, as a housewife. Why doesn't she manage an organization. The economic development of the nation not only depends on the performance of the men, but also women. Women should enter in both socio-economic activities. Well developed nations are not only giving equal priorities to women, they are developing certain motivational factors which enhance the performance level of women as an entrepreneur. Though there are certain internal and external motivational factors, women still require certain **unique motivation**. This paper provides certain unique motivational factors as compared to existed literature research in India, based on Primary data sources.*

KEYWORDS

Entrepreneurs, women entrepreneurs, women empowerment.

INTRODUCTION

Entrepreneurs are essential for the development of nation. Entrepreneurs are essential to form an entrepreneurship. Women are already entered in many fields as a doctors, lawyers, professionals, managers etc., women can be a good entrepreneur because of her inherent knowledge to manage a family and be a good employee. From past twenty years the role of women in industrial sector and service sector has been gradually increasing, as an employee her progress is good .government already providing certain special schemes to grow women entrepreneurs in India. Apart from that woman required more motivation to get better success as an entrepreneur.

REVIEW OF LITARATURE

According to **VIJAY KUMBHAR** 2013, Women's are back bone to develop nation. The nation which utilizes women effectively that countries economy would gradually increase. Motivation for womens is essential for getting success as entrepreneurs. But the scenario in India is different the traditional mind sets of the people and superstitions are throughing out women towards back. There is a gap between work and life, no direct ownership on assts, problems with men employees, and lake of financial support from government.

According to **Jayashree Upadhye**, in the personality status, especially the self confidence and the psychological satisfaction it enabled them to shoulder further entrepreneurial activity or face any problem in the family. That the efficiency, skills, earnings, honour received and the even elevated economic status of women entrepreneurs can the attitude of society towards women in general. Male dominance in society is reluctant to change their attitude towards women. The systematic and wholehearted role of the mentor NGO/s in the transformation of these women from lower strata of the society .Backward and forward support from agencies to these women entrepreneurs is the important factor to sustain them in their business ventures.

According to **Dr. Sunil Deshpande** today we are in a better position wherein women participation in the field of entrepreneurship is increasing at a considerable rate, efforts are being taken at the economy as well as global level to enhance woman's involvement in the enterprise sector. This is mainly because of attitude change, diverted conservative mindset of society to modern one, daring and risk-taking abilities of women, support and cooperation by society members, changes and relaxations in government policies, granting various up-liftment schemes to women entrepreneurs etc. extension to these findings there are certain other factors which facilitates to get success as an entrepreneur as explained in this paper.

According to **Dr. Roshan Lal, Dr. H S Badrinarayan** Empowering Women Entrepreneurs is essential for achieving the goals of sustainable development. The bottlenecks hindering the growth must be eradicated. Full participation of women as entrepreneurs in all kinds of suitable businesses should be encouraged. Proper training programmes should be initiated. Mentoring, News Letters, Trade Fairs / Exhibitions can be a useful source of entrepreneurial-development. Promoting Women-Entrepreneurship is certainly a sure path to rapid economic growth and development. Apart from these women required psychological motivation also.

IMPORTANCE OF THE STUDY

World economy of the country is classified into developed economy, developing economy and underdeveloped economy. As per statistics it is known that in well developed economy women are having freedom to develop as an entrepreneur, they are having equal priority as equal as man, but in developing economy and under developed economies women's are facing different types of problem, though government introduces different types of schemes for the sake of women, women are growing well day by day in all sectors and in all areas. Their contributions are more as scientists, software engineers, technocrats, economists, professors, lawyers, doctors and as a businessman also. So, it is clear evidence that women contribution for economy is essential and considerable.

STATEMENT OF THE PROBLEM

Women entrepreneurs are important for every nation, their growth rate is not up to the mark, and they required certain unique motivational factors to grow as an entrepreneur. This study is attempt to reveal/identify those unique motivational factors.

OBJECTIVES

1. To study the existed review of literature for better motivational factors.
2. To take the opinion of women entrepreneurs regarding motivational factors.
3. Evaluate the data based on data sources for better motivational factors.

RESEARCH METHODOLOGY

The following methodology is used in this study

(I) AREA OF THE STUDY

The survey was conducted in Nellore city in Andhra Pradesh state. Nellore is the largest district in Andhra Pradesh. Nellore is a right area for conducting research. Here there are many trading, manufacturing, Service organizations are available for conducting research.

(II) SOURCES OF DATA

The study has used both the primary data and secondary data. Field survey method was employed to collect primary data from 100 respondents in three areas from Nellore (Dt). Framed questionnaire is used for data collection. Secondary data were collected through various journals, magazines, reports and newspapers.

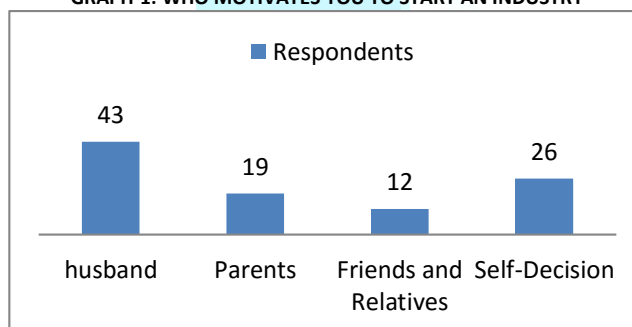
(III) SAMPLING DESIGN

For the purpose of the study 100 respondents have been chosen in Nellore city by using simple random sampling a questionnaire was prepared and administered in person to all the respondents. The information collected have been edited for reliability and consistency and presented in a master table for analysis.

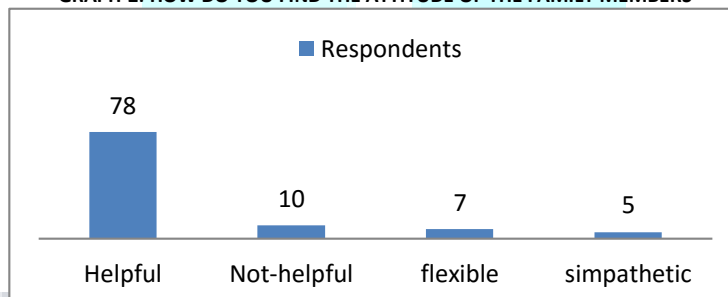
(IV) TOOLS FOR ANALYSIS

In this study the raw data collected are classified, edited and tabulated for analysis. The following were the some of the tools used. They are:

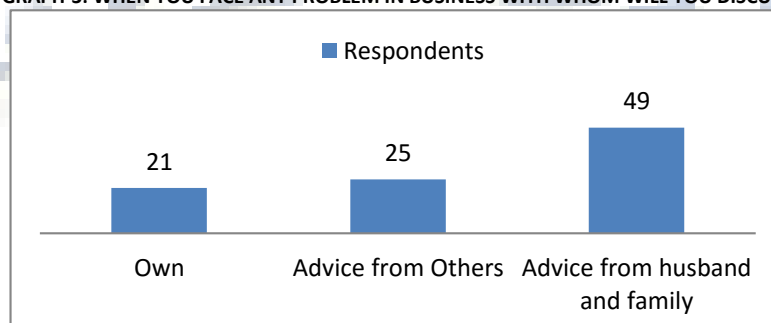
1. Percentage Method

RESULTS AND DISCUSSIONS**GRAPH-1: WHO MOTIVATES YOU TO START AN INDUSTRY****INTERPRETATION**

From the above graph.1 depicts that 43% of the respondents are opined that life partner (husband) support a lot to become an entrepreneur, where as 26% of the respondents are opined that they are self-decision makers regarding to become an entrepreneur, where as 19% of the respondents opined that they will be motivated by parents, remaining 12% respondents will be motivated by friends and others.

GRAPH-2: HOW DO YOU FIND THE ATTITUDE OF THE FAMILY MEMBERS**INTERPRETATION**

From the above graph.2 depicts that 78% of the respondents are opined that attitude of the family members are helpful, being an women entrepreneur where as 10% of the respondents are not-helpful to be as an entrepreneur, remaining 7% and 5% are flexible and sympathetic as women entrepreneurs.

GRAPH-3: WHEN YOU FACE ANY PROBLEM IN BUSINESS WITH WHOM WILL YOU DISCUSS

INTERPRETATION

From the above graph.3 depicts that 49% of the respondents are opined that if they face any problem in the business first they are giving priority to discuss with the family members and husband where as 25% of the respondents are opined that they are taking advice from other concern persons and 21% of the respondents opined that they are taking own decision making.

FINDINGS

1. 43% of the women's are accepted husband motivates a lot to become an entrepreneur.
2. 78% of the women's are accepted family members are helpful, being an entrepreneur.
3. 49% of the women's are accepted, if they face any problem, first they are giving priority to husband and family members to share their feelings, opinions, and problems in business.

RECOMMENDATIONS

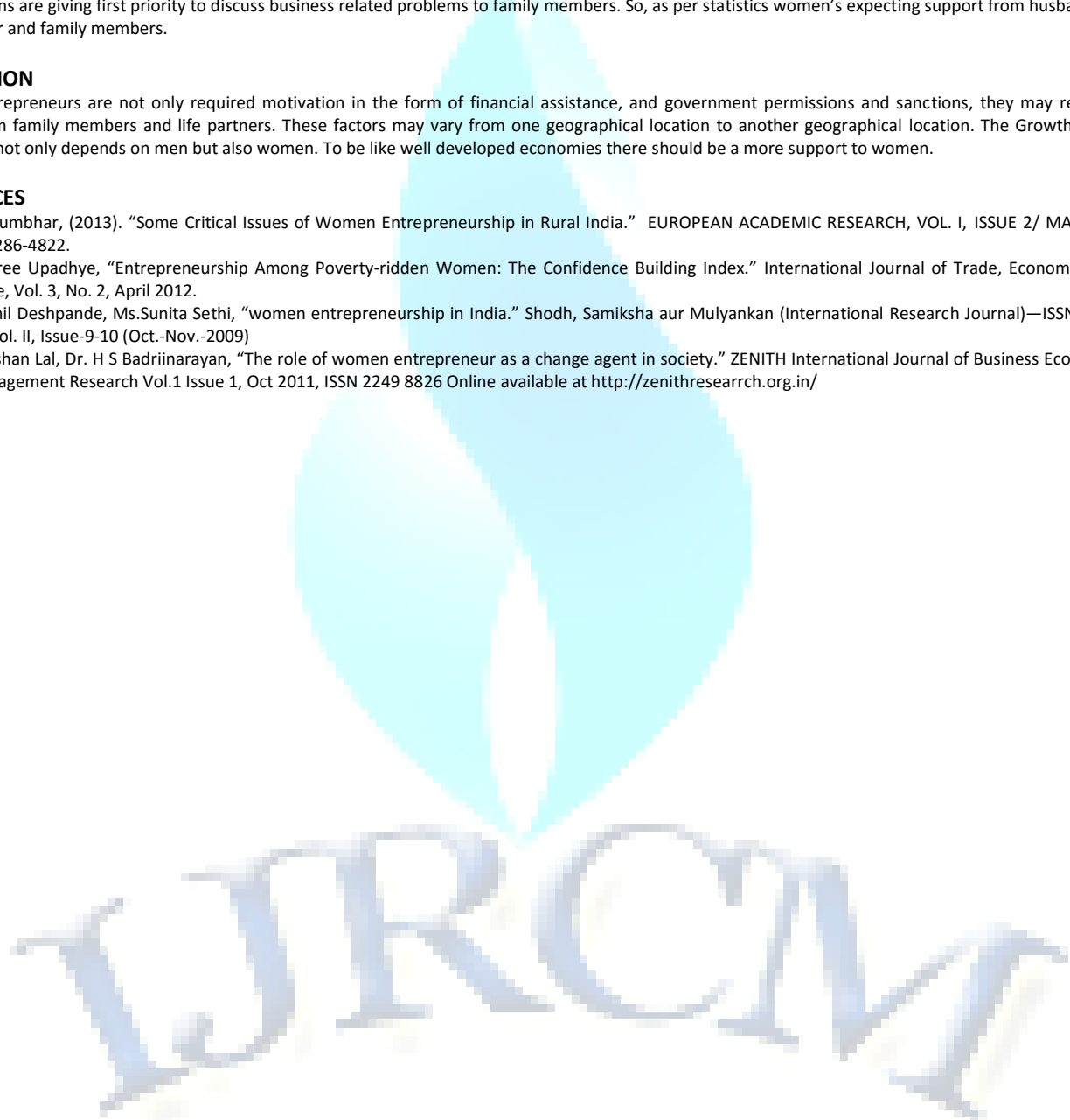
1. Women's are in growing stage as an entrepreneur, they not only required support in the form of monetary aspect, but also psychological motivation. Most women are getting success with the co-operation of husband/life partner in my survey.
2. Women's required moral support from family members, they should be helpful for them in all aspects.
3. Women's are giving first priority to discuss business related problems to family members. So, as per statistics women's expecting support from husband/life partner and family members.

CONCLUSION

Women entrepreneurs are not only required motivation in the form of financial assistance, and government permissions and sanctions, they may required support from family members and life partners. These factors may vary from one geographical location to another geographical location. The Growth of the economy is not only depends on men but also women. To be like well developed economies there should be a more support to women.

REFERENCES

1. Vijay Kumbhar, (2013). "Some Critical Issues of Women Entrepreneurship in Rural India." EUROPEAN ACADEMIC RESEARCH, VOL. 1, ISSUE 2/ MAY 2013 ISSN 2286-4822.
2. Jayashree Upadhye, "Entrepreneurship Among Poverty-ridden Women: The Confidence Building Index." International Journal of Trade, Economics and Finance, Vol. 3, No. 2, April 2012.
3. Dr. Sunil Deshpande, Ms.Sunita Sethi, "women entrepreneurship in India." Shodh, Samiksha aur Mulyankan (International Research Journal)—ISSN-0974-2832 Vol. II, Issue-9-10 (Oct.-Nov.-2009)
4. Dr. Roshan Lal, Dr. H S Badriinarayan, "The role of women entrepreneur as a change agent in society." ZENITH International Journal of Business Economics & Management Research Vol.1 Issue 1, Oct 2011, ISSN 2249 8826 Online available at <http://zenithresearch.org.in/>



LAND USE AND LAND COVER DETECTION FOR THREE DECADES USING GIS AND RS -A CASE STUDY OF ERODE DISTRICT

C. LALITHA
ASST. PROFESSOR
VELS UNIVERSITY
CHENNAI

DR. S. P. RAJAGOPALAN
PROFESSOR
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
G. K. M. COLLEGE OF ENGINEERING & TECHNOLOGY
CHENNAI

ABSTRACT

This paper evaluates the changes in land use and land cover in a specific area in Erode District, TamilNadu by comparing aerial photographs from 1990 and 2010. An attempt is also made to discuss possible implications of these land cover changes for land degradation. By applying Geographic Information Systems (GIS), two maps of the study area for the years 1990 and 2010 were produced. The maps show a decrease in coverage by shrub lands, vegetation and forests, and an increase in remaining open areas, settlements, and a water body. The aerial extension of categories of land cover was calculated by overlaying the two maps, the percentage of each type of land cover that was converted into other categories was computed. Land cover changes were most noticeable for shrub lands, with a crops has increased 19.57% and plantation crops has decreased -51.81% and settlements has increased 43.32% Areas under cultivation remained more or less unchanged. By and large, land cover changes observed in this study were the result of clearing of vegetation for grazing lands, new cultivation areas, etc., thus contributing to the current problem of land degradation in the country.

KEYWORDS

land use, land cover, GIS and RS.

1. INTRODUCTION

Land use and land cover change means quantitative changes in aerial extent (increase or decrease) of a given type of land use or land cover respectively. The detection and measurement of change depends on the spatial scale; higher the spatial level of detail, larger the changes in aerial extent of land use and land cover which can be detected and recorded. In case of land cover as well as land use, the meaning and conceptualization of change is much broader. Change could be because of conversion or modification. In case of land cover change, conversion involves. Conversion from one type of use to another i.e. changes in the mix and pattern of land uses in an area.

Knowledge of land use and land cover is important of many planning and management activities and is considered an essential element for modeling and understanding the earth as a system. Land cover maps are presently being developed from local to national to global scales. The use of panchromatic, medium-scale aerial photographs to map land use has been an accepted practice since the 1940s. More recently, small-scale aerial photographs and satellite images have been utilized for land use/land cover mapping.

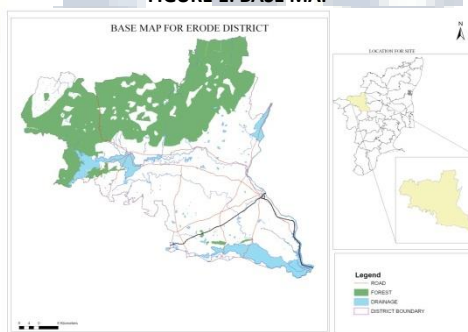
Remote sensing and GIS-based change detection studies have predominantly focused on providing the knowledge of how much, where, and what type of land use and land cover change has occurred. Only a few models have been developed to address how and why the changes occurred, and even fewer studies have attempted to link satellite remote sensing and GIS to stochastic modeling in landscape change studies.

GIS is emerging as an integrated technology that can tackle many problems in nature and society, especially at the global scale. Land cover classification is an important application of remote sensing data. A number of image classification algorithms have been developed to extract information from a variety of remote sensing datasets [5]. In general, these algorithms are able to produce classifications with high accuracy. However, the performance of these degrades rapidly when one or multiple types of imperfections occur in raw images due to a number of human, environmental, and instrumental factors. This study aims at analyzing land use changes using satellite imagery and GIS in Erode District in order to achieve this objective, topographic sheets and Land sat Satellite data were used. Geo-processing techniques and change detection comparison strategy was employed to identify land use changes.

2. STUDY AREA

Erode District is one of the industrialized districts located in the western part (Kongu Nadu) of the state of TamilNadu, India. The district comprises a long undulating plain, sloping gently towards the Kaveri River in the south-east. Erode District is landlocked and is situated at between 10° 36" and 11° 58" North latitude and between 76° 49" and 77° 58" East longitude. Western Ghats traverses across the district giving rise to small hill locks. Erode district had a population of 22,59,608 as of 2011. It is 46.25% urbanized as per Census 2010.

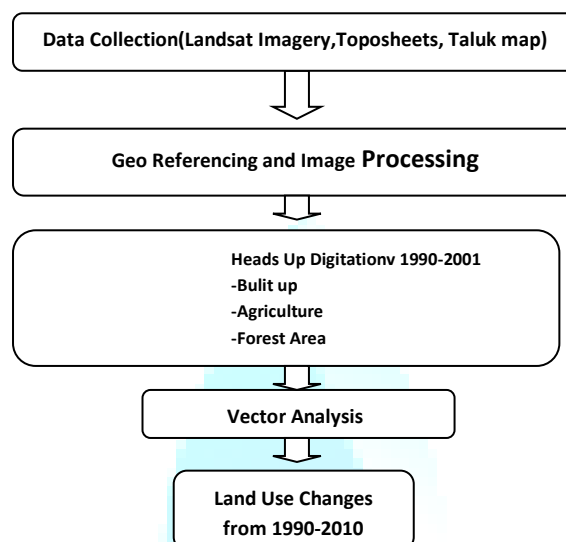
FIGURE 1: BASE MAP



3. SOFTWARE USED

In this study, satellite images are converted into vector analysis using GIS Arc. In ERDAS 9.1, images are classified on the basis of visual interpretation and the statistical attributes are analyzed using supervised Algorithm.

4. METHODOLOGY



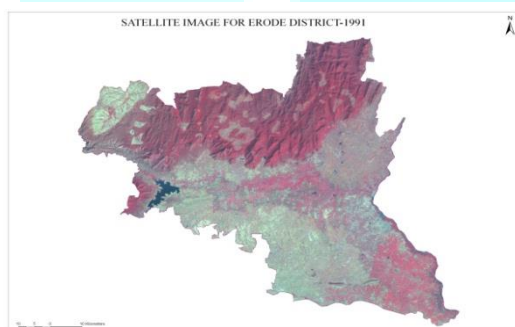
4.1 Data Collection

Landsat TM 21-11-1990, Landsat TM 17-10-2000 and LISS III 09-10-2010 satellite images have been downloaded from USGS website. Study areas are covered by 11 Toposheets (58E/09, 58A/14, 58E/03, 58E/02, 58E/06, 58E/07, 58E/08, 58E/10, 58E/11, 58E/12 and 58E/16) have been bought from Survey of India, Chennai.

TABLE 1: NAME OF THE DATA AND SOURCES

S.No	Type of Map	Resolution/ Scale	Date/Year of Acquisition
1	Toposheet	1:50,000	58E/09, 58A/14, 58E/03, 58E/02, 58E/06, 58E/07, 58E/08, 58E/10, 58E/11, 58E/12 & 58E/16 1975
2	Landsat TM	1:50,000	21-11-1990 17-10-2000 9-10-2010
3	NR census Atlas	1:50,000	2008
4	District and village maps	1:75,000	-

FIGURE 2: LANDSAT TM SATELLITE IMAGE FOR ERODE DISTRICT



4.2 Geo-Referencing

Geo-referencing means to define the position of earth surface or establishing its location in terms of map projection or coordinate systems. It is essential to make various data sources (Table 1) into common referencing or projection system i.e. World Geodetic System (WGS 84), Universal Transverse Mercator (UTM).

4.3 Image Processing

Digital Image Processing is largely concerned with four basic operations: image restoration, image enhancement, image classification, image transformation. Most of the image processing operations were completed by using ERDAS environment. Geometric Correction is essential that any form of remotely sensed imagery be accurately georeferenced to the proposed base map. Image enhancement is concerned with the modification of images to make them more suited to the capabilities of human vision. Regardless of the extent of digital intervention, visual analysis invariably plays a very strong role in all aspects of remote sensing. Digital Filtering is one of the most intriguing capabilities of digital analysis is the ability to apply digital filters. Filters can be used to provide edge enhancement.

4.4 Heads-up digitization

Heads-up digitizing is manual digitization by tracing a mouse over features displayed on a computer monitor, used as a method of vectorizing georeferenced raster data. Table 2 depicted the various layers was created based on heads-up digitization. This study assessed the land use changes between year 1990 and 2010. Land use vector layers (1990) were created by using Survey of India topographic sheets. Land use vector layers (2011) were created by using GIS satellite imagery.

4.5 Topology building and Error fixing

Creation of topology is necessary to make the spatial data usable. Errors were edited which included arc, label, move and intersect. The topology was constructed by using GRASS GIS commands. The topology was reconstructed when errors were found.

TABLE 2: VARIOUS LAYERS AND TYPES

Layer name	Layer type	1990	2010
Roads	Polyline	✓	✓
Water Body	Polygon	✓	✓
Settlements	Polygon	✓	✓
Forest Area	Polygon	✓	✓
Agriculture	Polygon	✓	✓
Administrative Boundary	Polygon	✓	✓

FIGURE 3: LAND USE AND LAND COVER MAP-1990

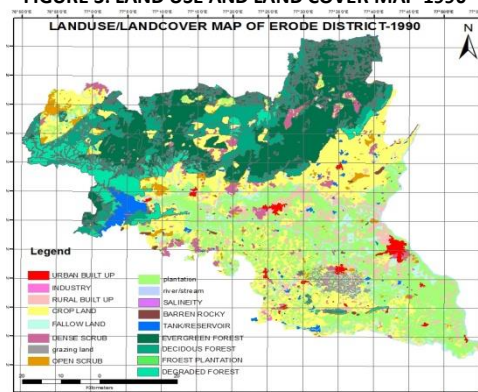
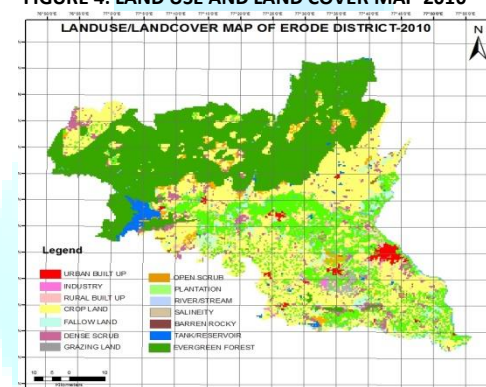


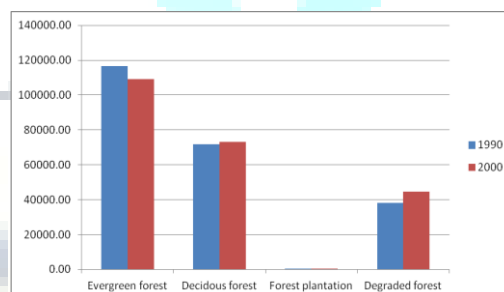
FIGURE 4: LAND USE AND LAND COVER MAP-2010



4.5 Vector analysis

Area of each category was calculated in QGIS software environment. The flow diagram indicating the methodology for land use mapping is given in Fig 2. The procedure adopted in this research work forms the basis for deriving statistics of land use dynamics and subsequently in the overall, the findings. The difference between land use 1990 and 2010 were predicted by using geo-processing tools present in GIS software environment. The difference has been shown in Table 3.

HISTOGRAM OF FOREST COVER BETWEEN 1990-2010



AGGREGATED DIFFERENCES BETWEEN FEATURE CLASSES IN THE CLASSIFIED IMAGE OF 1990-2010

S.No	LEVEL I	LEVEL11	LULC 1990	LULC 2010	Difference	Area in Percentage
1.	Built up	Urban Built Up	4438.83	6887.72	1923.30	35.55
		Rural Built Up	14966.70	15966.70	1000.00	6.26
		Industry	404.89	2055.16	800.78	80.30
2.	Agriculture	Crop Land	169801.00	190751.88	33235.00	10.98
		Fallow Land	24734.00	16576.01	0.00	-49.22
		Plantation	111119.00	91621.96	-57576.80	-21.28
3.	Forest	Evergreen forest	116506.79	70613.66	-43393.13	-64.99
		Deciduous forest	71896.99	102753.07	37075.98	30.03
		Forest Plantation	116.45	114.26	0.00	-1.92
		Degraded Forest	38245.46	53282.50	6317.14	28.22
4.	Grazing land	Grazing land	5849.36	3509.23	954.07	-66.68
5.	Waste land	Dense scrub	12561.80	9673.72	0.00	-29.85
		Open scrub	15589.50	24498.95	-4929.60	36.37
		Barren rocky	1103.28	1103.28	0.00	0.00
		Salinity	199.11	260.08	60.97	23.44
6.	water body	Tank/Reservoir	8708.61	8805.63	0.00	1.10
		River/ Stream	5909.67	5109.67	-800.00	-15.66

CONCLUSION

Overall changes in the landscape has shown an increased trend for urban development (43.32%) and growth of industry to 198% and forest to 52% . Such development is guided or often times constricted by various environmentally sensitive or protected areas (e.g. Reserve Forests.) and existing high-density development. The study

has revealed that satellite data has the unique capability to detect the changes in land use quickly. From the analysis it is found that the satellite data is very useful and effective for getting the results of temporal changes. With this effective data it is found that the agriculture land is decreasing at the rate of increasing the settlements

REFERENCES

1. A.Varadharajan, Iyappan. L. P. Kasinathapandian in the Assessment on Landuse Changes in Coimbatore North Taluk using Image Processing and Geospatial Techniques, International Journal of Engineering Research and Applications ISSN: 2248-9622 .
2. Chilar J. (2000). Land cover mapping of large areas from satellites: status and research priorities. International Journal of Remote Sensing, 21(67):1093–1114.
3. Lambin E.F.,A.H. Strahler.,Change vector analysis in multitemporal space: a tool to detect and categorize land cover change processes using high temporal resolution satellite data. Remote Sensing of the Environment, 48:231-244. 1994. [10] Story, M , R. Congalton, Accuracy assessment:
4. Lu ab, D. Batistella, C. M. Moran ab, E., Land-cover classification in the Brazilian Amazon with the integration of Landsat ETM+ and Radarsat data; International Journal of Remote Sensing. Vol.28, Issue. 24, pp. 5447 – 5459,2007 [7] Lillesand, T.M., Kiefer R., Remote Sensing Image Interpretation. John Wiley, NewYork. 1993.
5. LU.D , WENG.Q, A survey of image classification methods and techniques for improving classification performance, International Journal of Remote Sensing, Vol. 28, No. 5, 823–870, 10 March 2007.
6. Q. Weng, Landuse change analysis in the Zhujiang Delta of China using satellite remote sensing, GIS, and stochastic modeling, Journal of Environmental Management, 64, 2002, 273–284.
7. Santhosh Baboo and Renuka Devi, Integrations of Remote Sensing and GIS to Land Use and Land Cover Change Detection of Coimbatore District, International Journal on Computer Science and Engineering' 2(9), 2010, 3085-3088.

APPRAISAL OF LIQUIDITY PERFORMANCE IN LANCO INDUSTRIES LIMITED: A CASE STUDY

N. K. PRADEEP KUMAR
RESEARCH SCHOLAR
DEPARTMENT OF COMMERCE
S. V. UNIVERSITY
TIRUPATI

P. MOHAN REDDY
PROFESSOR
DEPARTMENT OF COMMERCE
S. V. UNIVERSITY
TIRUPATI

ABSTRACT

Ratios help to summarize large quantities of financial and to make qualitative judgment about the firm's financial performance. The parties interested in financial analysis are short-term and long-term creditors, owners and management. Short-term creditors' gives priority in the liquidity position or the short-term solvency of the firm. Liquidity refers to the ability of the firm to meet the current financial obligations in the short run, usually in one year. To analyze the firm's liquidity position by using the liquidity ratios. The liquidity of the Lanco Industries Limited is analyzed with the help of the following liquidity ratios. The present research paper tries to focus on liquidity performance on Lanco Industries limited and also the paper is endeavoring to analyze on two dimensional passion of liquidity and actual liquidity performance of a Lanco Industries Limited as well. The working funds in current assets were unnecessarily blocked up. The management of current assets and current liabilities was not as per the principles of sound financial management in Lanco Industries Limited. More working capital funds were unnecessarily blocked up in quick assets during the years 2009 and 2010. The liquidity was impairing in last two years of the study as the ratio was far less than that of the ideal norm of 1:1. The cash balances of Lanco Industries Limited had never touched the ideal norm as specified. The management of Lanco Industries Limited would fail to maintain adequate cash balances to meet the currently maturing obligations fully. The current liabilities were not fully discharged out of cash flows Lanco Industries Limited had not generated adequate cash flows to cover the current liabilities as the standard is cent percent cash flow coverage. The cash flow coverage was very thin in Lanco Industries Limited. The working funds which were blocked up unnecessarily in current assets shall be managed for productive purpose based on the sound cannons of working capital management. The adequate cash balances shall be maintained to meet the current obligations, so as to maintain the strong liquidity performance. The management of Lanco Industries Limited has to generate the cash flows by cutting down the costs to cover the current liabilities by maintaining actual liquidity position.

KEYWORDS

Current ratio, Quick ratio, Cash ratio and Net cash flow to current liabilities ratio in Lanco Industries Limited.

INTRODUCTION

Ratio analysis is a powerful tool of financial analysis. A ratio is defined as "the indicated quotient of two mathematical expressions" and as "the relationship between two or more things." In financial analysis, a ratio is used as a bench mark for evaluating the financial position and performance of a firm. The relationship between two accounting figures, expressed mathematically, is known as a financial ratio (or simply as a ratio). Ratios help to summaries large quantities of financial and to make qualitative judgment about the firm's financial performance. The parties interested in financial analysis are short-term and long-term creditors, owners and management. Short-term creditor's gives priority in the liquidity position or the short-term solvency of the firm. Liquidity refers to the ability of the firm to meet the current financial obligations in the short run, usually in one year. To analyze the firm's liquidity position by using the liquidity ratios. These ratios are generally based on the relationship between current assets and current liabilities. The liquidity of the Lanco Industries Limited is analyzed with the help of the key Liquidity ratios.

OBJECTIVES

The present research paper tries to focus on liquidity performance on Lanco Industries limited and also the paper is endeavoring to analyze on two dimensional fashion of liquidity performance i.e., an actual liquidity performance of a LIL.

TOOLS OF ANALYSIS

The data drawn from the annual reports of Lanco Industries Limited have been carefully analyzed, tabulated and interpreted by using well established financial tools. The analysis of data is carried out through liquidity ratios such as current ratio, quick ratio, cash ratio and Net cash flow to current liabilities ratio. Graphs and diagrams are presented to illuminate the facts and figures.

SCOPE AND COVERAGE

The present study is confined to Lanco Industries Limited(LIL). The Lanco Industries Limited, Chittoor District, Andhra Pradesh, India has been selected because of the proximity to the investigator. The study is restricted to assess the performance of Liquidity position in LIL with the help of the ratio analysis. The limited period considered for evaluating the study is seven years i.e. from 2006-2012.

ANALYSIS OF LIQUIDITY

A firm is able to meet its obligations as and when they become due. Liquidity ratios measure the ability of the firm to meet its current obligations (liabilities). The failure of a company to meet its obligations due to lack of sufficient liquidity, will result in a poor credit worthiness, loss of creditors' confidence, or even in legal tangles resulting in the closure of the company. A very high degree of liquidity is also bad; idle assets earn nothing. The firm's funds will be unnecessarily tied up in current assets. Therefore, it is necessary to strike a proper balance between high liquidity and lack of liquidity. The most common ratios, which indicate the extent of liquidity or lack of it, are:

- ♦ Current ratio
- ♦ Quick ratio
- ♦ Cash ratio
- ♦ Net cash flow to current liabilities ratio

CURRENT RATIO

Current ratio indicates the quality coverage of current assets over current liabilities. It indicates the ability of the company to meet its maturing current obligations. It is also the reflection of a static condition and of a relationship on one date between two variables. Current assets include cash within a year, such as cash and bank balances, marketable securities, inventories of raw materials, semi finished and finished goods, debtors, bills receivables and pre-paid expenses. Current liabilities are short-term measuring obligations to be met within a year, it includes trade creditors, bills payable, bank credit, provision for taxation, dividends payable and outstanding expenses.

The current ratio is a measure of the firm's short-term solvency i.e., its ability to meet short-term obligations. It indicates the availability of current assets in rupees for every one rupee of current liability. A current ratio of 2:1 is considered satisfactory. The higher the current ratio is the greater the margin of safety; the larger the amount of current assets in relation to current liabilities, the more the firm's ability to meet its obligations. It is a quick measure of the firm's liquidity.

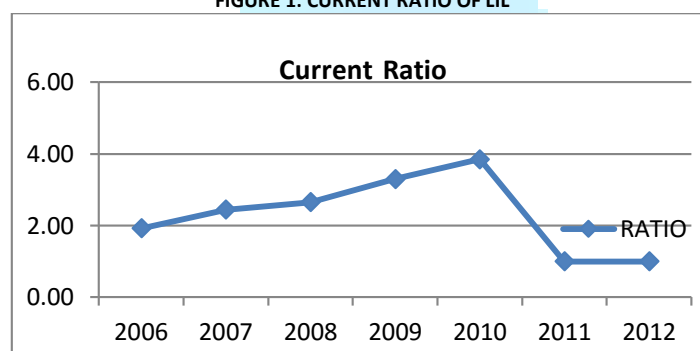
CURRENT RATIO = CURRENT ASSETS/ CURRENT LIABILITIES

The current ratio of the Lanco Industries Limited is presented in the Table1 and Figure1.

TABLE 1: CURRENT RATIO OF LIL

Year	Current Assets (Rs. in crores)	Current Liabilities (Rs. in crores)	Ratio (in times)
2006	183.27	95.56	1.92
2007	262.01	107.26	2.44
2008	266.16	100.3	2.65
2009	359.74	108.83	3.30
2010	304.62	79.21	3.85
2011	490.29	493.95	0.99
2012	566.48	568.73	0.99
Mean	347.51	221.98	2.30
Standard Deviation	13.15	212.65	1.08
C.V.(%)	39.18	95.80	46.96
Co-efficient of Correlation 0.92			

Source: Compiled from Annual Reports of Lanco Industries Limited

FIGURE 1: CURRENT RATIO OF LIL

The firm's current ratio refers that the company's short-term solvency. It is obvious that the current assets had moved from Rs.183.27crores in 2006 to Rs.566.48 crores. There had been gradual increase in the quantum of current asset with an exception of 2010 over the period under the study. Similarly current liabilities had steeply increased from near Rs.9.56 crores in 2006 to Rs.568.73 crores with variations during the period under reference. It is noticed that the current ratio had varied from the lowest of 0.99 times in the last two years to the highest of 3.85 in 2010. The behavior of current ratio was erratic over the study period. The current ratio was well below than the standard norm of two times in two out of seven years of study. The average current ratio registered at 2.30 times. The average current assets and current liabilities in absolute values recorded at 347.51crores and 221.98 crores respectively. The average current assets quantitative figures had exceeded the current liabilities. The standard deviation of current ratio registered at 1.08, while coefficient of variation stood at 46.96. The average co-efficient of correlation was 0.92. It indicates that there is highly positive correlation between current assets and current liabilities.

QUICK RATIO

Quick ratio, also called acid-test ratio, establishes a relationship between quick, or liquid, assets and current liabilities. It indicates the ability of the company to meet its immediate liabilities out of its quickly realizable current assets. An asset is liquid if it can be converted into cash immediately or reasonable soon without a loss of value. Cash is the most liquid asset and other assets that are considered to be relatively liquid. Inventories are considered to be less liquid. The term quick assets refer to current assets excluding prepaid expenses and inventories. Quick ratio is a more penetrating test of liquidity than the current ratio, yet it should be used cautiously. Generally a quick ratio of 1:1 is considered to represent a satisfactory current financial condition. A company with a high value of quick ratio can suffer from the shortage of funds if it has slow-paying, doubtful and long duration outstanding debtors. A low quick ratio may really be prospering and paying its current obligation in time. The quick ratio is found out by dividing quick assets by current liabilities.

QUICK RATIO = CURRENT ASSETS- INVENTORIES / CURRENT LIABILITIES

(OR)

QUICK RATIO = QUICK ASSETS/ CURRENT LIABILITIES

The quick ratio of the Lanco Industries Limited is presented in the Table 2 and Figure 2

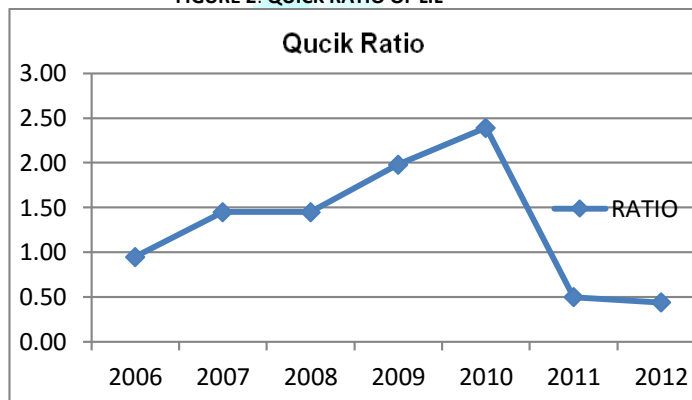
TABLE 2: QUICK RATIO OF LIL

Year	Quick Assets (Rs.in crores)	Current Liabilities (Rs.in crores)	Ratio (in times)
2006	91.33	95.56	0.95
2007	155.6	107.26	1.45
2008	145.23	100.3	1.45
2009	215.38	108.83	1.98
2010	189.43	79.21	2.39
2011	251.56	493.95	0.50
2012	247.71	568.73	0.44
Mean	185.18	221.98	1.30
Standard Deviation	58.48	212.65	0.73
C.V.(%)	31.58	95.80	56.15
Co-efficient of Correlation 0.74			

T

Source: Compiled from Annual Reports of Lanco Industries Limited

FIGURE 2: QUICK RATIO OF LIL



The higher the Quick ratio indicates the ability of a firm is liquid and has the ability to meet its current liabilities in time. It is evident that the quantum of quick assets reported the rise during the period under reference. The quick assets had increased from Rs.91.33 crores to Rs.247.71crores in 2012 with mild fluctuations. Current liabilities had abnormally increased from Rs.95.56 crores to Rs.568.73 crores in 2012. The quantum of current liabilities had registered a low amount of Rs.79.21 crores in 2010. The quick ratio of LIL had fluctuated between the lowest of 0.44 times in 2012 to highest of 2.39 times in 2010. The quick ratio had exceeded the standard norm of 1:1 in four years out of seven years under study. It may be further observed that the liquidity was impairing in last two years of the study as the ratio was far less than that of the ideal norm of 1:1. The average quick assets and current liabilities values recorded at 185.18 crores and 221.98 crores respectively. The standard deviation of quick ratio registered at 0.73, while coefficient of variation stood at 56.15. The average co-efficient of correlation was figured at 0.74. It indicates that there is satisfactory positive correlation between quick assets and current liabilities.

CASH RATIO

Cash ratio establishes relation between cash and current assets. It indicates the proportion of cash in current assets. Since cash is the most liquid asset, a financial analyst may examine cash ratio and its equivalent current liabilities. Trade investment or marketable securities are equivalent of cash; therefore, they may be included in the computation of cash ratio.

CASH RATIO = CASH/ CURRENT LIABILITIES

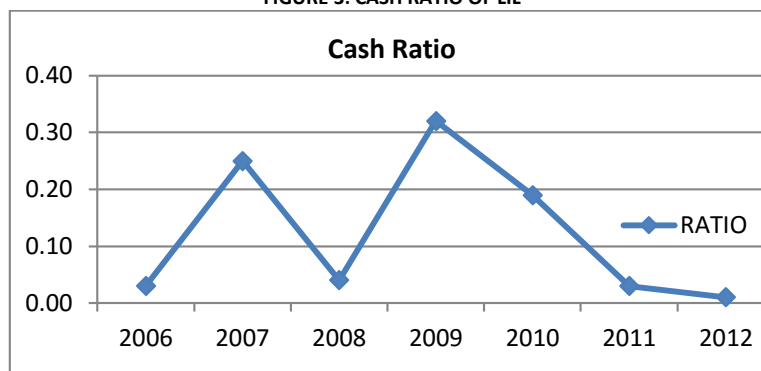
The cash ratio of the Lanco Industries Limited is presented in the Table 3 and Figure 3

TABLE 3: CASH RATIO OF LIL

Year	Cash (Rs. in crores)	Current Liabilities (Rs. in crores)	Cash Ratio (in times)
2006	3.56	95.56	0.03
2007	26.54	107.26	0.25
2008	4.20	100.3	0.04
2009	34.64	108.83	0.32
2010	15.16	79.21	0.19
2011	19.16	493.95	0.03
2012	10.24	568.73	0.01
Mean	16.21	221.98	0.12
Standard Deviation	11.52	212.65	0.13
C.V. (%)	71.06	95.80	108.33
Co-efficient of Correlation -0.090			

Source: Compiled from Annual Reports of Lanco Industries Limited

FIGURE 3: CASH RATIO OF LIL



High cash ratio indicates the idle cash reserves in the company, but low cash ratio is also not favorable to the company. The quantum of cash had registered a mix trend of rise and fall one a period under study. It had increased from Rs.3.56 crores immediately to Rs.26.54 crores and declined to the lowest level of Rs.4.2 crores. Again it depicted an increase of Rs.34.6 crores in 2009 and declined to Rs.10.24 crores in the concluding year of the study. The cash ratio had exposed to oscillation over the period under reference. The standard cash ratio is 0.5:1. The cash of LIL had never touched the ideal norm as specified. It may be inferred that the management of LIL would fail to maintain adequate cash balances to meet the currently maturing obligations fully. The average cash and current liabilities in absolute values recorded at 16.21 crores and 221.98 crores respectively. The average current liabilities quantitative figures had exceeded the cash. The standard deviation of cash ratio is registered at 0.13, while coefficient of variation stood at 108.33. The average coefficient of correlation was negatively framed at -0.090. It indicates that there is negative correlation between cash and current liabilities.

NET CASH FLOWS TO CURRENT LIABILITIES RATIO

Actual liquidity position of a firm mostly depends on its ability in paying off its current financial obligations from the net cash flows generated from its own operations but not by current assets alone when it is on the run. Irrespective of the source cash is generated from, it definitely provides coverage to the current obligations. Depreciation is non-cash expenses.

$$\text{NET CASH FLOWS TO CURRENT LIABILITIES RATIO} = \frac{\text{NET PROFIT} + \text{NON CASH EXPENSES}}{\text{CURRENT LIABILITIES}} \times 100$$

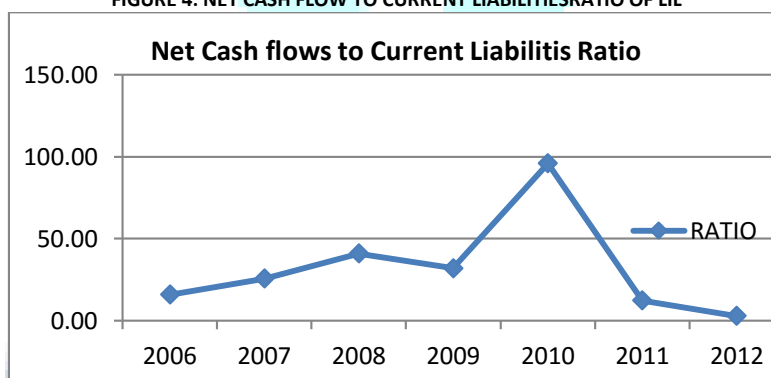
The Net cash flows to current liabilities ratio of the Lanco Industries Limited is presented in the Table 4 and Figure 4

TABLE 4: NET CASH FLOW TO CURRENT LIABILITIESRATIO OF LIL

Year	Net Profit + Non-cash expenses (Rs. in crores)	Current Liabilities (Rs. in Crores)	Ratio (in percentage)
2006	15.14	95.56	15.84
2007	27.40	107.26	25.55
2008	41.08	100.3	40.96
2009	34.76	108.83	31.94
2010	75.89	79.21	95.81
2011	60.73	493.95	12.29
2012	16.05	568.73	2.82
Mean	38.72	221.98	32.17
Standard Deviation	22.68	212.65	30.80
C.V.(%)	58.57	95.80	95.74
Co-efficient of Correlation -0.094			

Source: Compiled from Annual Reports of Lanco Industries Limited

FIGURE 4: NET CASH FLOW TO CURRENT LIABILITIESRATIO OF LIL



It is evident that the net cash flows had increased from Rs.15.41 crores in 2006 to Rs.60.73 crores and sharply edged down to Rs.16.05 crores. The current liabilities had strikingly had jumped from Rs.95.26 crores in 2006 to Rs.568.73 crores in 2012 with the exception of the year 2010. The ratio had widely fluctuated from the lower of 2.82 percent in 2012 to the highest of 95.81 percent in 2010. The cash flow coverage was very less during the period of study excluding the year 2010. It may be inferred that LIL had not generated adequate cash flows to cover the current liabilities as the standard is cent percent cash flow coverage. Hence, the cash flow coverage was very thin in LIL. The average net profit and non-cash expenses and current liabilities recorded at 38.27 crores and 221.98 crores respectively. The standard deviation of net cash flow to current liabilities ratio is registered at 30.80, while coefficient of variation stood at 95.74. The average coefficient of correlation was negatively framed at -0.094. It indicates that there is negative correlation between cash flow and current liabilities.

CONCLUSION

The working funds in current assets were unnecessarily blocked up. The management of current assets and current liabilities was not as per the principles of sound financial management in LIL. More working capital funds were unnecessarily blocked up in quick assets during the years 2009 and 2010. The liquidity was impairing in last two years of the study as the ratio was far less than that of the ideal norm of 1:1. The cash balance of LIL had never touched the ideal norm as

specified. The management of LIL would fail to maintain adequate cash balances to meet the currently maturing obligations fully. The current liabilities were not fully discharged out of cash flows LIL had not generated adequate cash flows to cover the current liabilities as the standard is cent percent cash flow coverage. The cash flow coverage was very thin in LIL. The working funds which were blocked up unnecessarily in current assets shall be managed for productive purpose based on the sound cannons of financial management practices. The adequate cash balances shall be maintained to meet the current obligations, so as to maintain the strong liquidity performance. The management of LIL has to generate the cash flows by cutting down the costs to cover the current liabilities by maintaining actual liquidity position.

REFERENCES

1. Helfertt, E.A., "Techniques of Financial Management", Singapore: Butter Worth and Company (Publishers) Limited, 1984, P245.
2. Herbert, T.S., "Finances for the non-financial manager, New York: John Wiley and Sons, 1982, P54.
3. Hingorani, N.L., and Ramanathan, "A.R. Management Accounting", New Delhi: Sultan Chand and Sons, 1973, P92.
4. Shankar, T., "Making Corporate reporting practices more communicative", Economic and Political Weekly, 1972, PP164-168.
5. Viscione, Jerry A., "Liquidity Ratios", New York: National Association of Credit Management.1983, PP15-24.



ORGANIZATIONAL CULTURE AS A DETERMINANT OF CUSTOMER SERVICE DELIVERY IN LOCAL AUTHORITIES IN KENYA

ROBERT K.W. EGESEA

LECTURER

DEPARTMENT OF BUSINESS ADMINISTRATION

MASINDE MULIRO UNIVERSITY OF SCIENCE & TECHNOLOGY

KAKAMEGA

PETER KIBAS

PROFESSOR

MARIST INTERNATIONAL UNIVERSITY COLLEGE

NAIROBI

THOMAS CHERUIYOT

ASSOCIATE PROFESSOR

STRATEGIC MANAGEMENT

MOI UNIVERSITY

ELDORET

ABSTRACT

This paper examines organization culture as a determinant of customer service delivery in local authorities in Kenya. This was done in an effort to examine ways in which these institutions can be made accountable and efficient in service delivery to citizens within their jurisdiction as envisioned in Kenya Vision 2030. It was based on the conceptualization that organization culture influences employee commitment which in turn determines service delivery in local authorities in Kenya. Using a descriptive survey design, the study collected data from 322 employees of local authorities and 216 small scale entrepreneurs in their jurisdiction who had been randomly and purposively selected. Data was analyzed descriptively and quantitatively to establish the linkage between organizational culture, employee commitment and customer service delivery. The findings of the study indicated that organizational culture had a positive and significant effect on employee commitment and customer service delivery in local authorities in Kenya. The study therefore concluded that organizational culture determines customer service delivery in local authorities in Kenya. The paper recommends that managers of current local authorities and those of the county governments that will be established in the country in 2013 should strive to build a strong organization culture that facilitates attainment of their strategic goals.

KEYWORDS

customer service delivery, organizational culture, employee commitment.

INTRODUCTION

The corporate world is populated by companies engaged in cut throat competition in an effort to win customers (Compton, 2004; Gachunga, 2008). Research shows that various internal factors in these entities drive their performance as well as shape their competitive advantage. Amongst the internal organizational factors that influence organizational performance is the corporate culture prevalent in a given organization (Zain, Ishak and Ghani, 2009; Martins and Martins, 2004). Many organizations have strived to build a strong corporate culture that ensures superior performance is attained where customers and other stakeholders receive value.

Scholars hold the view that organizational performance is a product of committed employees. According to Zain *et al* (2009) Sabir, Razzaq and Yameen (2010) and Manetje and Martins (2009), organizational culture builds organizational commitment in employees. This results in superior performance from them leading to enhanced organizational performance. For a long time, public institutions' performance in Africa has not been attracting attention as is the case with private enterprises. This is because unlike the public sector, shareholders of private firms have been vigilant and expect a good return on their investment. The management teams of such enterprises have therefore had to strive to ensure continuous enhancement of shareholders' value. In the public sector, citizens have started demanding for better services and accountability from public service bodies. This has led many governments and their agencies to adopt performance contracting as a means to enhancing accountability and service delivery.

Performance contracting has been embraced by governments and their agencies in Ghana, Swaziland, Botswana, Nigeria and Kenya among others (Kobia and Mohammed, 2006). The practice has aimed at recognizing citizens as customers of public entities who are meant to be offered superior services. In Kenya, the government embraced Results Based Management and Performance Contracting as part of the reforms in the public sector that sought to improve performance in government in 2001 (Kobia and Mohammed 2006). All government ministries and agencies such as Local Authorities are expected to develop strategic plans that focus on helping the country to attain Vision 2030 as well as deliver customer satisfaction to citizens. Local authorities have been involving citizens in identifying specific activities and projects to be undertaken in their various wards which are then incorporated in their Local Authority service Delivery Action Plans and Strategic Plans (CLARION, 2007; Odhiambo *et al*, 2005). Local Authorities have also developed service delivery charters that outline the timelines within which these institutions promise to deliver their obligations and services to citizens as well as provide recourse if one is dissatisfied with their services. This has resulted in marked improvement in the service delivery of local authorities and other government institutions. This made the country to receive the 2007 United Nations Public Service Award, (Mutunga, 2008).

LITERATURE REVIEW

Arriving at a single definition of organizational culture has eluded scholars. According to Zain *et al* (2009), organizational culture is a management philosophy and a way of managing an organization that seeks to improve the firm's effectiveness and efficiency. Others such as Martins and Martins (2004) see it as a system of shared meaning held by organizational members that distinguishes it from other organizations. It is the organization's personality that sets it apart from others. This may be in the form of distinctive norms, beliefs, principles and ways of behaving that combine to give each organization its distinctive character (Arnold, 2005). This paper defines organizational culture as a system of stable norms, beliefs, practices, actions and assumptions that are held by members of a given organization that define it and determine how it conducts its business.

The organizational culture found in local authorities has partly been seen as a contributor to poor service delivery by those entities (CLARION, 2007; Odhiambo *et al*, 2005). Previous studies have looked at organizational cultural dimensions such as the practices of an organization's members and its values towards

training, rewards, teamwork, goal attainment and communication and how they influence organizational commitment. In most of them, these dimensions were found to influence organizational commitment (Zain *et al*, 2009; Manetje and Martins, 2009). Another study by Shah, Memon and Phulpoto (2012) on the influence of organizational culture on organizational commitment of faculty members of private sector universities in Pakistan used team orientation, outcome orientation, people orientation, attention to detail, innovation and risk taking orientation as dimensions of organizational culture. The study found out that organizational culture influenced organizational commitment which in turn affected the performance of those organizations.

Organizational commitment has been defined by Meyer *et al* (2002) as employees' experience of a sense of oneness with the organization where they are psychologically attached to it. One identifies with the organization that he/she works for. It is made up of three components namely the affective, continuance and normative aspects. Affective commitment refers to an employees' positive emotional attachment to the organization. An employee strongly identifies with the goals of the organization and strives to attain them since he/she remains in the organization by choice.

Normative commitment on its part refers to employees' commitment to the organization due to a feeling of obligation. According to Nelson and Quick (2009), the employee stays with the organization because they feel they should. For example, it may be based on how they are socialized or due to the organization having facilitated their further training among others. Continuance commitment involves employees remaining within the organization due to the perceived high cost of losing organizational membership. Such employees fear losing the job, pensions and other accrued benefits hence will remain in the organization, at least until they get an alternative (Zain *et al*, 2009; Nelson and Quick, 2009).

Affective and normative commitments have been associated with superior organizational performance (Rashid and Raja, 2011). Continuance commitment on its part contributes to absenteeism, low staff morale and decreased productivity (Nelson and Quick, 2009). Employees remain in the organization in such a case because they have no alternative place to go. For example, their qualifications and experience may not give them a similar position elsewhere. In general, managers should strive to build organizational commitment since it is a major determinant of service delivery in organizations. Service delivery in Local authorities can be looked at in terms of the provision of required statutory services to the citizens in their jurisdiction. This can be in terms of timely provision of services, their quality and reduction of customer complaints.

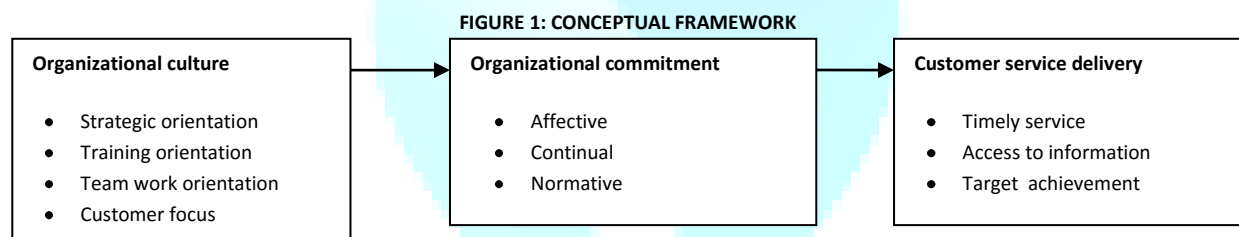
STATEMENT OF THE PROBLEM

The strategic plans of Local Authorities as well as the performance contracts signed by the managers of these entities are expected to elicit superior service delivery from them. This is because the projects and other activities that those local authorities commit themselves to implement in these plans and contracts usually target improving the general livelihoods of citizens socially, economically and even politically.

The scenario in Kenya is however contrary to these expectations. Garbage collection is irregular in major towns, traders lack markets, there is poor street lighting, corruption is rampant in local authorities and many are in financial distress (KACC, 2007, Kabathi, 2009, Kirimi and Munyinyi, 2007). Whereas this poor customer service delivery has been blamed on inadequate finances, corruption and political interference, other commentators blame poor service delivery on the prevalent organization culture in local authorities and other public agencies that does not recognize the citizens as customers who deserve better services (Kobia and Mohammed, 2006; Obong'o, 2009, Odhiambo *et al*, 2005). Despite the government's efforts to reverse this trend, these complaints still abound. This paper therefore sought to establish the influence of organizational culture on customer service delivery in Local authorities in Kenya.

CONCEPTUAL MODEL

This study examined the influence of organizational culture in determining customer service delivery in local authorities in Kenya. Customer service delivery was seen as the ultimate performance of employees who were high on affective and normative commitment. Organizational culture was assessed in terms of employees' perception of organizational values and practices with reference to strategic orientation, training of employees, team work orientation and customer focus as seen in Figure 1.



Source: Research study, 2011

STUDY HYPOTHESES

The study was guided by the following null hypotheses with regard to customer service delivery in local authorities in Kenya:

- HO₁ There is no relationship between organizational culture and organizational commitment in local authorities in Kenya.
- HO₂ There is no relationship between organizational commitment and customer service delivery in local authorities in Kenya.
- HO₃ There is no relationship between organizational culture and customer service delivery in local authorities in Kenya.

METHODOLOGY

The study used a descriptive survey design. A sample of 322 employees was selected from 13 local authorities in the Western region of Kenya through stratified and simple random selection methods. The study also selected 216 small scale entrepreneurs from the jurisdictions of these councils to participate in the study for the purposes of triangulating the study. Data was collected through questionnaires which were tested for reliability using the Cronbach Alpha coefficient tests. The Cronbach Alpha coefficients for the questionnaires of employees and small scale entrepreneurs were 0.898 and 0.808 respectively, indicating high levels of reliability. The questionnaire for employees of local authorities had questions that sought for data on demographics, strategic orientation, training orientation, team work orientation and customer focus which were measured on a 5 point likert scale of 1 (strongly disagree) to 5 (strongly agree). It also had items that sought for data on organizational commitment and customer service delivery. The questionnaire for small scale entrepreneurs had items that captured information on level of satisfaction with services offered by local authorities. The questionnaires were distributed to the respondents who were given adequate time to fill them before they were collected a week later.

RESEARCH FINDINGS

The study data was analyzed using descriptive and qualitative tests where the study hypotheses were also tested. Frequencies and percentages were used to present the data qualitatively and Pearson's product moment correlation coefficient tests were used for the quantitative analysis. The results were then presented in the sections that follow.

DESCRIPTIVE ANALYSIS

The results of the data collection revealed that most of the Local authorities had employees whose highest level of education was diploma and below. Most of them had worked for less than five years for these entities as seen on Table 2.

TABLE 2: DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Characteristics	Dimensions	Frequency(%)
Gender	Male	176 (54.7)
	Female	146 (45.3)
Age	Below 25 years	16 (0.5)
	25 - 34 years	97 (30.1)
	35 – 44 years	138 (42.9)
	45 – 54 years	67 (20.8)
	55 years and above	4 (1.2)
Highest level of education	Primary	15 (4.7)
	Secondary	84 (26.1)
	Certificate	72 (22.4)
	Diploma /CPA	121 (37.6)
	Bachelors degree	28 (8.7)
	Masters	2(0.6)
Duration of employment	Below 5 years	112 (24.8)
	6 – 10 years	66 (20.5)
	11 – 14 years	55 (17.1)
	15 years and above	89 (27.6)

Source : Research study 2012

The study further revealed that local authority employees acknowledged that various dimensions of organizational culture were practiced in the organization although their opinions differed on the extent to which they were practiced as seen on Table 3.

TABLE 3: DESCRIPTIVE RESULTS OF THE RELATIONSHIP BETWEEN ORGANIZATION CULTURE AND CUSTOMER SERVICE DELIVERY

Statement	SA f(%)	A f(%)	FA f(%)	D f(%)	SD f(%)
Strategic orientation					
• Activities are carried out in my council in line with our vision and mission	80 (24.8)	182(56.5)	13(4)	34(10.6)	13(4)
• Employees views are incorporated in our strategic and action plans	35(10.9)	207(64.3)	8(2.5)	46(14.3)	28(8.1)
Training orientation					
• Appraisals are done to identify staff to undergo further training	25(7.8)	139(43.2)	15(4.7)	79(24.5)	64(19.9)
• Training in my firm is prioritized and I have undertaken further training in the last one year	71(22)	203 (63)	10(3.1)	33(10.2)	5(1.6)
• My council pays training fees for employees undertaking further training.	82(25.5)	148(46)	20(6.2)	50(15.5)	22(6.8)
• Those who successfully finish training are promoted	51(15.8)	126(39.1)	22(6.8)	82(26.5)	41(12.7)
Team work orientation					
• There is cooperation within departments	40(12.4)	139(43.2)	9(2.8)	105(32.6)	29(9)
• I am comfortable to work in a team than an individual	72(22.4)	109(33.9)	10(3.1)	68(21.1)	63(19.6)
• There is good interpersonal communication in my council.	58(18)	190(59)	30(9.3)	34(10.6)	10(3.1)
Customer service delivery					
• My council has effectively delivered services to citizens as outlined in the service charter.	10(3.1)	72(22.4)	23(7.1)	183(56.8)	34(10.6)
• My council meets the required needs of residents on time.	16(0.5)	65(20.2)	16(5)	157(48.8)	68(21.1)
• The council allows residents access to information on its performance	25(7.8)	121(37.6)	36(11.2)	108(33.5)	32(9.9)
• The council addresses customer complaints	32(9.9)	181(56.2)	35(10.9)	53(16.5)	21(6.5)
Organizational commitment					
• If I got an opportunity elsewhere , I will leave this organization	33(10.2)	49(15.2)	21(6.5)	183(56.8)	36(11.2)
• I am ready to put in extra effort on behalf of the organization	64(19.9)	78(24.2)	44(13.7)	118(36.6)	18(5.6)
• I believe and share in the goals and values of the organization	33(10.2)	62(19.3)	47(14.6)	152(47.2)	28(8.7)
• I work here because I am obligated to do so	47(14.6)	125(38.8)	52(16.1)	82(25.5)	28(8.7)
• I am happy that I am involved in decision making.	41(12.7)	91(28.3)	45(14)	118(36.6)	27(8.4)
Customer focus					
• My council seeks views of our customer on our services quality	22(6.8)	77(23.9)	56(17.4)	117(36.3)	50(15.5)
• My council improves its services based on customer feedback	26(8.1)	77(23.9)	33(10.2)	126(39.1)	60(18.6)
• My council treasures our customers	27(8.4)	85(26.4)	50(15.5)	114(35.4)	46(14.3)

Key: Strongly Agree (SA) Agree (A) Fairly Agree (FA) Disagree (D) Strongly Disagree (SD)

Source : Research study, 2012

The findings reveal that employees perceived that activities in their local authorities were carried out according to the strategic plans and employees were taken for further training to improve their service delivery. Teamwork was also identified to exist amongst members of the local authorities. Although levels of organizational commitment were high, a high number of employees were not ready to put in extra effort on behalf of the organization as confirmed by 118(36.6%) and 18(5.6%) respondents respectively who disagreed and strongly disagreed with the statement on the issue. Most of them were also unhappy that they were not involved in decision making.

The study further revealed that small scale entrepreneurs who were identified as major customers of local authorities were fairly satisfied with the services of local authorities as shown on Table 4.

TABLE 4: PERCEPTION OF SMALL SCALE ENTREPRENEURS WITH SERVICES OF LOCAL AUTHORITIES

Statement	SA f(%)	A f(%)	FA f(%)	D f(%)	SD f(%)
The council fees and levies are fair	12(5.6)	96(44.4)	12(5.6)	60(27.85)	36(16.7)
The council offers quick and efficient services to me	78(36.1)	24(11.1)	24(11.1)	54(25)	60(27.8)
Employees of the council are friendly, caring & courteous	18(8.3)	72(33.3)	0	102(47.2)	24(11.1)
The council fully provides citizens with relevant services as outlined in the service charter	18(8.3)	60(27.8)	12(5.6)	84(38.9)	42(19.4)
The council allows me easy access to required information from their offices	24(11.1)	96(44.4)	6(2.8)	54(25)	36(16.7)
In general, I am satisfied with services offered by my local authority	36(16.7)	78(36.1)	12(5.6)	60(27.8)	30(13.9)

Key: Strongly Agree (SA) Agree (A) Fairly Agree (FA) Disagree (D) Strongly Disagree (SD)

Source :Research study, 2011

However, most of them felt that the council employees were not caring and courteous as was perceived by 102(47.2%) and 24(11.1%) of the respondents who disagreed and strongly disagreed respectively with a statement that stated the contrary. They also felt that the local authorities were not fully providing citizens with relevant services as provided for in their service charter.

QUANTITATIVE RESULTS

The study sought to establish the relationship between organization culture and organizational commitment and how this affected customer service delivery. The means for the organizational culture dimensions, organizational commitment measures as well as those of customer service delivery items were obtained and summated. They were then correlated using Pearson's Product Moment correlation coefficient tests at 95% confidence level. The results of these tests are presented in Tables 5 and 6.

TABLE 5: PEARSON'S PRODUCT MOMENT CORRELATION TEST RESULTS OF THE RELATIONSHIP BETWEEN ORGANIZATIONAL CULTURE AND ORGANIZATIONAL COMMITMENT

	Strategic orientation	Training orientation	Teamwork orientation	Customer focus	Organizational culture
Organizational commitment	0.466	0.433	0.346	0.299	0.414
Sig(2-tailed)	0.000	0.000	0.000	0.000	0.000
N	322	322	322	322	322

Source: Research study 2011

The results on Table 5 indicated that there was a positive and significant relationship between the four dimensions of organizational culture and organizational commitment. Strategic orientation had the highest correlation ($r = 0.466$; $p = 0.000$) followed by Training orientation and Teamwork orientation. Customer focus had the least correlation with organizational commitment ($r = 0.299$; $P = 0.000$). In general, there was a positive and significant relationship between organization culture and organizational commitment($r = 0.414$; $p = 0.000$). From the findings in Table 5, the first null hypothesis was rejected. The study concluded that there is a positive and significant relationship between organizational culture and organizational commitment. Organizational culture therefore influences organizational commitment.

The mean scores for organizational culture dimensions were then summated resulting in a composite measure of organizational culture. The same was done for the items on organizational commitment and customer service delivery. Further tests were then carried out to determine the relationship between organizational culture, organizational commitment and customer service delivery. This was done to test the second and third hypotheses of the study. The findings are presented in Table 6.

TABLE 6: PEARSON'S PRODUCT MOMENT CORRELATION TEST RESULTS OF THE RELATIONSHIP BETWEEN ORGANIZATIONAL CULTURE, ORGANIZATIONAL COMMITMENT AND CUSTOMER SERVICE DELIVERY

	Organizational culture	Organizational commitment
Customer service delivery	0.421	0.437
Sign. (2tailed)	0.000	0.000
N	322	322

Source: Research study 2011

The results in Table 6 showed that there was a positive and significant relationship between organizational commitment and customer service delivery($r=0.437;p=0.000$).This led the study to reject the second null hypothesis and conclude that there was a positive and significant relationship between organizational commitment and customer service delivery. Organizational commitment therefore influenced customer service delivery.

Further test results on Table 6 showed that there existed a positive and significant relationship between organizational culture and customer service delivery($r=0.421;p=0.000$).Contrary to the postulations of third hypothesis, the study concluded that there was a positive and significant relationship between organizational culture and customer service delivery. This led to the conclusion that organization culture influenced organizational performance.

DISCUSSIONS

Organization culture was found to be correlated to organizational commitment. This concurs with the findings of earlier studies by Zain *et al* (2009), Shah *et al* (2012) and Manetje and Martins (2009). Specifically, the strategic orientation where employees shared in the vision, mission and values of the organization and training orientation had the highest influence on organizational commitment. This indicates that employees ought to be made aware of and contribute to the formulation of strategic and action delivery plans to enhance their effective commitment. The local authorities had facilitated employees' skills enhancement through their emphasis on training hence enhancing normative commitment. With a positive culture that encourages teamwork, training and strategic focus, organizational commitment will be enhanced.

Although there was a significant and positive relationship between team orientation and organizational commitment, this correlation was low ($r = 0.346$). This signified that there was moderate cohesiveness amongst employees in local authorities which may have contributed to this scenario. The study also found that there was a positive and significant relationship between customer focus and organizational commitment ($r = 0.299$). The low score shows that employees' appreciation of customers was low, yet the local authorities were primarily established to offer citizens a variety of social and economic services. This indicates that there was a proportion of continuance commitment where some employees were serving these institutions without dedication for lack of alternative forms of employment. This tallies with the perception of small scale entrepreneurs respondents that employees of local authorities were not friendly, courteous and caring. This area needs to be addressed where employees should be taken for customer care training to enhance their social skills.

The findings also showed that organizational commitment had a superior relationship with customer service delivery ($r=0.437$) when compared to organizational culture($r=0.421$).This shows that managers in local authorities ought to focus on building and emphasizing organizational cultural aspects that enhance organizational commitment. With enhanced affective and normative commitment in the employees, customers will receive better service quality from the local authorities.

With the promulgation of the new constitution of Kenya, 2010 and the enactment of the Urban Areas and Cities Act of 2011, Counties, Cities, Municipalities and Towns are going to compete against each other in attracting investors. Managers ought to make their employees to appreciate their customers and deliver required services to them. With enhanced organizational commitment, there will be superior service delivery to customers. Organizational cultural dimensions that enhance affective and normative commitment should therefore be encouraged and nurtured.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings, the study concluded that organizational culture positively influenced customer service delivery in local authorities in Kenya. A focus on aspects of organizational culture that enhanced organizational commitment resulted in enhanced superior customer service delivery. Based on these findings the study recommends that:

- Managers of local authorities should focus their efforts on enhancing employees' appreciation of their customers.
- Local authorities should come up with mechanisms of encouraging the development of normative and affective commitment in employees to enhance customer service delivery.
- Local authorities should build strong cultures that encourage service delivery to enhance customer appreciation of their services. This will result in giving them a competitive edge over others.

- The County Governments that will be formed in 2013 in Kenya should prioritize the development of strong organizational cultures that fosters organizational commitment and superior performance.

REFERENCES

1. Arnold, J. (2005). *Work Psychology: Understanding Human Behaviour in the Workplace*, 4th edition. London: Prentice Hall Financial Times.
2. CLARION(2007): *Community Empowerment for Management of Decentralized funds project Report on training workshop for MOWELT*, Nairobi: CLARION.
3. Compton, R. (2005) *Performance Management: Panacea or Corporate outcast?* Research and practice in Human Resource Management Journal, Vol 13 (I) pp 46-54
4. Gachunga, H.G. (2008): *Impact of Globalization of HRM function in Developing Countries: A study of Kenya's Public and Private Corporations*, KCA Journal of Management, Vol. 1 No. 1, pp 36-50.
5. Kabathi, M. (2009): *Public Service besieged by corruption*, Adili. No 111, June edition.
6. KACC (2007): *National Corruption Commission Annual Report, 2007/08*, Nairobi: KACC
7. Kiriimi, S. and Munyinyi, W. (2004): *Facts on ERS: Civil Societies' Perspective*, Nairobi: National Council of NGOs.
8. Kobia, M. and Mohammed, N.(2006) : *The Kenya Experience with performance contracting*, A Paper presented during the 28th AAPAM Annual Round Table Conference, Arusha, 4th– 6th December.
9. Manetje, O. and Martins, N.(2009) *The relationship between organisational culture and organizational commitment*, Southern African Business Review, vol.13 no.1, pp87-111
10. Martins, N. & Martins, E.(2003). 'Organisational culture', In Robbins, S.P., Odendaal A. & Roodt, G. (eds), *Organisational Behaviour: Global and Southern African Perspectives*. Cape Town: Pearson Education South Africa.
11. Meyer, J.P, Stanley, D.J, Herscovitch, L and Topolaytsky, L. (2002) *Affective, continuance and normative commitment to the organisation: A meta-analysis of antecedents, correlates and consequences*. Journal of Vocational Behaviour, 61, pp 20-52
12. Mutunga, R. (2008): *Performance contracting a panacea to service delivery*, Industrial Training Magazine, December, pp 4.
13. Nelson, D.L. and Quick, J. C. (2009): *Organization Behaviour*, New Delhi: Cengage Learning.
14. Obong'o, S. O. (2009): *Implementation of performance contracting in Kenya*, International Public Management Review, Vol 10 (2) pp 66 – 84.
15. Odhiambo, M., Mitullah, W. N. and Akivaga, K. (2004) *Management of resources by Local authorities: The case of Local Authority Transfer Fund in Kenya*, Nairobi: Claripress
16. Rashid ,H. and Raja,N.S(2011) *Mediating Effect Of Corporate Culture On The Relationship Of Retention Factors to Organizational Commitment*, Interdisciplinary Journal of Contemporary Research In Business, vol 3No. 8 pp. 211-225
17. Sabir, M.S, Razzaq, A and Yameen, M.(2010) *Impact of Organizational Culture on the Employees' Commitment: Relationship between Levels of Organizational Culture with Commitment*, KASBIT Business Journal, 3(1) pp 88-95
18. Shah, S.M, Khaipur, S., Memon, M.S. and Phulpoto, A.(2012) *The Impact of Organizational Culture on the Organizational Commitment: A Study of Faculty Members of Private Sector Universities of Pakistan*, Interdisciplinary Journal of Contemporary Research In Business, vol 3No. 9 pp. 1004-1016
19. Zain, M., Ishak, R. and Ghani, E.K(2009) *The Influence of Corporate Culture on Organisational Commitment: A Study on a Malaysian Listed Company*, European Journal of economics, finance and administrative sciences, issue 17, No.17, pp 16-26

EMPLOYEE JOB SATISFACTION: A CASE STUDY ON ONGC**DR. MEGHA SHARMA****ASSOCIATE PROFESSOR****FAIRFIELD INSTITUTE OF MANAGEMENT & TECHNOLOGY****DELHI****ABSTRACT**

The study attempts to analyse the relationships between the different services, salary and other incentives, perceived job reinforcement capacity and job satisfaction. A positive relationship was found between the employers and other variables and job satisfaction was found. Results are discussed in the context of the arguments concerning the level of their satisfaction. A survey was conducted to test the preference of salaried employees when given the option of increased pay versus job satisfaction. The study also looked at various job characteristics and compared how employees ranked them as motivators and satisfiers. To prove the validity tests were also used and it shows very positive results, salary and incentives works as motivators.

KEYWORDS

Employee, job satisfaction, motivation.

INTRODUCTION

Oil and Natural Gas Corporation Limited (ONGC) is an Indian multinational oil and gas company headquartered in Dehra Dun, India. It is one of the largest Asia-based oil and gas exploration and production companies, and produces around 72% of India's crude oil (equivalent to around 30% of the country's total demand) and around 48% of its natural gas. It is one of the largest publicly traded companies by market capitalization in India. ONGC has been ranked 357th in the Fortune Global 500 list of the world's biggest corporations for the year 2012. It is also among the Top 250 Global Energy Company by Platts. ONGC was founded on 14 August 1956 by the Indian state, which currently holds a 69.23% equity stake. It is involved in exploring for and exploiting hydrocarbons in 26 sedimentary basins of India, and owns and operates over 11,000 kilometers of pipelines in the country. Its international subsidiary ONGC Videsh currently has projects in 15 countries. ONGC has discovered 6 of the 7 commercially-producing Indian Basins, in the last 50 years, adding over 7.1 billion tonnes of In-place Oil & Gas volume of hydrocarbons in Indian basins. Against a global decline of production from matured fields, ONGC has maintained production from its brown fields like Mumbai High, with the help of aggressive investments in various IOR (Improved Oil Recovery) and EOR (Enhanced Oil Recovery) schemes. Recovery Factor has improved from 28 per cent [in 2000] to 33.5 per cent (in 2011). Significantly Reserve Replenishment Ratio for the last 7 years, has been more than one.

REVIEW OF LITERATURE

Roland T. Rust, Greg L. Stewart, Argues that employee turnover is highest among employees who are not satisfied with their jobs. Because qualified employees are becoming more scarce and difficult to retain, organizations need to focus on increasing employee satisfaction. In the words of Ove C. Hansenmark, Marie Albinsson The purpose of this study was to explore how the employees of a company experience the concepts of customer satisfaction and retention. A phenomenological method was used, allowing the informants' own interpretations to be discovered. Satisfaction was discussed from three perspectives: definition of the concept, how to recognize when a customer is satisfied, and how to enhance satisfaction. In the words of Nina Specht, Anton Meyer, Customers spontaneously and explicitly judge service encounters on the basis of service employees' effort and abilities, perceived through certain behavioral cues. The specific, direct impact of perceived effort and abilities on customer satisfaction varies for different service types. Ali Mohammad Mosadegh Rad, Mohammad Hossein Yarmohammadian, said that the Employee job satisfaction depends upon the leadership style of managers. Nevertheless, participative management is not always a good management style. Managers should select the best leadership style according to the organizational culture and employees' organizational maturity. Christine Borycki, Ron G. Thorn, Jane LeMaster suggests that the study compares the nature of job satisfaction and organization commitment of employees in a United States manufacturing plant to employees in a Mexico maquiladora manufacturing plant. Demographic and job related variables were measured and used in a regression analysis to explain job satisfaction and organization commitment in both plants. Results indicate that significant differences exist. In the words of Jen-Hung Huang, Bih-Huang Jin, Chyan Yang, Marketing the products of other companies within an individual company intranet can benefit both employees and the company itself. This study examines the dimensions of satisfaction with a business-to-employees (B2E) benefit system and the linkages between satisfaction and organizational citizenship behavior (OCB). Structural equation modeling of data shows that convenience, delivery, interface, accuracy, price and security are factors that affect employee satisfaction with the B2E benefit system. Price is more important to the satisfaction of males than females. Yunus Kathawala, Kevin J. Moore, Dean Elmuti suggests that the study also looked at various job characteristics and compared how employees ranked them as motivators and satisfiers. Subjects were 41 automobile industry salaried employees who responded to written questionnaires. The results showed a preference for increased salary over increase in job security. Respondents who preferred a salary increase demonstrated a less satisfied attitude with current salary and overall satisfaction with the job. Those preferring increased security ranked security higher than salary as a satisfier, but not as a motivator. Those preferring a salary increase ranked compensation higher than job security as a motivator and a satisfier. Enid Mumford said that the extremely nebulous concept of "job satisfaction" is examined. Attempts to define it are made, providing a method for establishing how good a fit there is between employees' needs, expectations and aspirations in work and their actual work experience. Grace Davis suggest that the Job Descriptive Index (JDI) to measure job attitudes among approximately 80 employees of four different small businesses. Through a standardized procedure, each employee filled out the survey form, responded to a structured interview, and then completed the survey form again. Employees showed significant difference in job satisfaction before and after the structured interview. Medians from four dimensions – work, supervision, promotion, and co-worker – were found to be similar to norms but the medians of pay were much lower than the norm. Nevertheless, pay did not represent the lowest correlation with job satisfaction. Satisfaction at supervision did. Also employees reported work to have the highest correlation with job satisfaction. Young Lee suggests that the Satisfaction with the workplace was positively associated with job satisfaction. Using linear regression analysis, no significant difference was found between perception-based measures and gap measures for explaining work environment satisfaction. However, results propose that physical environmental status below expectation levels leads to dissatisfaction, but exceeding expectation levels does not increase satisfaction levels. In the words of Hoseong Jeon employee satisfaction leads to CS but CS did not affect ES, which suggests that the relationship between ES and CS is unilateral rather than bilateral. The findings also demonstrate that the dispositional variables (i.e. self efficacy, cooperative orientation) moderate the impact of ES on CS.

NEED FOR THE STUDY

Job satisfaction is directly related to the performance of an employee, if an employee is satisfied it means that person is having positive attitude towards the job. Always there is a need arises to assess certain points which are directly related to the study these are:

- To assess the employee's positive attitude towards job.
- To fulfill the sociological needs of the employees.
- It affects on the productivity of an organization.
- Job satisfaction is the main driving force which works in an organization.

OBJECTIVES OF THE STUDY

- To identify the factors which affects the job satisfaction among employees?
- Give suggestions to improve the satisfaction level of employees.
- To determine the degree of satisfaction towards the facilities.
- To assess the employees job satisfaction level.

ACHIEVEMENTS OF ONGC IN THE YEAR 2011-12

FY'12 has been a year of achievements for your Company as it performed exceedingly well in almost all the areas of its activities. Significant highlights for the year have been:

- Your Company accreted 84.13 mmtoe of ultimate reserves in the domestic fields (operated by ONGC), the highest in last two decades.
- Reserve replacement ratio has been 1.79; in 7 consecutively year more than 1.
- The Gross Revenue (₹ 768,871 million) and PAT (₹ 251,229 million) has been the highest-ever.
- ONGC paid the highest-ever dividend of ₹83,416 million; the Government of India's share has been ₹60,372 million.
- ONGC's standalone Net worth crossed ₹1,000,000 million benchmark (₹1,117,841 million as on 31.03.2012).
- Actual Plan expenditure for domestic operations during XI Plan period has been ₹1,205,523 million against the plan outlay of ₹759,838 million.

GLOBAL RECOGNITIONS

Your Company is the only Indian energy giant in 'Fortune's Most Admired List 2012' under 'Mining, Crude Oil Production' category (March 2012). ONGC has been ranked as the Number 2 Exploration & Production Company in the World and 21st in the overall listing of global energy companies as per 'Platts Top 250 Global Energy Company Ranking 2011' (November, 2011). ONGC has been ranked at 171st position in Forbes Global 2000 list 2012 of world's biggest companies for 2011 (April 2012).

RESEARCH METHODOLOGY

Research comprise defining and redefining problems, formulating hypothesis or suggested solutions; collecting, organizing and evaluating data; making deductions and reaching conclusions; and at last carefully testing the conclusions to determine whether they fit the current problem. In short, the search for Knowledge through Objective and Systematic method of finding solutions to a problem.

Type of Research: - Exploratory research

Research is based on both primary and secondary data.

Primary Data were collected through Questionnaire by random sampling method.

Secondary data were collected by the medium of internet, ONGC magazine & Journals.

Sample area: Rajahmundry, Vishakhapatnam.

Sample size: 60

Although, questionnaire was sent through e-mail and 120 questionnaires were sent to the employees of Vishakhapatnam office. Some questionnaire were incomplete and only 60 questionnaires were complete in all aspects.

Questionnaire was include different variables like: salary, promotion, employer-employee relation, facilities given, incentive offered, occupational level, Transfer policy, office timings, Annual leaves, working conditions.

Respondents were asked to rate each statement on the likert scale of 1 to 3. The collected data were tabulated and analyzed by using SPSS (version 14.0) and result and interpretation are as follows:

RESULTS & INTERPRETATION**1. SALARY OFFERED**

Validity	Frequency	In%	Valid %	Cumulative %
Neither agree nor Disagree	7	11.7	11.7	11.7
Agree	53	88.3	88.3	100
Total	60	100	100	

From the above data, it's clear that whatever the salary offered to the employees, 88.3% employees were satisfied from the current package and only 11.7% employees were in the state to say nothing.

2. PROMOTION POLICY

Validity	Frequency	In%	Valid %	Cumulative %
Not agree	30	50	50	50
Neither agree nor disagree	4	6.7	6.7	56.7
Agree	26	43.3	43.3	100
Total	60	100	100	

From the above data, it's said that 43.3% employees were agree that the current promotion policy is good, 50% employees were not satisfied with it and only 6.7% employees would not like to comment on this statement.

3. EMPLOYER-EMPLOYEE RELATION

Validity	Frequency	In%	Valid %	Cumulative %
Not agree	4	6.7	6.7	6.7
No comment	1	1.7	1.7	8.3
Agree	55	91.7	91.7	100
Total	60	100	100	

From the above data, it can be said that only 91.7% employees were agree that there is healthy relation between employer and employee and there were only 6.7% employee who were not satisfied with this statement.

4. FACILITIES PROVIDED BY ONGC ARE EXCELLENT

Validity	Frequency	In%	Valid %	Cumulative %
Not agree	4	6.7	6.7	6.7
Neither agree nor disagree	4	6.7	6.7	13.3
Agree	52	86.7	86.7	100
Total	60	100	100	

From the above sources, it's clear that the facilities provided by the ONGC were good and only 6.7 % employee were not satisfied with this statement and same number of employees would not like to comment on this.

5. INCENTIVE OFFERED

Validity	Frequency	In%	Valid %	Cumulative %
Not agree	2	3.3	3.3	3.3
Neither agree nor disagree	10	16.7	16.7	20
Agree	48	80	80	100
Total	60	100	100	

From the above data, it's clear that 80% employees were satisfied with the incentives offered to them and only 3.3% employees were not satisfied with the current incentives offered and only 16.7% employees were neither agree nor disagree with the incentives.

6. EMPLOYEE SATISFIED WITH THEIR JOBS

Validity	Frequency	In%	Valid %	Cumulative %
No	1	1.7	1.7	1.7
No comment	13	21.7	21.7	23.3
Agree	46	76.7	76.7	100
Total	60	100	100	

It's clear from the above data, that 76.7% of the employees were satisfied with their jobs. 1.7% employees were not satisfied and 21.7% employees were not like to say anything.

7. WORKING CONDITIONS

Validity	Frequency	In%	Valid %	Cumulative %
Poor	4	6.7	6.7	6.7
No comment	13	21.7	21.7	28.3
Yes	43	71.7	71.7	100
Total	60	100	100	

From the above data, it's clear that the working conditions were also good with 71.7% says yes, 21.7% respondents were not say anything and hardly 6.7% of the employees were in the state of no.

8. SATISFIED WITH THE CURRENT POSITION

Validity	Frequency	In%	Valid %	Cumulative %
No	6	10	10	10
No comment	24	40	40	50
Yes	30	50	50	100
Total	60	100	100	

From the above data, it is said that only 10% were not satisfied from the current position and 50% employees were satisfied with the current position and 40% employees were not interested to say anything about this matter.

9. ANNUAL LEAVES

Validity	Frequency	In%	Valid %	Cumulative %
No	10	16.7	16.7	16.7
Yes	50	83.3	83.3	100
Total	60	100	100	

From the above mention figures it's clear that 83.3% employees were satisfied from the leave policy and hardly 16.7% were not satisfied from the existing scheme.

10. OFFICE TIMINGS

Validity	Frequency	In%	Valid %	Cumulative %
Not agree	18	30	30	30
Neither agree nor disagree	2	3.3	3.3	33.3
Agree	40	66.7	66.7	100
Total	60	100	100	

From this data, it can be concluded that most of the employees around 66.7% were agree that the current timings were satisfactory and 30 % were not in favor of the present timings. Only 3.3% employees were in the state of neutral.

11. TRANSFER POLICY IS GOOD

Validity	Frequency	In%	Valid %	Cumulative %
Not agree	4	6.7	6.7	6.7
Neither agree nor disagree	1	1.7	1.7	8.3
Agree	55	91.7	91.7	100
Total	60	100	100	

From the above data, it can be concluded that 91.7% employees were agree that the present transfer policy were good and only 6.7% were not agree with this statement and only 1.7% were in situation no to comment on any statement.

12. THE DESCRIPTIVE STATISTICAL

Variables	(N)	Minimum	Maximum	Mean	S.D
Satisfaction with the job	60	1	3	2.75	.474
Working conditions	60	1	3	2.65	.606
Satisfied with current position	60	1	3	2.40	.669
Salary	60	1	3	2.88	.324
Facilities	60	1	3	2.80	.546
Incentives	60	1	3	2.77	.500
Promotion policy	60	1	3	1.93	.972
Annual leave	60	1	3	2.67	.752
Transfer policy	60	1	3	2.85	.515
Employer-employee relations	60	1	3	2.85	.515
Office timings	60	1	3	2.37	.920
Valid(N)	60				

CONCLUSIONS AND SUGGESTIONS

- It's very important to enhance the employee's satisfaction level.
- Pay structure should be revised because it plays an important role in the job satisfaction of employees.
- Timings of the office should be flexible so that the employees feel comfortable.
- Inter department or inter organizational tour should be arranged for the exposure of employees.
- Introduction of more and new promotion policies.
- Provide more facilities and incentives to the employees to boost up their morale.
- Transfer policy should also be flexible and timely it's been utilized.
- Internal atmosphere should be peaceful and comfortable to work with.
- Provision for leaves should also consider/include individual/personal preference.
- It's important that employee should be satisfied from the current position

So timely benefits, perks, revised salary should be given.

From the above survey, it can be concluded that the ONGC satisfy their employees and always be cooperative and supports its staff members also the transfer policy, promotion policy and incentives were given to employees were a flexible and mostly employee's preference will keep in mind while dealing with their leaves

REFERENCES

1. Ali Mohammad Mosadegh Rad, Mohammad Hossein Yarmohammadian, (2006) "A study of relationship between managers' leadership style and employees' job satisfaction", *Leadership in Health Services*, Vol. 19 Iss: 2, pp.11 – 28
2. Christine Borycki, Ron G. Thorn, Jane LeMaster, (1998) "JOB SATISFACTION AND ORGANIZATION COMMITMENT: A COMPARISON OF UNITED STATES AND MEXICO EMPLOYEES", *International Journal of Commerce and Management*, Vol. 8 Iss: 3/4, pp.7 – 25
3. Dov Elizur, (1990) "Quality Circles and Quality of Work Life", *International Journal of Manpower*, Vol. 11 Iss: 6, pp.3 – 7
4. Enid Mumford, (1991) "Job Satisfaction: A Method of Analysis", *Personnel Review*, Vol. 20 Iss: 3, pp.11 – 19.
5. Grace Davis, (2004) "Job satisfaction survey among employees in small businesses", *Journal of Small Business and Enterprise Development*, Vol. 11 Iss: 4, pp.495 – 503
6. Hoseong Jeon, Beomjoon Choi, (2012) "The relationship between employee satisfaction and customer satisfaction", *Journal of Services Marketing*, Vol. 26 Iss: 5, pp.332 – 341
7. http://www.ongcindia.com/wps/wcm/OngcHTML/Annual_Report_2011-12/Directors%20Report.html
8. Jen-Hung Huang, Bih-Huang Jin, Chyan Yang, (2004) "Satisfaction with business-to-employee benefit systems and organizational citizenship behavior: An examination of gender differences", *International Journal of Manpower*, Vol. 25 Iss: 2, pp.195 – 210
9. Kothari R. Meth. New age International Weihrich & koontz (2006).essentials of Management. 7th edition, Tata Mc grew Hill.
10. Nina Specht, (Institute of Marketing, Ludwig-Maximilians-University Munich, Munich, Germany), Sina Fichtel, (Institute of Marketing, Ludwig-Maximilians-University Munich, Munich, Germany), Anton Meyer, (Institute of Marketing, Ludwig-Maximilians-University Munich, Munich, Germany)
11. Ove C. Hansemark, (Ove C. Hansemark is based at the Department of Work, Economics, and Health, University of Trollhättan/Uddevalla, Uddevalla, Sweden.), Marie Albinsson, (Marie Albinsson is based at the Department of Work, Economics, and Health, University of Trollhättan/Uddevalla, Uddevalla, Sweden.)
12. Roland T. Rust, Greg L. Stewart, Heather Miller, Debbie Pielack, (1996) "The satisfaction and retention of frontline employees: A customer satisfaction measurement approach", *International Journal of Service Industry Management*, Vol. 7 Iss: 5, pp.62 – 80
13. So Young Lee, (2006) "Expectations of employees toward the workplace and environmental satisfaction", *Facilities*, Vol. 24 Iss: 9/10, pp.343 – 353
14. www.managementthehelp.org.accessed on sept12,2011
15. Yunus Kathawala, Kevin J. Moore, Dean Elmuti, (1990) "Preference between Salary or Job Security Increase", *International Journal of Manpower*, Vol. 11 Iss: 7, pp.25 – 31

SUPPLY CHAIN MANAGEMENT: A STUDY OF PADDY IN ANDHRA PRADESH

DR. I. SAI PRASAD
ASSOCIATE PROFESSOR
DEPARTMENT OF MANAGEMENT STUDIES
S.V.K.P & DR.K.S.RAJU ARTS & SCIENCE COLLEGE
PENUGONDA. W.G.DT.

ABSTRACT

In India most of the farm operators being small and marginal farmers, the processing and marketing the farmers facing high cost in production, lack of adequate availability of raw materials, poor quality and timeliness of information. The advantages of the supply chain management approach are numerous. Some important advantages are, reduction of product losses in transportation and storage, increasing of sales, dissemination of technology, advanced techniques, capital and knowledge among the chain partners, better information about the flow of products, markets and technologies transparency of the supply chain, tracking & tracing to the source, better control of product safety and quality and large investments and risks are shared among partners in the chain. This paper emphasizes the issues involved in this supply chain have changed dramatically and are influencing not only the supply chain partners but also the whole agriculture sector in India.

KEYWORDS

Supply Chain Management, Paddy, Distribution, Channel, Storage, Selling, Information.

INTRODUCTION

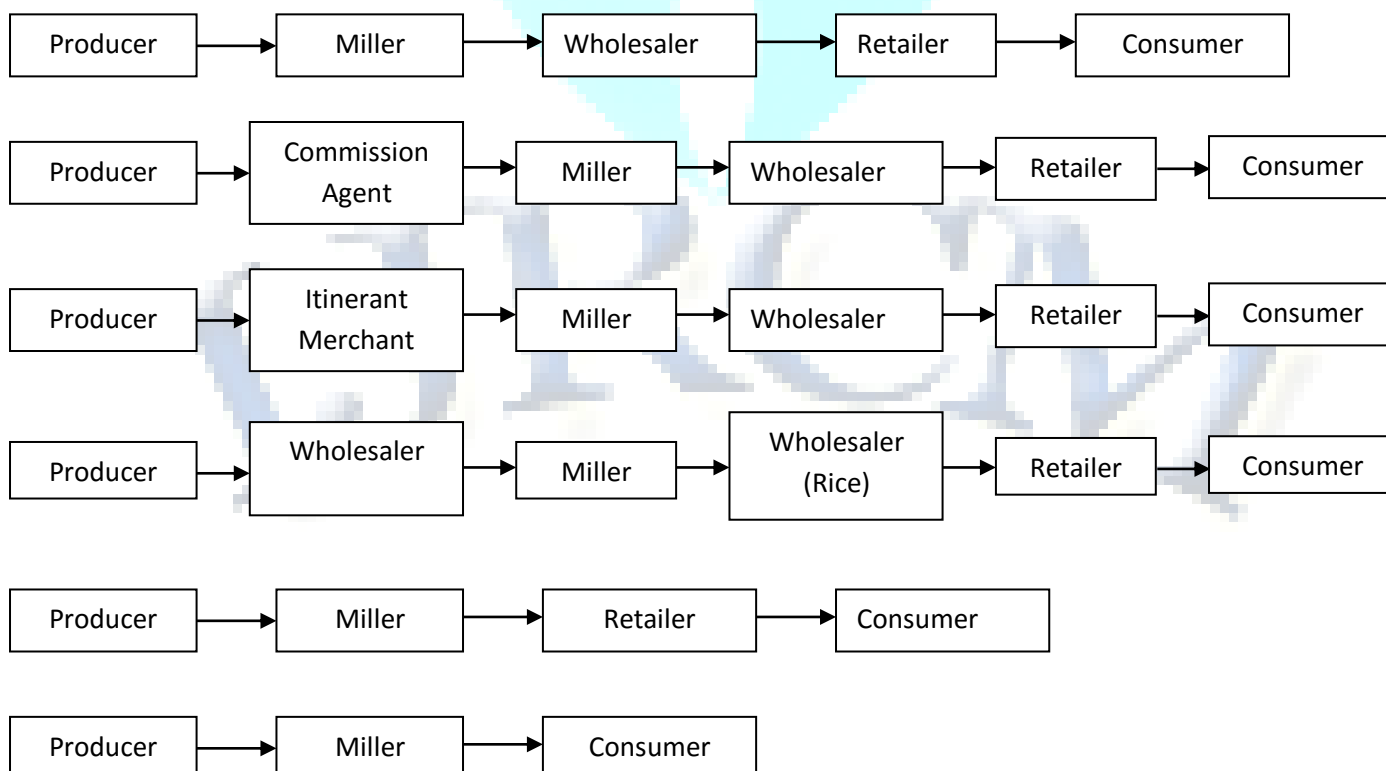
Indian economy is considered as agrarian economy. Agriculture is treated as the back bone of the country. It contributes to the economic and social well-being of the entire nation through its influence on the gross domestic product and employment. Agriculture plays a dominant role in the economic development of a country by providing food for the growing population, raw material and markets for expanding industries, employment avenues and capital formulation for further economic, social progress and growth.¹

The Indian economic growth in the recent years has been propelled by the growth of the service and manufacturing sectors, while agriculture sector is still playing a significant role by contributing 17 per cent of the GDP and providing employment to 60 per cent of the population.² As the Indian population is increasing, the demand for food grains is also increasing. It impacts, in the areas of procurement, processing and production, marketing, supply chain, infrastructure development, technology up gradation and education to the farmers. There is a need to manage the whole show in transparent and participatory ways with proper coordination with the stakeholders so that whole agriculture sector in India can derive the benefit effectively. Indian food supply chain is full of challenges and throws open several questions which has drawn attention of contemporary researchers. According to Food Corporation of India (FCI) sources, an average of 20 to 30 per cent of harvested produce is lost during transport from farm to factory.³

Managing supply chains requires an integral approach in which chain partners jointly plan and control the flow of goods, information, technology and capital from 'farm to fork' meaning from the suppliers of raw materials to the final consumers and vice versa. In order to react effectively and quick to consumer's demand, supply chain management is consumer-oriented. It aims at coordination of production processes.⁴ An efficient supply chain can contribute to an increase in the marketable surplus by lowering down the inefficiencies in production, processing, storage and transportation. It ensures better prices to the farmers suggest them to advance more in marketing so they get good price of produce.⁵

Paddy Distribution System in India: The distribution channels for paddy can be broadly categorized into two types. They are private channels and institutional channels (figure 1). The farmers have at least six private channel options. They are as following;⁶

(1) **Private Channels** - The major marketing channels identified in the private sector are:



(2) **Institutional Channels** – These channels cover the public and co-operative sector agencies. Institutional channels play a very significant role in the procurement and distribution of paddy. Food Corporation of India is the main agency for procurement, buffer stock operations and distribution of paddy. The main institutional marketing channels for paddy are shown below.

Producer – Procuring Agency (FCI/State Govt./Co-operatives) - Miller (FCI/Co-operatives/Private) - Distributing Agency (State Govt.)- Fire Price/Ration shop- Consumer.

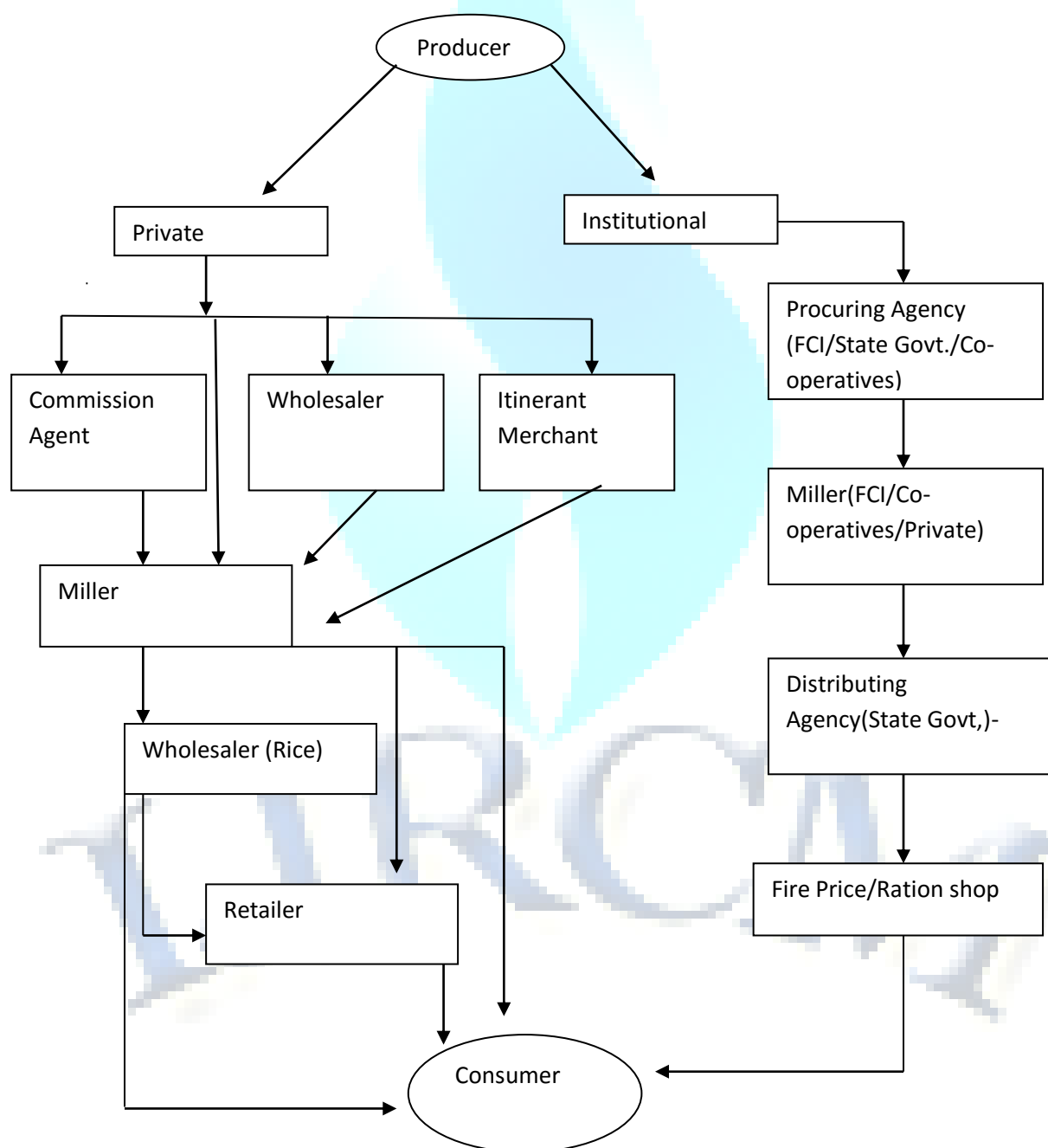
FOOD CORPORATION OF INDIA

The Food Corporation of India was setup under the Food Corporation Act 1964, in order to fulfil the following two objectives of the food policy and to take up effective price support operations for safeguarding the interests of the farmers.⁷

- Distribution of food grains throughout the country for public distribution system
 - Maintaining satisfactory level of operational and buffer stocks of food grains to ensure National Food Security
- In its service to the nation for more than four and half decades, FCI has played a significant role in India 's success in transforming the crisis management oriented food security into a stable security system. The objectives of the FCI are:

- to provide farmers remunerative prices,
- to make food grains available at reasonable prices, particularly to vulnerable section of the society,
- to maintain buffer stocks as measure of food security, and
- to intervene in market for price stabilization.

FIGURE I: MARKETING CHANNELS OF PADDY



PROCUREMENT

The government policy of procurement of food grains has the broad objectives of ensuring MSP to the farmers and also ensuring availability of food grains to the weaker sections at affordable prices. It ensures effective market intervention thereby keeping the prices under check and adds to the overall food security of the country. FCI, the nodal central agency of government of India, along with other state agencies undertakes procurement of wheat, paddy and coarse grains under price support scheme. The procurement under price support is taken up mainly to ensure remunerative prices to the farmers for their produce which works as an incentive for achieving better production. Before the harvest during each Rabi / Kharif crop season, the Govt. of India announces the minimum support prices (MSP) for procurement on the basis of the recommendation of the Commission of Agricultural Costs and Prices (CACP) which along with other factors, takes into consideration the cost of various agricultural inputs and the reasonable margin for the farmers for their produce. To facilitate procurement of food grains, FCI and various State Agencies in consultation with the State Govt. establish a large number of purchase centres at various mandis and key points. The number of centres and their locations are decided by the State Governments, based on various parameters, so as to maximize the MSP operations.

The extensive and effective price support operations have resulted in sustaining the income of farmers over a period and in providing the required impetus for higher investment in agriculture sector for improved productivity. Whatever stocks which are brought to the purchase centres falling within the Government of India, specifications are purchased at the fixed support price. If the farmers get prices better than the support price from other buyers such as traders / millers etc., the farmers are free to sell their produce to them. FCI and the State Government agencies ensure that the farmers are not compelled to sell their produce below support price.

PUBLIC DISTRIBUTION SYSTEM

The concept of Public Distribution System in the country was evolved in 1942 due to shortage of food grains during Second World War. The Government intervention in distribution of food started since then. This intervention of Government in distribution of food grains in the food scarcity period and, thereafter, continued in major cities, towns and certain food deficit areas. This policy of Public Distribution System/Rationing System has undergone several changes with successively during the planned era. The seventh five year plan assigned to it a crucial role by bringing the entire population under Public Distribution System and became a permanent feature in the country's economy.⁸

The government of India fulfills certain objectives of food security through Public Distribution at an affordable price. The public distribution system aims at meeting the twin objectives - the price support to the farmers for their produce and maintenance of stocks. Public distribution system was widely criticised for its failure to serve the population below the poverty line, its urban bias, negligible coverage in the states with the highest concentration of the rural poor and lack of transport and accountable arrangements for delivery. Realizing this, the government of India has introduced the Targeted Public Distribution System (TPDS) scheme in 1997 to streamline the PDS by issuing special cards to the families below the poverty line and selling essential articles under PDS to them at specially subsidised prices with better monitoring of the delivery system. This quantity is issued as rice^{*} or wheat or combination of both at Below Poverty Line prices. The states fix Consumer End Prices (CEP) at Fair Price Shops (FPS) level at not more than fifty paise per kg. over the Central Issue Price (CIP) particularly for the population below the poverty line. The states are also free to add the quantum coverage and the subsidy from their own resources.

OBJECTIVES OF STUDY

- To analyze the current scenario of Supply Chain Management of paddy in India
- To know the present position of Supply Chain Management of paddy in particularly Andhra Pradesh
- To analyze the Challenges & Opportunities in Supply Chain Management.

RESEARCH METHODOLOGY

Andhra Pradesh state which is known as Rice Bowl of India was selected for the study. The farmers of paddy are categorized into three groups viz., marginal & small size farmers, medium size farmers and large size farmers. The farmers holding land of below five acres are grouped under marginal & small farmers. The farmers with land holding varied between 5 acres and 25 acres are the medium size farmers. The farmers having land holding of more than 25 acres are large size farmers. A sample of 600 farmers divided equally among the three groups was selected for the study. Questionnaire was the research instrument used. The researchers conducted personal interviews with farmers. Adequate care was taken to minimize field errors.

PRODUCT DEVELOPMENT

Product development means cultivation process of paddy for the purpose of the study. Various issues starting from procurement of seeds to the generation of output have been analyzed to study the processes and problems of the farmers in paddy cultivation, information and marketing the produce.

SOURCES OF PROCUREMENT OF SEEDS

The sources for the procurement of seeds are self production, co-farmers, government agencies and open market. Out of the total, about 39 per cent of the respondents procure seeds from co-farmers, 23.3 per cent procure from the government agencies and 29 per cent develop seeds from their own resources. The study further reveals that most of the marginal & small size farmers are depending upon co-farmers for the seeds, while large number of medium size farmers procures seeds from government agencies and co-farmers. The majority of large size farmers use their own resources for the generation of seeds.

USE OF FERTILIZERS

Fertilizers basically can be classified as Inorganic and Organic (Bio- fertilizers) fertilizers. Out of the total, 363 respondents representing 60.5 per cent use only inorganic fertilizers and 30.3 per cent of the respondents use both organic and inorganic fertilizers. Only a few among the three categories of respondents use only organic fertilizers.

SELECTION OF THE FERTILIZERS REQUIRED

The information related to the variables influencing the selection of fertilizers required for cultivation from time to time. Out of the total, 343 respondents representing 57.2 per cent reveals that co-farmers are a major source for selecting fertilizers. As many as 195 respondents representing 32.5 per cent selecting fertilizers with their own experience. Only a few respondents, for the selection of fertilizers, depend upon agriculture officer and soil test. For using fertilizers soil test is considered as the best source among the others. Soil testing is the reliable diagnostic tool whose value in evaluating soil-fertility conditions is not realized by many farmers. It is necessary to create awareness and also provide testing facilities accessible to farmers.

USE OF PESTICIDES

The data relating to use of pesticides by the respondents, out of the total, 384 respondents representing 29.7 per cent use only chemical pesticides and 178 respondents representing 29.7 per cent use both chemical and bio-chemical pesticides. Only a few respondents depend upon biochemical pesticides.

^{*} Paddy becomes Rice after processing by the millers. Rice will be in conservable form after properly cooked.

CULTIVATION TECHNIQUES

The cultivation techniques adopted by respondents. Out of the total, 454 respondents representing 75.7 per cent are still using conventional techniques of cultivation. About 15 per cent of the respondents are using both modern and conventional techniques and there are only 9.7 per cent who use modern techniques. Though majority of the farmers are aware of the benefits of the use of modern techniques for cultivation, they could not adopt due to lack of technical knowledge, financial resources and risk perceptions.

DISTRIBUTION

As referred already, distribution is the key element in agricultural marketing in general and marketing of paddy in particular. The key intermediaries in the distribution of paddy are; commission agents, rice millers, Food Corporation of India and general retailers (Table I). The study revealed that more than 75 per cent of the respondents are selling their produce to the commission agents. The role of FCI, rice millers and retailers is not that significant as only a few respondents are depending on them for marketing their produce.

TABLE 1: SELLING OF PRODUCE (n = 600)

Particulars	Status			Total
	Marginal & Small	Medium	Large	
FCI	21 (3.5%)	16 (2.7%)	7 (1.2%)	44 (7.3%)
Rice Millers	8 (1.3%)	14 (2.3%)	35 (5.8%)	57 (9.5%)
Commission Agents	160 (26.7%)	157 (26.2%)	155 (25.8%)	472 (78.7%)
Retailers	11 (1.8%)	13 (2.7%)	3 (0.5%)	27 (4.5%)
Total	200 (33.3%)	200 (33.3%)	200 (33.3%)	600 (100.0%)

Figures in parenthesis indicate percentage to the grand total.

STORAGE PROBLEM

One of the key problems faced by paddy cultivators, irrespective of their size of land holdings is the problem of storage. The majority of the respondents revealed that they were unable to realize fair price to their produce due to lack of adequate storage facilities. The respondents face the problem of storage of their produce. Most of the medium size farmers and large size farmers are facing this problem when compared with marginal & small farmers.

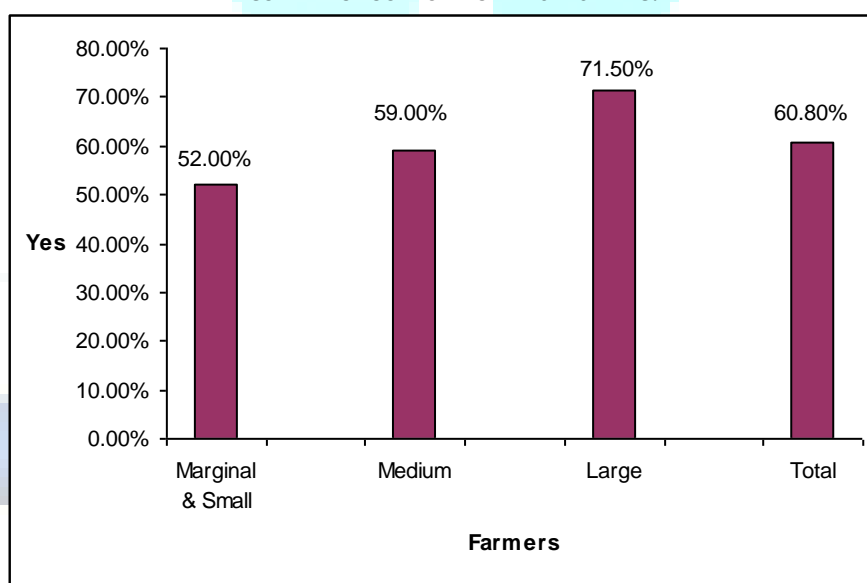
TRANSPORT EXPENSES FROM FIELD TO THE MARKET PLACE

The majority of the cases the buyer bears the transport expenses from field to markets. Out of the total, 487 respondents representing 81.2 per cent revealed the same. It suggests that the farmer sell the produce at the farm itself. There are, however, 9.2 per cent of the respondents revealed that they will bear the transportation expenses to carry the produce to the market place, while 9.7 per cent of the respondents revealed that the transport expenses are shared by themselves and the intermediaries.

PROBLEMS IN SELLING THE PRODUCE

The data shown in Figure II reveals that more than 60 per cent of the respondents face problems in selling their produce. The problems faced by the respondents include grading, under weighment, low price, lack of transportation facilities and lack of market information.

FIGURE II: DO YOU FACE PROBLEMS IN SELLING?



INFORMATION NEEDS

An attempt was made in the study to identify the information need of the respondents. The data presented in the Table II presents the details of needs. The information needs identified by the respondents includes seeds, cultivation methods, cultivation techniques, new tools & machines, fertilizers, pesticides, prices, demand pattern, Govt. schemes, export opportunities, crisis management, training sources, grading, storage facility, credit facility, interest rates and insurance. The study reveals about 80 per cent of the respondents need information on seeds occasionally. Information on cultivation methods was sought by 74.5 per cent of the respondents occasionally and 39.3 per cent respondents regularly. Regarding cultivation techniques, 54.3 per cent respondents need information occasionally while 32.2 per cent of the respondents need information regularly. About 71 per cent of the respondents need information on new tools and

machines occasionally. A little over 50 per cent respondents need information on fertilizers occasionally and about 42 per cent of the respondents need the information regularly. About 46 per cent of the respondents need information on pesticides regularly while a little over 45 per cent of the respondents need information occasionally. Regular information on prices was needed by about 49 per cent of the respondents and 45 per cent of the respondents need the information occasionally. The demand pattern of paddy was the information sought occasionally by about 59 per cent of the respondents and regularly by 23.2 per cent of the respondents. Out of the total, 64.2 per cent of the respondents want the supply information on government schemes occasionally while about 19 per cent of the respondents want the information regularly. Less than 50 per cent of the respondents wanted the information on export management either occasionally or regularly. The information on crisis management was sought by about 38 per cent of the respondents. About 90 per cent of the respondents wanted information on training sources. Information on grading was required by 58.3 per cent and information on storage facility was required by 88.5 per cent of the respondents. The information on credit facilities was needed by about 49 per cent of the respondents occasionally and 44.3 per cent of the respondents regularly. Information on interest rates was needed by about 89 per cent of the respondents, while information on insurance was needed by 79 per cent of the respondents.

TABLE II: THE DETAILS OF INFORMATION (n = 600)

Particulars	Frequency			Total
	Regularly	Occasionally	Never	
Seeds	83 (13.8%)	478 (79.7%)	39 (6.5%)	600 (100.0%)
Cultivation methods	236 (39.3%)	285 (47.5%)	79 (13.2%)	600 (100.0%)
Cultivation Techniques	193 (32.2%)	326 (54.3%)	81 (13.5%)	600 (100.0%)
New tools & machines	106 (17.7%)	425 (70.8%)	69 (11.5%)	600 (100.0%)
Fertilizers	250 (41.7%)	302 (50.3%)	48 (8.0%)	600 (100.0%)
Pesticides	273 (45.5%)	271 (45.2%)	56 (9.3%)	600 (100.0%)
Prices	293 (48.8%)	270 (45.0%)	37 (6.2%)	600 (100.0%)
Demand Pattern	139 (23.2%)	351 (58.5%)	110 (18.3%)	600 (100.0%)
Govt. schemes	113 (18.8%)	385 (64.2%)	102 (17.0%)	600 (100.0%)
Export opportunities	65 (10.8%)	220 (36.7%)	315 (52.5%)	600 (100.0%)
Crisis management	53 (8.8%)	175 (29.2%)	372 (62.0%)	600 (100.0%)
Training sources	235 (39.2%)	302 (50.3%)	63 (10.5%)	600 (100.0%)
Grading	62 (10.3%)	348 (58.0%)	190 (31.7%)	600 (100.0%)
Storage Facility	121 (20.2%)	410 (68.3%)	69 (11.5%)	600 (100.0%)
Credit facilities	266 (44.3%)	292 (48.7%)	42 (7.0%)	600 (100.0%)
Interest Rates	136 (22.7%)	399 (66.5%)	65 (10.8%)	600 (100.0%)
Insurance	103 (17.2%)	372 (62.0%)	125 (20.8%)	600 (100.0%)

Figures in parenthesis indicate percentage to the grand total.

CONCLUSIONS

There is a problem in supply chain management for processing and marketing of agricultural produces in India. There are two main types of agricultural supply chains in which one is highly-regulated by the government and another that is run by the private sector. Due to concerns over food security, the Indian government should create some more special rules for paddy. At this point the supply chain splits between the government and the private sector. If the government is buying a regulated crop, the Food Corporation of India will transact with the Commission Agent at a regulated minimum support price. The Food Corporation of India, a government body, is by far the largest purchaser of paddy, as well as many of the other key agricultural products, which it stores and distributes to impoverished populations through the Public Distribution System.

REFERENCES

1. Bhardwaj, S. & Palaparthi, I. (2008). Factors Influencing Indian Supply Chains of fruits and Vegetables: A Literature Review. The Icfai University Journal of Supply Chain Management, Vol V, No. 3, pp. 59-68.
2. D.Nageswara Rao (2002), "A Study of Marketing of Cotton in Coastal Andhra Pradesh" Indian Journal of Marketing, Vol.XXXII, Dec. pp.13.
3. http://agmarknet.nic.in/rice-paddy-profile_copy.pdf
4. http://fciweb.nic.in/frames/about_us.htm
5. http://fciweb.nic.in/frames/PDS_link.htm
6. Lambert, D. M. and M. C. Cooper (2000) Issues in supply chain management. Industrial Marketing Management 29, pp. 65-83.
7. Piali Halder, Simayan Pati (2011) A Need For Paradigm Shift to Improve Supply Chain Management of Fruits & Vegetables in India, Asian Journal of Agriculture and Rural Development, AESS Publications, 2011, 1(1),pp.1-20.
8. Rakesh Patidar, Imtiyaz Khan & Arun Sharma(2012) Supply Chain Management: Application in Agriculture Marketing, Interscience Management Review (IMR), ISSN: 2231-1513, Volume-2, Issue- 3, 2012, pp. 53.

PERFORMANCE APPRAISAL PROCESS AT ANDHRA PRADESH STATE ROAD TRANSPORT CORPORATION (APSRTC)

RAKHEE MAIRAL RENAPURKAR
SENIOR ASST. PROFESSOR
DEPARTMENT OF MANAGEMENT
BADRUKA COLLEGE PG CENTRE
KACHIGUDA

DR. SUDHAKAR B INGLE
ASSOCIATE PROFESSOR
R.S. MUNDLE, DHARAMPEETH ARTS & COMMERCE COLLEGE
NAGPUR

ABSTRACT

Performance Appraisal is an important element of Performance management system. It's a process which can help an organization to derive the information related to performance of its individuals, which are major contributors for the achievement of organizational goals. Thus it becomes important for an organization to focus more on the Process of Performance appraisal. It utilizes effective performance evaluation techniques to analyze employee performance. With increased competition due to liberalization and with foreign investments and multinationals being welcomed in this country there is immense pressure on the Indian organizations to perform better. This pressure is for survival in some organizations and in others to excel and expands in their own expertise. The employees are very comfortable with old technology and methods, which have yielded good results in the past. The past success combined with values, experience and loyalty to the organization prevents them to accept change, in addition to these employees, there has been an entry of new generation of employees who are already to absorb modern technology. The new generation of employees question everything and ready to run the race, in some cases they want more pay than an employee does with the similar qualification working for the past decade. The current study is been taken up to analyze the process of Appraisal system its effectiveness and how it is effecting the performance of employee through the system of feedback from the appraiser or the supervisor at Andhra Pradesh State Road Transport Corporation. A sample of 100 was taken to study the topic using a well designed questionnaire.

KEYWORDS

Performance Appraisal, Individual Development, Organizational Development.

INTRODUCTION

The process of Human Resource Development (HRD) helps the employees to acquire and/or develop technical, managerial and behavioral knowledge, skills and abilities and moulds the values, beliefs and attitudes necessary to perform present and future roles. The process of performance appraisal helps the employee and the management below to know the level of the employee's performance compared to the standard/ predetermined level.

Performance appraisal is essential to understand and improve the employee's performance through HRD. In fact, performance appraisal is the basis for HRD. It was view that performance appraisal was useful to decide upon employee promotion/transfer, salary determination and the like. But the recent developments in Human Resource Management (HRM) indicate that performance appraisal is the basis for employee development. Performance appraisal indicates the level of desired performance level, level of actual performance and the gap between these two. This gap should be bridged through Human Resource development techniques like training, executive development, etc.

In other words Performance Appraisal is a process of evaluating our employee's performance of a job in terms of it's periodically. It is a powerful tool to calibrate, refine and reward the performance of the employee. It helps to analyze the employee's achievements and evaluate his/her contribution towards the achievements of the overall individual and organizational goals. By focusing the attention on performance, Performance Appraisal goes to the heart of **personnel management** and reflects the management's interest in the progress of the employees.

Dale S. Beach defines Performance Appraisal as the system of evaluation of the individual of the organization of the individual with regard to his/her performance on the job and his/her performance on the job and his/her potential for development.

Edwin B. Flippo says that Performance Appraisal is a systematic, periodic and an impartial rating of employee's excellence in matter pertaining to his/her potential for a better job.

REVIEW OF LITERATURE

Josh Bersin in his article "Time to Scrap Performance Appraisals" discussed that employees need and want regular feedback (daily, weekly), so a once-a-year review is not only too late but it's often a surprise. Regular coaching is the key to alignment and performance. Managers cannot typically "judge" an entire year of work from an individual at one time (imagine if your spouse gave you an annual review!), so the annual review is awkward and uncomfortable for both manager and employee. Manager-employee relationships are not 1:1 like they used to be. We work with many leaders and peers during the year, so one person cannot adequately rate you without lots of peer input. While some employees are a poor fit and likely are poor performers, these issues should be addressed immediately, not at the end of the year. Some companies really do have a lot of high performers, so forced ranking eliminates great people and damages the culture. People are inspired and motivated by positive, constructive feedback – and the "appraisal" process almost always works against this. The most valuable part of an appraisal is the "development planning" conversation – what can one do to improve performance and engagement – and this is often left to a small box on the review form.

Edward E Lawler III in his article Performance Appraisals Are Dead, Long Live Performance management" opined that, Performance appraisals are one of the most frequently criticized talent management practices. The criticisms range from their being an enormous waste of time to their having a destructive impact on the relationship between managers and their subordinates.

Criticizing performance appraisals has a long history. For decades, the literature on talent management has pointed out the flaws in most performance management systems and in some cases recommended completely abandoning them. The problem with abandoning them is that they are vital to effective talent management. Imagine a company doing a good job of managing its talent without gathering information about how well individuals perform their jobs, what their skills and knowledge are, and what their responsibilities and performance goals are for the future. These types of data are simply fundamental to the effective management of the talent of any organization.

A decade ago, a study made by him on performance management in over fifty firms and found that every firm had a performance management system. In some cases they were functioning reasonably well. There were, of course, organizations that did not have an effective system and were saying that they expected to

either redesign their system or cease doing performance appraisals. The latter is what you would expect organizations to do if they followed the advice of many of the critics of performance appraisals.

In his recent study to check whether organizations are doing performance appraisals in their organization. The results of the survey of one hundred relatively large U.S. corporations provide some interesting data on whether organizations are doing performance appraisals. The bottom line is that every company responded that they do have a performance management system, and only six percent said that they are considering getting rid of performance appraisals for some or all of their employees. In short, the death of performance appraisals is not occurring and is unlikely to occur. Companies reported that on average ninety-three percent of their salaried employees receive a performance appraisal, and typically they receive at least one every year. Only one company reported that they had recently stopped doing evaluations for fifty or more of their employees. The survey did find that, on the average, companies are not more satisfied with their performance management systems than they were ten years ago. However, the vast majority, about eighty-five percent, report that their system is at least moderately effective.

The obvious conclusion is that companies will continue to do performance appraisals despite their shortcomings and despite the many criticisms of them that appear in the management literature. In my opinion, organizations have no choice. Instead of wasting our time debating whether to eliminate performance appraisals, we should be talking about how to make them more effective. The key is to make them part of a complete performance management system, which includes goal setting, development, compensation actions, performance feedback and a goals-based appraisal of performance.

NEED AND IMPORTANCE OF THE STUDY

The study is been taken up to check and measure the satisfaction level of the employees from the present appraisal system. How the process provides information about the performance (ranks) based on which decision regarding salary fixation, confirmation, transfer and demotion are taken. How they convey the feedback about the level of achievement and behaviour of subordinate, which can helps to review the performance of the subordinate, rectifying deficiencies and to set new standards of work, if necessary.

OBJECTIVES OF THE STUDY

- To study the performance appraisal system followed in the organization
- To study the performance appraisal practices and to identify the important aspects influencing the performance of the employees and whether they are satisfied by performance appraisal system.
- To examine how the performance appraisal system is helpful for an individual.
- To know whether the employees are getting adequate feedback and support from their superiors.

LIMITATIONS OF THE STUDY

- As the employees of the organization were busy with their work schedule, it was difficult to collect detailed data
- Time was the major constraint to collect the data in detail.
- Survey was done with the sample size of 100, as the employees of the company work in shifts and as they are busy with their schedule
- Some were unable to understand the language in the questionnaire so they felt it difficult to answer.

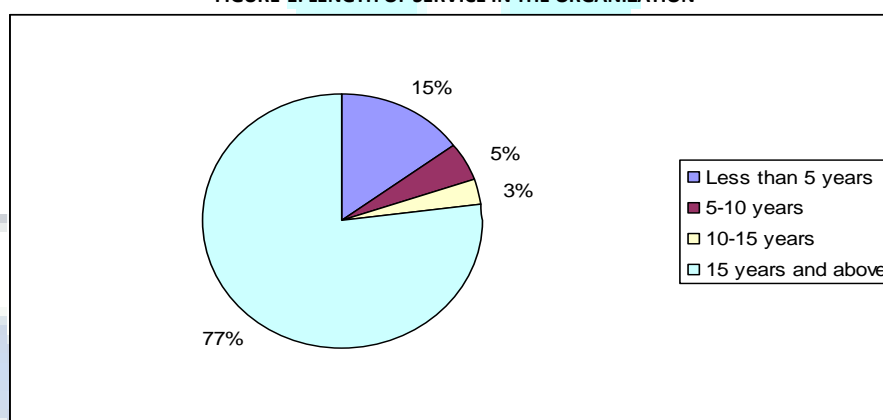
RESEARCH METHODOLOGY

The study tries to analyze the effect of various factors on the process of performance appraisal. Studies of this sort with scientific analysis in remaining aspects of HRD will certainly help the overall performance enhancement, which can be helpful to increase the productivity of the organization. Source of data is both primary and secondary data which were gathered and utilized for the study of performance appraisal system. To elicit the primary data for proposed study a well designed Questionnaire is used for respondents to strengthen the information. Secondary data is collected through books, APSRTC personnel manual, APSRTC website and performance appraisal forms of APSRTC, internet information and company reports and documents. A sample of size 100 is utilised for the study.

DATA ANALYSIS

1. Since how long have you been working in this organization?

FIGURE-1: LENGTH OF SERVICE IN THE ORGANIZATION

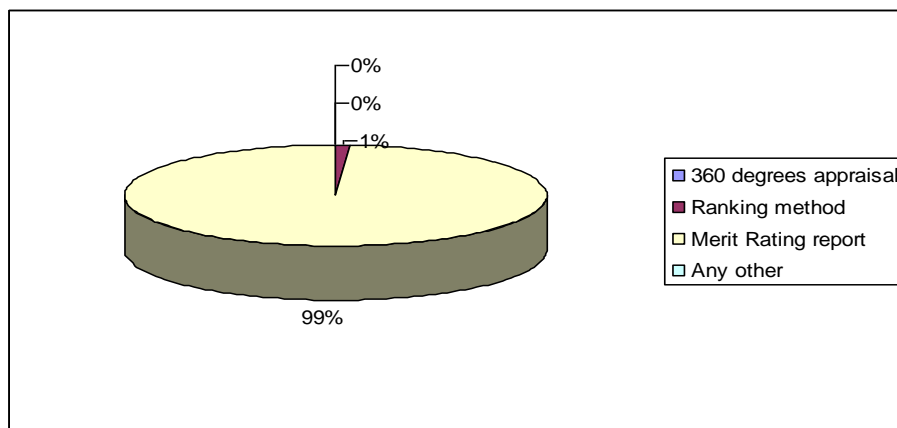


INTERPRETATION

From the above figure it is observed that 15% of employees are working with the organization for less than 5 years, where as 5% employees for 5-10 years and 3% for 10-15 years and others for more than 15 years.

2. Which method of performance appraisal system your organization is following?

FIGURE-2: PERFORMANCE APPRAISAL METHOD

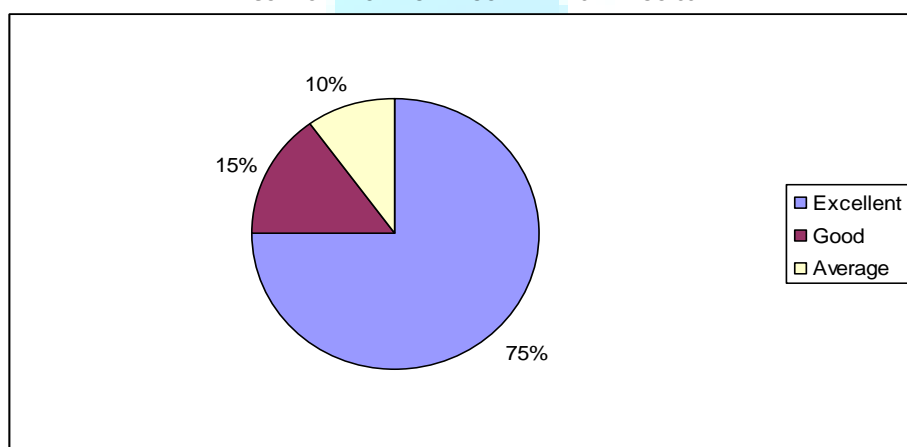


INTERPRETATION

From the above figure it is observed that 98% of the employees stated that their organization follows Merit Rating report and 1% mentioned that ranking method is adopted.

3. How do you feel about the appraisal system which is being followed?

FIGURE-3: PERCEPTION ABOUT APPRAISAL PROCESS

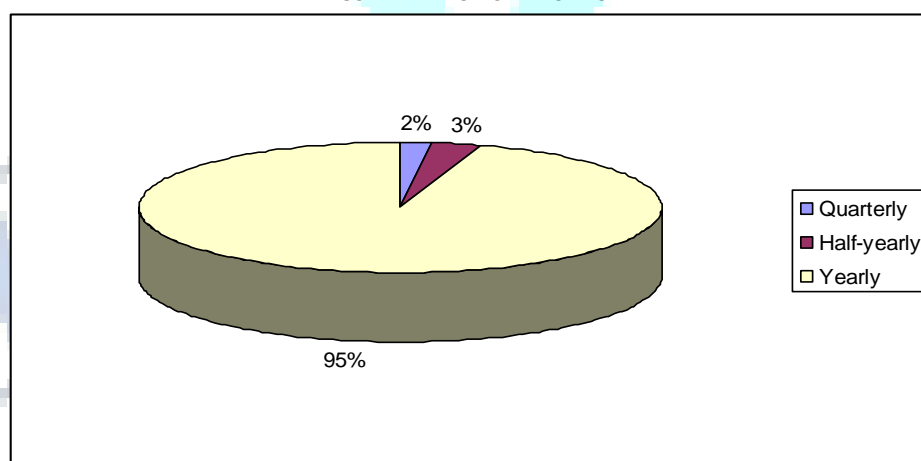


INTERPRETATION

From the above figure it is observed that 75% of employees feel that the performance appraisal system followed in their organization is excellent and 15% feel that it is good and 10% as average.

4. Performance appraisal is evaluated for every?

FIGURE-4: PERIODIC EVALUATION

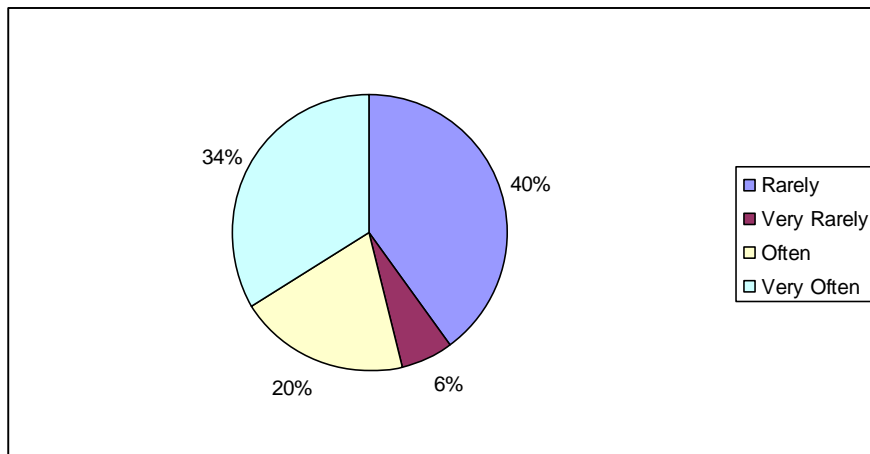


INTERPRETATION

From the above figure it observed that 95% of employees responded that their performance is evaluated Yearly, 3% as Half-yearly and 2% as Quarterly.

5. Do you feel this performance appraisal system will provide an opportunity to express your job related issues?

FIGURE-5: PERFORMANCE APPRAISAL SYSTEM AS AN OPPORTUNITY TO EXPRESS JOB RELATED ISSUES

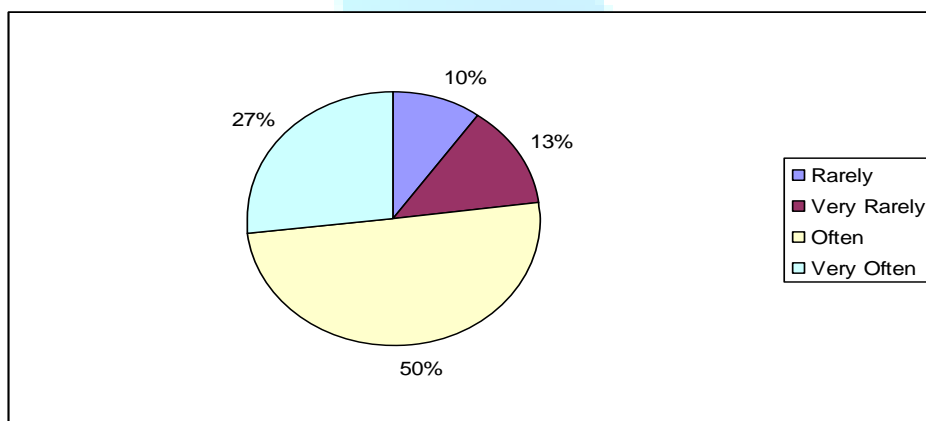


INTERPRETATION

From the above figure it is observed that 40% of the employees feel that the performance appraisal system followed in their organization rarely provides an opportunity to express their job related issues, 6% expressed as it is very rarely, 20% as often and 34% as very often. Hence we come to know that some employees feel that they are expressing their job related issues while some are not.

6. Do you get any guidance from your superiors for your growth in the organization?

FIGURE-6: SUPERIORS GUIDANCE FOR GROWTH

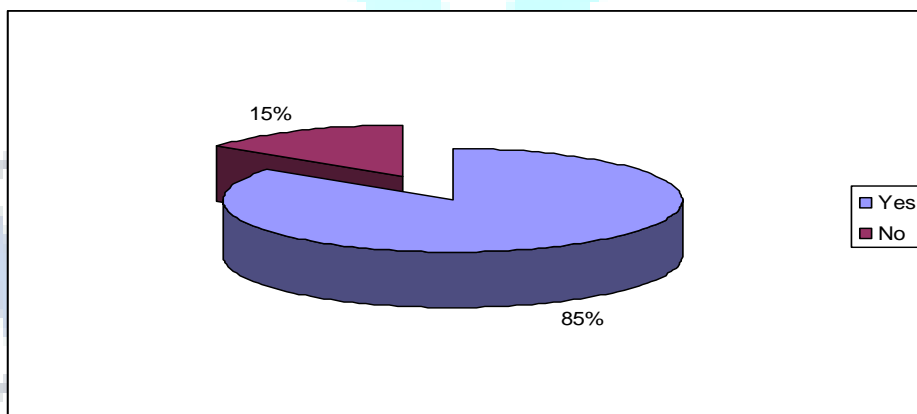


INTERPRETATION

50% of the employees responded as they are being guided often by their superiors for their growth in the organization, 27% feel often and 10% of employees feel rarely and 13% feel very rarely. Thus it means that the superiors were providing guidance for the growth of their subordinates in APSRTC.

7. Do you feel the feedback given by them is effective?

FIGURE-7: EFFECTIVENESS OF FEEDBACK

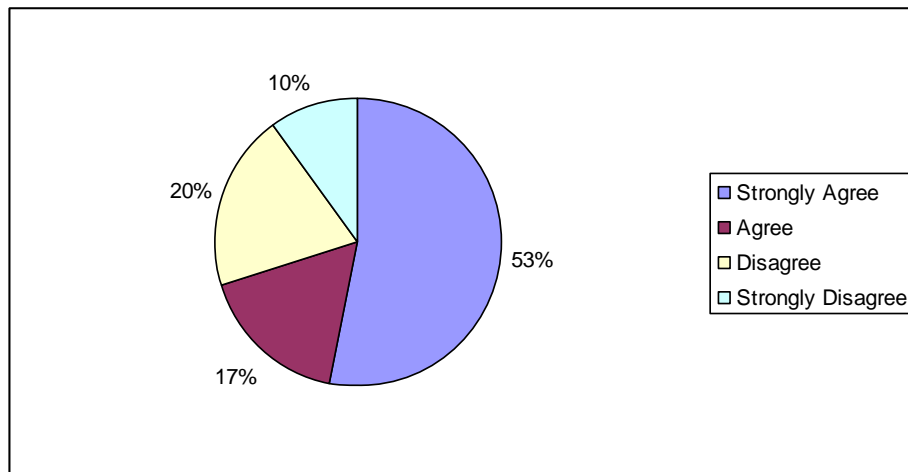


INTERPRETATION

From above chart 85% of employees feel that the feedback given by the organization is effective and rest feels its not effective. So we can understand that the feedback given is effective and is related to their performances in APSRTC.

8. Do you think performance appraisal is beneficial for organization development and individual development?

FIGURE-8: PERFORMANCE APPRAISAL HELPFUL IN INDIVIDUAL AND ORGANIZATIONAL DEVELOPMENT

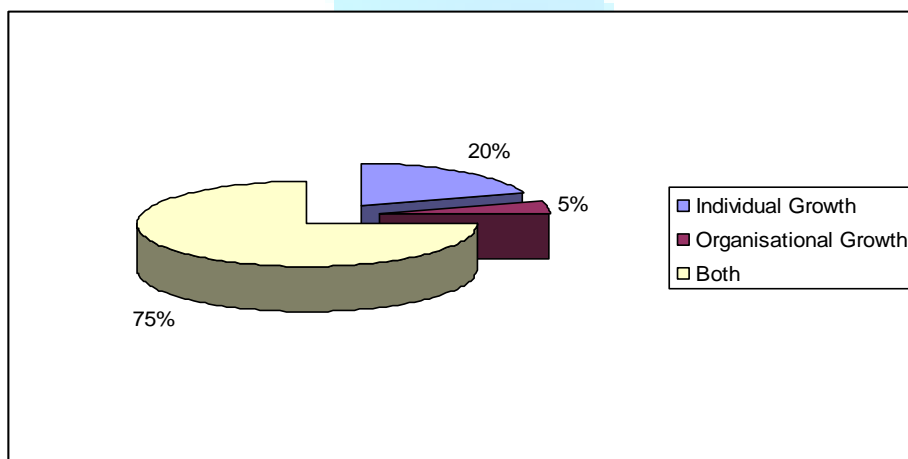


INTERPRETATION

53% of the employees strongly agree that the performance appraisal is beneficial for organization development and individual development and 17% agree, 20% disagree and 10% strongly disagree with the statement. So most of the employees accept that performance appraisal is beneficial for both individual and organization development.

9. In your opinion, what is the major criterion based on which performance appraisal should be done?

FIGURE-9: CRITERIA FOR PERFORMANCE APPRAISAL

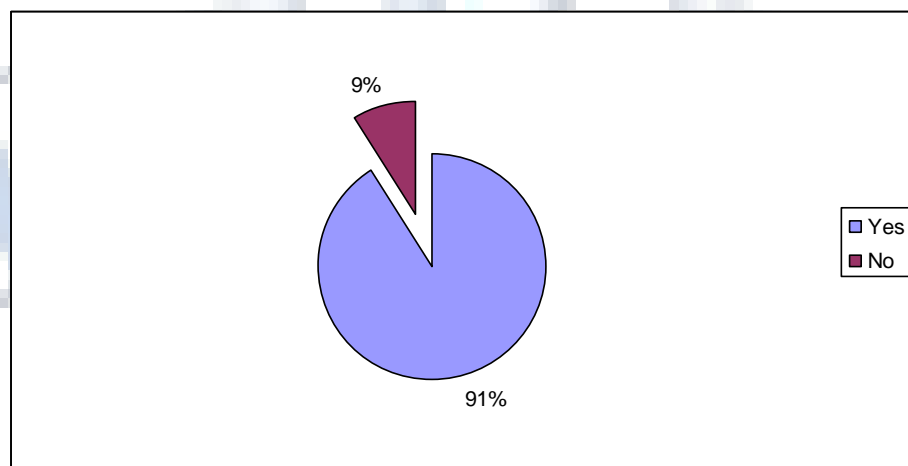


INTERPRETATION

Most of the employees want the criterion of performance appraisal to be based on both individual and organizational growth. 75% employees like it to be based on both and 20% of employees on individual growth only and 5% on organizational growth.

10. Do you think performance appraisal will help in improving the effectiveness of the employee?

FIGURE-10: PERFORMANCE APPRAISAL HELPFUL IN IMPROVING EMPLOYEE EFFECTIVENESS

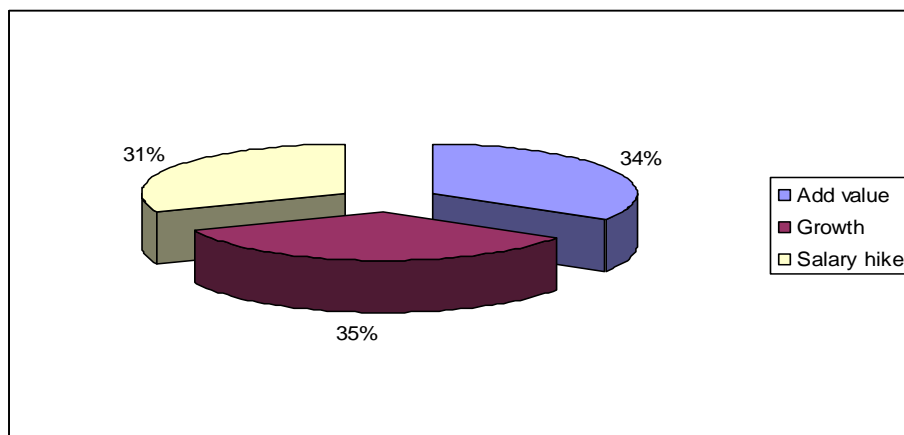


INTERPRETATION

91% of the employees think that the performance appraisal will help in improving the effectiveness of the employees and 9% feel it will not.

11. What is your personal opinion on performance appraisal?

FIGURE-11: PERSONAL OPINION ON PERFORMANCE APPRAISAL

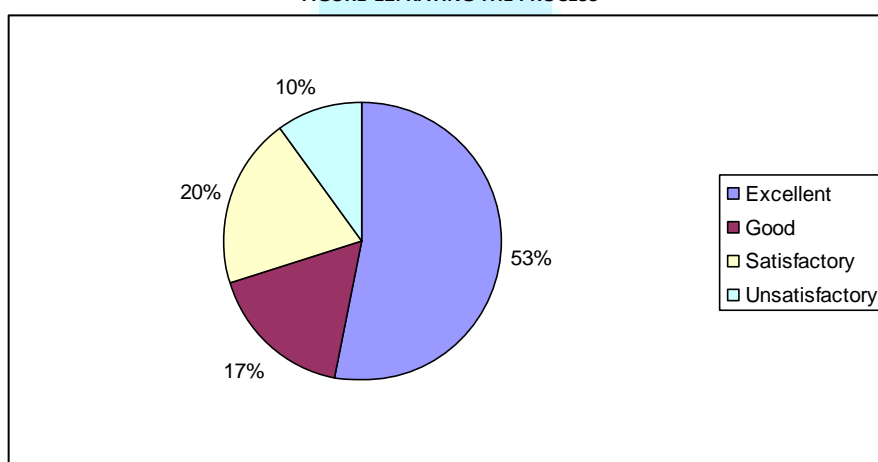


INTERPRETATION

From the above figure we understand that the personal opinion of 31% of employees about performance appraisal is that it hikes the salary and 35% feel it is for growth and 34% feels it adds value.

12. How would you rate performance appraisal system at your organization?

FIGURE-12: RATING THE PROCESS

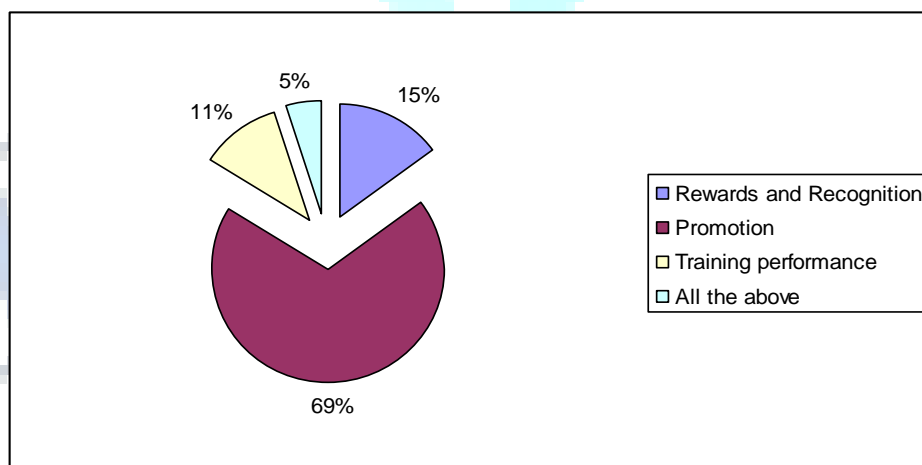


INTERPRETATION

From the above figure it is observed that 53% of employees feel that the Merit Rating report which their organisation is following is excellent, 17% feel it is good, 20% feel its satisfactory and 10% feel unsatisfactory about the rating process.

13. According to your organization performance appraisal leads to?

FIGURE-13: PERFORMANCE APPRAISAL LEADS TO

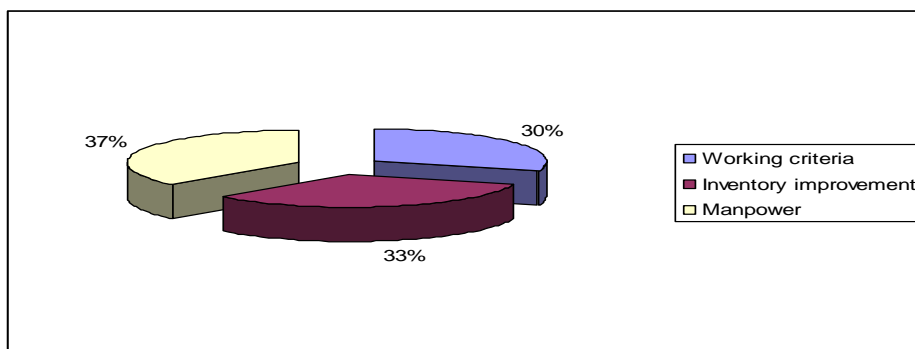


INTERPRETATION

69% of employees responded that performance appraisal leads to promotion in their organisation, 11% feel it leads to training for performance improvement, 15% feel it leads to Rewards and recognition and 5% on all.

14. How does an outgrowth of a company depend on management of Inventory, working condition and Man power?

FIGURE-14: EFFECT OF MANAGEMENT ON COMPANY GROWTH

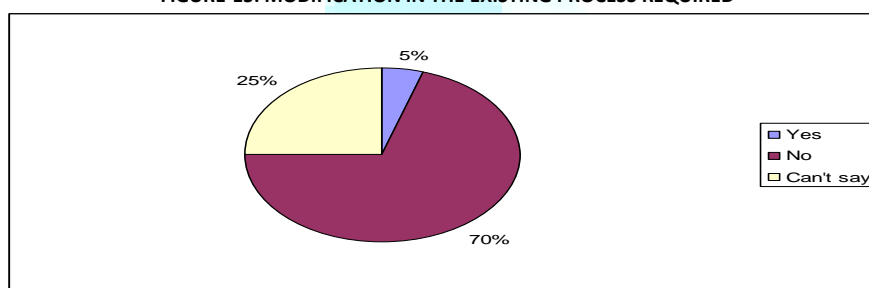


INTERPRETATION

The outgrowth of the company depends on working criteria, inventory improvement and man power. According to 37% of employees it depends on man power, 30% feel on working criteria and 33% feel on inventory improvement.

15. Do you want to add any extra feature to the existing performance appraisal system in your organization?

FIGURE-15: MODIFICATION IN THE EXISTING PROCESS REQUIRED



INTERPRETATION

From the above figure it can be understood that that 70% of the employees don't want to add any extra feature to the existing performance appraisal system, 25% can't say and 5% want to add, but they did not specified what feature to add, one employee added to have discussions along with the feed back to rectify their performances.

CONCLUSION

- Performance appraisal is an inevitable system in an organisation as it provides a base for taking up various organisation decisions which will lead to organisational growth and effectiveness.
- The emphasis of the appraisal is to have the workforce which can make more contributions and can adapt to changing situation for a more improved and efficient organisation.
- With the appraisal there will be development of necessary capabilities in the employees to perform their tasks and then creating the performance which will lead to the achievements of goals of the organisation.
- After the complete study made on the system of performance appraisal in the organization, it has been realised that performance appraisal system is better and the employees were satisfied with the appraisal system the organisation is following. Employees will get adequate feedback and they are guided by their superiors.

SUGGESTIONS

- The interpersonal relationship between the appraiser and appraise should be enhanced.
- Adequate and periodical feedback of employees performance should be framed and appraisal should be based on those individual goals.
- New skills and their implementation should be given adequate weight age.
- Make aware of appraisal in the organisation in such a way that the employees get motivated where there will be increase in pay and promotion after the appraisal.
- There are some negative marks for their bad performance from the whole weight age marks they obtained, so that their salaries will be reduced or there will be demotions, so this should be reduced or instead providing motivation classes will yield better performances.

REFERENCES

TEXT BOOKS

1. Prasad, L.M, (2005), "Human Resource Management" Jain Book Depot.
2. Rao, V.S.P,(2007) "Human Resource Management" , Excel Books
3. Rao, T.V, (2002), "Appraising and Developing Managerial Performance", Excel Books.

JOURNALS

4. APSRTC personnel manual.
5. Performance Appraisal forms of APSRTC.

WEBSITES

6. <http://www.forbes.com/sites/edwardlawler/2012/07/12/performance-appraisals-are-dead-long-live-performance-management/>
7. <http://www.forbes.com/sites/joshbersin/2013/05/06/time-to-scrap-performance-appraisals/>
8. http://www.google.co.in/?gws_rd=cr
9. <http://www.pf-appraisal.com/intro.html>
10. www.apsrtc.co.in.
11. www.citehr.com
12. www.performanceappraisal.com

DETECTION OF BRAIN TUMOR USING THRESHOLDING AND MORPHOLOGICAL OPERATIONS

SHRIJA MADHU
ASSOCIATE PROFESSOR
DEPARTMENT OF MCA

GODAVARI INSTITUTE OF ENGINEERING AND TECHNOLOGY
RAJAHMUNDRY

T.M.SIRISHA
ASST. PROFESSOR
DEPARTMENT OF MCA
GODAVARI INSTITUTE OF ENGINEERING AND TECHNOLOGY
RAJAHMUNDRY

ABSTRACT

This paper aims to locate the tumor in brain. A computer based diagnosis is suggested in order to detect the Tumor from the given Magnetic Resonance Image(MRI). Many methods are available for detection of brain tumors like watershed segmentation, gradient operators, thresholding techniques, wavelet transforms and morphological operations. In this paper for extracting the tumor region, morphological operations along with thresholding technique is applied. The proposed method is compared with existing algorithm to check the efficiency of this method. Better result is achieved by this proposed method.

KEYWORDS

benign, malignant, morphological operators, mri, thresholding.

1. INTRODUCTION

Now a days, one of the main cause for increasing mortality among children and adults is brain tumor. It has been concluded from the research of most of the developed countries that number of people suffering and dying from brain tumors has been increased to 300 per year during past few decades.

A brain tumor is an abnormal growth of cells within the brain, which can be cancerous or non-cancerous (benign). It is generally caused by abnormal and uncontrolled cell division, normally either in the brain itself, in the cranial nerves, in the brain envelopes, skull, pituitary and pineal gland, or spread from cancers primarily located in other organs (metastatic tumors). Brain tumors are of two types: primary and secondary. Primary brain tumors include any tumor that starts in the brain. Primary brain tumors can start from brain cells, the membranes around the brain, nerves, or glands. Primary brain tumors are classified as: a) benign; b) malignant.

Benign tumors can be removed, and they seldom grow back. Benign brain tumors usually have an obvious border or edge. They don't spread to other parts of the body. Malignant brain tumors are generally more serious and often are a threat to life. They are likely to grow rapidly and crowd or invade the nearby healthy brain tissue. Cancer cells may break away from malignant brain tumors and spread to other parts of the brain or to the spinal cord. They rarely spread to other parts of the body.

As brain tumor detection is a very time consuming process which is done by medical experts. So to tackle this issue many segmentation techniques are developed by the image processing experts. Many of these techniques are not properly defined rather they are ad hoc techniques. Segmentation is the process where an image is divided into the different regions on some similarity bases. Basic function of the segmentation is that we can easily extract information and different features from the images. Image segmentation plays a critical role in all advanced image analysis applications, a key purpose of segmentation into divide image into regions and objects that correspond to real world objects or areas, and the extent of subdivision depends on requirements of specific application.

There are many segmentation techniques, mostly based on similarity or discontinuity. Threshold Segmentation is a kind of similarity based segmentation. In this paper threshold segmentation along with morphological operators is used for detecting the tumor and after that area is calculated in pixels.

2. RELATED WORK

In this section, a brief review of the literature is presented. A good amount of literature related to the application of segmentation techniques for brain tumor detection is available. Tumor detection using watershed and thresholding techniques is provided in Anam Mustaqeem et al [1], Sudipta Roy et al [6] and Saptalkar et al [2]. Authors Pratibha Sharma et al [4], have presented an efficient algorithm for detecting the edges of brain tumor using watershed and morphological operators obtained through MRI scanning. The clustering technique have been comprehensively explored and used in Logeswari and Karnan [5], a clustering support come close to using a self organizing map (SOM) algorithm is projected for medical image segmentation. Segmentation using gradient operators is suggested in Nag et al [3].

3. METHODOLOGY

The proposed method uses threshold segmentation and morphological operations. The colored image is converted to gray and then using random thresholding it is converted to binary, where the tumor gets separated from other components of image due to concentration, intensity differences. Then using morphological operations like erosion and dilation, other than tumor all other components are removed. The methods imerode and imdilate of MATLAB is used for doing it and structuring element is generated using strel('disk',3). The method is divided into two algorithms one for detecting the tumor and other for calculating the area. The area is calculated in pixels.

3.1 METHODS USED

3.1.1 Threshold Segmentation: Threshold segmentation is one of the segmentation methods. Thresholding is the commonly used enhancement technique used for segmenting an image into object and background. A threshold value is computed above (or below) which pixels are considered "object" and below (or above) which "background" and eliminates unimportant shading variations. The input gray scale image is converted into a binary format. The method is based on a threshold value which will convert gray scale image into a binary image format. The main logic is the selection of a threshold value. Some common methods used under this segmentation include maximum entropy method and k-means clustering method for segmentation. We are using random thresholding technique.

3.1.2 Morphological Operations: Morphology is a technique of image processing based on shapes. The value of each pixel in the output image is based on a comparison of the corresponding pixel in the input image with its neighbors. By choosing the size and shape of the neighborhood, you can construct a morphological operation that is sensitive to specific shapes in the input image. Morphologic operations are especially suited to the processing of binary images and grayscale images.

Dilation and erosion are two fundamental morphological operations. Dilation adds pixels to the boundaries of objects in an image, while erosion removes pixels on object boundaries. Dilation is the process in which the value of the output pixel is the maximum value of all the pixels in the input pixel's neighborhood. In a binary image, if any of the pixels is set to the value 1, the output pixel is set to 1. Erosion is the process in which the value of the output pixel is the minimum value of all the pixels in the input pixel's neighborhood. In a binary image, if any of the pixels is set to 0, the output pixel is set to 0.

3.2 ALGORITHM FOR TUMOR DETECTION

Step 1: Read the image.
 Step 2: Convert image to gray.
 Step 3: Resize the image .
 Step 4: Take a random threshold value.
 Step 5: Apply random thresholding on the image.
 Step 6: Generate a structuring element using `strel('disk',3)`.
 Step 7: Using the structuring element first perform erosion using `imerode()` on the image.
 Step 8: Next perform dilation using `imdilate()` on the image.
 Step 9: Resultant image displays only the tumor.

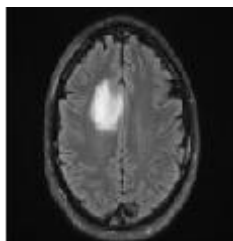
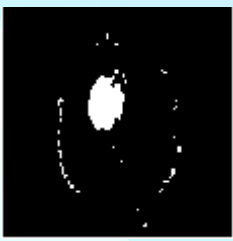

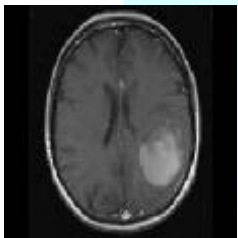
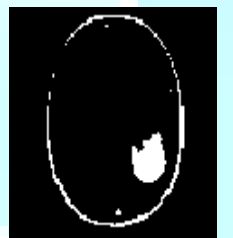

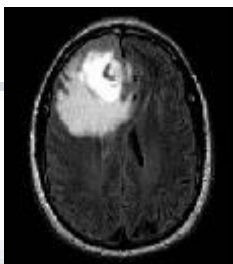

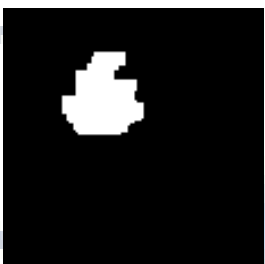
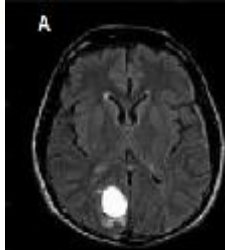
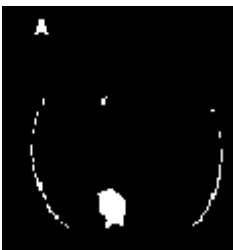

3.3 ALGORITHM FOR CALCULATION OF AREA(INPUT - THE TUMOR DETECTED IN THE ABOVE ALGORITHM)

Step 1: Read the image
 Step 2: `area=0`
 Step 3: Compare current pixel if equal to 255 then `area=area+1`
 Step 4: Repeat Step 3 till last pixel of the image.
 Step 5: Print area
 This gives the area of the tumor.

4. RESULTS

The method is applied on many images and some of them are shown in the form of a table here. The name of the image, original image, image after thresholding, the effect of morphological operation and the area in pixels is being displayed. For uniformity all images are resized to 100x100 and then area of the tumor is calculated.

TABLE 4.1 SHOWING IMAGES OF BRAIN WITH TUMOR ALONG WITH AREA IN PIXELS

IMAGE NAME	ORIGINAL IMAGE	AFTER THRESHOLD	MORPHOLOGICAL OUTPUT	AREA IN PIXELS
IM1				250
IM2				228
IM3				670
IM4				120

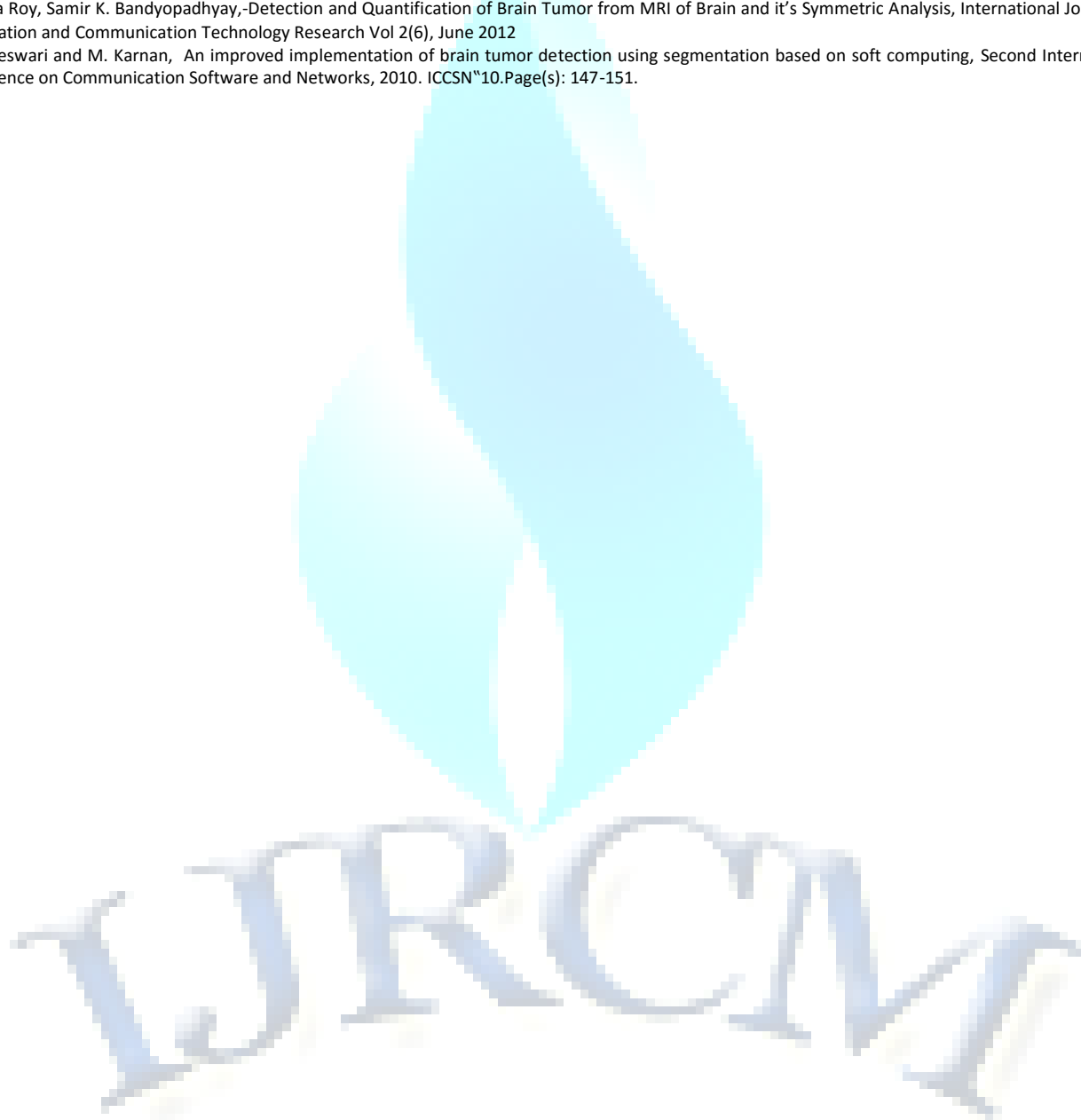
5. CONCLUSION

This work was done to detect brain tumor using medical imaging techniques. The technique used was segmentation, which is done using a method based on threshold segmentation and morphological operations. The proposed method was experimented with MRI scanned images of human brains for locating tumor in the images. Human brains MRI images were taken, converted to gray images and then using thresholding converted to binary, highlighting the tumor. After this morphological operations were applied to get the tumor separated from rest of the components of the image, then area of the tumor in pixels was calculated. The proposed method has given efficient end results.

Future work is to extend the proposed method for color based segmentation and 3D images.

REFERENCES

1. Anam Mustaqeem, Ali Javed and Tehseen Fatima, "An Efficient Brain tumour Detection Algorithm using Watershed and Thresholding based segmentation", International Journal of Image, Graphics and Signal Processing (IJIGSP), Vol. 4, No.10, 2012, pp.34-39.
2. B.K.Saptalkar and H.Rajeshwari – Segmentation based detection of Brain Tumor, International Journal of Computer and Electronics Research, Volume 2, Issue 1, February 2013
3. Manas Kumar Nag, Richa Sahay and J.B. Jeeva-Segmentation of Tumor from MRI Images, Open Access Scientific Reports, Vol 1, Issue 12, 2012
4. Pratibha Sharma, Sangam Choudhary and Manoj Diwakar, Dept. of Computer Science, MITS, Lakshmangarh, "Application of Edge Detection for Brain Tumour Detection", International Journal of Computer Applications (0975 – 8887), Volume 58– No.16, November 2012-21.
5. Sudipta Roy, Samir K. Bandyopadhyay, -Detection and Quantification of Brain Tumor from MRI of Brain and its Symmetric Analysis, International Journal of Information and Communication Technology Research Vol 2(6), June 2012
6. T. Logeswari and M. Karnan, An improved implementation of brain tumor detection using segmentation based on soft computing, Second International Conference on Communication Software and Networks, 2010. ICCSN'10. Page(s): 147-151.



ANTECEDENTS OF CUSTOMER RELATIONSHIP MANAGEMENT AND ITS IMPACT ON CUSTOMER LOYALTY IN BANKING SECTOR

V.KRISHNAMOORTHY

ASST. PROFESSOR

**DEPARTMENT OF MANAGEMENT STUDIES
KONGU ENGINEERING COLLEGE (AUTONOMOUS)
PERUNDURAI**

DR. R. SRINIVASAN

ASSOCIATE PROFESSOR

**PG & RESEARCH DEPARTMENT OF CORPORATE SECRETARYSHIP
BHARATHIDASAN GOVERNMENT COLLEGE FOR WOMEN
PONDICHERRY**

ABSTRACT

The purpose of this study is to examine the impact of various antecedents of customer relationship management and its impact on customer loyalty. The target population of the study is commercial bank customers of Theni Taluk in Theni District, Tamilnadu. The questionnaire method was followed to collect data from the customers. The statistical tools like Cronbach Alpha, Factor Analysis and Multiple Regression Analysis was used in this study. The result revealed that there is a significant impact on service quality, communication, commitment aspects of customer relationship management and customer loyalty. The study noted that there is no significant impact on customer satisfaction and conflict handling aspects of customer relationship management with customer loyalty. The research study findings have substantial implications for bank managers. The identification of various antecedents of customer relationship management helps the bank manager to design an effective CRM strategy for maintaining relationship with customers.

KEYWORDS

Commitment, Conflict Handling, Customer Relationship Management, Loyalty, Service Quality.

INTRODUCTION

eregulation, information technology and ongoing globalization have changed the competitive landscape in the service sector, banking sector is no exception (Christer Standberg et al., 2012) As a result interbank competition has intensified (Gan et al., 2006) and banks have adapted their marketing to this changing reality (Dibb and Meadows, 2001; Arasli et al., 2005 ; Tsoukatos and Mastrojianni, 2010) To achieve success in the complex and competitive market researchers have suggested a number of key areas that need to be considered and one of these key areas is leveraging firm customer relationship (Nelson oly Ndubisi et al., 2007) Relationship marketing is considered to be accepted wholeheartedly by marketing practioners and scholars (Barnes, 1995). Banks have recognized the importance of customer relationship management. Retaining old customer also costs less than acquiring new customers. The company knows the customer's needs and wants, (Davidow and Uttal, 1989) and old customers also pay less attention to competing brands and advertising, are less price sensitive and create favorable words of mouth (Desai and Mahajan, 1998). Several prominent authors (Berry et al .,1983; Gummerson 1990; Gronroos, 1996; Wang et al., 2004, Sin et al., 2005, Ndubisi et al., 2007, Chahal and Kumari, 2010; Lo et al.,2010; Basar et al., 2011, Momoun et al., 2011) have identified various constructs in the arena of customer relationship management relating to several industries. Amazingly, there is still much debate on what constitutes CRM (Nevin, 1995, Parvatiyar and Sheth, 2001; Sin et al., 2005; Agariya & Singh, 2012). Relationship marketing aims to establish, maintain and enhance relationships with customers and other partners, at a profit, so that the objectives of the parties involved are met (Gronroos, 1994). The term relationship marketing and customer relationship management are almost used interchangeably in many of the late works of prominent authors (Arun Kumar Agariya, 2012) and for developing a comprehensive list of CRM practices, there is an essential requirement for designation of important constructs of customer relationship management(CRM). Therefore relationship marketing as an emerging discipline is in need for further theoretical development (Gummesson, 2002) .. The cost of retaining an existing customer is lower than that of finding new customers (Lewins, 1987, Desatnick, 1988, Stone et al.,1996; Bitran and Mondschein, 1997; Chattopadhyah, 2001; Massey et al.,2001) .Customer relationship management (CRM) are one of the tools for retaining customers (Debjain Sahoo, 2011). Service Quality was one of the most important issues in maintaining a sustainable relationship with the customers (Peng & Wang, 2006). With this background, the present study examines antecedents of various factors in customer relationship management in banking sector and impact on customer loyalty.

REVIEW OF LITERATURE

Several studies addressed various facets of CRM and its impact on Loyalty. Arun Kumar Agariya and Deepali Singh (2012) Developed CRM scale development and validation in Indian Banking Sector. They identified the organization structure and customer support service quality, trust, technology, Perrsonalization and market orientation were critical factors of CRM. Even though marketing researcher have identified various factors for retaining customers, very important are customer satisfaction, trust, commitment (Morgan and Hunt, 1994) Loyalty (Berry and Parasuraman, 1991) and Service Qualiity (Guo et al, 2008). Nelson oly Ndubisi (2007) identified relationship quality antecedents and identified that significant positive relationship between trust, commitment and conflict handling on relationship quality. Saravana Kumar and Senthil Kumar examined the impact of customer relationship marketing strategy and customer loyalty. The study revealed that customer relationship marketing strategy has a positive impact on customer loyalty in banking sector. A study conducted by Gurjeet Kaur et al .,(2011) revealed that relationships, satisfaction emerged as the strongest factors which influence switching barriers of customers. Rust and Zahorik (1993) Opined that the retention rates are driven by customer satisfaction, which in turn increase market share. Numerous studies have examined the importance for a business of retaining its customers in great depth, and suggesting that retention leads to increased market share and generate profits (Fornell, 1992: Buttle, 1996: Rust et al ., 1996: Hillier, 1999).

Customer satisfaction and loyalty are highly correlated (Athanasopoulos et al.,2001: Hallowell, 1996: Silvestro and Cross, 2000) .Several studies have established the positive links between loyalty and firm profitability. (Anderson et al., 1994: Hallowell, 1996: Reichheld, 1996: Silvestro and Cross, 2000). Customer Satisfaction with a company's products (or) services is the key to customer retention, the company's success and long term competitiveness. (Henning – Thureau & Klee, 1997) customer loyalty has been considered as an important source of long term business success (Rust and Zahorik, 1993) and Building a relationship with a customer is a good way to retain loyal customers in the long run (Sheaves and Barnes, 1996).

Customer loyalty, a key mediating variable in explaining customer retention (Pritchard and Howard, 1997) and loyal customers are less likely to switch to a competitor due to price inducement and these customers make more purchases as compared to less loyal customers (Baldinger and Robinson, 1996). Core Service, human element, non-human element, Tangibles and social responsibility were the service quality dimensions identified by Suresh Chandar et al., (2001).

Several studies have found that improved service quality increased customer satisfaction in the Indian Banking sector (Lenka et al., 2009; Bedi, 2010; Kaura and Datta, 2012). A study conducted by Boulding et al., (1993) found a positive relationship between service qualities and repurchase intentions and willingness to recommend. A study conducted by Parasuraman et al., (1988) found that service quality is an antecedent of customer satisfaction; Numerous studies have shown that improved service quality will result in more customer satisfaction (Bitner et al, 1994; Cronin & Taylor, 1992). Even though several studies have been conducted related to the antecedents of customer relationship and its impact on customer loyalty in banking sector, most of the studies either been conducted in metropolitan cities (or) western countries. Therefore the researcher intends to fill the gap by studying antecedents of customer relationship and impact of customer loyalty in the Theni Taluk of Theni district.

CONSTRUCT DEVELOPMENT

The variables relating to the present studying is drawn from different source .communication, commitment and conflict handling are drawn from Morgan and Hunt (1994) and variables relating to service quality which consists of five variables are drawn from the model developed by Parasuraman et al .,(1988) and related students of Parasuraman et al .,(1985). The variables relating to customer satisfaction which consists of two statements were drawn from Chrchill and Surprenant (1982) and Ndubisi (2003).

RESEARCH METHODOLOGY

The target population of the present study is commercial bank customer in the Theni Taluk of Theni District. In Theni Taluk 19 public sector banks and 9 private sector banks are there out of 28 banks, twenty customers are drawn as a sample customer with the help of bank managers. While selecting customers, the following criteria have been adapted.

- ❖ The customer should have an account with a bank for a period of at least two years.
- ❖ The minimum balance of any account should be at least Rs. 1,00,000/-

The total sample size comes to 560 customers. Before collecting data pilot study was conducted. Based on the pilot study, suitable modification has been made in the questionnaire. The researcher used questionnaire method for collecting data. The researcher obtained 352 filled questionnaires out of 352 filled questionnaires, 34 questionnaires were dropped on account of incomplete information in the questionnaire. The researcher used 318 questionnaires for further analysis. Therefore the total sample of the present study is 318 respondents and the response rate was 56.78 percent . The data were collected from the period of Jan 2013 to April 2013. The questionnaire consists of two parts. The first part of the questionnaire consist of the demographic profile of the respondents and the second part of the questionnaire consist of factors leading to customer relationship management and loyalty. The respondents were asked to rate the variable in the questionnaire at five point scale. The scores awarded to the response of each variable were Very High, High, Moderate, Low, Very Low. With this back ground, the researcher intend to study the antecedents of customer relationship and its impact on customer loyalty in Banking Secor.

OBJECTIVES OF THE STUDY

This study is undertaken with the following objectives.

1. To identify the various antecedents of customer relationship management in the banking sector.
2. To examine the impact of different antecedents of customers relationship management and customer loyalty.

INSTRUMENT VALIDITY

The internal consistency of the instrument was tested with reliability analysis. The reliability test was to run to determine how strongly the attributes were related to each other (Hair et al., 2003).Reliability estimates (Cronbach's Alpha) for the construct's dimensions as follows. Communication (0.787), Conflict handling (0.783), Service Quality (0.711), Commitment (0.724) and Satisfaction (0.702), suggesting a high degree of reliability. The results very well exceed 0.60 (hair et al., 1998) Lower limit of acceptability.

RESULTS AND DISCUSSION

TABLE NO. 1: PROFILE OF THE SAMPLE RESPONDENTS

Variables	Respondents (in Numbers)	Respondents (In Percentage)
Gender:		
Male	210	66.04
Female	108	33.96
Age		
Less than 25	98	30.8
25.1 to 35	112	35.2
35.1 to 45	69	21.7
45.1 to 55	39	12.3
Occupation		
Government	75	23.6
Private	79	24.8
Business	112	35.2
Professionals	52	16.4
Education		
Up to +2	74	23.3
UG	102	32.1
PG	95	29.9
Professionals	47	14.8
Family Type		
Nuclear	279	87.7
Joint Family	39	12.3
Monthly Income		
Below Rs. 20,000	27	8.5
Rs. 20,001 to Rs. 30,000	95	29.9
Rs. 30,001 to Rs. 40,000	66	20.8
Rs. 40,001 to Rs. 50,000	91	28.6
Above Rs. 50,001	39	12.3
Account Type		
Savings Bank	138	42.37
Current Account	81	25.47
Fixed Deposit	99	31.16

Table No: 1 presents the demographic profile of the respondents. As far as gender is concerned 66.04 percent of the respondents were male, and 35.2 percent were in the age group of 25.1 to 35, 35.2 percent of respondents were business man, 32.1 percent of respondents had undergraduate qualification, 87.7 percent of the respondents living in Nuclear family, 29.9 percent of respondents earned monthly income between Rs. 20,001 to Rs. 30,000 and 43.37 percent of respondents had saving bank account.

EXPLORATORY FACTOR ANALYSIS

To explain the variables of the antecedents of customer relationship management, the factor analysis was performed. Before administering the factor analysis the data validity for factor analysis is tested with the help of Kaiser-Mayer-Olkin (KMO) measures of sampling adequacy and Bartlett's test of Sphericity. The KMO measures of sampling adequacy (0.868) and Zero present level of significance of Chi-Square satisfy the condition the conditions of validity of data for factor analysis. The factor analysis results in five important factors. The variables relating to antecedents of service quality are exhibited in Table No: 2

TABLE NO. 2: ANTECEDENTS OF CUSTOMER RELATIONSHIP MANAGEMENT FACTORS

S.No	Factors	Number of Variables Included	Reliability coefficient	Eigen Value	Percentage of Variance Explained	Cumulative Percent of Variable Explained
1	Communication	4	0.787	5.914	32.857	32.857
2	Conflict Handling	4	0.783	2.295	12.752	45.609
3	Service Quality	5	0.711	1.243	6.906	52.515
4	Commitment	3	0.724	1.061	5.893	58.408
5	Satisfaction	2	0.702	1.013	5.631	64.038
Total		18				
KMO Measures of Sampling Adequacy: 0.749				Bartlett's Test Sphericity Chi-Square Value: 1.889E3		

The narrated five antecedents of customer relationship management factors (CRMF) explained the variables in CRMF to the extent of 64.038 percent. The most important CRMF factor is communication since its respective Eigen Value is 5.914. It consists of four CRMF variables with the reliability coefficient of 0.787. Since the second and third important factors are conflict handling and service quality since their Eigen Values are 2.295 and 1.243. The variables explained by these factors are 12.752 and 6.906 percent respectively. The commitment consists of three ACR variables with reliability co-efficient of 0.724. The next important CRMF factor is satisfaction since its respective Eigenvalues are 1.013, it consists of two variables with the reliability co-efficient of 0.702.

MULTIPLE REGRESSION

In order to measure the impact of different antecedents of customer relationship and customer loyalty, multiple regression analysis has been administered. Customer loyalty was used as a dependent variable whereas the independent variables were communication, conflict handling, service quality, commitment and satisfaction.

TABLE NO: 3 CONTRIBUTION OF VARIABLES IN THE DIMENSIONS OF SERVICE QUALITY DEPENDENT VARIABLE CUSTOMER LOYALTY SCORE (Y)

Independent Variable	Understandized Co-efficient	Standard Error	Standardized Coefficient	t-Value	Significance
			Beta		
Constant	3.903	0.547		7.130	0.000
Employees Personal Relations (x_1)	1.952	0.365	1.213	5.355	0.000**
Customer's Best Interest at Heart (x_2)	1.641	0.342	0.903	4.802	0.000**
Consistency of Service (x_3)	1.329	0.341	1.078	3.902	0.000**
Employees Interest (x_4)	0.895	0.359	0.658	2.491	0.014
Confidence and Safety (x_5)	0.385	0.149	0.267	2.588	0.11
R^2	0.463				
Adjusted R^2	0.419				
F	8.226				

**1 % Level of significance.

$$Y = 3.903 + 1.952 X_1 + 1.641 X_2 + 1.329 X_3 + 0.895 X_4 + 0.385 X_5$$

The results exhibit that there is a strong and significant relationship between service quality of Customer relationship management and customer loyalty ($F = 8.226$, F statistic < 0.00) The R^2 value = 0.463 revealed that the independent variables explained 46.3 percent of the variance in customer loyalty with an adjusted R^2 of 41.9 percent. Among the independent variables, Employees personal relation was found to be important determinants of customer loyalty ($\beta = 1.213$, $t = 5.355$, P 0.000 < 0.05). similarly this was followed by customer's best interest at heart ($\beta = 0.903$, $t = 4.802$, P 0.000 < 0.05). In addition to this consistency of service was found to be key determinants of customer loyalty ($\beta = 1.078$, $t = 3.902$, P 0.000 < 0.05). The employee behavior, and confidence and safety factor is not statistically significant in determining customer loyalty since their respective ($\beta = 0.658$, $t = 2.491$, P 0.000 > 0.05 and $\beta = 0.267$, $t = 2.588$, P 0.000 > 0.05).

TABLE NO: 4 CONTRIBUTION OF VARIABLES IN THE DIMENSIONS OF COMMUNICATION DEPENDENT VARIABLE: CUSTOMER LOYALTY SCORE (Y)

Independent Variable	Understandized Co-efficient	Standard Error	Standardized Co-efficient	t-Value	Significance
			Beta		
Constant	3.253	0.469		6.939	0.000
Bank Provides timely and trustworthy information (x_1)	0.658	0.096	0.622	6.853	0.000**
Bank provides information if there is any service(x_2)	0.637	0.091	0.573	7.013	0.000**
Bank fulfills its promises (x_3)	0.727	0.112	0.528	6.463	0.000**
Information is provided by the bank is accurate (x_4)	0.125	0.107	0.121	1.163	0.247
R^2	0.591				
Adjusted R^2	0.577				
F Statistic	41.577				

** significant at 1% level.

$$Y = 3.253 + 0.658 X_1 + 0.637 X_2 + 0.727 X_3 + 0.125 X_4$$

The result clearly revealed that there is a significant relationship between communication aspects of customer relationship management and customer loyalty ($F = 41.577$, F Statistic < 0.00) The R^2 value = 0.591 revealed that independent variables explained 59.7 of the variance in customer loyalty with an adjusted R^2 of 57.7. Among the independent variables, bank provides timely and trustworthy information has a strong impact on customer loyalty ($\beta = 0.622$, $t = 6.853$, P < 0.05) This was followed by bank provided information if there is any service ($\beta = 0.573$, $t = 7.013$, P < 0.05), bank fulfill its promises ($\beta = 0.528$, $t = 6.463$, P < 0.05) The information provided by bank is accurate ($\beta = 0.121$, $t = 1.163$, $P = 0.247$ > 0.05) but this factor is not statistically significant in determining customer loyalty.

TABLE NO: 5 CONTRIBUTION OF VARIABLES IN THE DIMENSIONS OF COMMITMENT DEPENDENT VARIABLE: CUSTOMER LOYALTY SCORE (Y)

Independent Variable	Understandized Co-efficient	Standard Error	Standerdadized Coefficient	t-Value	Significance
			Beta		
Constant	2.589	0.465		5.569	0.000
Bank offers personalized services to meet customer needs	0.661	0.090	0.621	7.334	0.000**
The bank is flexible when its services are changed	0.457	0.095	0.451	4.793	0.000**
The bank is flexible in serving my needs	0.536	0.112	0.407	4.803	0.000**
R ²	0.561				
Adjusted R	0.545				
F	36.706				0.000

**Significant at 1 percent level

$$Y = 2.589 + 0.661 X_1 + 0.457 X_2 + 0.536 X_3$$

The result of the multiple regression analysis for commitment is summarized in Table No: 5 the result clearly revealed that there is a significant relationship between conflict handling aspects of customer relationship management and customer loyalty ($F = 36.706$, F Statistic < 0.00) The R^2 value 0.561 revealed that independent variables explained 56.1 percent of the customer loyalty with an adjusted R^2 of 54.5. Among the independent variable, bank offers personalized services to meet customer needs was found to be important determinants of customer loyalty ($\beta = 0.621$, $t = 7.334$, $P = 0.000 < 0.05$) Similarly, this was followed by bank is flexible when its services are changed ($\beta = 0.451$, $t = 4.793$, $P = 0.000 < 0.05$) and bank is flexible in serving my needs ($\beta = 0.407$, $t = 4.803$, $P = 0.000 < 0.05$).

CONCLUSION

In conclusion, this research identified five key dimensions of various antecedents of customer relationship management. They are communication, conflict handling, service quality, commitment and satisfaction. The aim of this study was examining the impact of different dimensions of customer relationship management and loyalty. In order to assess the impact of different antecedents of customer relationship management and customer loyalty, multiple regressions were used. From this study, it was found that there is a significant impact on service quality, communication, commitment aspects of customer relationship management and customer loyalty. The study found that there is no significant impact on customer satisfaction and conflict handling aspects of customer relationship management. Therefore managers and marketers in banking sector in particular, other service sector in general should enhance the commitment, communication and enhance service quality dimensions of customer relationship which may lead to customer loyalty.

DIRECTION FOR FURTHER RESEARCH

This study examined various antecedents of customer relationship and its impact on customer loyalty. This study was carried out only in the Theni Taluk of Theni District. The same work can be conducted in other regions of the country. Furthermore, this study can be extended by comparing various antecedents of public sector banks, and private sector banks and foreign banks. Similarly this research can be extended to other industries as well. Another scope for future research is to include a number of antecedents of customer relationship variables not used in the present study.

MANAGERIAL IMPLICATIONS

The research study findings have significant implications for bank managers. The study identified various antecedents of customer relationship management in the banking sector and this can be implemented to enhance the relationship with customers. The five antecedents namely, Communication, Conflict Handling, Service Quality, Commitment, Satisfaction. The identification of the various antecedents of customer relationship management helps the bank manager to design an effective CRM strategy for maintaining relationship with customers. Therefore bank managers and top management of the bank should focus on these antecedents to improve the relationship with the customers. The findings of the study also reveal that service quality, communication, commitment has an impact on customer loyalty. This will help bank managers ascertain priorities in implementing various CRM strategies.

REFERENCES

- Agariya, A.K and Singh, D (2012 a), "Customer Relationship Management Index Development & Validation in Indian Banking Sector", International Journal of Management, 3 (2), 10-32.
- Anderson, E.W, Fornell, C and Lehmann, D.R (1994), "Customer Satisfaction, Market Share and Profitability: Findings from Sweden", Journal of Marketing, Vol.58, No.3, PP 53-66.
- Arasli, H Mehtap – Smadi, S and Katircioglu, S.T (2005), "Customer Service Quality in the Greek Cypriot Banking Industry", Managing Service Quality, Vol.15, NO.1, PP 41-5.
- Arun Kumar Agaria and Deepali Singh (2012), "CRM Scale Development and Validation in Indian banking Sector", Journal of Internet banking and Commerce, Vol.17, No.1, PP 1-12.
- Athanassopoulos, A, Gounaris, S and Strathakopoulos, R (2001), "Behavioral Responses to Customer Satisfaction: An Empirical Study", European Journal of Marketing, Vol.35, No.5/6, PP 687-707.
- Baldinger, A.L and Robinson, J (1996), "Brand Loyalty: The link between attitude and behavior", Journal of Advertising research, Vol.36, No.6, PP 22-34.
- Barnes, J (1995), "Establishing relationships getting closer to the customer may be more difficult than you think", Irish Marketing Review, Vol. 8, PP 107-16.
- Basar oztaysi, Selime Sezgin and Ahmet Fahri Ozok (2011), "A Measurement tool for Customer Relationship Management processes", Industrial Management and Data System, 111 (6), 943-960.
- Bedi, M (2010), "An integrated frame work for service quality, Customer satisfaction and behavioral responses in Indian banking Industry - a comparison of public and private sector banks", Journal of services research, Vol.10, No.1, PP 157-72.
- Berry, L.L and Parasuraman, A (1991), "Marketing Services: Competing Through Quality", The Free Press, New York. NY.
- Berry, L.L. Shostack, G.L and Upah, G.D (Eds) (1983), "Emerging Perceptions on Service Marketing", American marketing Association, Chicago. IL
- Bitner, M.J Booms, B.H and Mohr, L.A (1994), "Critical Service Encounters: The Employee's View point", Journal of Marketing, 58, 4: 95-106.
- Bitran, G.R and Mond Schein, S.V (1997). "A Comparative Analysis of Decision Making Procedures in the catalog sales industry", European management Journal, Vol.15, No.2, PP 105-16.
- Boulding, W, Karla, A Staelin, R and Zeithaml, V.A (1993), "A dynamic process model of service quality: From expectations to behavioral intentions", Journal of marketing research, 30 (February), 7-27.
- Buttle, F (1996), "Relationship Marketing", Buttle, F (Ed), Relationship Marketing: Theory and Practice, Paul Chapman Publishing, London, PP 1-16.
- Chahal, H. and Kumari, N; (2011), "Evaluating Customer Relationship Dynamics in Healthcare Sector through Indoor patient's Judgement", "Management Research Review, 34 (6), 626-648.
- Chattopadhyay, S.P. (2001), "Relationship Marketing in an enterprises resources planning environment", marketing Intelligence and Planning, Vol.19, No.2, PP 136-9.
- Christer Strandberg, olofwahlberg and Peterohman (2012), "Challenges in servicing the mass affluent segment; bank customer perception of service quality", Managing Service Quality, Vol.22, No.4, 2012, PP .359-385.

19. Churchill, G.A and Surprenant, C (1982), "An Investigation into the determinants of customer satisfaction", *Journal on marketing research*, Vol.19, No.4, PP 491-504.
20. Cronin, J.J and Taylor, S.A (1992), "Measuring Service Quality: A re-examination and extension", *Journal of marketing*, Vol.56, NO.3, PP 55-68.
21. Davidow, W.H and Uttal, B (1989), "Total Customer Service: The Ultimate Weapon", Harper and Row, Newyork, NY.
22. Debjani Sahoo, (2011), "Integrating Customer relationship Management in Hotel Operations: A comparative Study", *Vilakshan XIMB Journal of Management*, PP No. 58-70.
23. Desai, K.K and Mahajan, V. (1998), "Strategic Role of affect-based attitudes in the acquisition, development and retention of customers", *Journal of Business Research*, Vol.42, July PP 309-24.
24. Desatnick, R.L (1988), "Managing to Keep the Customer", Houghton Mif in Boston, MA.
25. Dibb.S and Meadows, M (2001), "The application of a relationship marketing perspective in retail banking", *The Service Industries Journal*, Vol..21, No.1, PP.169 – 94.
26. Fornell, C (1992), "A National Satisfaction Barometer: The Swedish Experience", *Journal of Marketing*, Vol.56, No.1, PP 1-21.
27. Gronroos, C.(1994), "From marketing mix to relationship marketing: Towards a paradigm shift in Marketing", *management Desicions*, Vol.32, No.2, PP 4-20.
28. Gronroos, C.(1996), "relationship marketing: Strategic and Tactical Implications", *Management Decision*, 34 (3) 5-15.
29. Gummesson, E (2002), "Total relationship Marketing", 2nd Edition, Butter Worth – Heinmann, Oxford.
30. Gummesson, E. (1990), "The part-time marketer, Centre for Service research", Karlstad, Sweden.
31. Guo, X, Duff, A and hair, M (2008), "Service Quality Measurement in the Chinese Corporate Banking Market", *International Journal of bank marketing*, Vol.26, No.5, PP 305-27.
32. Gurjeet kaur, R.D. Sharma and Neha Mahajan, "Exploring Customer Switching intentions through relationship marketing paradigm", *International Journal of bank marketing*, Vol.30, Issue A, PP 280-302.
33. Hair, J.F, Anderson, R.E, Tatham, R.L and Black, W.C (2003), "Multivariate Data Analysis, Person Education", New Delhi.
34. Hair, J.F. Jr, Anderson, R.E, Tatham, R.L and Black, W.C (1988), "Multivariable Data Analysis", Prentice hall, Upper Saddle River, NJ.
35. Hallowell, R (1996), "The Relationships of Customer Satisfaction, Customer Loyalty and Profitability: an empirical Study", *International Journal of Service Industry Management*, Vol.7, No.4, PP 27-42.
36. Hallowell, R (1996), "The Relationships of Customer Satisfaction, Customer Loyalty and Profitability: an empirical Study", *International Journal of Service Industry Management*, Vol.7, No.4, PP 27-42.
37. Hennig –Thurau, Thorsten & Hansen, Ur Sula (2000), "Relationship marketing: Gaining Competitive Advantage through customer satisfaction and Customer retention", Germany: Springer.
38. Hillier, T (1999), "Market Share matters", *marketing Business*, May, PP 18-19.
39. Kaura,V and Datta, S.K (2012), "Impact fo Service Quality on Satisfaction in Indian Banking Sector", *The IUP Journal of Marketing management*, Vol.II, NO.3, PP 38-47.
40. Lenka, V, Suar, D and Mohapatra, P.K.J (2009), "Service Quality, Customer Satisfaction and Customer Loyalty in Indian Commercial banks", *Journal of Entrepreneurship*, Vol.18, No.1, PP 47-64.
41. Lewins, R.C. (1987), "The Measurement of gaps in the Quality of Hotel Services", *International Journal of Hospital Management*, Vol.6, No.2, PP 83-8.
42. LO Ada S., Lawrence D. Stalcup and Amy Lee (2010), "Customer Relationship Management for Hotels in Hong Kong", *International Journal of Contemporary Hospital Management*, 22(2), 139 – 159.
43. M.Saravanakumar, B.Senthil Kumar (2013), "Impact of Customer Relationship Marketing Strategy and Customer Loyalty – A study of banking sector in South India", *Life Science Journal*, 10 (5s), 431-441.
44. Mamoun N. Akroush, Samer E. Dahiyat, Hesham S. Gharaibeh bayan N, Abu-Lail (2011), "Customer Relationship Management implementation: An investigation of a scale's generalizability and its relationship with business performance in a developing county context", *International Journal of Commerce and Management*, 21 (2), 158-190.
45. Massey, A. Montoya-Weiss, M. Holcom, K 2001, "Reengineering the Customer Relationship: Leveraging Knowledge Assets of IBM", *Decision Support Systems*, 32 (2), 155-170.
46. Morgan, R.M. and Hunt, S.D (1994), "The Commitment Trust-Theory of Relationship Marketing", *Journal of Marketing*, Vol.58, July PP 20-38.
47. Morgan, R.M. and Hunt, S.D (1994), "The Commitment Trust-Theory of Relationship Marketing", *Journal of Marketing*, Vol.58, July PP 20-38.
48. Ndubisi Nelson oly, Chan Kok Wah and Gibson C. Ndubisi, (2007). Supplier – Customer Relationship Management and Customer Loyalty: The Banking Industry Perspective: *Journal of Enterprise Information Management*, 20 (2), 222-236.
49. Ndubisi, N.O (2003), "Service Quality: Understanding Customer Perception and Reaction and its impact on Business", *International Journal of Business*, Vol.5, No.2, PP 207-19.
50. Nelson Oly Ndubisi (2007), "relationship Quality Antecedents: The Malaysian Retail banking Perspective", *International Journal of Quality & Reliability Management*, Vol.24, No.8, PP 829-845.
51. Nelson oly Ndubisi, Chan Kok Wah, Gibson C. Ndubisi (2007), "Supplier- Customer Relationship Management and Customer Loyalty the banking industry perspective", *Journal of Enterprise Information management*, Vol. 20, No.2, PP 222-236.
52. Nevin, J.R (1995) Relationship Marketing and Distribution Channels: Exploring, Fundamental Issues, "Journal of the Academy of Marketing Science", 23, 327-334.
53. Parasuraman, A Zeithaml, V.A and Berry L.L (1991b), "Refinement and Reassessment of the SERVQUAL scale", *Journal of Retailing*, Vol.67, No.4, PP 42-50.
54. Parasuraman, A, Zeithaml V.A and Berry L.L (1994), "Alternative scales for measuring service Quality: A comparative Assessment based on psychometric and diagnostic criteria", *Journal of retailing*, Vol.70, No.3, PP 210-230.
55. Parasuraman, A, Zeithaml V.A and Berry, L.L (1985), "A Conceptual model of service quality and its implications for future research", *Journal of marketing*, Vol.49, PP 41-50.
56. Parasuraman, A, Zeithaml V.A and Berry, L.L (1988), "SERVQUAL: A multiple item scale for measuring customer perceptions of service quality", *Journal of Retailing*, 64 (Spring) 12-40.
57. Parasuraman, A, Zeithaml V.A and Berry, L.L (1988), "SERVQUAL: A multiple item scale for measuring customer perceptions of service quality", *Journal of Retailing*, 64 No.1, PP 12-40.
58. Parasuraman, A, Zeithaml, V.A and Berry L.L (1991 a), "Understanding Customer Expectation of Services", *Sloan Management review* (Spring), PP 39-48.
59. Parvatiyar, A and Sheth, J.N (2001), " Customer Relationship Management: Emerging Practice, Process and Discipline", *Journal of Economic and Social research*, 3(2), 1-34.
60. Peng, L.Y & Wang, Q (2006), "Impact of relationship Marketing Tactics (RMTS) on Switchers and Stayers in a Competitive Services Industry", *Journal of Marketing Management*, 25: 25-59.
61. Pritchard, M.P and Howard, D.R (1997), "The Loyal Traveller: examining a typology of service patronage", *Journal of Travel research*, Vol.35, NO.4, PP 2-10.
62. Reichheld, F.F. (1996), *the Loyalty Effect*, Harvard Business School, Boston, MA.
63. Rust, R and Zahorik, A (1993), "Customer Satisfaction, Customer retention and market Share", *Journal of Retailing*, Vol.69, No.2, PP 193-215.
64. Rust, R.T, Zahorik, A and Keininghan, T.L. (1996), "Service marketing", Harper Collins, New York.
65. Rust, R.T. and Zahorik, A.J. (1993), "Customer Satisfaction, Customer retention and market Share", *Journal of Retailing*, Vol.69, No.2, PP 193-215.

66. Sheares, D.E and Barnes, J.G (1996), "The Fundamentals of Relationship: An Exploration of the concept to guide marketing implementation" in Swartz, T.A., Bowen, D.E and Brown, S.W (Eds), *Advances in Services Marketing and Management*, Vol.5, JAI Press, Greenwich, CT.
67. Silvestro, R and Cross, S (2009), "Applying the Service Profit Chain in a Retail Environment: Challenging the Satisfaction Mirror", *International Journal of Service Industry Management*, Vol.II, NO.3, PP 244-68.
68. Sin ,Leo Y.M., Tse, Alan, C.B and Yim Frederic, H.K (2005), "CRM: Conceptualization and scale Development", *European Journal of Marketing*, 39 (11/12), 1264 – 1290.
69. Sin ,Leo, Y.M., Tse, Alan, C.B and Yim Frederic, H.K (2005), "CRM: Conceptualization and scale Development", *European Journal of Marketing*, 39 (11/12), 1264 – 1290.
70. Stone, M, Woodcock, N and Wilson, M (1996), "Managing the Change from Marketing planning to customer relationship management", *Long range Planning*, Vol.29, No.5, PP 675-83.
71. Suresh Chandar, G.S. Rajendran, C and kamalanabhan, T.J (2001), "Customer perceptions of service quality: a Critique", *Total Quality management*, Vol.12, No.1, PP. 111-24.
72. Tsoukatos, E.W and Mastroianni,E (2010), "Key Determinants of service quality in retail banking", *Euromed Journal of Business*, Vol.5, No.1, PP 85-100.
73. Wang, Y, Hing Po Lo, Chi Renyong and Yang Yongheng (2004), "An Integrated Framework for Customer Value and Customer Relationship Management Performance: A Customer-Based Perspective from China", *Managing Service Quality*, 14 (2/3), 169-182.



ASSESSMENT OF CUSTOMERS' SERVICE EXPECTATIONS AND PERCEPTIONS IN GEM HOSPITAL: GAPS MODEL

V. KANIMOZHI
ASST. PROFESSOR

SASI CREATIVE SCHOOL OF BUSINESS
COIMBATORE

DR. R. ANITHA
ASSOCIATE PROFESSOR

SASI CREATIVE SCHOOL OF BUSINESS
COIMBATORE

ABSTRACT

The hospital services market symbolizes one of the most important segments of the Indian healthcare industry and is projected to be worth US\$ 81.2 billion by 2015. In India's healthcare industry, the private sector has emerged as a vibrant force, gaining both national and international repute. The Health Care Industry in Coimbatore has witnessed a tremendous growth in the last decade. GEM hospital, Asia's first exclusive gastroenterology and advanced laparoscopic surgery center situated in Coimbatore is providing world class laparoscopic treatment to the patients from various parts of India such as Mumbai, Ahmedabad, Calcutta, Bangalore, etc and abroad. Nowadays, Customers have become more and more aware of their requirements and are demanding higher standards of services. The perceptions and expectations of customers are continually evolving, making it difficult for the service providers to measure and manage service effectively. However, it is important to understand how sensitive the customers are to various service attributes or dimensions. Allocating resources in the fashion that is consistent with customer priorities can enhance the effectiveness in the service operations. This study aims to assess the exceptions and perceptions of customers regarding the quality of service offered by GEM Hospital, Coimbatore.

KEYWORDS

Expectations, Perceptions, Service Quality.

INTRODUCTION

The healthcare industry forms the backbone of any nation's well being and can be broadly divided into five segments namely hospitals, pharmaceuticals, diagnostics, medical equipment & supplies and medical insurance. World health care industry includes any medical institution which includes either a single medical assistant to the medical practitioner or medical practitioners attached to different hospitals and other medical establishments. The world health care industry comprises of the following segments: Hospitals, Nursing, Physicians, Dentists, Health care services at home, Medical practitioners, Outpatient departments, Ambulant health care facilities and Diagnostic laboratories and medical services. With latest technological developments happening across the globe, the world health care industry is catching up with the other leading industries of the world.

The Indian healthcare sector is expected to reach US\$ 100 billion by 2015 from the current US\$ 65 billion, growing 20 per cent year-on-year (y-o-y), as per rating agency Fitch. The industry aims to touch US\$ 79 billion in 2012 and US\$ 280 billion by 2020, on back of increasing demand for specialized and quality healthcare facilities. India's cost advantage and explosive growth of private hospitals, equipped with latest technology and skilled healthcare professionals have made it a preferred destination for medical tourism. Medical tourism market is expected to expand from US\$ 1.9 billion in 2011 to reach US\$ 3.9 billion in 2014, at a CAGR of 27 per cent. India is the most competitive destination with advantages of lower cost and sophisticated treatments, highlighted the RNCOS report titled 'Indian Healthcare - New Avenues for Growth'. Exchange Rate used: INR 1 = US\$ 0.01816 as on 22nd Dec 2012.

Coimbatore has the sophisticated large hospitals offering the world class quality treatments equivalent to the best hospitals around the world. The number of Coimbatore hospitals delivering health care to the masses is increasing every day. Coimbatore's charity trusts have ensured that the district has a unique place in health care industry. They have championed the cause of health and medical care in Coimbatore. Coimbatore is also well-known for its exclusive super-speciality hospitals. The Lakshmi group started the Kuppusamy Naidu Hospital. It is one of the five centres in the country for the detection of cancer and education on cancer. The PSG Hospitals with highly scientific clinical services; The KG Hospital with the state-of-the-art facilities; The Kovai Medical Centre and Hospital (KMCH) with specialised procedures such as stenting, fallopian tube recanalisation, chemoembolisation and laparoscopic and thoracoscopic; Ganga Hospital for trauma, orthopaedic and micro-vascular surgery; **GEM Hospital for laparoscopy**; Rao Hospital for assisted reproduction and endoscopy; The Eye Foundation and Sankara Eye Clinic for ophthalmology - which offer world-class treatment at affordable rates; Vikram Hospital for ENT and so on. Other than this, Ayurvedic hospitals, Homeopathy Clinics, Naturopathy hospitals, Siddha Hospitals, and Acupuncture treatments are also emerging with innovative ideas to treat the people with their ancestral knowledge.

GEM hospital, Asia's first exclusive gastroenterology and advanced laparoscopic surgery center situated in Coimbatore is providing world class laparoscopic treatment to the patients from various parts of India such as Mumbai, Ahmedabad, Calcutta, Bangalore, etc and abroad.

REVIEW OF LITERATURE

"Using SERVQUAL to measure the Service Quality of Travel Agents in Guangzhou, South China" was conducted by Zhou Ruiqi and Pritchard Adrain (2005). The objective was to investigate the expectations and perceptions of Chinese consumers in the context of travel agents in South China. With Sample size of 221 respondents and the data was collected using interview schedule and questionnaire that was designed based on SERVQUAL dimensions. The study revealed that there is a negative gap scores between the expectations and perceptions of consumers and the overall service quality of the top four travel agents in Guangzhou was not satisfactory.

"A study to find the Gaps in Services offered by ICICI bank with regard to Customer Expectations and Deliverables" was conducted by Megha Trivedi and Nirmit Agrawal. To identify the degree of customer satisfaction on various dimensions of ICICI bank and to determine the gap in services offered by ICICI bank with special reference to the expectations of the customers and services offered was the objective. Descriptive research design with sample size of 100 respondents was used and structured questionnaire, SERVQUAL was used to collect the primary data. The study revealed that customers are highly satisfied with the tangibility dimension followed by assurance and other dimensions.

"An Assessment of Service Quality in National Parks: A case study of Gunung Gading National Park (GGNP), Sarawak" was conducted by Abas Said, Nor Emel Farnida Jaddil and Norazirah Ayob (2004 – 2005). The objectives were to evaluate the service quality expectations and perceptions in GGNP, to determine the gaps between service quality and expectations and to evaluate the visitors' satisfaction with trips to GGNP. With sample size of 182 respondents the data was collected using questionnaire developed based on ECOSERV model. The findings of the study revealed that there was a negative service quality gaps in all dimensions of service quality and the overall service quality in GGNP was unsatisfactory.

"Service Quality and behavioural intentions: An Empirical Study in Computer centres in Madurai" was conducted by T.Vanniarajan and A.Stephen. The study investigates the quality of services offered to students in an institutional computer centre and measures tangible and intangible aspects of service quality, customer satisfaction and revisit intentions. Purposive sampling with sample size of 500 respondents was done. Questionnaire was used for data collection. The study revealed that the service performance of computer centres generally lags behind the users expectations and Tangible aspects of service performance have a stronger direct effect on revisit intention and recommendation than the intangible aspects. Further, the study revealed that the intangible aspects have a stronger indirect effect on revisit intention and recommendation especially through user satisfaction. It was concluded that the satisfied users intend to revisit the computer centres and also recommend others to visit it.

"Customer Expectations and Perceptions across the Indian Banking Industry and the resultant Financial Implications" was conducted by Kirti Dutta and Anil Dutta. The objective of the study was to compare the expectations and perceptions of service quality and bank performance between public, private and foreign banks and the overall service quality of banks in India. Quota sampling was done and the sample size was 263 respondents. Questionnaire was used for data collection. The study revealed that in the banking sector it is the foreign banks which are perceived to be offering better quality services followed by the private and then public banks. It was also found that these perceptions are reflected in the financial performance of the banks.

STATEMENT OF THE PROBLEM

Services have assumed greater importance in the Indian economy due to its remarkable contribution to GDP. The competition in service organizations is becoming intense and severe. It is apparent that the growth in the services sector has been substantive. Today one can find a large variety of services being offered in the market by service providers. These services are extremely heterogeneous and varied. Customers have become more and more aware of their requirements and demand higher standards of services. The perceptions and expectations of customers are continually evolving, making it difficult for the service providers to measure and manage service effectively. It is important to understand how sensitive the customers are to various service attributes or dimensions. Allocating resources in the fashion that is consistent with customer priorities can enhance the effectiveness in the service operations. This study aims to assess the service quality of GEM hospital which is Asia's first most advanced Laparoscopic Surgery and Research Centre which in turn will enable to clearly identify the expectations and perceptions of patients with regard to services of GEM hospital

OBJECTIVES

- To assess GEM hospital's service quality along each of the five SERVQUAL dimensions
- To assess gaps between customer expectations and perceptions of services in GEM hospital
- To ascertain customer requirements or expectations for services
- To prioritize the service requirements of customers in GEM hospital

RESEARCH METHODOLOGY

A Descriptive study was undertaken with sample size of 80. Purposive sampling technique which is a non-probability sampling method was used since the data has been collected from a specific target group. Primary data was collected using an undisguised structured questionnaire, SERVQUAL developed by A.Parasuraman. The last part of the questionnaire sought the general information about the respondents and the remaining questions were directed towards finding out the views of the respondents on their expectations and perceptions of the 5 dimensions of service quality as per SERVQUAL instrument. The data collected were analyzed using SPSS package. The tools used in the study for analysis of data are simple percentage analysis, mean score. Weighted SERVQUAL score and Un-weighted SERVQUAL score are calculated.

LIMITATIONS

- The findings are applicable only to GEM hospital, Coimbatore
- Very young and old patients are not included in the study.
- The study was conducted only with those who are admitted as inpatients during the period of research.
- Patients admitted in ICU are not included.

DATA ANALYSIS AND INTERPRETATION

TABLE 1 : DEMOGRAPHIC PROFILE OF RESPONDENTS

S.No	Demographic Profile		%
1	Gender	Male	35
		Female	65
2	Family Income (Per Month)	Less than 10,000	15
		10,001 – 20,000	31.2
		20,001 – 30,000	38.8
		30,001 – 40,000	8.8
		Above 40,000	6.2

Source : Primary Data

Table 1 indicates that Majority (65%) of the respondents are male. Most (38.8%) of the respondents belong to the family income group (per month) of Rs.20,001 to 30,000 followed by 31.2% belonging to income group of Rs.10,001 to 20,000.

TABLE 2: GAPS IN SERVICE QUALITY

Dimensions	Factors	Perceptions	Expectations	Gap Score
Tangibles	Modern looking equipments	6.1375	5.5375	0.6
	Visually appealing physical facilities	5.625	5.225	0.4
	Neat appearance of personnel	6.0875	5.9375	0.15
	Visually appealing materials associated with service	5.2	5.625	-0.425
	Average Tangibles SERVQUAL Score			0.18125
Reliability	Keep up Promise of Performing at Certain Time	5.45	5.4	0.05
	Sincere Interest in Solving Patients Problem	5.6375	5.9625	-0.325
	Get Things Right at first time	5.2625	5.475	-0.2125
	Provide Service at the Promised Time	5.075	5.425	-0.35
	Error Free Records	5.6	5.625	-0.025
	Average Reliability SERVQUAL Score			-0.1725
Responsiveness	Inform exactly about the Performance of Service	5.25	5.7375	-0.4875
	Prompt Service	5.8	5.725	0.075
	Willingness to Help	5.95	5.8125	0.1375
	Not Busy to Respond	5	5.075	-0.075
	Average Responsiveness SERVQUAL Score			-0.0875
Assurance	Trustworthy	5.6	5.6375	-0.0375
	Safe in Dealings	5.6625	5.8875	-0.225
	Courteousness of Personnel	5.8625	5.5625	0.3
	Knowledge of Personnel	5.4625	5.6625	-0.2
	Average Assurance SERVQUAL Score			-0.0406
Empathy	Individual Attention	5.6625	5.65	0.0125
	Convenient Operating Hours	5.3375	5.4875	-0.15
	Personal Attention	5.5125	5.9875	-0.475
	Best Interests at Heart	5.525	5.4375	0.0875
	Understanding the Needs	5.45	5.7	-0.25
	Average Empathy SERVQUAL Score			-0.155
Gaps in Service Quality Unweighted SERVQUAL Score				-0.05487

Source: Primary Data

From Table 2 and Figure 1 the following inferences can be made :

Positive gap (0.18125) prevails in tangibility dimension, expectations regarding materials associated with the service (-0.425) are not met well, whereas expectations regarding modern looking equipments (0.6), visually appealing physical facilities (0.4) and neatness of personnel (0.15) are well met.

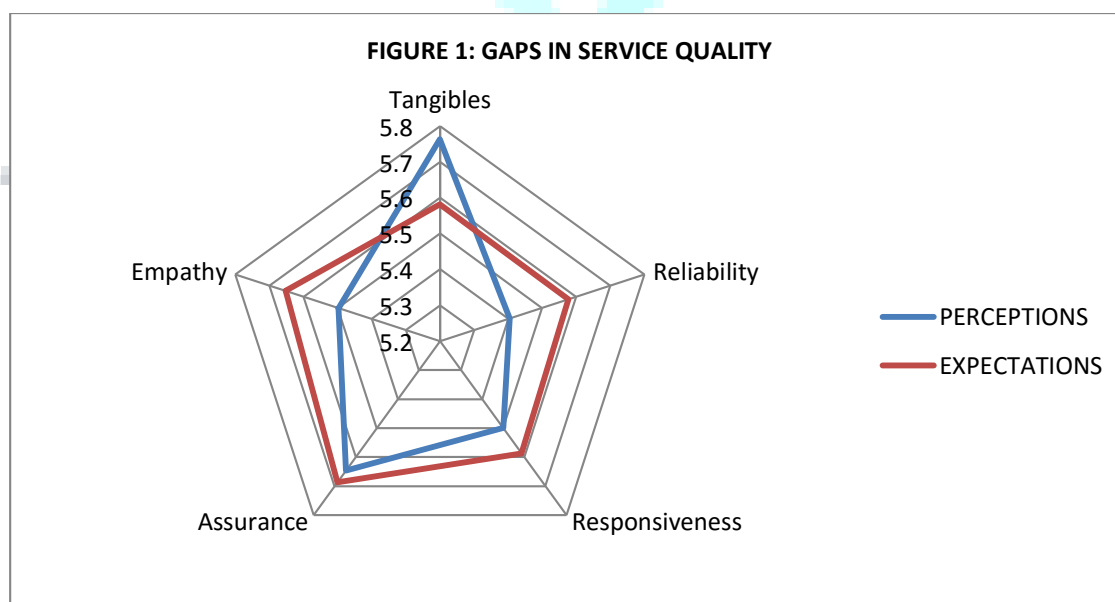
Negative gap (-0.1725) exists in the reliability dimension, the expectations regarding sincere interest in solving patients problem (-0.325), getting things right at first time (-0.2125), providing service at the promised time (-0.35) and error free records (-0.025) are not well met whereas expectation regarding keeping up promise of performing at certain time (0.05) is well met.

Negative gap (-0.0875) exists in the responsiveness dimension, expectations regarding providing prompt service (0.075) and willingness to help (0.1375) are well met whereas expectations regarding informing exactly about the performance of service (-0.4875) and not being busy to respond (-0.075) are not well met.

Negative gap (-0.0406) exists in the assurance dimension, expectations regarding courteousness of personnel (0.3) is well met by the Gem hospital whereas the perceptions regarding trustworthiness (-0.0375), safe in dealings (-0.225) and knowledge of personnel (-0.2) are slightly lower than the expectations.

Negative gap (-0.155) exists in the empathy dimension, expectations regarding individual attention (0.0125) and best interest of patients at heart (0.0875) are well met whereas the perceptions regarding convenient working hours (-0.15), personal attention (-0.475) and understanding the needs (-0.25) are slightly lower than the expectations. The perception of empathy dimension of service quality is slightly lower than the expectations.

Service Quality of GEM Hospital has a negative gap (-0.05487). The perceptions regarding reliability (-0.1725), responsiveness (-0.0875), assurance (-0.0406) and empathy (-0.155) are slightly lower than the expectations where as the perception regarding tangibles (0.18125) of Gem hospital are more than the expectations. The perception of service quality of Gem hospital is slightly lower than the expectations.



Source : Primary Data

TABLE 3 : WEIGHTED SERVICE QUALITY SCORE

Servqual Dimension	Scores (A)	Importance Weights (B)	Weighted Score (A*B)
Tangibles	0.18125	20.5625	3.72695
Reliability	-0.1725	22.1875	-3.8273
Responsiveness	-0.0875	20.125	-1.7609
Assurance	-0.0406	17.75	-0.7207
Empathy	-0.155	19.375	-3.003
TOTAL			-5.58495
WEIGHTED SERVQUAL SCORE			-1.11699

Source: Primary Data

Table 3 indicates that respondents have given maximum importance to Reliability dimension (22.1875) followed by tangibles (20.5625), responsiveness (20.125), empathy (19.375) and assurance (17.75). Since the weighted SERVQUAL score is in negatives (-1.11699), perceptions of service quality of Gem hospital is slightly lower than the expectations.

TABLE 4 : FEATURES PREFERRED

Dimensions	Mean Score
Tangibles	1.19
Reliability	1.39
Responsiveness	1.3
Assurance	0.8
Empathy	1.29

Source: Primary Data

Table 4 indicates that Respondents have preferred reliability (1.39) as the most important feature followed by responsiveness (1.30). The important service requirement of patients is reliability followed by responsiveness, empathy, tangibles and assurance.

CONCLUSION

Gem hospital is considered to be one of Coimbatore's best hospitals for Laparoscopic treatment. Customer's expectations and perceptions have changed a lot, thanks to technological advancement. Assessment of Service Quality of GEM Hospital revealed a negative gap of (-0.05487). Tangibility dimension of Service quality shows a positive gap which brings to light Gem Hospital's modern looking equipments, visually appealing physical facilities and neatness of personnel are at par with customers' expectations. Even though Gem hospital provides reliable services, it has to concentrate even more on reliability dimension as it is the most preferred among other dimensions by the patients. Reliability can be enhanced by providing service at the promised time with error free records and by showing sincere interest in solving patient's problem and by getting things right at the first time. Responsiveness can be further improved by providing exact information about the performance of service and by not being busy to respond to patients. Enhancement of assurance can be done by creating trustworthiness and safety in dealings and by improving the knowledge of personnel by providing them training. Understanding the needs of the patients, showing personal attention and by having operating hours convenient to the patient's requirements can enable to better satisfy customers expectations towards empathy.

REFERENCES

- Abas Said et.al., "An Assessment of Service Quality in National Parks: A case Study of Gunung Gading National Park, Sarawak", The Icfai University Journal of Environmental Economics, Vol VII, no. 2, May 2009, pp.74 – 85.
- C.Bhatta Charjee, Services Marketing – Concepts , Planning & Implementation, (1st ed; New Delhi: Excel Books, 2006) Ch.XIX, pp.489 – 496.
- C.Madhavaiah and S.Durga Rao, "Service Quality Measurement in Passenger Road Transportation Services: A Comparative Study of Public and Private Sector Road Transportation Services in Andhra Pradesh", Journal of Marketing & Communication, Vol.3, Issue 2, Sep – Dec 2007, pp.59 – 74.
- <http://www.firstpost.com/business/indian-healthcare-sector-likely-to-hit-155-bn-revenue-by-2017-551579.html>
- http://www.ibef.org/artdispviewcampaign.aspx?art_id=33137&cat_id=119&in=29
- Kirti Dutta and Anil Dutta , "Customer Expectations and Perceptions across the Indian Banking Industry and the Resultant Financial Implications", Journal of Services Research, Vol.9, No.1, April – Sep 2009, pp.31 – 47.
- Megha Trivedi and Nirmal Agrawal, "A Study to Find the Gaps in Services Offered by ICICI Bank with Regard to Customer Expectations and Deliverables", The Icfai University Journal Of Services Marketing, Vol.VII, No.1, March 2009, pp.19 – 27.
- P.David Jawahar and R.Maheswari, "Service Perception: Emotional Attachment As a Mediator of the Relationship between Service Performance and Emotional Brand", The Icfai University Journal of Marketing Management, Vol. VIII, No.2, May 2009, pp.7 – 19.
- R.Vijayalakshmi and P.A.Keerthi, "A Study on The Service Quality of LIC As Expected and Perceived by its Policy Holders", Journal of Contemporary Research in Management, Vol.2, No.3,4, July – Dec 2007, pp.71 – 76.
- Ravi Shanker, Services Marketing – The Indian Perspective, (1st ed; New Delhi: Excel Books, 2002) Ch.I & IX, pp. 4 – 15 & 106 - 108 .
- S.A.Buddhika et.al., "Service Quality of Formal and Informal Semiformal Sector Microfinance Institutions in Sri Lanka: A comparative study of Financial Service Providers in Southern Province", South Asian Journal of Management , Vol:15, Issue No:3, July – Sep 2008, pp.40 – 52.
- Sunitha and M.Dhanabakam, "Service Quality in Health Insurance", Birla Institute of Management Technology : Journal of Insurance & Risk Management, Vol 9, No:2, July – Dec 2007, pp.82- 95.
- T.Vanniarajan & A.Stephen, "Service Quality and Behavioural Intentions: An Empirical Study in Computer Centres in Madurai", SONA Journal of Global Management Review, Vol.3, Issue.3, May 2009, pp.13 – 22.
- Uma Sekaran, Research Methods For Business – A Skill Building Approach, (4th ed: New Delhi: Wiley India, 2007) Ch.XI, p.294
- Valarie A Zeithaml et.al., Services Marketing – Integrating focus Across the Firm, (4th ed; New Delhi: Tata McGraw Hill) Ch.VI, p.157.
- William J. Glynn et.al., Understanding Services Marketing, (New Delhi: Prentice Hall of India, 2006) Ch.VI, pp.143 – 153.
- www.bharatbook.com/Market-Research-Reports/Indian-Hospital-Industry
- www.bharatbook.com/productdetail.asp?id=80692
- www.coimbatorecity.com/index.php?content/view/62/27/
- www.economywatch.com/world-industries/health-care/
- www.economywatch.com/world-industries/health-care/trends.html
- www.hospitalreviewmagazine.com
- www.ibef.org/download/bedside_india.pdf
- www.ibef.org/industry/healthcare.aspx
- www.researchandmarkets.com/reportinfo.asp?report_id=28397
- www.researchconnect.com/downloadreport.asp?RepID=199000
- www.universalteacherpublications.com/mba/project/p1000/ssm/health1.htm
- Zhou Ruiqi and Pritchard Adrian , "Using SERVQUAL to Measure the Service Quality of Travel Agents in Guangzhou, South China", Journal of Services Research, Vol.9, No.1, April – Sep 2009, pp.87 – 103.

IMPACT OF CLOUD COMPUTING ON INDIAN SMEs: ADOPTION, BENEFITS AND FUTURE SCOPE

NAZIR AHMAD
RESEARCH SCHOLAR
DEPARTMENT OF COMPUTER SCIENCE
ALIGARH MUSLIM UNIVERSITY
ALIGARH

JAMSHED SIDDIQUI
ASSOCIATE PROFESSOR
DEPARTMENT OF COMPUTER SCIENCE
ALIGARH MUSLIM UNIVERSITY
ALIGARH


ABSTRACT

Cloud Computing an emerging technology has its implicit effect in technological advancement and to satisfy the need of Small and Medium size enterprises (SMEs). Innovations in information technology have changed the trend of IT adoption, cloud computing is emerging trend and its popularity and usage is increasing day by day. Services like SaaS, PaaS and IaaS gaining popularity among different sectors of industry. Cost effectiveness is the prime factor in its adoption in addition to ease of operation, scalability, auto up gradation, zero maintenance and time saving. The very recent advancement is the availability of ERP modules in the cloud that will revolutionize the computing world and adoption among the SMEs

KEYWORDS

Cloud Computing, ERP SMEs, PaaS, IaaS, SaaS.

INTRODUCTION

 MEs are defined as businesses that employ fewer than 250 people and are independent from other organizations. However, SMEs are diverse: some are dynamic and flexible, with a great power to innovate and a vast range of diversity, others traditional, based on family involvement, embedded in local business environments, and others are start-ups, fragile organizations striving for life and subsistence. Based on Micro, Small & Medium Enterprises Development Act MSME Act, 2006, in India, SMEs are classified broadly into:

a) Manufacturing SMEs engaged in the manufacture / production of goods pertaining to any industry.

b) Service industry SMEs, which have been defined in terms of their investment in equipment (excluding land & buildings) and further classified into small enterprises with investment above Rs. 10 lakhs (USD 45 million) and up to Rs. 2 crores (USD 900 million) and medium enterprises- investment above Rs. 2 crores (USD 45 million) and up to Rs. 5 crores (2250 million USD).

Business applications are moving to the cloud. It's not just a fad—the shift from traditional software models to the Internet has steadily gained momentum over the last 10 years. Looking ahead, the next decade of cloud computing promises new ways to collaborate everywhere, through mobile devices. Current research has shown that through the use of information and communications technologies (ICTs), small and micro-enterprises are able to see improved economic outcomes - thus increasing their potential for survival within developing communities. Micro-enterprises play a very important role in generating jobs, developing business skills, and providing needed goods and services to a community. Cloud computing is relatively new technology and still organizations are trying to understand its usage and process of its adoption and its effective utilization, cloud vendors like Amazon, Salesforce etc. providing training in form of seminars and tutorials to the customers. The IT services now known as cloud computing have been around for decades, but they never grew beyond a small fraction of total industry revenue. Now, however, their time has come: over the past few years, a dizzying array of hardware and software available as services over the internet has emerged. Consumers and businesses have embraced a multitude of cloud services, from mature sales force management services to email and photo editing to the latest smart phone applications and the entire social networking phenomenon. Further, researchers project an imminent inflection point in the adoption of cloud services by organizations both large and small.

IT adoption has been defined in several ways depending on the context and objectives, IT provides many benefits to the business by implementing and using IT sellers can access narrow markets segments that are widely distributed while buyers can benefit by accessing global markets with larger product availability from a variety of sellers at reduced costs. Improvement in product quality and the creation of new methods of selling existing products are also benefits. The benefits of IT are not only for large firms, small and medium sized enterprises can also benefit from technology investment.

ERP software brings users economic benefits during a company's operational management. The economic benefits of ERP users are better than the non-users. All the data and information resources are managed by Enterprise Resource Planning Systems in the business organizations. This information is stored in centralized and shared data stores. Nowadays information is a priceless tool for organizations and through this perspective it is important to reach all the data of a company IT system in real time. The key is the mobility of the ERP system. We can use Cloud computing infrastructure & SaaS for low cost working. Here Cloud computing infrastructure is just a web service interface to operating system virtualization

CLOUD COMPUTING OVERVIEW

Although cloud computing has been defined by various authors in different ways, standard definition according to NIST "Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction"[1]. Different types of cloud services are as follows:

SaaS (Software as a Service): Is the most widely known and widely used form of cloud computing. It provides all the functions of a sophisticated traditional application to many customers and often thousands of users, but through a Web browser, not a "locally-installed" [2], application. Little or no code is running on the Users local computer and the applications are usually tailored to fulfill specific functions. SaaS eliminates customer worries about application servers, storage, application development and related, common concerns of IT. Highest-profile examples are Salesforce.com, Google's Gmail and Apps, instant messaging from AOL, Yahoo and Google, and VoIP from Vonage and Skype.

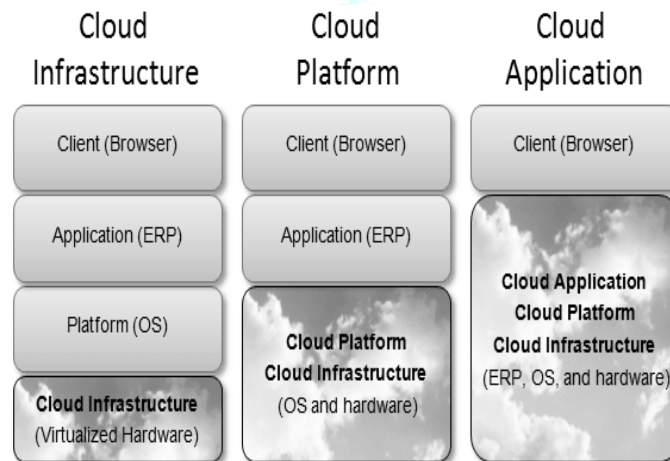
PaaS (Platform as a Service): Delivers virtualized servers on which customers can run existing applications or develop new ones without having to worry about maintaining the operating systems, server hardware, load balancing or computing capacity[3]. These vendors provide APIs or development platforms to create and run applications in the cloud – e.g. using the Internet. Managed Service providers with application services provided to IT departments to monitor systems and downstream applications such as virus scanning for e-mail are frequently included in this category. Well known providers would include Microsoft's Azure, Salesforce.com, and Google Maps.

IaaS (Infrastructure as a Service): Delivers utility computing capability, typically as raw virtual servers, on demand that customers configure and manage. Here Cloud Computing provides grids or clusters or virtualized servers, networks, storage and systems software, usually (but not always) in a multitenant architecture. IaaS is designed to augment or replace the functions of an entire data centre. This saves cost (time and expense) of capital equipment deployment but does not reduce cost of configuration, integration or management and these tasks must be performed remotely. Vendors would include Amazon.com (Elastic Compute Cloud [EC2] and Simple Storage), IBM and other traditional IT vendors.

Cloud Computing refers to both the applications delivered as services over the Internet and the hardware and systems software in the data centers that provide those services. The services themselves have long been referred to as Software as a Service (SaaS), so we use that term. The data centre hardware and software is what we will call a Cloud. When a Cloud is made available in a pay-as-you-go manner to the public, we call it a Public Cloud; the service being sold is Utility Computing. Current examples of public Utility Computing include Amazon Web Services, Google AppEngine, and Microsoft Azure. We use the term Private Cloud to refer to internal data centers of a business or other organization that are not made available to the public. Thus, Cloud Computing is the sum of SaaS and Utility.

Computing, but does not normally include Private Clouds. Different types of cloud ERP has been shown in fig-1

FIG. 1- DIFFERENT TYPES OF CLOUD ERP



a) Cloud Infrastructure (for example: Amazon, GoGrid) delivers an cloud infrastructure where you install and maintain a platform and an application.

b) Cloud Platform (for example: Windows Azure) delivers a cloud platform where you install and maintain your applications without worrying about the operating environment.

c) Cloud Application (for example: Salesforce.com) delivers a complete application, all you maintain is your client access program which is frequently a browser. Virtual machines from several organizations will require to be co-placed on the same physical resources to benefit the cloud computing providers from efficiencies of virtualization. Some of the basic concerns plan that businesses should inform of them when designing their cloud computing deployments are pointed below [4; 5; 6;7;8]. There are four different deployment models of cloud computing:

Public Cloud: Public or external cloud is traditional cloud computing where resources are dynamically provisioned on a fine-grained, self-service basis over the Internet or via and or from an off-site third-party provider who bills on a fine-grained basis

Community Cloud: If several organizations have similar requirements and seek to share infrastructure to realize the benefits of cloud computing, then a community cloud can be established. This is a more expensive option as compared to public cloud as the costs are spread over fewer users as compared to a public cloud. However, this option may offer a higher level of privacy, security and/or policy compliance.

Hybrid Cloud: Hybrid Cloud means either two separate clouds joined together (public, private, internal or external)

or a combination of virtualized cloud server instances used together with real physical hardware. The most correct definition of the term "Hybrid Cloud" is probably the use of physical hardware and virtualized cloud server instances together to provide a single common service. Two clouds that have been joined together are more correctly called a "combined cloud".

Private Clouds: Private clouds describe offerings that deploy cloud computing on private networks. It consists of applications or virtual machines in a company's own set of hosts. They provide the benefits of utility computing -shared hardware costs, the ability to recover from failure, and the ability to scale up or down depending upon demand.

CLOUD COMPUTING IN INDIA

Cloud computing is still in its infancy in India, but as economic and institutional factors improve, it could greatly accelerate India's digitization and transform how cell phones are used. If industry and the government can develop products that meet local needs and address issues such as low bandwidth and security concerns, the cloud might serve as an important catalyst in driving economic and social progress and development in India. As one of the fastest growing economies in the world, India seems to be at the forefront of most technological developments and cloud computing is no exception. Indian Enterprises have been faced with ebbs and flows in workflow for the past few years and this trend is expected to continue for the foreseeable future. For this reason, cloud computing has a particular advantage for a growing economy like India. First, it balances the ebbs and flows in the workflow without significant impacts to the company's bottom line. Second, the cloud allows an enterprise to focus on its core competencies by allowing the cloud provider to deal with all of the hassles involved with the development, maintenance, storage, and upgrades of business applications. For these reasons, experts predict that the cloud computing market in India will grow at a compound annual growth rate of 40 percent by 2014. The adoption rates of cloud computing technologies in India are fast, and are based on much of the good work that the Telecom Regulatory Authority of India (TRAI) has completed by promoting strong broadband policies. One recent article in Dataquest hailed cloud computing as one of the most significant and important areas for investment in India, citing a Gartner study that states that cloud computing will account for 5 percent of the total investments in India by 2015. Indian mid-sized companies, with a rapid rate of growth, are serving a sizable and rapidly growing domestic market. There is a definitive Indian opportunity; according to Microsoft CEO Steve Ballmer cloud computing would generate 300,000 jobs in India. Adding weight to his estimate, technology research firm IDC has now projected that revenues from cloud services in India will grow to over \$3 billion by 2015 from the \$534 million expected this year. During the same period, the global revenues from cloud services will grow from \$29 billion to over \$70 billion, it said, projecting revenues from cloud computing in India to grow at a compounded annual growth rate (CAGR) of 56% to hit \$3.164 billion by 2015.

"SMEs and the individual user will drive cloud growth in the coming years," according to, vice president, technology at Tech Mahindra. "Large enterprises still have security concerns with cloud computing." Infosys has launched Finacle Lite for rural and semi-urban banks. Tata Consultancy Services (TCS) has "iON" exclusively for SMEs. TCS expects to make iON a \$1 billion business in five years. Infosys did not disclose cloud revenue projections, but according to Vishnu Bhat, its vice president (systems integration and cloud), "We see cloud computing and its offerings as a big growth engine."

The notion of computing perception determines understanding, sense of value, attitude and adaptability related to computing, and the computing knowledge indicates the knowledge of computing solutions and systems [23]. While migrating to cloud computing, especially IaaS, of course, firms would require special skills as they have to spend more efforts on the integration of services with existing infrastructure and to perform business operations effectively [9; 10; 11]. Thus, while dealing with cloud IaaS, expertise in electronic business procurement, contract negotiation, and managing vendor relationships should be deployed [12; 13]. Several studies depict that presently there exists lack of awareness among firms pertinent to cloud computing [9; 10].

ADOPTION FACTORS

There are various factors to be considered by the SMEs for the adoption of cloud computing.

A) LOW COST INCURRED IN THE INFRASTRUCTURE AND MANPOWER MANAGEMENT

Implementing the cloud technology helps the organization to reduce its infrastructural expenditure. By doing so the organization will not have to set up its own extended physical infrastructure, because the cloud offers Infrastructure-as-a-Service (IaaS) that include resources like hardware, core networking components, UPS, CPU, data storage, etc. Hence on the other hand usage of cloud reduces the labor cost as it is not necessary to have a large number of staff to maintain the setup. It requires only a few people capable of handling the apps and to co-ordinate with the cloud for its management.

B) EFFECTIVE DISASTER RECOVERY

An organization needs to design its own disaster recovery strategies as a part of data security. But when the organization is collaborated with the cloud, data security is reserved under the responsibility of cloud. The disaster recovery services provided by the cloud will be more secure and automated which basically simplifies the task to be performed by the organization.

C) EASY SCALABILITY

When there is a sudden increase in the requirements, the organization needs to adjust itself according to the demands. This procedure will be simplified when the company's application is hosted by the cloud infrastructure. So at times of increased demands, the organization has to only request for the extra resources that are necessary. The required resources may comprise of facilities such as, computing power, storage, software, hardware, processing power etc.

D) IDENTIFY THE CORRECT CLOUD SERVICE TO BE IMPLEMENTED

Cloud computing offers several different types of services to compensate the emerging requirements that differ from one organization to another. So it is very crucial for the organization to primarily select the correct kind of service that is necessary to them. Cloud computing eases the task of deciding the right choice of service by allowing the organizations to try the service before purchasing. Some of which provide free trials whereas others being completely free.

E) INCREASED SCOPE FOR MOBILITY

Adopting the cloud technology helps the organization to develop a mobile environment for itself. The employees of the organization need not chain themselves to their desk, but instead they can gain access to information from any location and at any point of time as long as they have access to the internet. This serves as one of the major plus points to the organization's growth as the employees can view and edit the documents simultaneously and irrespective of location.

F) INCREASED STORAGE

Cloud storage means storing the data in an off-site server and the management of the server is handled by the service provider. The cloud computing technology facilitates the organization to achieve larger storage areas when compared to the storage areas available in private computer systems. Cloud computing also enables the organization to adjust itself to the altering storage requirements. Therefore cloud storage is very flexible as it can be accessed from anywhere and anytime.

G) HIGHLY AUTOMATED SERVICES

Automated services provided by cloud allow the organization to shift their focus on other important issues as they no longer need to update the software themselves. The responsibility of performing vital tasks like server update and software updates are to be under taken by the service providers.

FUTURE OF CLOUD COMPUTING

SMEs in India are on the lookout for an agile and secured infrastructure and Cloud Computing can be the safest bet, as currently only 8% of the Indian population are using Smartphone and the number is expected to go up to over 25% by 2015, which will drive the growth of Cloud technology and services, these days that it is hard to understand what exactly it is. However, with businesses demanding cost effective, scalable and robust infrastructure, the future of IT is in the cloud. The challenge for enterprises, especially startups and SMEs in India is to run a business without actually owning anything. By leveraging the cloud, this is truly possible as smaller players can cut down their maintenance costs and save a lot on the operational expenses. The impact of cloud computing for SMEs in India can be tremendous and with an increased number of companies embracing the cloud, there has been a major paradigm shift and an optimistic road ahead.

CONCLUSION

SMEs need to seriously look at the economics of dealing with data on priority. Cloud computing offers long term cost saving measures besides providing flexibility than earlier data handling models. Cloud also offers opportunity to the SMEs to try out IT applications which traditionally have been the preserve of large business houses and prohibitive licensing cost had deterred the SMEs from trying out. The other major benefit of cloud is the portability of the application and provides an individual to access application from anywhere anytime. This can be very useful for SMEs as they typically have fewer people to manage business and absence of an employee can affect the functioning of the organization. Anytime anywhere access can be boon to employees on travel or on long absence from work place. By subscribing to cloud company can free its IT team from performing updates, installing patches or providing application support. The decision to move to cloud by the SMEs would require push from the owner manager and is a decision worth trying.

REFERENCES

1. ACA Research, Software-as-a-Service (SaaS) in Australia: Is it the Next Big thing? (2007) ,http :// www.anthonywatson. net. Au /files /SAAS%20White%20Paper%20FINAL.PDF
2. C. Y. Yoon, K. M. Lee, S. K. Hong, and J. W. Kang, "Evaluating end-user computing competency in an organizational computing environment", IEEE, 25-27, 2008.
3. Catteddu, D., & Hogben, G. (2009). Cloud Computing –Benefits, risks and recommendations for information security. European Network and Information Security Agency (ENISA).
4. Chowdhury, M. (2009, December 18). Cloud Computing: Facts, Security & Legal Challenges. LAW 447B TERM PAPER . University of British Columbia.
5. Cloud Security Alliance. (2009). Security Guidance for Critical Areas of Focus in Cloud Computing V2.1. December 2009.
6. GmbH, Z. (2009). Zimory Enterprise Cloud –Whitepaper. http://www.zimory.com/fileadmin/images/content_images/pdf/WP_Enterprise_Engl_020409.pdf.
7. K. Johnson, "Spotlight on Cloud Computing Series, Infrastructure as a service", EDUCAUSE, Oct 2010. Retrieved from, <http://net.educause.edu/ir/library/pdf/LIVE1028.pdf>.
8. Kamal, M., & Qureshi, S., (2009) —An Approach to IT Adoption in Micro-enterprises: Insights into Development||. MWAIS Fourth Annual Conference. Madison, South Dakota. Best paper award.
9. Khajeh-Hosseini, D. Greenwood, and I. Sommerville, "Cloud Migration: A Case Study of Migrating an Enterprise IT System to IaaS", To appear in 3rd Int. Conf. on Cloud Computing (IEEE CLOUD 2010), 2010.
10. M. Sheth, "Cloud adoption in India: Infrastructure as a service trends and perceptions in the Indian market", Ernst and Young, report, 2010.
11. Mirzaei, N. (2008). Cloud Computing. RightScale Inc. (2009). RightScale Cloud Management Features. <http://www.rightscale.com/products/features/>.
12. NIST, NIST Definition of Cloud Computing, retrieved: csrc.nist.gov/groups/SNS/cloud-computing/cloud-def-15.doc
13. V. Kundra, "Federal cloud computing strategy", CIO, report, February 2011. Retrieved from, <http://www.cio.gov/documents/federal-cloud-computing-strategy.pdf>

A STUDY ON THE EFFECTIVENESS OF TRAINING AND DEVELOPMENT PRACTICES ON THE BASIS OF LEVEL OF TRUST, COMMUNICATION AND MORALE OF EMPLOYEES AT LIBERTY SHOES LIMITED

DR. VANDANA KHETARPAL
ASSOCIATE PROFESSOR
M M INSTITUTE OF MANAGEMENT
M. M. UNIVERSITY
MULLANA

REETI ATREJA
RESEARCH SCHOLAR
M M INSTITUTE OF MANAGEMENT
M. M. UNIVERSITY
MULLANA

ABSTRACT

To survive and grow in a competitive scenario and with changing technology organizations must be constantly kept up to date through effective training and development programs. Employees training and development is important in industries with rapidly changing technology such as shoes industry. It has become an issue of strategic importance. There is however a limited focus on the evaluation of the effectiveness of training and development practices in an organisation and yet training and development of employees is critical for the survival and growth of an entity. It is discovered that organizations show poor attitude to training administration by not preparing and equipping their trainees before, during and after a training program. The methodology adopted for this study was convenience sampling. The aim of present study is to study the various methods used by Liberty shoes Limited for conducting training and development of employees, to analyse the effective implementation of training programs in the selected organisation and to evaluate the effectiveness of training and development programs on the basis of 3 parameters- level of trust, communication and morale of employees. The methodology adopted for the study is convenience sampling. The major findings of the study indicated that training and development practices directly or indirectly benefits both to employees and organisation as a whole. Employees and organisation gain in the form of motivation, knowledge, communication, team work, change in attitude, trust, supervision and morale but our focus of attention is the trust, communication and morale of employees in an organisation. Thus factories should keep up their strengths and should alleviate their weaknesses by applying clear and scientific principles regarding human resource training and development.

KEYWORDS

Training, Development.

INTRODUCTION

Human capital is an important asset for organizations under intense competition. Effectiveness of an organisation mostly depends upon utilization of human resources as only they keep other resources active. An effective functioning of an organization requires that employees learn to perform their jobs at a satisfactory level of proficiency. Here is the role of training. To cope up with the changing environment and technological advancement, organisations need to develop and train their employees. Training and development enables human capital to unleash their dexterity. A profound training program acts as a vehicle to enhance employee skills, knowledge, motivation, level of trust and communication and enable them to perform better in their jobs.

Training: The verb 'to train' is derived from the old French word trainer, meaning "to drag". It is a process of assisting a person for enhancing his efficiency and effectiveness at work by improving and updating his professional knowledge by developing skills relevant to his work and cultivating appropriate behavior and attitude towards work and people. Training can only add to and build upon the foundation of existing knowledge and experience. It teaches what and why. It teaches employees what to do in the given circumstances with specific materials to achieve designated ends or goals.

Proper recruitment and selection are not sufficient to build manpower. Along with industrialization there has been rapid development in the field of science and technology. Production techniques are becoming complex day by day. So managers and laborers have to function in accordance with these changes, otherwise imparting training will be inevitable.

Development is training people to acquire new horizons, technologies or viewpoints. It enables leaders to guide their organizations onto new expectations by being proactive rather than reactive. It enables workers to create better products, faster services and more competitive organisations. It generally focuses on future jobs in the organisation. It is learning for growth of the individual, but not related to a specific present or future job. Unlike training and education, which can be completely evaluated, development cannot always be fully evaluated. This does not mean that we should abandon development programs, as helping people to grow and development is what keeps an organisation in the cutting edge of competitive environments. Development can be considered the forefront of what many now call Learning Organization. The survival of the organisation requires development throughout the ranks in order to survive, while training makes the organisation more effective and efficient in its day-to-day operations.

In this way, Development is a related process; it covers not only those activities, which improve job performance, but also those activities, which bring about growth of the personality, helps individuals in the progress towards maturity.

To attract new customers, meet customer expectations, and attain customer satisfaction and to retain customers, organisations are striving to be best in their products, service quality and in their customer encounters. This can happen only when organisations have highly skillful employees as their assets. And those employees should be trained on contemporary issues to meet present 'techno-customers' expectations. Thus significance of training and development function is conspicuous. After realizing the fact that T&D function is significant in delivering best quality outcome to customers, Indian companies starting investing in T&D functions. However, training alone can't give sustainable competitive advantage for any organisation. Results of training have to be measured in order to know its impact on business results, thereby taking measures for further improvements in the training program delivered. Because of huge investments, efforts and time involvement in training function, top management also are interested to know the impact of training program on trainees. Hence training programs are evaluated to determine the extent of knowledge, skills and abilities delivered through training and translated into performance. A training program is said to be effective, when it delivers what is intended.

T&D can be one of the most important investments a business can make. The right training can ensure that your business has the right skills to tackle the future. It can also help attract and retain good quality staff, as well as increasing the job satisfaction of those presently with you- increasing the chances that they will satisfy your customers.

REVIEW OF LITERATURE

Muksuda Hossain (2012), in his study, (Training and development practices of multinational company), has concluded that- Training plays an important role in developing employee's skills and future opportunities and increases morale. Need assessment before training must be introduced to make a cost effective training. Practical and audio-visual sessions in training can also be lucrative and fruitful in this regard. All this will accelerate the productivity and employee commitment towards the organisation. **Rama Devi V, Nagurvali Shaik (2012)**, in his study (Evaluating training and development effectiveness), has given his opinion-Training and development contribute in such a way that employees can enhance their dexterity. Training helps organisation in achieving their strategic objectives and gives organisation a competitive edge. Organisations train and develop their employees to the fullest advantage and evaluate whether training and development programs are effective in producing desired results. Proper evaluation is the base to effective training. **Sunita Dahiya, Ajeya Jha (Jan-June 2011)**, in his study (International Journal of computer science and communication) has concluded that- The failure of training programme evaluations can be attributed to inadequate planning or design, lack of objectivity, improper interpretation of results and inappropriate use of results. However having a well structured training measurement system in place can help one determine where problem lies. **Dr. Shefali Verma, Rita Goyal (2011)**, in his study(Training in insurance and their impact on employees productivity in IJRESS) has concluded that- No matter the way one looks at training and development, they help employees to learn how to use the resources in an approved fashion that allows the organization to reach its desired output. Able people may grow to a point where they are ready for responsibilities beyond their initial assignment. When this happens, training and development becomes imperative. **Dr. V. Rama Devi, Mr. Nagurvali Shaik (2012)**, in his study (Training and development – A jump starter for employee performance and organizational effectiveness) has come to the final conclusion that- Training and development updates not only the performance graph of employees but also of organisation. It improves the drive, initiative and quality of work and assists them in achieving the goals and objectives of the organisation and this enhances the effectiveness among employees within organisation. **Dr. Nadeem Ahmed Bashir, Khawaj Jehanzeb (2013)**, in his study (Training and development program and its benefits to employees and organisation- A conceptual study) has given his opinion that- if there is a systematic training and development program for the employees the companies will harvest its profit from the market and remain competitive. If the organisations are capable to support all employees in meeting their requirements then both employees and organisations will get long term benefits. **A.K.L Jayawardana, H.A.D Prasanna(July-Dec 2007, Jan-June 2008)**, in his study(Factors affecting the effectiveness of training provided to merchandisers of garment industry) has concluded that- supervisor support, self efficacy, a continuous learning culture and training motivation are positively correlated with training effectiveness. Also it was found that training motivation moderates the relationship between supervisor support, self efficacy and a continuous learning culture with training effectiveness.

IMPORTANCE OF THE STUDY

This study provides possible suggestions for the effectiveness of employees training and development of the shoe factories. It helps the researcher to acquire knowledge and practical experience. It also helps as a source of document and a stepping stone for those researchers who want to make further study on the area afterwards.

STATEMENT OF THE PROBLEM

To study the effectiveness of training and development practices at liberty shoes limited on the basis of level of trust, communication and morale of employees in an organisation.

OBJECTIVE OF THE STUDY

- 1) To study the various methods used by Liberty shoes Limited for conducting training and development of employees.
- 2) To analyse the effective implementation of training programs in the selected organisation.
- 3) To evaluate the effectiveness of training and development programs on the basis of 3 parameters- level of trust, communication and morale of employees.

NEED FOR TRAINING AND DEVELOPMENT

Training is needed in an organization to increase quality of work, increase productivity, to improve morale of employees, to reduce supervision, to reduce errors at work place, for improvement in efficiency of employees, to increase level of trust, for development of knowledge and skill, for effective communication, to increase Team Work, to improve organizational culture, to modify the attitude of employees, to prepare employees for higher jobs and for better utilization of resources. But our focus is on the Level of trust, communication and morale of employees at Liberty Shoes Limited.

MODEL FOR MEASURING TRAINING EFFECTIVENESS

Kirkpatrick's 4 level of Training evaluation model is used to measure the training and development effectiveness.

Evaluation can be done for various purposes-

- ❖ To increase the morale, trust and communication of employees through effectiveness of the program while it is going on.
- ❖ To increase the morale, trust and communication of employees through the program to be held next time.
- ❖ To help participants to get feedback for their improvement in all these 3 spheres.
- ❖ To find out to what extent the objectives are achieved through these parameters.

In evaluating the worth of a specific program, sets of measurement criteria should be identified. These are as follows:-

- 1) REACTION 2) LEARNING 3) BEHAVIOUR 4) RESULTS

EFFECTIVE TRAINING AND DEVELOPMENT

Effective training will indicate not only finding out whether the training was well done but also what it achieved and whether it was worthwhile for the organisation to be sponsoring it. Therefore to ensure that the training is effective, the human resource department and the management need to adopt a systematic approach to training which often includes identifying the need, delivery and evaluation. Training must be **SPECIFIC, MEASURABLE, And ACHIEVABLE** and **TIME TARGETED**. A careful implementation of each element of training and development process is needed to make it effective.

CONSEQUENCES IN THE ABSENCE OF TRAINING AND DEVELOPMENT

Failure to conduct employee training and development can contribute to Constraints in business development, High recruitment cost, Greater pressure and stress on staff, high labor turnover, higher training cost and increased overtime working.

COMPANY PROFILE

INTRODUCTION TO LIBERTY SHOES LIMITED

Liberty Shoes limited was started on 25th December 1954. The group started its manufacturing facilities at Karnal, Liberty Puram, Gharunda, Agra, Kanpur, Saharanpur but its headquarters are located at Karnal. It is among the top 5 manufacturers of leather footwear in the world with a turnover exceeding Rs. 600 crore. Its far reaching capabilities are due to its extensive marketing network of 150 distributors, 350 exclusive showrooms and 6,000 multi brand outlets.

OBJECTIVE AND CREDO OF LIBERTY SHOES LIMITED

- ❖ To ensure that the method they use is the latest technology the world over.

- ❖ To follow the high standards of honest workmanship in whatever they make.
- ❖ To walk the extra mile to ensure customer satisfaction worldwide.
- ❖ To know that 'We are about People'.

TRAINING AND DEVELOPMENT AT LIBERTY SHOES LIMITED

At Liberty the importance of training and development is understood fully. Here, it is made sure that the performance of employees doesn't suffer and their pace of work doesn't slacken due to lack of training. Liberty believes in investing in its people for their overall development and expansion of their overall capabilities. It also encourages external training program for overall development of its human force. Annual calendar and monthly schedules are prepared to carry the various training practices. The training department is continuously on its toes as this cycle of training is a continuous one. There are well equipped training centers like 'Manav Vikas Kendra' and 'T.I. club' where all training programs are conducted. Some are conducted by professional trainers and training institutes.

HYPOTHESIS FOR DATA ANALYSIS

HYPOTHESIS 1

$H(0)_1$ = The training programs are not effectively implemented in the selected organisation.

$H(1)_1$ = The training programs are effectively implemented in the selected organisation.

HYPOTHESIS 2

$H(0)_2$ = The training programs are not effective in improving the efficiency of employees in the selected organisation.

$H(1)_2$ = The training programs are effective in improving the efficiency of employees in the selected organisation.

RESEARCH METHODOLOGY

RESEARCH DESIGN

The primary aim of this study is to describe the employee training and development practices. To achieve this objective, descriptive and analytical type of research design with a mixed approach was employed. The descriptive type of research design helps to portray accurately the characteristics of a particular individual, situation or a group. The mixed research method is considered to be very effective in answering research questions compared to quantitative and qualitative approach when used in isolation.

SAMPLE DESIGN

A sample design is a definite plan for obtaining a sample from a given population. There are many sample designs from which a researcher can choose. A researcher must prepare or select a sample design which should be reliable and appropriate for their research. The probability and convenience sampling has been used in this study.

SAMPLE SIZE

Sample size: 100

SURVEY INSTRUMENT

The research instrument used was questionnaire and the necessary data for this study are collected from the primary source. One open-ended questionnaire was used and were measured by a 5-point Likert scale (Strongly agree to strongly disagree). Journals and books were also used as a secondary source of data collection.

STATISTICAL TOOL USED

Average score method and T-test are used to analyse the primary data collected from the respondents.

RESULTS AND DISCUSSIONS

HYPOTHESIS 1: ANALYSIS ON THE BASIS OF EFFICIENCY OF IMPLEMENTATION OF TRAINING PROGRAM

Q. How well are the training programs introduced by your organisation?

ONE-SAMPLE STATISTICS				
	N	Mean	Std. Deviation	Std. Error Mean
eff	100	4.2900	.76930	.07693

ONE-SAMPLE TEST						
	Test Value = 3					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
eff_1	16.769	99	.000	1.29000	1.1374	1.4426

The above table shows that the mean score of the respondents regarding the training practices in the institution is above 3(4.29) which indicates that training practices are rated well by the employees of the organisation and are helpful in increasing the efficiency of the employees. The standard deviation of .76930 shows that respondents do not differ much in their opinion regarding training practices of the organisation. One- sample test says that at 95% level of confidence there is no significance difference among the respondents. The above test shows that null hypothesis $H(0)_1$ - the training programs are not effective in improving the efficiency of employees in the organisation is rejected and our alternate hypothesis $H(1)_1$ - the training programs are effective in improving the efficiency of employees in the organisation is accepted.

HYPOTHESIS 2: ANALYSIS ON THE BASIS OF PARAMETERS

Q. How effective is your training program in the following parameters?

(1) Effectiveness on the basis of increasing communication.

ONE-SAMPLE STATISTICS				
	N	Mean	Std. Deviation	Std. Error Mean
inc_com	100	4.1100	.77714	.07771

One-Sample Test						
	Test Value = 3					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
inc_com	14.283	99	.000	1.11000	.9558	1.2642

The above table shows the mean score of the respondents regarding the effectiveness on the basis of increasing communication. The mean score is high that is above 3(4.11) which is good which shows that the training and development practices are effective in increasing communication among the employees. The standard deviation of .77714 shows that the responses of respondents are positive. It leads to reduction of barriers of communication within the organisation and there is no significant difference regarding their opinion. One- sample test says that at 95% level of confidence there is no significance difference among the respondents. The above test shows that null hypothesis H (0)2- that the increasing the communication is minimum and hypothesis is rejected and our alternate hypothesis H (1) 2 –that increasing the communication is maximum and hence accepted.

(2) Effectiveness on the basis of improving the morale of employees.

ONE-SAMPLE STATISTICS				
	N	Mean	Std. Deviation	Std. Error Mean
imp_mor	100	4.1800	.78341	.07834

ONE-SAMPLE TEST					
	Test Value = 3				
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference
					Lower Upper
	15.062	99	.000	1.18000	1.0246 1.3354

The above table shows that the mean score of the respondents regarding the effectiveness on the basis of improving the morale. score is high ,that is above 3(4.18), which shows that the training and development practices helps in improving the morale of employees. The standard deviation of .78341 shows that respondents do not differ much in their opinion regarding training practices of the organization. It shows the all the employees are motivated with the current training and development programs and the training needs are evaluated effectively in an organization and there is no significant difference regarding their opinion. One- sample test says that at 95% level of confidence there is no significance difference among the respondents The above test shows that null hypothesis H (0)2- that the improving the morale of employees is minimum and hypothesis is rejected and our alternate hypothesis H (1) 2 –that improving the morale of employees is maximum and hence accepted.

(3) Effectiveness on the basis of increasing the level of trust.

ONE-SAMPLE STATISTICS				
	N	Mean	Std. Deviation	Std. Error Mean
inc_trus	100	3.8800	.90207	.09021

ONE-SAMPLE TEST					
	Test Value = 3				
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference
					Lower Upper
inc_trus	9.755	99	.000	.88000	.7010 1.0590

The above table shows the mean score of the respondents regarding the effectiveness on the basis of increasing the level of trust. The mean score is high that is above 3(3.88) which is not much good which shows that the training and development practices do help to some extent in increasing the trust. The standard deviation of .90207 shows that the responses of respondents are positive. They do not differ much in their opinion regarding training practices of the organisation. It shows the all the employees are motivated with the current training and development programs and the training needs are evaluated effectively in an organization and there is no significant difference regarding their opinion. One- sample test says that at 5% level of significance there is no significance difference among the respondents The above test shows that null hypothesis H (0)2- that the increasing the level of trust is minimum and hypothesis is rejected and our alternate hypothesis H (1) 2 –that increasing the level of trust is maximum and hence accepted.

FINDINGS

The findings of this research support the literature review in the number of key areas. Organisations tend to recognize the need for, and potential of training programs for their existence. Employees training and development are the important issues for the organisation and are of utmost priority. A continuous improvement of training and development programs are important to measure its effectiveness. Employees and the organisation gain in the form of motivation, knowledge, communication, team work, level of trust and morale.

The findings of the present study are presented with the help of following points:-

- 1) The training practices are very well introduced and effectively implemented at Liberty shoes Limited.
- 2) Employees are very much satisfied with the current training and development practices
- 3) The training needs are evaluated effectively in an organisation.
- 4) The training practices are organized at top and middle level of an organisation.
- 5) Management considers training as important part of the organisation.
- 6) It helped in boosting the morale of employees to a great extent and employees are motivated to perform effectively.
- 7) These practices have helped in reducing the barriers of communication at different levels of an organisation.
- 8) Training and development practices have contributed in increasing teamwork and cooperation which has led to a positive attitude among employees to a great extent.

SUGGESTIONS

The following suggestions based on the study taken are:

1. On the basis of data analyses it has been observed that the level of trust among the employees is very less in the organisation and management should organize some training practices to increase the level of trust among employees.
2. Many employees of an organisation are not aware of the training objectives. So trainers must make it clear to all the employees.
3. Neglected areas of training such as best practices in an organisation, communication skills, knowledge of new technologies, safety must be included in the training program.
4. Other methods of training like role playing method, audio-visual method, basket training method, business game method and job-rotation method can also be introduced to make training effective.
5. A good atmosphere and working conditions must be provided to the employees so that they work happily and are satisfied with their performance.
6. Performance based incentives can be a good source of motivation for the employees to increase their confidence.
7. Employee's feedback plays a very important role so as to understand the effectiveness of the training program.
8. Training and development needs should be analyzed periodically taking into consideration as one of the most important factors for the employees as well as for the organisation.
9. Employers or top level managers must help employees understand the business, e.g. knowledge of competitors, new technology etc.

CONCLUSION

Training and development practices in an organisation contribute in such a way that employees can enhance their dexterity. Training helps organisation in achieving their strategic objectives and gives organisation a competitive edge. It is not just sufficient to conduct a training program. Organisations should evaluate whether training and development programs are effective and producing desired results. Training evaluation should be regular system in every organisation. Training program is also a way for an organisation to showcase to its employees that it cares for their self development. This plays a big role in increasing the morale, trust, communication and loyalty that an employee feels towards its organisation. Employee's feedback on a training program is essential to understand the effectiveness of a training program. If training is good then the employees will contribute their maximum for the achievement of the organisations objectives.

Training and development ultimately upgrades not only the performance graph of employees but also of the organisation.

LIMITATIONS OF THE STUDY

1. The research work has been carried out only in head office at Karnal and the findings may not be applicable to the other branches.
2. The sample has been collected using random-sampling technique. As such result may not give an exact representation of the population.
3. Shortage of time is also reason for incomprehensiveness.
4. Normally employees hesitate to disclose the information so it leads to biasness.

SCOPE FOR FURTHER RESEARCH

The scope for further research is wide and possible in other branches of Liberty shoes limited.

REFERENCES

1. A.K.L. Jayawardana, H.A.D Prasanna, Factors affecting the effectiveness of training provided to merchandisers of garment industry, Vol. 12 Nos 3 &4, July-Dec 2007 , Vol. 13 Nos 1 & 2, Jan-June 2008, Srilanka.
2. D.A. Olaniyan (2008), Staff Training and Development: a vital tool for organizational effectiveness, European Journal of scientific Research, ISSN 1450-216X, Vol. 24, No. 3, Nigeria, pp- 326-331.
3. Haslinda Abdullah (summer 2009), major challenges to the effective management of human resource training and development activities, The Journal of International social Research, Vol. 2/8, Malaysia.
4. Henry Ongori, Jennifer Chishamiso (2011), Training and development practices in an organisation: An intervention to enhance organizational effectiveness, Vol. 2(4) , pp 187-198, Botswana.
5. Dr. Vimla Sanjeev Kumar, MS Hu Yanan (2011), Training factors and its impact on training effectiveness in Kedah state development corporation, International Journal of Human Resource studies, Vol. 1, No. 2 ISSN 2162-3058, Malaysia.
6. Dr. Shefali Verma, Rita Goyal (2011), A study of training in insurance and their impact on employees productivity in IJRESS, Vol 1, Issue 1.
7. Sunita Dahiya and Ajeya Jha (Jan-June 2011), International Journal of computer science and communication , Vol 2.
8. Muksuda Hossain (Sep 2012), Training and development practices of a multinational company operating in Bangladesh, International journal of Applied Research in business administration and economics, Vol 01, Issue 04, article No. 04, Bangladesh, pp- 29-38.
9. Rama Devi V, Nagurvali Shaik (2012), evaluating training and development effectiveness, Asian Journal of management research, Vol 2, issue 1 pp 2229-3795.
10. P.Sasikumar, M.Vijayaraj and M. Malarvizhi (April 2012), a study on effectiveness of training in Godrej Sara Lee, Indian Stream Research Journal, Vol 2, Issue 3, Tamil Nadu.
11. Dr. V. Rama Devi, Mr. Nagurvali Shaik(July 2012), Training and Development a jump starter for employee performance and organizational effectiveness, International Journal of Social Science and Interdisciplinary Research, vol 1 Issue 7, Andhra Pradesh ,pp 2277-3630.
12. Dr Nadeem Ahmed Bashir, Khawaj Jehanzeb (2013), Training and Development program and its benefits to employee and organization: A conceptual study, European Journal of business and management, Vol 5, No 2, ISSN 2222-1905 (Paper), ISSN 2222-2839 (Online).
13. Ajit Jadhav, A study of Training and Development in Indian Banks, National Monthly referred Journal of Research in commerce and management, Vol. No. 1, Issue No. 1, ISSN 2277-1166
14. Leslie Allan, The myth of the silver bullet- and how to improve the effectiveness of training, Article published by Australian Institute of Training and Development, Vol. 29, Issue 1.

APPENDIX**GENDER****QUESTIONNAIRE**

MALE	
FEMALE	

**DESIGNATION
DEPARTMENT**

QUALIFICATION

12 th	
Graduation	
Post Graduation	
Masters/Doctorate Degree	

How long have you been in your current position?

< 4 years	
4-8 years	
9-13 years	
19 years and above	

- What is the various training practices adopted in your organization?
 - ☐ On the job training
 - ☐ Induction training
 - ☐ Vestibule training
 - ☐ Simulation training
 - ☐ Lecture training
 - ☐ Others
- For whom do you organize the training and development programs in your organization?
 - ☐ To Level Management
 - ☐ Middle Level Management
 - ☐ Lower Level Management
 - ☐ All of the above
- Rank the following barriers of Training and development in the order of their impact?
 - ☐ Time ()
 - ☐ Money ()
 - ☐ Lack of Interest by the staff ()
 - ☐ Non-availability of skilled trainer ()
 - ☐ Inefficiency of the top management ()
- How well the training practices are introduced by your organization?
 - ☐ Excellent
 - ☐ Very Good
 - ☐ Average
 - ☐ Good
 - ☐ Poor
- Does your organization analyze training needs periodically?
 - ☐ Always
 - ☐ Often
 - ☐ Sometimes
 - ☐ Rarely
 - ☐ Never
- Your organization considers training as a part of organizational strategy. Do you agree with this statement?
 - ☐ Strongly Agree
 - ☐ Agree
 - ☐ Neutral
 - ☐ Disagree
 - ☐ Strongly Disagree
- Do the employees have the positive attitude towards the training and development practices in the organization?
 - ☐ Very Often
 - ☐ Often
 - ☐ Sometimes
 - ☐ Rarely
 - ☐ Never
- Are the employees satisfied with the training and development practices in an organization?
 - ☐ Highly satisfied
 - ☐ Satisfied
 - ☐ Neutral
 - ☐ Dissatisfied
 - ☐ Highly Dissatisfied
- How effective are your training programs in the following parameters?

	Highly Effective	Effective	Neutral	Least Effective	Not at all Effective
Productivity					
Improving quality of work					
Reduction of Errors					
Improving Morale of employees					
Reduction of supervision					
Increasing level of trust					
Increasing Communication					
Team Work					
Modifying the attitude of employees					

Additional Comments:

A SURVEY OF THE DIMENSIONALITY REDUCTION TECHNIQUES IN DATA MINING: A REVIEW PAPER

TARANMEET KOUR
STUDENT
DEPARTMENT OF COMPUTER SCIENCE
GURU NANAK DEV UNIVERSITY
AMRITSAR

AMITPREET KOUR
STUDENT
DEPARTMENT OF COMPUTER SCIENCE
GURU NANAK DEV UNIVERSITY
AMRITSAR

DR. SANDEEP SHARMA
ASSOCIATE PROFESSOR
GURU NANAK DEV UNIVERSITY
AMRITSAR

ABSTRACT

The objective of data mining is to identify valid novel, potentially useful, and understandable correlations and patterns in existing data [Chung and Gray 1999]. The volume of electronically accessible data in warehouses and on the Internet is growing faster than the speedup in processing times predicted by Moore's Law. Consequently, classical data mining algorithms that require one or more computationally intensive passes over the entire database are becoming prohibitively slow, and this problem will only become worse in the future. The scalability of mining algorithms has therefore become a major research topic. One approach to the scalability problem is to run mining algorithms on a small subset of data. That is Data Reduction is a very important issue. Data reduction techniques can be applied to obtain a reduced representation of the data set that is much smaller in volume, yet closely maintains the integrity of the original data. That is, mining on the reduced data set should be more efficient yet produce the same analytical results. In this paper mainly dimensionality reduction technique to reduce data is been discussed. Under it mainly two techniques i.e. SVD and PCA are been discussed.

KEYWORDS

Data Mining, eigen values, eigen vectors, PCA, SVD.

I. INTRODUCTION

The sheer volume of data today and its expected increase in the next few days are some of the key challenges in data mining and knowledge discovery applications[1]. Besides a huge number of data samples that are collected and processed, the high dimensional nature of data arising in many applications causes a need to develop effective and efficient techniques that are able to deal with massive amount of data[9]. As the dimensionality of data increases, many types of data analysis and classification problems become significantly harder.

Dimensionality reduction, feature selection, numerosity reduction, and data compression are some of the techniques to reduce the attribute space.

II. DATA REDUCTION TECHNIQUES

Dimensionality reduction is the process of reducing the number of random variables or attributes under consideration by producing the linear combination of the original data. Dimensionality reduction methods include transforms and principal components analysis which transform or project the original data onto a smaller space. The main advantage of this technique is that the size of attribute space is reduced without losing a lot of information of the original attribute space. The disadvantage is the fact that the linear combinations of the original features are usually not interpretable and the information about how much an original attribute contributes is often lost.

Feature Selection works by removing redundant or irrelevant features from the data set as they can lead to a reduction of the classification accuracy or clustering quality and to unnecessary increase in the computational cost. The advantage of feature selection is that no information about the importance of single feature is lost. On the other hand, if a small set of features is required and the original features are diverse, information may be lost as some of the features must be omitted.

Numerosity reduction techniques replace the original data volume by alternative smaller forms of data representation.

Data compression, transformations are applied so as to obtain a reduced or "compressed" representation of original data.

In this paper we will mainly deal with dimensionality reduction technique of data reduction. Data reduction can be lossless or lossy. In dimensionality reduction, reduction of the dimensionality is done by using low rank approximation techniques to create new attributes that are combinations of the old, original variables. Dimensionality reduction is also referred to as feature transformation, feature extraction or feature construction. Some of the techniques covered under this are Principal Component Analysis(PCA), Singular Value Decomposition(SVD), Pseudoinverse(also called as Moore Penrose Pseudoinverse), etc.

III. PRINCIPAL COMPONENT ANALYSIS

Principal component analysis (PCA)[2] is a standard tool in modern data analysis - in diverse fields from neuroscience to computer graphics - because it is a simple, non-parametric method for extracting relevant information from confusing data sets.

Often, the variables under study are highly correlated and as such they are effectively "saying the same thing". It may be useful to transform the original set of variables to a new set of uncorrelated variables called principal components. These new variables are linear combinations of original variables and are derived in decreasing order of importance so that the first principal component accounts for as much as possible of the variation in the original data. These new attributes (called principle components(PCs)) have to meet the following criteria: The PCs are (i) linear combinations of the original attributes, (ii) orthogonal to each other, and (iii) capture the maximum amount of variation in the data. Also, PCA is a linear dimensionality reduction technique, which identifies orthogonal directions of maximum variance in the original data, and projects the data into a lower-dimensionality space formed of a sub set of the highest variance components.

The goal of PCA is to reduce the dimensionality of the data while retaining as much as possible of the variation present in the original dataset.

A. Advantages and disadvantages of PCA

PCA is a relatively simple, non-parametric, generic method that is useful for finding new, more informative, uncorrelated features and it can be used to reduce dimensionality by rejecting low variance features. Since the principal components are orthogonal[7][8] to each other, every principal component is uncorrelated to every other principal component (i. e., they do not contain any redundant information). The principal components are designed to account for the highest percentage of the variation among the variables with as few PCs as possible. Thus, often the first few PCs account for some large percentage of the total variance, allowing for a compact representation of the data with only low dimensions.

However, PCA is limited to re-expressing the data as combinations of its basis vectors. A main drawback of PCA[5] is that each PC is a linear combination of all original variables, thus leading to a potentially difficult interpretation of the PCs. On the contrary, in a system with many variables PCA may be used to project the dimension down to a reasonable number of plots, and the principal components could be rotated towards a more meaningful representation. Moreover, PCA[6] is sensitive with respect to the units of measurement. If the units and the variances of attributes vary a lot, then variables with high variance tend to dominate the first few principal components. In this case, the data need to be normalized prior to the PCA transformation.

B. Computational complexity

From a computational point of view, the eigen value decomposition for solving the PCA transformation is rather expensive in terms of runtime, especially for a large number of attributes. There are several algorithms for solving symmetric eigen problems, but all of them are of order $O(n^3)$. So the complexity of solving PCA also revolves around the same.

IV. SINGULAR VALUE DECOMPOSITION

Singular Value Decomposition[3] can be viewed from three points of view:

1. It is a method for transforming correlated variables into a set of uncorrelated ones that better expose the various relationships among the original data items.
2. SVD is a method for identifying and ordering the dimensions along which data points exhibit the most variation.
3. Once we have identified where the most variation is, it is possible to find the best approximation of the original data points using fewer dimensions. Hence SVD can be seen as a method of data reduction.

SVD[4] is based on a theorem of linear algebra which says that a rectangular matrix can be broken down into a product of three matrices:

- a) An orthogonal matrix U [i.e. $U^T U = I$] and the columns of U are orthonormal eigen vectors of $A A^T$.
- b) A diagonal matrix S , containing the square roots of eigen values from U or V in descending order.
- c) Transpose of an orthogonal matrix V^T [i.e. $V^T V = I$] and the columns of V are orthonormal eigen vectors of $A^T A$.

$$\text{i.e. } A_{mn} = U_{mm} S_{mn} V_{nn}^T$$

The truncated SVD (or reduced rank SVD) to A can be found by setting all but the first k largest singular values equal to zero and using only the first k columns of U and V . This is usually denoted like

$$A_k = U_k S_k V_k^T$$

or more explicitly,

$$A_k \approx (u_1, \dots, u_k) \begin{pmatrix} \sigma_1 & & \\ & \ddots & \\ & & \sigma_k \end{pmatrix} \begin{pmatrix} v_1 \\ \vdots \\ v_k \end{pmatrix}$$

A. Computational complexity

In general, the computational complexity of the SVD algorithm for computing all three matrices U , S and V is $O(4m^2n + 8mn^2 + 9n^3)$, for computing only the matrices S and V it is $O(4mn^2 + 8n^3)$, making the decomposition unfeasible for large datasets. The RSVD algorithm has a complexity of $O(4m^2n + 22n^3)$ for computing all three matrices, and a complexity of $O(2mn^2 + 11n^3)$ for computing only S and V .

Other than the data reduction the various other applications of SVD are:

1. **Numerical Rank:** The SVD can be used as a numerically reliable estimate of the effective rank of the matrix. The rank of a matrix is defined as the number of linearly independent columns in a matrix. The way to find these dependencies is to focus on the singular values that are of a larger magnitude than the measurement error. If there are r such singular values, the effective rank of the matrix is found to be r : The SVD is closely related to the idea of selecting the closest rank r approximation to a matrix, which is further considered in the data compression.
2. **Pseudoinverse:** Another application of the SVD is to the computation of what is called the generalized inverse of a matrix. This is very closely related to the linear least squares problem. If A is square and full-rank it has an inverse. But for the tall and fat matrices i.e. when $m > n$ and $m < n$ respectively the inverse cannot be taken out directly. In such cases the pseudoinverse is been taken out. Various methods for calculating the pseudoinverse have been found. The pseudoinverse of a sparse matrix is been found in [12]. Similarly the pseudoinverse can also be taken out by Linear Solver[11] which takes out the inverse by deviding the matrix into two parts.
3. **Rank Deficient Least Squares:** As with most of our other linear algebra tools, SVD provides yet another way to solve linear systems. This is stable when the we deal with square matrices One of the strengths of the SVD is that it works when the matrix is singular. It also deals with the overdetermined and underdetermined cases when the number of equations is not equal to the number of unknowns.

B. Relation to PCA

Calculating the SVD is equivalent of finding the eigen values and eigen vectors of AA^T and $A^T A$. The eigenvectors of AA^T make up the columns of U , the eigenvectors of $A^T A$ make up the columns of V . Moreover, the singular values in S are the square roots of eigen values from AA^T and $A^T A$. The SVD-PCA connection stems from the straightforward linear algebra calculations

$$AA^T = (USV^T)(VS^T U^T) = US^2 U^T, \text{ and}$$

$$A^T A = (VS^T U^T)(USV^T) = VS^2 V^T$$

An often mentioned difference between these two approaches is that PCA removes

the mean of each variable whereas SVD uses the original data (however, the mean could also be removed before computing the SVD). Especially for sparse data it is not always preferable to remove the mean of the data.

V. METHODS

There are various methods to solve matrix equations that are specialised to particular problems. We can select between these based on the type of data. Various methods used for the same are as follows:

1. **LAPACK:** It is the default method for solving dense numerical matrices. When the matrix is square and non-singular the routines dgesv, dlange, and dgecon are used for real matrices and zgesv, zlange, and zgecon for complex matrices. When the matrix is non-square or singular dgelss is used for real matrices and zgelss for complex matrices. If the input matrix uses arbitrary-precision numbers, then LAPACK algorithms extended for arbitrary-precision computation are used.
2. **Multifrontal:** The Multifrontal method is a direct solver used by default if the input matrix is sparse. If the input matrix to the Multifrontal method is dense, it is converted to a sparse matrix. The implementation of the Multifrontal method uses the UMFPACK library.

3. *Krylov*: The Krylov method is an iterative solver that is suitable for large sparse linear systems, such as those arising from numerical solving of PDEs. Basically two Krylov methods are implemented: Conjugate Gradient (for symmetric positive definite matrices) and BiCGSTAB (for non-symmetric systems). The default method for Krylov, BiCGSTAB, is more expensive but more generally applicable. The ConjugateGradient method is suitable for symmetric positive definite systems, always converging to a solution (though the convergence may be slow). If the matrix is not symmetric positive definite the ConjugateGradient may not converge to a solution.

4. *Cholesky*: The Cholesky method is suitable for solving symmetric positive definite systems. This method is far more fast and stable. For dense matrices the Cholesky method uses LAPACK functions such as dpotrf and dpotrs for real matrices and zpotrf and zpotrs for complex matrices. For sparse matrices the Cholesky method uses the TAUCS library.

5. *Symbolic Methods*: There are a number of methods that are specific to symbolic and exact computation: CofactorExpansion, DivisionFreeRowReduction and OneStepRowReduction.

VI. CONCLUSIONS AND FUTURE WORK

In this paper we have discussed about data reduction techniques and from them we conclude various advantages of data reduction. It leads to better understanding of underlying model. It is simply the usage of various visualization techniques(eg looking at peers or triplets of attributes, self organizing maps, etc.). Data reduction significantly reduces the computational cost and memory requirements of the classification algorithm applied to data. Here mainly the dimensionality reduction aspect of data reduction is considered. SVD and PCA can be mainly used for dimensionality reduction. While PCA mainly works with principal components SVD deals with whole data and mainly with sparse matrix. From a theoretical point of view, PCA and SVD have the best theoretically provable properties, and give the best approximation in terms of approximation error. Moreover, both techniques are purely deterministic and always produce reproducible results (for identical input).

The availability of fast and efficient algorithms is also an important aspect of dimensionality reduction methods. The software libraries as described in the method part provide several algorithmic variants for efficiently computing singular value decomposition and eigen value decomposition(to be used in PCA).

The future work for these techniques can be that various applications of these techniques can be explored and the accuracy of data reduction can be increased.

REFERENCES

1. A. Beck and M. Teboulle, "A Fast Iterative Shrinkage Thresholding Algorithm for Linear Inverse Problems", *SIAM J. Imaging Sci.*, vol.2, no. 1, pp. 183-202, 2009.
2. Alter O., Brown P.O., Botstein D. Singular value decomposition for genome-wide expression data processing and modeling. *Proc Natl Acad Sci USA* 2000; 97:10101-06.
3. Fayyad, U., Piatetsky-Shapiro, G., and Smyth "From Data Mining to Knowledge Discovery: An Overview" *Advances in Knowledge Discovery and Data Mining*, MIT Press, 1-36, Cambridge, 1996.
4. Jolliffe, I. T. (2002). *Principal component analysis* (Second ed.): Springer.
5. Larose, D.T., *An Introduction to Data Mining. Discovering Knowledge in Data*. 2005: Willi & Sons, Inc.
6. M.A. Carreira-Perpinan. *A review of dimension reduction techniques*. Technical report CS-96-09, Department of CSE, University of Sheffield, 1997
7. Mark Richardson tutorial on "Principal Component Analysis", 2009.
8. Michael E. Wall "Singular value decomposition and principal component analysis", 2003.
9. Principal components analysis for correlated curves and seasonal commodities: The case of the Petroleum markets (Tolmasky & Hindanov, 2002).
10. Shlens, J., *A Tutorial on Principal Component Analysis*. 2009.
11. Smith, L., *A Tutorial on Principal Component Analysis*. 2002.

AN IMPERATIVE STUDY ABOUT HUMAN COMPUTER INTERACTION: TRENDS AND TECHNOLOGIES**DR. ASHU GUPTA****ASST. PROFESSOR****SCHOOL OF IT****APEEJAY INSTITUTE OF MANAGEMENT TECHNICAL CAMPUS****JALANDHAR****SAKSHI DUA****ASST. PROFESSOR****DEPARTMENT OF COMPUTER SCIENCE & IT****LYALLPUR KHALSA COLLEGE FOR WOMEN****JALANDHAR****ABSTRACT**

Computer is a device that has established its importance in almost every field of today's life. There was a time when some devices were needed to feed the data in computer machine but time has changed. Inventions are going in such a way that data can be directly pass to computers but with the intervention of human being. Such procedure introduced the concept Human computer Interaction (HCI). It is a highly advanced field that describes how the users are able to deal with computers to accomplish their respective tasks in a new way and how he can directly deal with machines. Lots of technologies have been rooted out in HCI – sixth sense technology, gesture recognition, speaker recognition etc. All these technologies are the in-trend and pioneer research topics for researchers nowadays, because research on such advance and interesting topics motivates the researcher to move ahead. The basic contents of this paper focus on the study of human computer Interaction (HCI), conjunction between human and computer. Moreover, this paper comprises of definitions, application related concepts, latest advancements in of the area Human Computer Interaction, Architecture that it possesses, modeling of HCI and broad range of references for referred material.

KEYWORDS

Human Computer Interaction, Speech Recognition, Variations of HCI, Applications

INTRODUCTION

Usage of Computers in every day of human life is indispensable activity. For very small to larger tasks, all are being done by Computers. There are considerable advantages of using Computers for some of the special fields especially in engineering and medicines. For this, abundant of inventions have been done to make more use of computers by such areas. HCI (human-computer interaction), study of way, how the people interact with computers and to what extent computers are successfully interacting with human beings. Hewett [3] defined "Human computer interaction is a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them.". HCI studies the relationship between human and computers, it needs supporting knowledge on both the human and the machine side. Before such kind of invention, for interaction between computers and human being key-boards, mouse etc, were in trend. But no ways so many devices have been released which are helpful in developing interaction between user and computer. Thomas [1] in his paper focused on variety of new devices for user computer interaction. The highlighting objectives of this broadly defined paper are to describe the overall architecture of Human Computer Interaction, approaches that come under HCI and some of the newly arrivals in the field of input devices that are useful in HCI these days. Aforementioned variations of HCI are the most covering areas for researchers as it polishes their knowledge for happenings of world. As name implies, HCI consists of three parts: the **user**, the **computer** itself, and the ways they work together that is **interface** itself.

LITERATURE REVIEW

Fakhreddine Karray, Milad Alemzadeh, Jamil Abou Saleh and Mo Nours Arab (2008) attempted to include the definitions regarding HCI, presented the study of existing techniques along with study of recent advancements under HCI and all the new interaction methods like intelligent, multimodal methods have been introduced in their paper.

Jia Wei (2009) in his paper purely explores the concept of HCI with numerous definitions and its applicability or use in hospitality industry. Moreover, some standards that are required for designing HCI and many more applications of HCI have been discussed in his paper.

Thomas Hahn (2010) in his paper stated all the techniques and devices which are favorable for HCI like devices that uses the human hand gesture along with multi touch tabs like iPad and sixth sense technology all have been described in so deep way.

Acm sigchi curricula for human-computer interaction (updated on 2009) It is a curricula that involves all the matter in the form of chapters. Five chapters have been designed, covers introduction, HCI courses, HCI curriculum designs and some kind of observed issues.

Sanjeev Tayal, Pramod Kr. and Monika Garg (2012) focused on every aspect related to Sixth Sense. They have provided enormous details on Sixth Sense technology like how it works actually and what are the important and vital components behind its working and the advantages of Sixth Sense technology also been introduced in this paper.

Chris Harrison, Desney Tan, and Dan Morris (2010) In this paper the authors have presented their work/approach towards the fact that human body or skin is appropriate as an input surface. They have used the approach of wrist, finger tips, forearm and armband for input surface and afterwards Results for the same in the terms of percentage have been declared which shows which part is highly effective to serve as input for data even while moving/walking these surfaces work!!

STATEMENT OF PROBLEM

In this paper there is extreme focus on inseparable concepts of HCI and all the major developments that have been done under HCI like various smart devices that enable today's user to interact with computer directly without intervention of input devices or output devices. The main reason behind the creation of this Research paper is to provide abundant data or a crystal clear view on HCI and all the techniques that fall under HCI which play vital important role in efficient working of HCI. So for this purpose an overview of HCI, Vast researches that are done on HCI and some trendy devices which are being used in HCI have been drafted out in this paper.

COMPONENTS OF HCI

USER / END USER

User is the one end of entire system, but Prior component of Human Computer Interaction. The days have gone when user was responsible to enter the data into the system via some restricted Input devices. Nowadays vast list of devices has been introduced which incorporates very advance devices for forwarding the data into the machines. Jia Wei [7] stated that user may an individual user or may group of users working together are the actual users of HCI. It is the need of user and interesting concepts that are behind their origin and development.

COMPUTER/ MACHINE

Computer is the actual machine where interaction is to be carried out. Computers ranging from mini to mainframes are considerable useful, depending upon the utility of a user. But all these new technologies like gesture & speech recognition, sixth sense technologies require one particular device for their efficient working. Like speech recognition requires high quality Mic where as sixth sense technology requires sort of mini projector by which it can project the view that user is viewing. Nicky Danino[11] stated that computers in HCI refers to technologies that involves systems from desktop to generalized. For invoking user interaction with computers, Imperative input devices with high storage memory are required to be attached with such computer systems. Laptops cum notepads are in trend that can act as laptop one time and notepad at another time if screen is detached from its keypad.

INTERFACE/ADMIX/INTERACTION

HCI is responsible to create the enhancing interaction between the computers and human beings. All the input and output devices are being involved this process. Lew, Sebe, and Huang [5] in their paper stated that human beings not only with speech interact with one another , but use body gestures too for the reflection of their emotions .Graphical user interface is highly efficient interface to create the interaction with machine to complete the task.

GOALS THAT HCI ATTEMPTING TO ATTAIN

Introduction and development of new concepts, logics always possess some goals or some objectives behind them. HCI has been coined out due to several reasons. User involvement is at prior place that makes it efficient at highest. Acc to Te'eni [9], HCI is to be designed to achieve compatibility between its user and machine by providing well-suitable interfaces. The highlighting goals of HCI are to produce usable, friendly, simple to learn systems: A basic goal of HCI is to improve the interactions between users and computers by making computers more usable and receptive to the user's needs. HCI is a design that should produce a fit between the user, the machine and the required services in order to achieve a certain performance both in quality and optimality of the services. Specifically, HCI is concerned with:

- Methodologies and processes for designing interfaces (i.e., given a task and a class of users, design the best possible interface within given constraints, optimizing for a desired property such as learnability or efficiency of use)
- Methods for implementing interfaces (e.g. software toolkits and libraries; efficient algorithms).
- Techniques for evaluating and comparing interfaces.
- Developing new interfaces and interaction techniques.
- Developing descriptive and predictive models and theories of interaction.

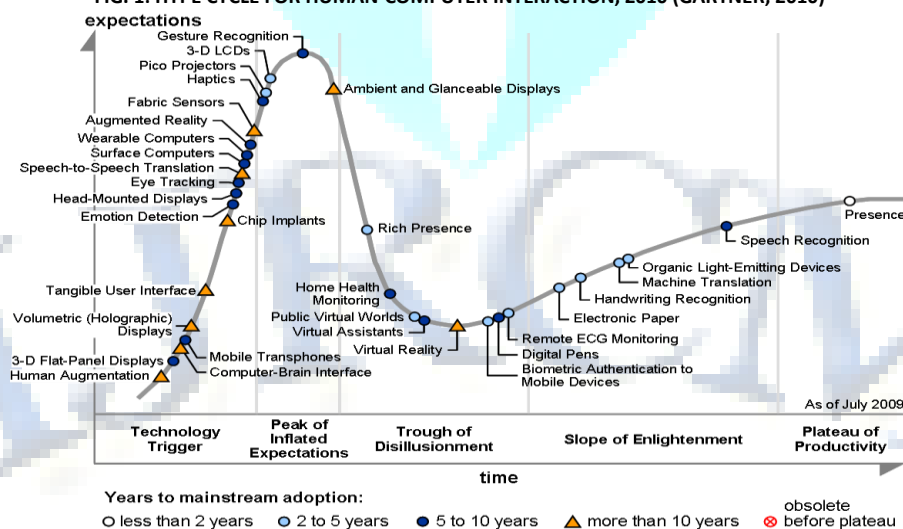
HIGHLY IN-TREND STREAM FOR RESEARCHERS

All the recent technologies and advancements in the field of HCI are making this stream so interesting for the researchers. No area has been left untouched where the sort of latest advancements of HCI have not been involved. Smart home concept, Smart classes, Smart phones, sensor Networks, human speech recognition all are the concepts of HCI. So Far, Special models have been introduced for the efficient working of HCI. Classical Input devices that were in so high demand have been completely replaced by the new methods and new techniques for feeding the data into the computer systems for processing. Hand gestures, human voice are the highly adaptable methods to feed the data as input, all is great achievement by using HCI. Speech recognition, this is one of the important application of HCI that has made handicapped user able to interact with Computers without the intervention of their hands by only speaking out the words either isolated or connected and these words are easily captured by computers and these machines can act upon data that they received from Users. Another the most important application that comes under HCI is Sixth sense technology, that lets the users to use hand gestures to interact with the information. This outstanding invention has been proposed by Pranav Mistry. This technology uses some sort of Pocket projectors, a mirror, a camera along with mobile like wearable device and this has reduced the need of all kind of input and output devices, wherever the user is he can use his palm or his arm as an input device, can say its really the super advancement in the area of HCI

HYPER-CYCLE FOR HUMAN COMPUTER INTERACTION

A hype cycle diagram for Human Computer Interaction is a representation of the maturity, adoption and social applications of this technology the term was introduced by Gartner, Inc

FIG. 1: HYPE CYCLE FOR HUMAN-COMPUTER INTERACTION, 2010 (GARTNER, 2010)



As far as HCI is concerned three main aspects are inseparable part of HCI and they can be represented as: cognitive aspect, physical aspect and finally affective aspect. The cognitive aspects associates with the ways by which the user is understandable to the system and can easily communicate with the system. The physical aspect associated with the mechanisms that are involved in human – computer interaction. The affective aspect deals with way by which the user is continued to use the machine although the machines change its attitude and behavior about the user. hype cycle diagram above shown , is a graphical representation that is mirroring the maturity and adoption of HCI technologies and showing the emerging trends as well as which have gone under slope that is slope of enlighten.

VARIATIONS UNDER THE FIELD OF HCI

HCI wraps variety of techniques in itself. Impressing fact about this, each and every technology under HCI is highly in trend topic under these days research. Slow and steady but researchers are working on every field that is under HCI. It is based on different modalities [4], HCI can be divided into three categories -

1. Visual driven HCI
2. Audio approach based HCI
3. Sensor approach based HCI

Different variations or types come under HCI which enables to enter the data in different ways by streaming data in Audio based approach, Visual Based Approach and/or via sensor technology.

VISUAL DRIVEN HCI

The visual approach based human computer interaction is probably the most widespread area in HCI research. Here researchers emphasizes on human responses which can be recognized as a visual signal. Devices recognize the visual movement or physical movement of user and responds in accordance with that. Body movement is just enough to make the machine understand of concepts. Such kinds of devices are helpful to people who are quite less known to computer machines. Some of the main research areas in this section are as follow [4]:

Detection/ Analysis of face expressions

Facial Expression Analysis

Body Movement Tracking (Large-scale)

Gesture Recognition

Gaze Detection (Eyes Movement Tracking)

Facial expression analysis generally deals with recognition of visually emotions. Facial expressions are the automatic recognition of facial expressions, very important component of natural human-machine interfaces; it may also be used in behavioral science and in clinical practice.

Gaze tracking is tracking the gaze of people looking at images to determine regions of interest and their importance. Eye tracking systems are basically for helping disable candidates in which eye tracking plays a important role.

AUDIO APPROACH DRIVEN HCI

The audio approach based interaction; inverse to visual HCI is another important area of HCI systems. User voice is required to make here computer understand the instructions that are delivered by speaker. This area deals by acquiring information in different audio signals. Research areas in this section can be divided to the following parts:

Speech Recognition

Speaker Recognition

Human made Noise/Sign Detections

Speech recognition and Speaker recognition have been the major areas of researchers.

Speech recognition systems is also known as Automatic Speech Recognition (ASR), or computer speech recognition, is the process of converting a speech signal to a sequence of words, by means of an algorithm implemented as a computer program used by the general public e.g. phone-based automated information retrieval, or ticketing purchasing – the user makes contact with the system, and speaks instead of commands and questions. Models for these recognition systems can be depicted as-

- Zipf's law
- Hidden Markov Models (HMM)
- The noisy channel
- Parametric clustering

A speech recognition system needs a microphone for the person to speak into, Speech recognition software, a computer to take and interpret the speech, a good quality soundcard for input and/or output.

Speaker recognition encompasses verification and identification. Automatic Speaker Verification (ASV) is the use of a machine to verify a person's claimed identity from his voice.

Music generation and interaction is a new area in HCI which has applications in art industry in both audio- and visual-based HCI systems.

SENSOR APPROACH DRIVEN HCI

This comprises of at least Physical sensor that is placed between user and machine to carry out the interaction. These sensors are very sophisticated.

Pen-Based Interaction (Light pen)

Mouse & Keyboard

Joysticks

Motion Tracking Sensors

Digitizers

Pressure Sensors

Taste/Smell Sensors

Pen-Based sensors are specifically for mobile devices and are related to pen gesture and handwriting recognition areas.

Mouse and Keyboard, the main goal of any mouse is to translate the motion of our hand into signals that the computer can use.

A **keyboard** is a typewriter-style device, which uses an arrangement of buttons or keys. Keyboards have become the main input device for computers. It has characters engraved or printed on the keys and each press of a key typically corresponds to a single written symbol.

Motion tracking sensors/digitizers are the latest technology which has revolutionized movies, animations, art, and video game industry.

These types of sensors are also preferred in medical surgery application.

INTERACTIVE & IMPERATIVE TECHNOLOGIES OF HCI**TELEPRESENCE**

Telepresence is an interactive and imperative technique that comprises of video technologies to give the perception to employees as they sit together in a same location although they are geographically separated. Very high definition cameras with very high fidelity acoustics are needed in the both of the side of participation. The California Community Colleges (CCC) is the real example using such interactive technology.

PERVASIVE HUMAN SENSING AND REMOTE ASSISTANCE

This technique is basically for military and civilian personnel by whom they can provide abundant information possibly by the use of head –mounted cameras and they could have benefit from virtual assistance. For example, for the bidirectional way, the information from translator, cultural experts, and intelligence medical staff could be provided directly to a soldier in the field. These specialists are intended to feed the information directly into the HMD of a soldier

MULTI TOUCH DEVICES INCORPORATING HCI TECHNIQUE**IPAD**

The recent invention of iPad came from Apple is one of the latest implementation of full multi-touch displays which is entirely a new way that lets the people to interact with their computer. Thomas [1] in his paper stated importance of iPad and its contribution in HCI efficient working. With the introduction of iPad, it is now possible to use all the finger movements two finger movement or four finger movement to navigate through the interface. For example two fingers can magnify the things and four fingers to browse through the windows.

FIG. 2: IPAD PICTURE (TAKEN FROM <http://www.google.co.in/>)**MICROSOFT @SURFACE**

Microsoft Surface is a collection of software and hardware technology that allows the people to interact with digital contents. These devices make use of infrared cameras for recognition of objects that are used on screen. An object may be the human fingers or even other items which can be placed on the screen. Thomas [1] in his paper described these devices much suitable for stationary purpose like for a normal table with which it is then feasible to interact with. Here no extra devices are required for a usage of this tool and interaction can be made directly with the hands. With the large 30 inch display more people are able to interact with the system and with each other at the same time. So it is perhaps possible to browse through different information menus about the placed item and obtain more digital information.

SMART* APPLICATIONS OF HCI**SMART* CARS**

HCI has been pointed out under the keen vision of car manufacturers too. They are putting their efforts for introducing the cars with backseats along with imperative gaming, location tracking features etc.

SMART* TVS

When talk about Smart TVs, one cannot avoid the Samsung TVs, who introduced the Smart these very firstly for the users by involving the concept of HCI where it is possible to manipulate the TV with finger gesture. Moreover, TV can act as computer systems in the same time with access of internet. These TVs enables the user to install vast range of applications and plug-ins and they do run their own complete operating system.

NEW APPLE TV

Apple TV, Digital media receiver that has been designed to fetch the contents from Youtube, Flickr, I cloud etc. This TV comprises of hard drive, its third generation was introduced on March 7, 2012 with new user interface.

SMART PHONES

Smartphone Technology brought into light by Sony Ericsson. Later on, Samsung, one of the leading Brand for advancement in electronics which introduced Smart Phones with prominent features of – Multi-touch, Sensors, Accelerometers, Location detection, Wi-Fi feature, largest display screen and flash for camera etc. These phones require their own mobile operating system (OS) –Apple's iOS, Google's Android, RIM's Blackberry and Samsung's Bada etc.

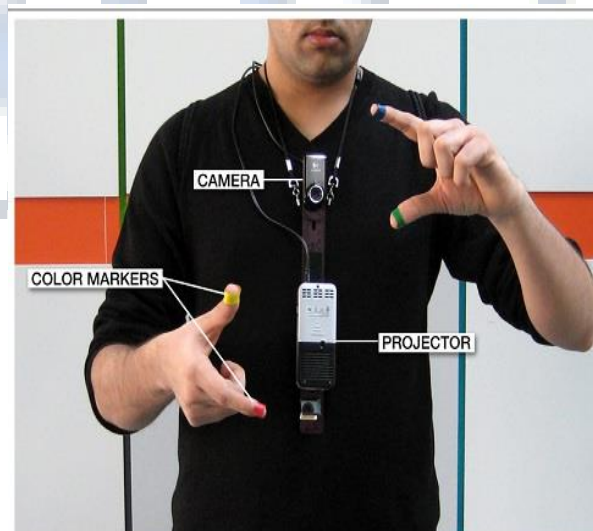
HCI IN VIDEO DEVICES

High efforts have been made in the area of video input and output devices like Sixth Sense. The main purpose of such devices is to provide more and more interaction with the computer then with normal touch screens or ipads. Therefore, these techniques tend to recognize human gestures like the hands without any kind of need of additional handheld pointing devices. This comprise of two categories-

SIXTH SENSE

Sixth Sense is a wearable gestural interface device that was introduced by Pranav Mistry, It is the new technique that is helpful in the area of HCI, in which all the interaction is done via hands without involving any kind of handheld devices. Acc to [6] Sixth Sense is a wearable gestural interface that lets the user to use hand gesture in a natural way to deal with information. The Sixth Sense prototype is comprised of a pocket projector, a mirror, colored marker and a camera as shown in fig [3]. Each of the components play vital role in its efficient working where Pocket projector projects the information like data or pictures on to wall or any of the surfaces, Mirror reflects the image or picture to any suitable surface that may be a wall or any of flat surfaces, Camera is to capture required picture that user makes with his hand and sends to the smart phone for further processing of image, Mobile or Smart Phone that processes the picture that it has been captured from camera interprets the hand gesture of user with color tapes or markers wrapped around Finger tips of user [6]. Colored Markers are wrapped around finger tips of user, they are of red, green, yellow and blue tapes that aid the webcam to recognize the hand or finger gesture of user, The camera, mirror and projector are connected wirelessly to a blue tooth smart phone device that can be easily fit into the user's pocket. Both the projector- the camera and sensors are connected to mobile computing device that lies in the user's pocket. The projector projects visual information enabling surfaces, walls and physical objects; while the camera recognizes and tracks users' hand gestures and physical objects using computer-vision based techniques.

FIG. 3: IMAGE REPRESENTATION FOR SIXTH SENSE WORKING ALONG WITH COMPONENTS [6]



SKINPUT

Skinput is a technology that appropriates the human body for acoustic transmission, allowing the skin to be used as an input surface [2]. It uses bio-acoustic sensing to localize finger tips on the skin. The technology was studied and developed by Chris Harrison, Desney Tan, and Dan Morris at Microsoft Research's Computational User Experiences Group. Likewise sixth sense technology, Skinput also makes use of human body and it is always available mobile input system.

GSPEAK

GSpeak an Oblong's core technology, a full gesture input or output device employing 3D interface. It comes up with very sophisticated user interface and is designed to be used with big screens that use a lot more space. Therefore the user needs to wear hand gloves to control the interface activities, such systems come with very high definition graphical outputs that can be projected to any screen that user facing. User here able to drag the objects from big screens to a smaller screen and can use the interface with touch screen and can again drag the objects back to the big output screens. The most adventurous thing about this, the system can be used with any of the Device you want.

CONCLUSION & FUTURE SCOPE

This paper reflects brief description of Human Computer Interaction, Detail architecture of HCI and scope of Human Computer Interaction in the field of upcoming technologies. Applications of HCI have been flashed so that latest areas can be put into front of readers and they can have very bright knowledge about Human Computer Interaction, about recent applications like in Speech Recognition, Pattern Recognition, Sensor technology, Facial Expression Analysis, Body Movement Tracking, Gaze Detection, Gesture Recognition, and Eyes Movement Tracking etc. It is very important to say that well-designed HCI applications can minimize the gap between the user and the machine reduces time wasting and improve work efficiency to make happy and satisfied users.

REFERENCES

1. Dix Alan, Finlay E. Janet, Gregory D. Abowd, Beale Russell, "Human computer Interaction", 3rd Edition, Pearson prantice hall.
2. Hahn Thomas, "Future Human Computer Interaction with Special Focus on Input and Output Techniques", University of Reykjavik accessed on 2010, March 26
3. Harrison Chris, Tan Desney, and Morris Dan "Skinput: Appropriating the Body as an input Surfcae"
4. Hewett, Baecker, Card, Carey, Gasen, Mantei, Perlman, Strong, and Verplank, "Acm sigchi curricula for human-computer interaction," 1992,1996.<http://old.sigchi.org/cdg/cdg2.html>.accessed on 2010, February 23.
5. <http://www.google.co.in/>
6. <http://www.pranavmistry.com/projects/sixthsense/>, accessed on 2010, March 20.
7. <http://www.sitepoint.com/computer-interaction-site/>
8. Jia,Wei "Exploration of Human computer Interaction (HCI) Applications in Hospitality Industry"
9. karray, Fakhreddine, Alemzadeh Milad, Saleh Abou Jamil and Arab Nours Mo "Human Computer Interaction: Overview on State of the Art, Pattern analysis and machine Intelligence"
10. Lew, Sebe, and Huang (2007) "The age of human computer interaction" [Editorial]
11. Sanjeev Tayal, Pramod Kr. and Monika Garg, "Integrating Information with the Real World Using Sixth Sense Computing"
12. Te'eni, D., Carey, J., & Zhang, P. (2007) "Human computer interaction: Developing effective organizational information systems" Hoboken, NJ: John Wiley & Sons, Inc.

A REVIEW ON THE COST MANAGEMENT STRATEGIES ADOPTED BY AIRLINES GLOBALLY

DR. BINDU NAIR
ASST. PROFESSOR
EMIRATES AVIATION COLLEGE
DUBAI

ABSTRACT

The global airline industry faces many challenges and is affected by the external environmental changes as well as internal operating environment. The increasing number of commercial airline companies has put more pressure on their management to continually seek profits, reduce cost, and increase revenues. One of the main challenges faced today is the rising fuel cost which is eating into the bottom lines of the airlines causing many of them to declare bankruptcy. Therefore airlines always try to exercise restraint and adopt many strategies so that they can control the rising costs. This paper attempts to identify the current status of the global airline industry and outline some of the key cost management strategies adopted by them.

JEL CODE

M41, L93.

KEYWORDS

Aircraft Fleet, Cost Management, Fuel Hedging, Global Airline Industry.

INTRODUCTION

The airline industry is an industry which has low profitability owing to it being highly capital, labour and technology intensive. At the moment, the aviation industry's performance (worldwide) seems to be on the road to recovery, from the economic recession of 2008. Middle-east carriers have shown strong growth figures despite the reduced profits. Far-eastern carriers have also grown in both size and scope, and have seen tremendous growth over the past couple of years. China, in particular, has seen tremendous growth in domestic air travel, and is also managing to manufacture their own aircrafts. The American markets are currently focusing on reducing costs, while European carriers continue to take advantage of benefits associated with joining alliances. The following parts will give brief insights into markets in different geographical territories.

OVERVIEW OF THE GLOBAL AIRLINE INDUSTRY**AMERICAN MARKETS**

American Airlines' parent company AMR filed for Chapter 11 Bankruptcy in November 2011. This gives AMR a chance to manage and restructure its debts and hopefully come out with some of their debts managed, and a brighter outlook for the future. American Airlines was the only legacy carrier to have not filed for bankruptcy to this point. They have long prided themselves on staying out of bankruptcy. However, the harsh reality is that many of American's competitors have emerged from bankruptcy and have turned a profit, namely Delta Air Lines, who posted net income of \$765 million last quarter. American is currently plagued with problems such as labor disputes and high expenses, which makes their situation even more difficult. (Racing Winds, 2011)

Southwest Airlines is the nation's largest carrier in terms of originating domestic passengers boarded. Southwest maintains a dominant position in terms of its low cost advantage. The entry of similar (low-cost) competitors in the market might as well challenge Southwest's position as the market leader. As the airline's CASM (Cost-per-seat-kilometer) increases, the airline becomes more vulnerable and appears to lose some of its market advantage. SW's CASM has constantly been changing due to rising fuel prices and above average employee remuneration (Southwest claim that they have excellent relations with all their labor unions, which overlook over 80% of their workforce). SW has also incorporated structural changes to their aircrafts (such as blended winglets) in order to reduce their fuel costs by reducing fuel burn. Despite these risks, the Dallas-based airline has managed to expand their network, while providing special fares and offers. (Swam Media, 2012)

EUROPEAN MARKETS

British Airways claims that they expect to only break even in 2012, mainly due to higher fuel costs, emissions taxes and crew strikes. In the 1st quarter of 2012, BA made a loss of 62 million Euros, while at the same time, its sister company, Iberia, made a loss of 170 million Euros (Barr, 2012). Due to changing market trends and preferences, passengers in EU are increasingly changing their preference to low cost carriers, which puts BA at a major disadvantage, with their premium fares and high costs of services. The airline's complex management structure is another major disadvantage, as it results in delays in decision making, which is unacceptable in such a dynamic and changing market environment. KLM is also currently facing quite a few problems, due to high staff costs, and large amounts of debt. KLM spends about a third of its revenue on staff costs, its biggest expense. The airline has been blamed of weak management of costs, and it does not seem to be able to recover their debts by the end of 2012. Lufthansa, faced with soaring fuel costs and escalating competition on its European routes, stated that it would eliminate 3,500 administrative jobs as part of a wide-ranging effort to improve its profitability by €1.5 billion over the next three years. The airline reported a loss of \$498 million for the first quarter of 2012. Again, as in the case of KLM, the main competition seems to come from low cost carriers like Ryanair, easyJet and Air Berlin. (Clark, 2012) The worsening economic situation in Greece has had a waterfall effect on most other European countries, therefore reducing demand for air travel, and therefore, affecting the aviation industry in Europe. The EU Emissions Trading Scheme (ETS) has also proved to be an additional burden for the carriers operating within this region.

MIDDLE EAST

Emirates Airline had stated that their profits fell by 72%, to AED 1.5 billion. This is a drastic reduction from the previous year's profits of AED 5.38 billion. Rising costs of jet fuel seem to be the main reason behind this reduction in profit. The jet fuel bill of the airlines increased by a staggering 44.4% in comparison to the previous year. Despite a reduction in profits, the airline has managed to grow in terms of revenues and the acquisition of new aircrafts has also been the driving force behind this growth. Emirates airline manages to contain many hidden costs by maintaining fleet commonality, which would prove to be a long term benefit for the airline, in terms of reduced maintenance and training costs. Airport slot management has also benefitted the airline by being able to provide convenient flight schedules. Etihad Airways aims at breaking even this year, as they have experienced rapid passenger number growth over the last year. Their revenues (for the 1st quarter of 2012) have increased by 28%, to AED 3.63 billion. The airline follows a business model of gradual network growth and code-share agreements, in order to maximize revenue through these methods. The airline has also made equity investments in European carriers, in order to gain the benefits of synergy with these carriers and in the recent new it has bought a 17% stake in the Indian air carrier Jet Airways.

ASIAN AND SOUTH PACIFIC MARKETS

India and China are two of the world's fastest growing economies as of now, as the aviation industries in their countries are also growing rapidly. India and China are part of the BRIC nations (Brazil, Russia, India and China), characterized by rapid growth and economic development. It has been observed in the past that economic growth and growth in the aviation industry go hand in hand, and that is the case in these countries as well (bar a few exceptions). With rapid double digit growth in these countries, and growth in China as high as 20%, several global companies are targeting these countries in order for greater expansion and growth. According to industry predictions, by 2030, one-third of all passenger traffic (globally) will be in the Asia Pacific region, and the number of aircrafts

operating there would increase from 5500 aircrafts to around 14,000 aircrafts. According to Association of Asia Pacific Airlines (AAPA), "Airlines based in the Asia Pacific region carried 17.2 million international passengers in April, a 12.2% increase compared to the same month last year" (AAPA).

The following developments have been observed within the BRIC nations as well as other parts of Asia;

Gulfstream Aerospace Corp. views India as a long-term growth market for its range of business jets. The Asia-Pacific market currently (March 2012) accounts for approximately 27 percent of their total market (Gulfstream). While Gulfstream has been operating with businesses in India for over 2 decades, they forecast that the Indian market would require larger numbers of business aircraft in the forthcoming years.

AirAsia, of Thailand, continues to grow rapidly in the coming year, with plans to invest approximately 1.5 billion baht in expanding its on fleet in the years 2012-2014. The Thai budget carrier "aimed to serve 8 million passengers this year to boost revenue growth to about 20-25 percent and planned to buy Airbus A320s to double its fleet to 48 over the next five years", according to a statement issued to the press.

While Kingfisher Airline's plight is being widely publicized and spread as a 'sign of impending doom' to other carriers in India, some carriers are showing that this is just a passing trend. Jet Airways has bucked the trend in the country by ordering (on lease) up to 100 narrow body aircrafts for use during 2012/13, for approximately \$3.75 billion. Due to Kingfisher Airlines and Air India curtailing most of their flights (due to losses), Jet Airways is set to gain additional passenger and cargo traffic from the 2 aforementioned carriers.

Indonesia's Lion Air is planning to invest in 10 new Boeing 787 dream liners, costing them approximately \$1.9 billion. Their main motivation to do so would be that "the 787 would help Lion Air's marketing campaign with an image of fuel efficiency and the latest technology" (Lion Air).

COST MANAGEMENT STRATEGIES EMPLOYED BY AIRLINES

Airlines have been very reactive to changing trends in demand, as well as rising costs of operation. Cost management strategies have ranged from structural changes to the aircraft, to hybrid fuel hedging agreements. Some carriers have focused on changing certain characteristics of the airline product in order to cut costs, while others have kept their product unchanged, and have focused on cutting costs in subsidiary processes (maintenance, training, etc.). Some of the main cost management strategies that have already been employed by operators include;

AIRCRAFT WEIGHT REDUCTION

Due to the uncontrollable nature of fuel prices, airlines are often at the mercy of rising fuel prices. Rising fuel prices directly affect airlines' bottom line. However, airlines understand the importance of weight reduction in improving fuel efficiency of already existing aircrafts. Therefore, many airlines are adopting subtle changes to the interiors (cabin) of the aircraft, in order to reduce the gross weight of the aircraft. Weight reduction can be achieved even by changing a small aspect of the aircraft's cabin, such as the carpeting (Stensgaard, 2008). Some carriers have made changes to the airline product, by removing useable aspects such as in-flight magazines and in-flight entertainment (IFE) in the pursuit of weight reduction. Others have made subtle changes to the cabin and structure without altering the airline product at all (for example, lighter seats and carpets, lighter meal carts, removing heavy microwave ovens, etc.)

FUEL HEDGING

Fuel hedging is a tool used by airlines, in order to protect against the effects of the volatility of fuel prices. Basically, fuel hedging involves hedging a bet against future oil prices. Airlines set up hedging agreements with financial entities, and agree to pay a standard rate (the current year's rate) for a predetermined period of time, regardless of whether the future fuel prices rise or fall. If the fuel prices rise in the future, the airline benefits in the hedge agreement, but if the fuel prices fall, the airlines would lose out as they would still have to pay the predetermined rate for fuel. Many airlines have benefited from fuel hedging, however, some airlines have decided against it due to the inherent risk involved. Therefore, some airlines (like Emirates) have gone for hybrid fuel hedging agreements where a portion of the fuel requirement is hedged, while the remaining is procured at the market spot rates.

FLEET COMMONALITY

This is not so much of a cost reduction technique, but more of a proactive approach to manage costs. Fleet commonality refers to having multiple aircraft from the same family of aircraft. For example, owning multiple aircraft from the Airbus A319-320-321 family provides benefits of fleet commonality to an airline by reducing overall costs of spare parts and maintenance contracts. Fleet commonality brings along with it a host of benefits, ranging from reduced expenditure on spare parts (due to common spare parts), to reduced training costs (due to similar interfaces in aircraft of the same family).

FLEET UPGRADE

Newer aircrafts require less maintenance, burn less fuel and are less prone to break down. Some carriers lease/buy new aircraft, as opposed to used aircraft, in order to reap the benefits of efficiency in operations. The initial investment may be higher than buying used aircrafts, but the long-term cost savings far outweigh the higher initial investment.

RESTRUCTURING OF ORGANIZATION

Some airlines may be able to reduce excessive debts and costs by restructuring their management structure. This might involve laying off employees, hiring new staff, changing choice of target segments, changing mission and direction of the organization, etc. Organizational restructuring may be beneficial, as it may be able to directly reduce staff costs, and it may also be able to change the perception of the organization (to the customers) in a positive way.

INCREASED LEVEL OF OUTSOURCING

Airlines can further reduce their operating costs by outsourcing maintenance, repair and overhaul (MRO) activities to external parties who are specialized in the field, as opposed to doing it themselves. Other non-core activities, such as marketing, may also be outsourced in order to eliminate the staff costs that would be involved in running a separate department.

REVIEW ON THE EFFECTIVENESS OF EXISTING COST REDUCTION STRATEGIES

'Cost-cutting', or cost reduction has been the main priority for airlines for quite some time now. Considering that they (costs) are one of the few controllable variables which may dictate success or failure of an airline, airlines have gone to extreme lengths in order to be cost-effective and efficient. The previous section in this document has highlighted certain cost management and reduction strategies that are currently being adopted by airlines. This section (below) will attempt to measure the effectiveness of most of the aforementioned strategies in actually improving the overall profitability of airlines worldwide. The analysis (of each of the strategies and their effectiveness) done in this section would be supported by facts and figures from publications and articles. The analysis is as follows;

AIRCRAFT WEIGHT REDUCTION

Many carriers have decided to go for the 'less-is-better' route, by reducing the overall weight of the aircraft without violating safety regulations. This may include reduction of weight by getting rid of unnecessary heavy machinery in the galley, or by redesigning the interior of the cabin with the use of lighter materials, etc. the main aim of reducing overall weight would be the savings made in fuel burn over the course of a flight. Studies have shown that weight reduction in certain non-core aspects of the aircraft (such as the interior structure of the cabin door, overhead compartments and components in the tail section of the cabin) can yield up to an average of approximately 15-20% of savings (in mass/weight). This, in turn, would result in approximately 10% reduction in fuel burn during flight (Cervellera, 2007).

Qantas Airlines, for example, has reduced the weight of their aircraft by reducing the amount of drinking water and food supplied to each aircraft, and by using lighter and thinner seats and carpets. A Taiwanese Airline reduced the dead weight of the aircraft by reducing the number of newspapers and magazines, using lighter catering carts and removing the front seat footrests. These innovations may seem very beneficial at first sight; however, they have a fatal blemish of reducing overall levels of passenger satisfaction on board the aircraft. Therefore, weight reduction (from an airline's perspective) may be attractive, but must be done with subtlety so as to not dilute the airline product in the process. From a manufacturer's perspective, weight reduction is not only beneficial, but is seen as a necessary step in development of new design concepts for aircrafts. Boeing's new 787 Dreamliner is an example of such a step towards development, as it incorporates the use of carbon composite materials in the construction of its outer body structure.

FUEL HEDGING

The effectiveness of fuel hedging agreements has been debated time and time again, between airlines on a global scale. Certain carriers view fuel hedging as a very risk-free, beneficial practice, while other airlines view the practice as something that could potentially 'put them in the red', or cause the company to go into losses. It is clear that fuel prices are currently the most influential variable costs for airlines, comprising almost 40% (on average) of an airline's total costs. Hedging bets on such a game-changing aspect of total costs can therefore, seem to be a risky proposition for certain carriers. A large part of deciding whether or not to hedge comes down to the way in which airlines view jet fuel hedging (Reals, 2008).

The benefits experienced by hedging include reduced exposure to the effects of dramatic fuel price increases, and increased profitability during sudden increases in fuel prices. Southwest airlines has reaped the maximum benefit of fuel hedging (in comparison to other airlines worldwide) as they had rightly predicted increases in fuel prices, which had enabled them to continue paying for fuel at the hedged rate, and had also helped them maintain their levels of profitability. However, sometimes fuel hedging agreements may end up being extremely cost prohibitive. US Airways, based in Arizona, stated that without hedging fuel, they have been able to make a profit of \$447 million in 2010, by avoiding hedging their fuel requirements. The airline also stated that sometimes fuel hedge agreements may end up being more expensive than paying for fuel at the market spot rates. Some airlines also make sure that they only hedge a proportion of their total fuel requirements. This provision allows airlines to balance risk and reward, in such a way that they benefit from stability in fuel prices (from the proportion of fuel hedged), while benefitting from potential falls in price levels for jet fuel in the spot market. Therefore, fuel hedging has proved to be an effective tool in the medium-term time period for airlines, while, it has not proved to be significantly beneficial in the long run.

FLEET COMMONALITY

Fleet commonality is a technique practiced by various airlines worldwide in order to cut down the cost of maintenance and spare parts for their fleets. Fleet commonality brings along with it the benefits of economies of scale in the purchase of spare parts and maintenance contracts (contracts for the maintenance of aircraft within the same family of aircraft). Commonality may be by model, manufacturer, family or any combination of the aforementioned criteria. Fleet commonality also makes it cheaper for the airline to train pilots, as; for example, pilots with a type rating for one aircraft may be able to operate and fly another aircraft within the same family of aircrafts. The only disadvantage of fleet commonality in this aspect would be that complete fleet commonality may limit the scope of operations of an airline in niche markets or specialized operations. Therefore, fleet commonality can be understood as an absolute benefit to the industry, and as advancement in cost management strategy.

FLEET UPGRADE

This refers to an up gradation of an airline's fleet to a newer model of the same, or different aircraft with similar characteristics. The advantages of upgrading an airline's fleet include better performance and range, improved payload handling characteristics, reduced maintenance and repair costs (over the long run), and reduced fuel burn. Fleet upgrades may also be used as a marketing gimmick, in order to attract potential customers through promotion of the newer aircrafts (for e.g., in the case of Singapore Airlines). However, many airlines fail to realize the 'hidden' costs behind a fleet upgrade. These hidden costs may prove to be a major disadvantage to the airline. This may include the purchase of brand new spare parts, the high costs of acquiring new aircrafts, the opportunity cost of operations during delivery period, training costs of pilots for flying the new aircrafts, and costs of disposal/sale of former retired aircrafts.

Therefore, fleet upgrades must NOT be made purely as a marketing gimmick, as the costs associated with procurement of new aircrafts may prove to be prohibitive purely for a marketing gimmick. However, in the long run, fleet up gradation can prove to be beneficial by pushing down overall maintenance costs for the airline.

RESTRUCTURING OF ORGANIZATION

This practice is usually very rarely carried out, and generally after the occurrence of a mishap or poor performance from an airline. Causes for airline restructuring may range from fragmented organizational structures with low productivity, duplication of functions among areas, and resource imbalance in relation to the operation market potential (Compass Consultoria, 2012). Restructuring may help with grouping of areas with common objectives, minimizing wastage of time, interface conflicts and duplications in work. It may also help in creating new areas with increased focus on the degree and level of customer service. However, organizational restructuring practices have often ignored the human aspects in relation to the process. Restructuring has often led to employees getting downsized and demoted to lower job positions. Employee morale and motivation seem to be the 2 main areas that have been hit the hardest during a restructuring. These factors may seem to be negligible at first (at least from a financial perspective), but in the long run, may be critical towards the potential success or failure of the organization. Therefore, restructuring of organizations must increase the emphasis on employee motivation, rather than just pure financial gains, in order to succeed in the long run.

INCREASED LEVEL OF OUTSOURCING

Outsourcing partnerships in the airline sector have evolved considerably in the past decade. Airlines all over the world are seeking strategic relationships with partners who really understand their business, as well as the industry, and who can work closely with them to solve the challenges of a fast-changing and dynamic environment. Outsourcing in the airline industry is usually limited to outsourcing of repairs and maintenance, as well as catering services and ground transport services. Flight notification services (FNS) and terminal services are also being outsourced to external parties nowadays. Some carriers outsource their entire aircraft crew if they are unable to acquire skilled crew of their own. In the past, it has always been seen as a cost cutting exercise; but in the modern ever-changing business environment, outsourcing has more to do with achieving ongoing efficiencies, innovation as well as improvement to the mutual profit of both partners. Therefore, outsourcing is nowadays not only seen as an operational aid, but also as an input in the planning and development phase of an airline. This involvement of external parties helps in reducing costs from the grassroots level, by planning in advance the proportion of tasks to be outsourced, and at what cost. However, outsourcing may limit autonomy and flexibility of the airline to make their own decisions quickly and seamlessly. Limited flexibility and autonomy may lead to potential losses, due to delays in decision making; which would eventually lead to inefficient performance.

CONCLUSION

This paper attempts to explore the cost management strategies adopted by the airlines globally and concludes that the above mentioned strategies are of vital importance especially in today's times as Airlines are grappling with the rising fuel costs. Many Airlines are adopting the fuel hedging strategy in a big way and it is helping them to mitigate the fuel price hike risk. This paper is just a reference of the various practices adopted by airlines and provides a platform for further in-depth research into this issue.

REFERENCES

1. APAA (2012) <http://www.asianaviation.com/articles/302/Divergent-trend-continues>. Last accessed May 2012
2. Barr, N (2012) <http://www.proactiveinvestors.co.uk/companies/news/42650/ba-owner-hit-by-fuel-costs-strikes-and-spanish-woes-42650.html>. Last accessed June 2012
3. Cervellera, Pietro (2007) Reducing Weight in Aircraft Structures, www.engbrasil.eng.br/index_arquivos/ap29.pdf. Last accessed June 2012
4. Clark, N (2012) <http://www.nytimes.com/2012/05/04/business/global/lufthansa-to-cut-3500-jobs-in-bid-to-improve-profitability.html>. Last accessed July 2012
5. Compass Consultoria (2012) http://www.compassconsultoria.net/cases/organization-restructuring-model_322?lang=en. Last accessed July 2012
6. Lion Air (2012) http://www.pilotcareercentre.com/Aviation-Pilot-Recruitment-New_Item/5324/Lion+Air+Nearing+Deal+For+10+Boeing+787+Dreamliners Last accessed May 2012
7. Racing Winds (2011) <http://racingwindsblog.wordpress.com/2011/11/29/analysis-breaking-down-the-american-airlines-bankruptcy-situation/> Last accessed Apr 2012
8. Reals, K (2008) <http://www.flightglobal.com/news/articles/hedge-your-bets-314880/> Last accessed July 2012
9. Stensgaard, Anne-Birte (2008) <http://www.ameinfo.com/157911.html>. last accessed Apr 2012
10. Swam Media (2012) <http://www.swamedia.com/releases/394f11e5-4235-49c3-b1a0-071d7e17c2a7> last accessed June 2012

APPLICATION OF ARTIFICIAL BEE COLONY ALGORITHM TO INDEPENDENT COMPONENT ANALYSIS

AMRESH KUMAR SINGH
ASST. PROFESSOR
DEPARTMENT OF COMPUTER SCIENCE
SHYAMLAL COLLEGE (EVENING)
UNIVERSITY OF DELHI
NEW DELHI

ABSTRACT

Artificial Bee Colony (ABC) Algorithm is an optimization algorithm based on the intelligent behaviour of honey bee swarm. The model consists of three essential components: employed and unemployed foraging bees, and food sources. The first two components, employed and unemployed foraging bees, search for rich food sources, which is the third component, close to their hive. The model also defines two leading modes of behaviour which are necessary for self-organizing and collective intelligence: recruitment of foragers to rich food sources resulting in positive feedback and abandonment of poor sources by foragers causing negative feedback. In ABC, a colony of artificial forager bees (agents) search for rich artificial food sources (good solutions for a given problem). To apply ABC, the considered optimization problem is first converted to the problem of finding the best parameter vector which minimizes an objective function. Then, the artificial bees randomly discover a population of initial solution vectors and then iteratively improve them by employing the strategies: moving towards better solutions by means of a neighbour search mechanism while abandoning poor solutions. The results show that ABC outperforms the other algorithms like Genetic Algorithm (GA), Particle Swarm Algorithm (PSO) and Particle Swarm Inspired Evolutionary Algorithm (PS-EA). In this paper, ABC algorithm is used to optimize the cost function that is based on maximisation of independence among components in independent component analysis.

KEYWORDS

Artificial Bee Colony Algorithm, Independent Component Analysis.

1 INTRODUCTION

Artificial Bee Colony (ABC) is a recently defined swarm intelligence algorithm by Dervis Karaboga in 2005, motivated by the intelligent behaviour of honey bees. It uses only common control parameters such as colony size and maximum cycle number. ABC as an optimization algorithm provides a population-based search procedure in which individuals called foods positions are modified by the artificial bees with time and the bee's aim is to discover the places of food sources with high nectar amount and finally the one with the highest nectar. In ABC system, artificial bees fly around in a multidimensional search space and some (employed and onlooker bees) choose food sources depending on the experience of themselves and their nest mates, and adjust their positions. Some bees (scouts) fly and choose the food sources randomly without using experience. If the nectar amount of a new source is higher than that of the previous one in their memory, they memorize the new position and forget the previous one. Thus, ABC system combines local search methods, carried out by employed and onlooker bees, with global search methods, managed by onlookers and scouts, attempting to balance exploration and exploitation process. In this paper, ABC algorithm is used to optimize the cost function that is based on maximisation of independence among components in independent component analysis.

2 SWARM INTELLIGENCE

Swarm intelligence is the discipline that deals with natural and artificial systems composed of many individuals that coordinate using decentralized control and self-organization [4]. In particular, the discipline focuses on the collective behaviours that result from the local interactions of the individuals with each other and with their environment. Examples of systems studied by swarm intelligence are colonies of ants and termites, schools of fish, flocks of birds, herds of land animals. Some human artifacts also fall into the domain of swarm intelligence, notably some multi-robot systems, and also certain computer programs that are written to tackle optimization and data analysis problems.

2.1 PROPERTIES OF A SWARM INTELLIGENCE SYSTEM

The typical swarm intelligence system has the following properties [4]:

- it is composed of many individuals;
- the individuals are relatively homogeneous (i.e., they are either all identical or they belong to a few typologies);
- the interactions among the individuals are based on simple behavioural rules that exploit only local information that the individuals exchange directly or via the environment (stigmergy);
- the overall behaviour of the system results from the interactions of individuals with each other and with their environment, that is, the group behaviour self-organizes.

The characterizing property of a swarm intelligence system is its ability to act in a coordinated way without the presence of a coordinator or of an external controller. Many examples can be observed in nature of swarms that perform some collective behaviour without any individual controlling the group, or being aware of the overall group behaviour. Notwithstanding the lack of individuals in charge of the group, the swarm as a whole can show an intelligent behaviour. This is the result of the interaction of spatially neighbouring individuals that act on the basis of simple rules.

Most often, the behaviour of each individual of the swarm is described in probabilistic terms: Each individual has a stochastic behaviour that depends on his local perception of the neighbourhood.

Because of the above properties, it is possible to design swarm intelligence system that are scalable, parallel, and fault tolerant.

- Scalability means that a system can maintain its function while increasing its size without the need to redefine the way its parts interact. Because in swarm intelligence system interactions involve only neighbouring individuals, the number of interactions tends not to grow with the overall number of individuals in the swarm: each individual's behaviour is only loosely influenced by the swarm dimension. In artificial systems, scalability is interesting because a scalable system can increase its performance by simply increasing its size, without the need for any reprogramming.
- Parallel action is possible in swarm intelligence systems because individuals composing the swarm can perform different actions in different places at the same time. In artificial systems, parallel action is desirable because it can help to make the system more flexible, that is, capable to self-organize in teams that take care simultaneously of different aspects of a complex task.
- Fault tolerance is an inherent property of swarm intelligence systems due to the decentralized, self-organized nature of their control structures. Because the system is composed of many interchangeable individuals and none of them is in charge of controlling the overall system behaviour, a failing individual can be easily dismissed and substituted by another one that is fully functioning.

3 ARTIFICIAL BEE COLONY (ABC) ALGORITHM

3.1. BEHAVIOUR OF REAL BEES

Tereshko developed a model of foraging behaviour of a honeybee colony based on reaction–diffusion equations. This model that leads to the emergence of collective intelligence of honeybee swarms consists of three essential components: food sources, employed foragers, and unemployed foragers, and defines two leading modes of the honeybee colony behaviour: recruitment to a food source and abandonment of a source. Tereshko explains the main components of his model as below[2]:

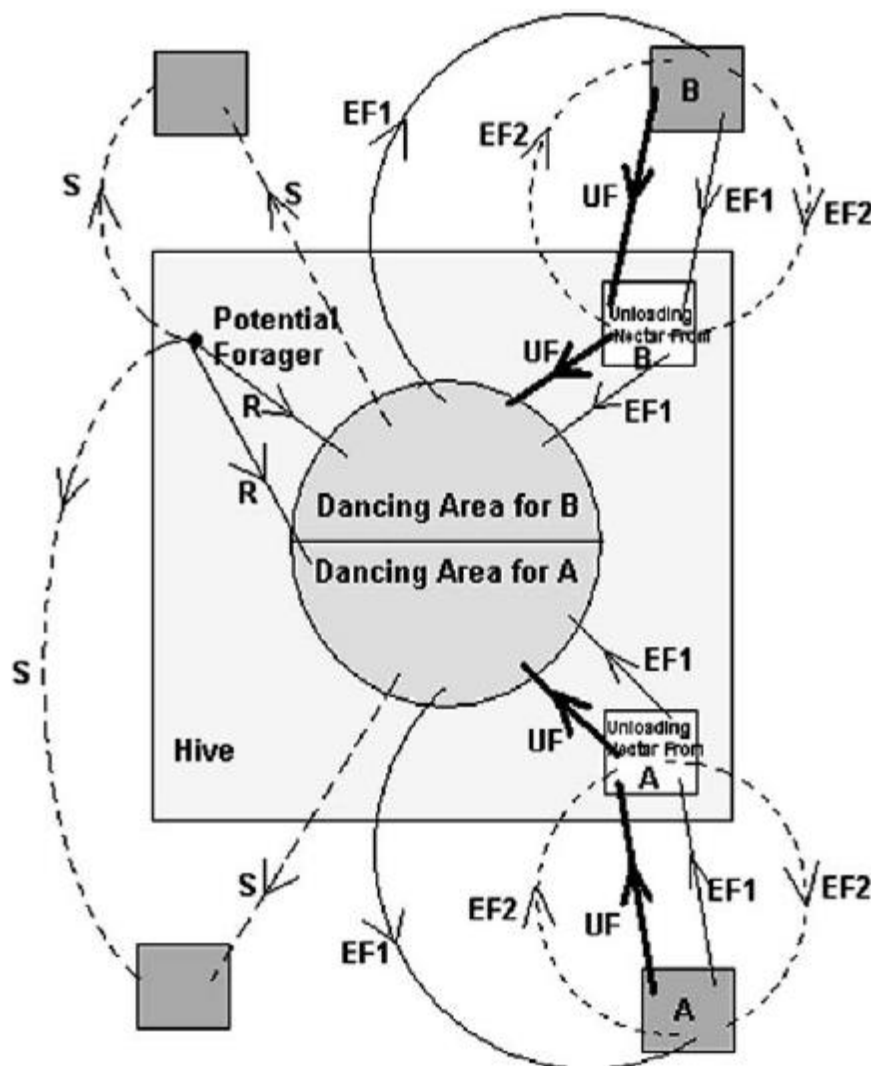
1. Food Sources: In order to select a food source, a forager bee evaluates several properties related with the food source such as its closeness to the hive, richness of the energy, taste of its nectar, and the ease or difficulty of extracting this energy. For the simplicity, the quality of a food source can be represented by only one quantity although it depends on various parameters mentioned above.
2. Employed foragers: An employed forager is employed at a specific food source which she is currently exploiting. She carries information about this specific source and shares it with other bees waiting in the hive. The information includes the distance, the direction and the profitability of the food source.
3. Unemployed foragers: A forager bee that looks for a food source to exploit is called unemployed. It can be either a scout who searches the environment randomly or an onlooker who tries to find a food source by means of the information given by the employed bee. The mean number of scouts is about 5–10%.

The exchange of information among bees is the most important occurrence in the formation of collective knowledge. While examining the entire hive it is possible to distinguish some parts that commonly exist in all hives. The most important part of the hive with respect to exchanging information is the dancing area. Communication among bees related to the quality of food sources occurs in the dancing area. The related dance is called waggle dance. Since information about all the current rich sources is available to an onlooker on the dance floor, probably she could watch numerous dances and chooses to employ herself at the most profitable source. There is a greater probability of onlookers choosing more profitable sources since more information is circulating about the more profitable sources. Employed foragers share their information with a probability which is proportional to the profitability of the food source, and the sharing of this information through waggle dancing is longer in duration. Hence, the recruitment is proportional to profitability of a food source.

In order to better understand the basic behaviour characteristics of foragers, let us examine Fig. 1[2]. Assume that there are two discovered food sources: A and B. At the very beginning, a potential forager will start as unemployed forager. That forager bee will have no knowledge about the food sources around the nest. There are two possible options for such a bee:

- i. It can be a scout and starts searching around the nest spontaneously for food due to some internal motivation or possible external clue (S on Fig. 1).
- ii. It can be a recruit after watching the waggle dances and starts searching for a food source (R on Fig. 1[2]).

FIG. 1: BEHAVIOUR OF HONEYBEE FORAGING FOR NECTAR[2]



After finding the food source, the bee utilizes its own capability to memorize the location and then immediately starts exploiting it. Hence, the bee will become an employed forager. The foraging bee takes a load of nectar from the source and returns to the hive, unloading the nectar to a food store. After unloading the food, the bee has the following options [2]:

- i. It might become an uncommitted follower after abandoning the food source (UF).

ii. It might dance and then recruit nest mates before returning to the same food source (EF1).

iii. It might continue to forage at the food source without recruiting bees (EF2).

It is important to note that not all bees start foraging simultaneously. The experiments confirmed that new bees begin foraging at a rate proportional to the difference between the eventual total number of bees and the number of bees presently foraging.

3.2. WORKING OF ARTIFICIAL BEE COLONY (ABC) ALGORITHM

In ABC algorithm, the position of a food source represents a possible solution to the optimization problem and the nectar amount of a food source corresponds to the quality (fitness) of the associated solution. The number of the employed bees or the onlooker bees is equal to the number of solutions in the population[3]. At the first step, the ABC generates a randomly distributed initial population $P(C=0)$ of SN solutions (food source positions), where SN denotes the size of employed bees or onlooker bees. Each solution x_i ($i = 1, 2, \dots, SN$) is a D-dimensional vector. Here, D is the number of optimization parameters. After initialization, the population of the positions (solutions) is subject to repeated cycles, $C = 1, 2, \dots, MCN$, of the search processes of the employed bees, the onlooker bees and the scout bees[3]. An employed bee produces a modification on the position (solution) in her memory depending on the local information (visual information) and tests the nectar amount (fitness value) of the new source (new solution). If the nectar amount of the new one is higher than that of the previous one, the bee memorizes the new position and forgets the old one. Otherwise she keeps the position of the previous one in her memory[2][3].

After all employed bees complete the search process, they share the nectar information of the food sources and their position information with the onlooker bees. An onlooker bee evaluates the nectar information taken from all employed bees and chooses a food source with a probability related to its nectar amount. As in the case of the employed bee, she produces a modification on the position in her memory and checks the nectar amount of the candidate source. If the nectar is higher than that of the previous one, the bee memorizes the new position and forgets the old one.

The main steps of the algorithm are as below: [3]

1: Initialize Population

2: repeat

3: Place the employed bees on their food sources

4: Place the onlooker bees on the food sources depending on their nectar amounts

5: Send the scouts to the search area for discovering new food sources

6: Memorize the best food source found so far

7: Until requirements are met

In ABC algorithm, each cycle of the search consists of three steps: sending the employed bees onto their food sources and evaluating their nectar amounts; after sharing the nectar information of food sources, the selection of food source regions by the onlookers and evaluating the nectar amount of the food sources; determining the scout bees and then sending them randomly onto possible new food sources. At the initialization stage, a set of food sources is randomly selected by the bees and their nectar amounts are determined. At the first step of the cycle, these bees come into the hive and share the nectar information of the sources with the bees waiting on the dance area. A bee waiting on the dance area for making decision to choose a food source is called onlooker and the bee going to the food source visited by herself just before is named as employed bee. After sharing their information with onlookers, every employed bee goes to the food source area visited by herself at the previous cycle since that food source exists in her memory, and then chooses a new food source by means of visual information in the neighbourhood of the one in her memory and evaluates its nectar amount. At the second step, an onlooker prefers a food source area depending on the nectar information distributed by the employed bees on the dance area. As the nectar amount of a food source increases, the probability of that food source chosen also increases. After arriving at the selected area, she chooses a new food source in the neighbourhood of the one in the memory depending on visual information as in the case of employed bees. The determination of the new food source is carried out by the bees based on the comparison process of food source positions visually. At the third step of the cycle, when the nectar of a food source is abandoned by the bees, a new food source is randomly determined by a scout bee and replaced with the abandoned one. In our model, at each cycle at most one scout goes outside for searching a new food source, and the number of employed and onlooker bees is selected to be equal to each other. These three steps are repeated through a predetermined number of cycles called Maximum Cycle Number (MCN) or until a termination criterion is satisfied.[3]

An artificial onlooker bee chooses a food source depending on the probability value associated with that food source, p_i , calculated by the following expression (1):

$$p_i = \frac{fit_i}{\sum_{i=1}^N fit_i} \quad \dots\dots(1)$$

where fit_i is the fitness value of the solution i which is proportional to the nectar amount of the food source in the position i and SN is the number of food sources which is equal to the number of employed bees or onlooker bees [5],[3].

In order to produce a candidate food position from the old one in memory, the ABC uses the following expression (2):

$$v_{ij} = x_{ij} + \Phi_{ij} (x_{ij} - x_{kj}) \quad \dots\dots (2)$$

where $k \in \{1, 2, 3, \dots, SN\}$ and $j \in \{1, 2, 3, \dots, D\}$ are randomly chosen indexes[3]. Although k is determined randomly, it has to be different from i . Φ_{ij} is a random number between $[-1, 1]$. It controls the production of neighbour food sources around x_{ij} and represents the comparison of two food positions visually by a bee.

As can be seen from equation (1), as the difference between the parameters of the x_{ij} and x_{kj} decreases, the perturbation on the position x_{ij} gets decreased, too. Thus, as the search approaches the optimum solution in the search space, the step length is adaptively reduced[3].

If a parameter value produced by this operation exceeds its predetermined limit, the parameter can be set to an acceptable value. In this work, the value of the parameter exceeding its limit is set to its limit value[3].

The food source of which the nectar is abandoned by the bees is replaced with a new food source by the scouts. In ABC, this is simulated by producing a position randomly and replacing it with the abandoned one. In ABC, if a position cannot be improved further through a predetermined number of cycles, then that food source is assumed to be abandoned. The value of predetermined number of cycles is an important control parameter of the ABC algorithm, which is called "limit" for abandonment [3].

Assume that the abandoned source is x_i and $j \in \{1, 2, 3, \dots, D\}$, then the scout discovers a new food source to be replaced with x_i . This operation can be defined as in (3)

$$x_i^j = x_{min}^j + rand[0, 1](x_{max}^j - x_{min}^j) \quad \dots\dots (3)$$

After each candidate source position v_{ij} is produced and then evaluated by the artificial bee, its performance is compared with that of its old one. If the new food source has an equal or better nectar than the old source, it is replaced with the old one in the memory. Otherwise, the old one is retained in the memory. In other words, a greedy selection mechanism is employed as the selection operation between the old and the candidate one [2].

Totally, ABC algorithm employs four different selection processes[2]:

1. a global probabilistic selection process, in which the probability value is calculated by (1) used by the onlooker bees for discovering promising regions,
2. a local probabilistic selection process carried out in a region by the employed bees and the onlookers depending on the visual information such as the colour, shape and fragrance of the flowers (sources) (bees will not be able to identify the type of nectar source until they arrive at the right location and discriminate among sources growing there based on their scent) for determining a food source around the source in the memory in a way described by (2),
3. a local selection called greedy selection process carried out by onlooker and employed bees in that if the nectar amount of the candidate source is better than that of the present one, the bee forgets the present one and memorizes the candidate source produced by (2). Otherwise, the bee keeps the present one in the memory.
4. A random selection process carried out by scouts as defined in (3).

It is clear from the above explanation that there are three control parameters in the basic ABC: The number of food sources which is equal to the number of employed or onlooker bees (SN), the value of limit and the maximum cycle number (MCN).

In the case of honeybees, the recruitment rate represents a measure of how quickly the bee colony finds and exploits a newly discovered food source. Artificial recruiting could similarly represent the measurement of the speed with which the feasible solutions or the good quality solutions of the difficult optimization problems can be discovered. The survival and progress of the bee colony are dependent upon the rapid discovery and efficient utilization of the best food resources. Similarly; the successful solution of difficult engineering problems is connected to the relatively fast discovery of good solutions especially for the problems that need to be solved in real time. In a robust search process, exploration and exploitation processes must be carried out together. In the ABC algorithm, while onlookers and employed bees carry out the exploitation process in the search space, the scouts control the exploration process. Detailed pseudo-code of the ABC algorithm is given below:

```

1: Initialize the population of solutions  $x_i$ ,  $i = 1, 2, \dots, SN$ 
2: Evaluate the population
3: cycle = 1
4: repeat
5: Produce new solutions  $v_i$  for the employed bees by using (2) and evaluate them
6: Apply the greedy selection process for the employed bees
7: Calculate the probability values  $p_i$  for the solutions  $x_i$  by (1)
8: Produce the new solutions  $v_i$  for the onlookers from the solutions  $x_i$  selected depending on  $p_i$  and evaluate them
9: Apply the greedy selection process for the onlookers
10: Determine the abandoned solution for the scout, if exists, and replace it with a new randomly produced solution  $x_i$  by (3)
11: Memorize the best solution achieved so far
12: cycle = cycle + 1
13: until cycle = MCN
  
```

4 MANUAL EXECUTION OF ABC ALGORITHM FOR A MINIMIZATION PROBLEM

Considering the optimization problem

Minimize $f(x) = x_1^2 + x_2^2$, $x_1, x_2 \in [-5, 5]$

Control Parameters of ABC Algorithm are set as;

- Colony size, CS = 6

- Limit for scout, L = (CS*D)/2 = 6

and dimension of the problem, D = 2

First, we initialize the positions of 3 food sources (CS/2) of employed bees, randomly using uniform distribution in the range (-5, 5).

X =

1.4112 -2.5644

0.4756 1.4338

-0.1824 -1.0323

So $f(x)$ values are:

8.5678

2.2820

1.0990

Fitness function:

$$fit_i = \begin{cases} 1 \\ 1 + f_i \end{cases}, \quad \text{if } f_i \geq 0$$

$$1 + abs(f_i), \quad \text{if } f_i < 0$$

Initial fitness vector is:

0.1045

0.3047

0.4764

Maximum fitness value is 0.4764, the quality of the best food source.

Cycle=1

//Employed bees phase

1st employed bee

with this formula, produce a new solution.

k=1 //k is a randomly selected index.

j=0 //j is a randomly selected index.

$\Phi = 0.8050$ // Φ is randomly produced number in the range [-1, 1].

$v_0 = 2.1644$ -2.5644

Calculate $f(v_0)$ and the fitness of v_0 .

$f(v_0) = 11.2610$ and the fitness value is 0.0816.

o Apply greedy selection between x_0 and v_0

0.0816 < 0.1045, the solution 0 couldn't be improved, increase its trial counter.

2nd employed bee

$v_{ij} = x_{ij} + \Phi_{ij} (x_{ij} - x_{kj})$

with this formula produce a new solution.

k=2 //k is a random selected solution in the neighbourhood of i.

j=1 //j is a random selected dimension of the problem.

$\Phi = 0.0762$ // Φ is randomly produced number in the range [-1, 1].

$v_1 = 0.4756$ 1.6217

Calculate $f(v_1)$ and the fitness of v_1 .

$f(v_1) = 2.8560$ and the fitness value is 0.2593.

Apply greedy selection between x_1 and v_1

0.2593 < 0.3047, the solution 1 couldn't be improved, increase its trial counter.

3rd employed bee

$$v_{ij} = x_{ij} + \Phi_{ij} (x_{ij} - x_{kj})$$

with this formula produce a new solution.

$k=0 // k$ is a random selected solution in the neighborhood of i .

$j=0 // j$ is a random selected dimension of the problem.

$\Phi = -0.0671 // \Phi$ is randomly produced number in the range $[-1, 1]$.

$$v_2 = -0.0754 \quad -1.0323$$

Calculate $f(v_2)$ and the fitness of v_2 .

$f(v_2) = 1.0714$ and the fitness value is 0.4828.

Apply greedy selection between x_2 and v_2 .

$0.4828 > 0.4764$, the solution 2 is **improved**, set its trial counter as 0 and replace the solution x_2 with v_2 .

$x =$

1.4112 -2.5644

0.4756 1.4338

-0.0754 -1.0323

$f(x)$ values are;

8.5678

2.2820

1.0714

fitness vector is:

0.1045

0.3047

0.4828

//Now, Calculate the probability values p for the solutions x by means of their fitness

//values by using the formula

$$p_i = \frac{fit_i}{\sum_{i=1}^n fit_i}$$

$p =$

0.1172

0.3416

0.5412

//Onlooker bees phase

//Produce new solutions v_i for the onlookers from the solutions x_i selected

//depending on p_i and evaluate them.

• 1st onlooker bee

$i=2$

$$v_2 = -0.0754 \quad -2.2520$$

Calculate $f(v_2)$ and the fitness of v_2 .

$f(v_2) = 5.0772$ and the fitness value is 0.1645.

Apply greedy selection between x_2 and v_2

$0.1645 < 0.4828$, the solution 2 couldn't be improved, increase its trial counter.

2nd onlooker bee

$i=1$

$$v_1 = 0.1722 \quad 1.4338$$

Calculate $f(v_1)$ and the fitness of v_1 .

$f(v_1) = 2.0855$ and the fitness value is 0.3241.

Apply greedy selection between x_1 and v_1

$0.3241 > 0.3047$, the solution 1 is improved set its trial counter as 0 and replace the solution x_1 with v_1 .

$x =$

1.4112 -2.5644

0.1722 1.4338

-0.0754 -1.0323

$f(x)$ values are;

8.5678

2.0855

1.0714

fitness vector is:

0.1045

0.3241

0.4828

• 3rd onlooker bee

$i=2$

$$v_2 = 0.0348 \quad -1.0323$$

Calculate $f(v_2)$ and the fitness of v_2 .

$f(v_2) = 1.0669$ and the fitness value is 0.4838.

Apply greedy selection between x_2 and v_2

$0.4838 > 0.4828$, the solution 2 was improved, set its trial counter as 0 and replace the solution x_2 with v_2 .

$x =$

1.4112 -2.5644

0.1722 1.4338

0.0348 -1.0323

$f(x)$ values are;

8.5678

2.0855

1.0669

fitness vector is:

0.1045

0.3241

0.4838

//Memorize best

Best =

0.0348 -1.0323

//Scout bee phase

TrialCounter =

1

0

0

//There is no abandoned solution since $L = 6$

//If there is an abandoned solution (the solution of which the trial counter value is

//higher than $L = 6$); generate a new solution randomly to replace with the

//abandoned one.

Cycle = Cycle+1

The procedure is continued until the termination criterion is attained.

5 INDEPENDENT COMPONENT ANALYSIS

5.1 INTRODUCTION

Independent component analysis (ICA) is a method for finding underlying factors or components from multivariate (multidimensional) statistical data[8]. In simple terms, ICA is a statistical technique for decomposing a complex dataset into independent sub-parts. A related and commonly used term is Blind Source Separation which is the separation of a set of source signals from a set of mixed signals, without the aid of information (or with very little information) about the source signals or the mixing process. ICA can be regarded as one of the most important approaches of blind source separation. Both concepts are based on unsupervised learning.

For example- suppose we are in a room where two people are speaking simultaneously. We have two microphones, which we hold in different locations. The microphones give us two recorded time signals, which we could denote by $x_1(t)$ and $x_2(t)$, with x_1 and x_2 the amplitudes, and t the time index. Each of these recorded signals is a weighted sum of the speech signals emitted by the two speakers, which we denote by $s_1(t)$ and $s_2(t)$. We could express this as a linear equation:

$$x_1(t) = a_{11}s_1 + a_{12}s_2 \quad \dots\dots (4)$$

$$x_2(t) = a_{21}s_1 + a_{22}s_2 \quad \dots\dots (5)$$

where a_{11}, a_{12}, a_{21} and a_{22} are some parameters that depend on the distances of the microphones from the speakers. For the time being, we omit any time delays or other extra factors from our simplified mixing model. As an illustration, consider the waveforms in Fig. 2 and Fig. 3. These are, of course, not realistic speech signals, but suffice for this illustration. The original speech signals could look something like those in Fig. 2 and the mixed signals could look like those in Fig. 3. The problem is to recover the data in Fig. 2 using only the data in Fig. 3.

Actually, if we knew the parameters a_{ij} , we could solve the linear equation in (4) by classical methods. The point is, however, that if we don't know the a_{ij} , the problem is considerably more difficult. One approach to solving this problem would be to use some information on the statistical properties of the signals $s_i(t)$ to estimate the a_{ij} . Actually, and perhaps surprisingly, it turns out that it is enough to assume that $s_1(t)$

and $s_2(t)$, at each time instant t , are *statistically independent*. This is not an unrealistic assumption in many cases, and it need not be exactly true in practice. The technique of ICA, can be used to estimate the a_{ij} based on the information of their independence, which allows us to separate the two original source signals $s_1(t)$ and $s_2(t)$ from their mixtures $x_1(t)$ and $x_2(t)$. Fig. 4 gives the two signals estimated by the ICA method. As can be seen, these are very close to the original source signals (their signs are reversed, but this has no significance.)

Independent component analysis was originally developed to deal with problems that are closely related to the cocktail-party problem. Since the recent increase of interest in ICA, it has become clear that this principle has a lot of other interesting applications as well.

FIGURE 2: THE ORIGINAL SIGNALS. [12]

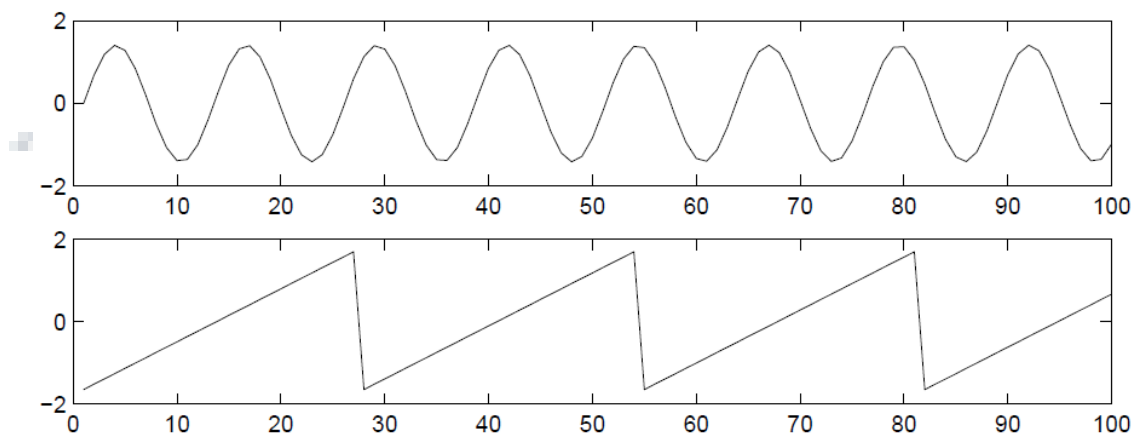


FIGURE 4: THE ESTIMATES OF THE ORIGINAL SOURCE SIGNALS, ESTIMATED USING ONLY THE OBSERVED SIGNALS IN FIG. 3. THE ORIGINAL SIGNALS WERE VERY ACCURATELY ESTIMATED, UP TO MULTIPLICATIVE SIGNS. [12]

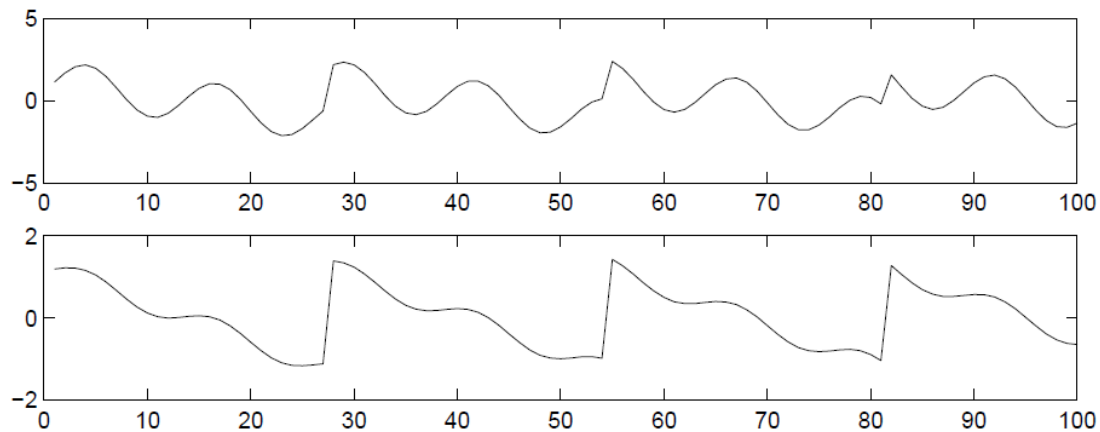
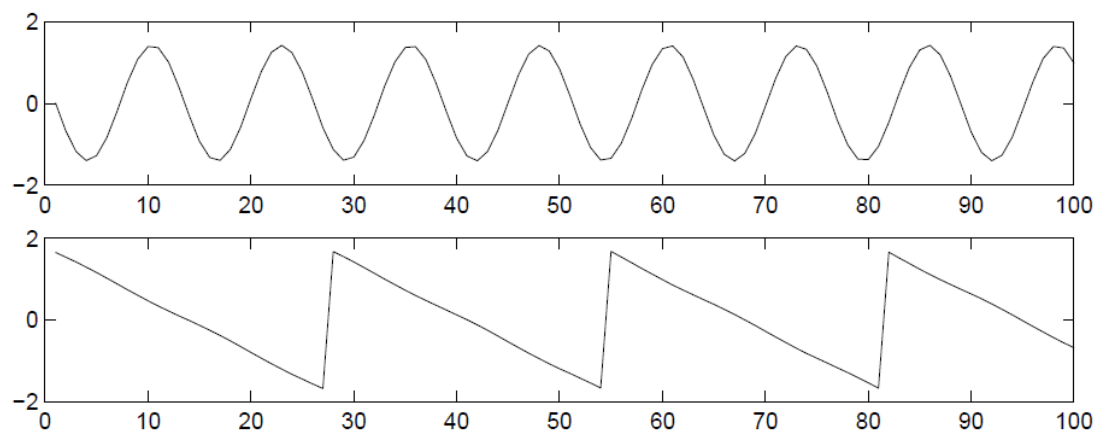


FIGURE 3: THE OBSERVED MIXTURES OF THE SOURCE SIGNALS IN FIG. 2. [12]



Consider, for example, electrical recordings of brain activity as given by an electroencephalogram (EEG). The EEG data consists of recordings of electrical potentials in many different locations on the scalp. These potentials are presumably generated by mixing some underlying components of brain activity. This situation is quite similar to the cocktail-party problem: we would like to find the original components of brain activity, but we can only observe mixtures of the components. ICA can reveal interesting information on brain activity by giving access to its independent components.

Another, very different application of ICA is on feature extraction. A fundamental problem in digital signal processing is to find suitable representations for image, audio or other kind of data for tasks like compression and denoising. Data representations are often based on (discrete) linear transformations. Standard linear transformations widely used in image processing are the Fourier, Haar, cosine transforms etc. Each of them has its own favorable properties (Gonzales and Wintz, 1987).

5.2 MATHEMATICAL FORMULATION OF ICA

To formulate ICA mathematically assume that we observe n linear mixtures x_1, \dots, x_n of n independent components [12]

$$x_j = a_{j1}s_1 + a_{j2}s_2 + \dots + a_{jn}s_n, \text{ for all } j. \quad (6)$$

We have now dropped the time index t ; in the ICA model, we assume that each mixture x_j as well as each independent component s_k is a random variable, instead of a proper time signal. [12] The observed values x_j , e.g., the microphone signals in the cocktail party problem, are then a sample of this random variable. Without loss of

generality, we can assume that both the mixture variables and the independent components have zero mean: If this is not true, then the observable variables x_i can always be centered by subtracting the sample mean, which makes the model zero-mean.

It is convenient to use vector-matrix notation instead of the sums like in the previous equation. Let us denote by \mathbf{x} the random vector whose elements are the mixtures x_1, \dots, x_n , and likewise by \mathbf{s} the random vector with elements s_1, \dots, s_n . Let us denote by \mathbf{A} the matrix with elements a_{ij} . Generally, bold lower case letters denote vectors and

bold upper-case letters denote matrices. All vectors are understood as column vectors; thus \mathbf{x}^T , or the transpose of \mathbf{x} , is a row vector. Using this vector-matrix notation, the above mixing model is written as

$$\mathbf{x} = \mathbf{A}\mathbf{s}. \quad (7)$$

Sometimes we need the columns of matrix \mathbf{A} ; denoting them by \mathbf{a}_i the model can also be written as

$$\mathbf{x} = \sum_{i=1}^n \mathbf{a}_i s_i \quad (8)$$

The statistical model in Eq. 7 is called independent component analysis, or ICA model. [12] The ICA model is a generative model, which means that it describes how the observed data are generated by a process of mixing the components s_i . The independent components are latent variables, meaning that they cannot be directly observed. Also the mixing matrix is assumed to be unknown. All we observe is the random vector \mathbf{x} , and we must estimate both \mathbf{A} and \mathbf{s} using it. This must be done under as general assumptions as possible.

The starting point for ICA is the very simple assumption that the components s_i are statistically independent [12]. We also assume that the independent component must have nongaussian distributions. However, in the basic model we do not assume these distributions known (if they are known, the problem is considerably simplified.) For simplicity, we are also assuming that the unknown mixing matrix is square, but this assumption can be sometimes relaxed. [12]

Then, after estimating the matrix \mathbf{A} , we can compute its inverse, say \mathbf{W} , and obtain the independent component simply by:

$$\mathbf{s} = \mathbf{W}\mathbf{x} \quad (9)$$

ICA is very closely related to the method called blind source separation (BSS) or blind signal separation. A "source" means here an original signal, i.e. independent component, like the speaker in a cocktail party problem. "Blind" means that we know very little, if anything, on the mixing matrix, and make little assumptions on the source signals. ICA is one method, perhaps the most widely used, for performing blind source separation.

In many applications, it would be more realistic to assume that there is some noise in the measurements [12] which would mean adding a noise term in the model. For simplicity, we omit any noise terms, since the estimation of the noise-free model is difficult enough in itself, and seems to be sufficient for many applications.

6 COST FUNCTION FOR ABC ALGORITHM IN ICA CONTEXT

To perform optimization problem based on ABC algorithm, first is very important to define the cost function in ICA context [11]. In this paper, the cost function for ABC algorithm in ICA context is based on maximisation of independence among components. There are two types of contrast function of ICA which are based on information theory and high order statistics(kurtosis).

According to central limit theorem that is totally practical in ICA, the distribution of a sum of independent random variables tends toward a Gaussian distribution. Thus, a sum of two independent random variables usually has a distribution that is closer to Gaussian than any of the two original random variables. In ICA, if the kurtosis of estimated signals is maximized and distanced from the kurtosis of Gaussian signal then the reverse of the theorem is confirmed and independence among estimated signals is guaranteed. [13] So the fitness function can be defined based on the sum of the absolute values of kurtosis in estimated signals. Another natural measure of dependence between signals is inspired by information theory that is minimization of mutual information [13]. Thus fitness function which needs to be maximised in order to have maximum independence[13].

$$J = -\sum_{i=1}^n [E\{y_i^4\} - 3E^2\{y_i^2\}] + H(y_i) - H(y)$$

The cost function proposed in this paper takes the fusion of two criteria, kurtosis and mutual information which is negative of fitness function which is to be minimised in order to have maximum independence.

That can be defined as:

$$f = \sum_{i=1}^n [E\{y_i^4\} - 3E^2\{y_i^2\}] + H(y_i) - H(y) \quad \dots 10$$

The part (let us say call it Z_1), $[E\{y_i^4\} - 3E^2\{y_i^2\}]$ of cost function represents kurtosis and latter part (let us say call it Z_2) $H(y_i) - H(y)$ is mutual information for estimates of source speech signals y_1, y_2, \dots, y_n . E is the expectation operator and H is the entropy associated with the signal which can be defined as, in general

$$E[y] = \sum_{i=1}^n y_i p_i$$

and

$$H(y) = -\sum_{i=1}^n p(y_i) \log(p(y_i))$$

Assuming that components are equally likely for simplicity, we have $p_i = 1/n$, and kurtosis part, Z_1 can be written as

$$[E\{y_i^4\} - 3E^2\{y_i^2\}] = [1/n(y_i^4) - 3(1/n(y_i^2))^2] \quad \dots 11$$

Second part of equation (10) Mutual information part, Z_2 can be written as

$$H(y_i) - H(y) = -p(y_i) \log(p(y_i)) - n(-p(y_i) \log(p(y_i)))$$

$$= -p(y_i) \log(p(y_i)) + n(p(y_i) \log(p(y_i)))$$

$$= (n-1)p(y_i) \log(p(y_i))$$

$$= \frac{(n-1)}{n} \log(1/n)$$

$$= -\frac{(n-1)}{n} \log(n) \quad \dots 12$$

Combining equations (10), (11) and (12), we get

$$f = \sum_{i=1}^n \left([1/n(y_i^4) - 3(1/n(y_i^2))^2] - \frac{(n-1)}{n} \log(n) \right) \quad \dots 13$$

Here we have the cost function of ICA that is to be minimised with the use of ABC algorithm. I have implemented this result in Java.

7 OUTPUT AS AN EXAMPLE

```

C:\Windows\system32\cmd.exe

C:\Users\Amresh\Desktop\4th_cse\abc_jv>javac abc_ica.java

C:\Users\Amresh\Desktop\4th_cse\abc_jv>java abc_ica
Component[1]:0.09368816627017984
Component[2]:0.05211160787725344
Component[3]:-0.10127795516318705
Component[4]:-0.1432816211008756
After run 1 , cost function value:-4.158844889942153
Component[1]:-0.3362205526743316
Component[2]:-1.9272258419182142
Component[3]:-0.8255833801797582
Component[4]:-0.019598906345099865
After run 2 , cost function value:-3.2668444105724
Component[1]:0.15781168461191622
Component[2]:-0.2582596391206149
Component[3]:1.328389148209123
Component[4]:1.4332101911753847
After run 3 , cost function value:-3.700243315388901
Mean of cost function values after all 3 runs: -3.7086442053011517

C:\Users\Amresh\Desktop\4th_cse\abc_jv>

```

8 CONCLUSION AND FUTURE WORK

In this paper I have optimized the fitness function of Independent Component Analysis in order to attain maximum independence among components using Artificial Bee Colony algorithm which provides better result than other Particle Swarm Optimization algorithm. Purpose of attainment of maximum independence among components is to make the source signals separate easily. In future work, this ABC algorithm can be used to solve the whole ICA problem. I have not considered the presence of noise in this approach, but in real situations there might be many cases where consideration of noise is significant. The inclusion of noise may be considered in the extension of this work.

9 REFERENCES

1. V. Tereshko, Reaction–diffusion model of a honeybee colony's foraging behaviour, in: M. Schoenauer (Ed.), Parallel Problem Solving from Nature VI, Lecture Notes in Computer Science, vol. 1917, Springer–Verlag, Berlin, 2000, pp. 807–816.
2. Karaboga, D., Akay, B. (2009), A Comparative Study of Artificial Bee Colony Algorithm, Applied Mathematics and Computation, 214, 108-132, Elsevier, Netherlands.
3. B. Basturk, Dervis Karaboga, An Artificial Bee Colony (ABC) Algorithm for Numeric function Optimization, IEEE Swarm Intelligence Symposium 2006, May 12–14, 2006, Indianapolis, Indiana, USA
4. ABC algorithm – http://www.scholarpedia.org/article/Artificial_bee_colony_algorithm, Viewed on March 01, 2013
5. ABC algorithm- <http://mf.erciyes.edu.tr/abc/> Viewed on March 02, 2013
6. Swarm intelligence- http://en.wikipedia.org/wiki/Swarm_intelligence, Viewed on March 07, 2013
7. Neural Networks – A comprehensive foundation. second edition Simon haykin
8. Hyvärinen, A.; Karhunen, J.; Oja, E. (2001): Independent Component Analysis, New York: Wiley
9. ICA - <http://research.ics.aalto.fi/ica/icademo/> Viewed on March 12, 2013
10. ICA - http://cis.legacy.ics.tkk.fi/aapo/papers/IJCNN99_tutorialweb/ Viewed on March 09, 2013
11. Mavaddaty, S.; Amirkabir Univ. of Technol., Tehran, Iran; Ebrahimzadeh, A., A comparative study of bees colony algorithm for blind source separation, 20th Iranian Conference on Electric Engineering.
12. Hyvärinen, A.; Oja, E. (2000): "Independent Component Analysis: Algorithms and Application", Neural Networks, 13(4-5):411-430.
13. Mavaddaty, Ebrahimzadeh, Research of Blind Signals Separation with Genetic Algorithm and Particle Swarm Optimization Based on Mutual Information, Journal of Computer Engineering, 1 (2009) 77-88.
14. Entropy- http://en.wikipedia.org/wiki/Entropy_information_theory Viewed on May 02, 2013
15. Kurtosis- <http://en.wikipedia.org/wiki/Kurtosis> Viewed on March 02, 2013
16. Higher-order statistics - http://en.wikipedia.org/wiki/Higher-order_statistics Viewed on March 22, 2013



ACTIVITY BASED COSTING & TRADITIONAL COST ACCOUNTING SYSTEM: A COMPARATIVE STUDY OF OVERHEAD COST ALLOCATION

MONIKA KHEMANI
ASST. PROFESSOR
DEPARTMENT OF COMMERCE
SHYAM LAL COLLEGE
DELHI UNIVERSITY
NEW DELHI

ABSTRACT

The present world of cut throat competition coupled with increasing consumer demands and product differentiation makes the traditional costing redundant and widely responsible for strategic failures. Traditional costing apportions indirect expenses on irrational basis to discrete product lines and services. Activity Based Costing (ABC) contemplates a paradigm shift in overhead allocation through scientific means commonly known as cost drivers. In this paper, we trace the development of concepts and techniques of cost accounting that have shifted the attention of the management practitioners towards alternative methods of costs allocation. This paper highlights the distinctive features of ABC for ascertaining true product cost. Undoubtedly, ABC is a definite improvement over the traditional methods on the premise that the costs are collected on the basis of activities rather than products and it can effectively contribute to the top managerial decision making process based on product, customer and geographical profitability.

JEL CODE

M 41

KEYWORDS

Activity Based Costing, Cost Accounting, Cost Drivers, Traditional Costing.

INTRODUCTION

The use of traditional cost accounting for overhead allocation is now being considered as outdated and nebulous as it is based on indiscriminate ways of allocation and is of little value in industry where direct cost is insignificant. ABC brings radical changes in the methodology of overhead cost allocation. However, contrary to popular belief, ABC does not replace the established traditional costing system it rather gives new perspective to overhead cost allocation. ABC focuses on the activities and allocates the cost of such activities through common cost drivers to end product or customer for better decision making.

As per ABC philosophy both the direct and indirect costs must be identified for each customer separately and this is truly a refinement of the traditional costing systems of apportioning overheads. Traditional Costing Systems is based on measures such as direct labour hours or machine hours to allocate overhead costs to products manufactured. On the other hand, ABC allocates overhead costs to products on the basis of the resources consumed by each activity involved in the product. This is accomplished by assigning costs to cost pools that represent specific activities and allocating these costs using appropriate cost drivers to the product. Cost drivers are those activities, which have a direct cause and effect relationship to the occurrence of a particular cost. (Carter, Usry, 2002).

The main assumption of the ABC system is that products consume activities and activities consume resources (Hongren, Datar & Foster, 2003). An activity is defined as event, action, transaction or work sequence that incurs cost when producing a product or providing a service (Weygandt, Kieso & Kimmel, 2005). In the ABC system, direct costs are also traced to products or services, so the main attention is paid to indirect costs which are allocated to activities, instead of to departments (like in traditional systems). The application of the ABC system goes through two main stages. In the first stage, indirect costs are allocated to activity/ cost pools. It is important to determine the correlation between a particular indirect cost and an identified activity. The second stage in ABC application is assigning indirect costs from activity cost pools to products, by using defined cost drivers. A cost driver is any factor or activity that has a direct cause effect relationship with the resources consumed. The usage of multiple allocation bases can provide a more accurate and objective profitability of various products. The goal of any cost system is to provide relevant and timely information to the management. This information supports better management of corporate resources in production of the goods or provision of services and improves competitiveness in terms of costs, quality and profitability.

ABC methodology assigns an organization's resource costs through activities to the products and services provided to its customers (Wikipedia, 2008). It is generally used as a tool for understanding product and customer cost and profitability. As such, ABC has been used as a strategic tool for pricing, outsourcing and measurement of process improvement initiatives. The ABC method was designed in the United-States during the 80's (Cooper and Kaplan, 1988). "It is a refined cost system which enables classifying more costs as direct, to expend the number of indirect cost pools and to identify cost drivers" (Wegmann, 2008). ABC favours better cost allocation by identifying resources consumed for specific activities and related cost drivers.

ABC system is a costing principle that relies on activities that have a cause and effect relationship with cost as a basis for allocating such cost to cost objects which jointly cause the cost (Debor and Eragbhe, 2005). ABC charges products for the cost of capacity they actually use and not for idle capacity like the absorption method. However, the true worth of ABC from a managerial perspective is its ability to assign activity costs to cost objects. This enabling characteristic allows management accountants to reassign activity costs across business processes and identify relationships more accurately in decision-making processes. Under ABC, these activities and rates more precisely link to the actual work or job currently performed. ABC terminology is work centric as compared with absorption costing which is transaction centric (Cokins, 2002).

Many authors have advocated several stages in the implementation of ABC. Hongren, Datar and Foster (2003) as quoted by Debor and Eragbhe (2005) advocated seven stages which includes;

- i. Identifying the products that are the chosen objects;
- ii. Identifying costs, direct cost of the product;
- iii. Selecting the cost allocation basis to use for allocating indirect costs to products;
- iv. Identifying the indirect costs associated with each cost allocation base;
- v. Computing the rate per unit of each cost allocation base used to allocate indirect cost;
- vi. Computing the indirect cost allocation to the product; and
- vii. Computing the total cost of the product by adding all direct cost and indirect costs of the products.

Users of the ABC system have to identify the activities, which generate cost and then match the activities to the level bases used to assign costs to the products. While using the ABC system, the activities, which generate cost, must be determined and then should be matched to the level drivers used to assign costs to the products (Akyol et. al., 2005).

Narasimhan and Thampy (2002) stated that activity based costing system highlights the use of activity based cost information in benchmarking and identification of value added and non-value added activities. Bhatta (2001) argued that most companies seem to recognise that their cost systems do not respond adequately

to today's competitive environment and the methods they use to allocate costs among their products are unscientific. Quite simply, accurate cost information can give a company a competitive edge.

Worldwide ABC adoption rates appear to be relatively low as it is quite cumbersome and redefines entire allocation methodology. Companies nowadays operate under volatile business environments that are strongly influenced by customer demands and generate revenues and profits when customers identify value and buy their product or service. Under this framework managers will focus their attention internally to find the best ways of using their resources effectively, in order to create or maintain value in their products or services. Activity based systems which are information systems that provide quantitative information about activities in an organization. Activity based systems help managers to view the organization as a collection of related activities, thus enable managers to improve operating processes and make better pricing decisions.

The ABC system is very complex and takes much more effort and resources to implement than the traditional systems. Its application is justified only if the benefits from the ABC system exceed the costs of its implementation. Therefore, when management decides to implement the ABC system, it must be sure that the system will provide more useful cost information for taking right decisions than traditional systems.

REVIEW OF LITERATURE

Bromwich and Bhimani (1989) observed that though ABC corrects the product cost distortions but no such study has been done to demonstrate that it increases the profitability of the firm (Shim and Stagliano 1997).

Shields (1995) discovered that users' perceptions of ABC success were linked to six behavioural and organizational variables: top management support; integration with competitive strategy initiatives, such as TQM and JIT; performance evaluation and compensation; non-accounting ownership of the ABC project; training provided in designing, implementing and using ABC; and the provision of adequate resourcing. They found that the firm's top-level manager 'champions' the ABC project and cross functional teams, process orientation and adequate training to employees on the ABC, linkages between activity based team oriented performance metrics to the compensation plan, and decision making at shop floor level by people who have process knowledge.

Hubbell (1996) argued in favour of integrating ABCM systems with the measures of shareholder value such as economic value added. The resultant integrated cost management system could provide a better governance mechanism for improving processes, optimising the use of capital and thus create shareholder value.

Foster and Swanson (1997) surveyed 132 United States companies and found that all of them were using activity based cost management. The decision to use ABCM, management use of dollar improvement and the overall net benefits as success measure yielded the highest explanatory power.

Goddard and Ooi (1998) discussed the ABC methodology, as implemented in library services at the University of Southampton. The result showed substantial differences in the allocation of the central overheads cost as between institutions of Higher Education using the ABC model and the existing system. They argued that, although the ABC approach may overcome some of the problems of overhead allocation and improve the economic efficiency of organizations, there are significant problems with its practical application. In this study, it has been concluded that the ABC model provides more equitable overhead allocation than traditional systems, as it ensures that the faculty is charged for its actual consumption of central resources. It also enables allocated costs to be both verified and refuted. However, this case study showed that, in practice, the ABC model is less efficient than in theory. Also, it is very expensive to develop and maintain such a system.

Anderson and Young (1999) in a study of 21 filed research sites of two firms examined the relationship between activity-based costing systems, contextual factors, and factors related to ABC implementation process by using survey and interview process. They found that implementation process has clear influence on the ABC/M success and the contextual setting directly influences the process and outcome. The criteria for success of ABC systems is its ability to provide more accurate cost data vis-à-vis traditional cost systems and usage of ABC cost data for cost reduction and process improvement.

Booth and Giacobbe (1999, 1997) reported on a survey of 213 manufacturing firms and noted comments by some "adopters" that ABC had been a success. However, the authors cautioned that most of the firms surveyed had only been using ABC for a short period of time, which would make it difficult to fully assess any benefits. Also, the majority were still using their existing costing systems as well i.e. the ABC system had not been infused or integrated within the primary system.

Gordon and Silvester (1999) examined the performance of ten ABC user firms vis-à-vis their matched size and industry controlled counterparts who have not adopted ABC. Though ABC user firms had abnormal returns on the date of announcement but not statistically significantly different from their counterparts. Thus, they questioned the adoption of ABC if it does not lead to creation of firm value.

Groot (1999) reported by surveying the United States food and beverages industry that 18% of the respondents had implemented ABC and 58% were considering its implementation.

Malmi (1999) found that firms superior performance subsequent to ABC adoption revealed that the ABC adoption decision was the 'rational value enhancing choice' and it was not a fad or fashion or forced selection.

Shekari (2000) studied ABC in increasing the optimization in Siman-e-Fars Company by designing and proposing ABC system, after studying and analyzing the current system of costing in that company and recognizing its strong points and weak points. Then by using the table of determining value added and the criterion for activity appropriation, he determined activities with value added and without value added by using the definition for value added in activity based costing system. Finally, he determined the yield of service activity centers and manufacturing centers by using ABC costing and it was shown that ABC system has saved a lot and it has increased the profitability of the company. Thus, by omitting unnecessary activities and without value added, the yield of the activity centers and the company as a whole increased.

Kennedy and Affleck-Graves (2001) examined the link between ABC implementation and creation of shareholder value using Rappaport (1986) framework and event study methodology (Brown and Warner 1980 & 1985). They got responses from 47 ABC users and 187 non-ABC users. They found that choice of management accounting system such as activity based costing for a sample of UK firms had a significant impact on firm.

Cagwin and Bouwman (2002) in their survey of 210 internal auditors found that the firms with diverse product portfolio and with high proportion of overheads cost when they have adopted activity-based costing along with other strategic initiatives such as Just in Time (JIT) and Total Quality Management (TQM), it resulted in substantial improvement in their return on investments. The other enabling conditions for the efficacy of the ABC in the organizations are sophisticated information technology systems, absence of excess capacity and competitive environment.

Narasimhan and Thampy (2002) designed ABC system for ascertaining service cost for different customers with a case study of two branches of a large Indian private sector bank. The use of ABC information in benchmarking, branch network restructuring, business process outsourcing, and identification of value-added and non-value added activities have been argued.

Anand, Sahay and Saha (2005) noted Cagwin and Bouwman (2002) in their survey of 210 internal auditors found that the firms with diverse product portfolio and with a high proportion of overhead cost when they have adopted activity-based costing along with other strategic initiatives such as JIT and TQM, resulted in substantial improvement in their return on investments. The other enabling conditions for the efficacy of the ABC in the organisations are sophisticated information technology systems, absence of excess capacity and competitive environment.

European University Association (EUA, 2008) prepared the study in which they have numbered different factors which are influencing the development of the full costing method at European universities. These factors are legal status, size, profile, ownership of property, governance, funding structure and the level of autonomy. The study has shown that some countries have fully developed a full costing system such as the UK and the Netherlands and some countries like Estonia, Slovenia and Croatia, do not have any method for tracing and allocating costs. The reasons for that could be found in available databases for implementation, especially accounting and costing data, but also in the institutional framework for universities. The higher cost recovery of project costs and financial sustainability of universities can be achieved through the benefits on the national level, which include: a more comprehensive approach to costing, more efficient internal resource allocation, and improved decision-making - based on a better understanding of investment decisions, benchmarking possibilities within the sector and price activities.

Yereli (2009) studied the application of ABC in a Turkish hospital and compared the results with the traditional costing system. She calculated the cost of gall bladder surgery by using both methods and then compared the results. The results showed that the cost of this surgery by using the new system regarding in dollar, and by using the traditional system compared with the ABC was between 965 and 1053 and between 535 and 599 dollars, respectively. These results show that ABC can prepare more appropriate data and can help the managers in analyzing the prices and better decision makings about budgeting and strategic programming.

Gujral et al. (2010) used activity-based costing method as a tool for costing in Hematopathology lab. First the data needed were collected through the hospital's accounting system and interviewing the staff. Then the related costs were analysed and the direct and indirect costs were identified and were appropriated according to the definite percentages and stimulants. Using ABC results in a more accurate and clearer data about service costs. This method helps the laboratories to redesign their cost structure or at least get a more appropriate understanding of the economy dominant over the laboratory management.

OBJECTIVES OF STUDY

The following objectives are formulated for the present study:

1. To conceptualize ABC and its related benefits in manufacturing set up.
2. To highlight the significant improvement in product costing thorough proper allocation of overheads.
3. Making Products more competitive by vigorously following scientific basis of cost allocation.
4. ABC yields benefits to the company, its business partners and consumers through phasing out non permissible waste, making products highly competitive and enhancing shareholders wealth.
5. To determine the nature of costs and analyze them as direct traceable costs, activity traceable costs and non-traceable costs (or unallocated costs).
6. To determine cost drivers for each activity and use output measures to calculate activity recovery rates to be loaded on the products.

IMPACT OF ABC IMPLEMENTATION ON PRODUCT COSTING

In the hypothetical case study given below, we have attempted to highlight the impact of Activity Based Costing on product costing and challenging the traditional costing method of overhead cost allocation by turning the export rejected product into profitable option. This paradigm shift in profitability is really spectacular and ABC undoubtedly offers different perspective to product costing. A Company produces three products and related cost of manufacturing and other indirect expenses of the products are as follows:

PRODUCTS			
Cost Elements	A	B	C
Raw Material	12	15	21
Direct Labour	9	12	14
Variable Overheads	6	5	8
Machine Hours	8	8	9

The Company adopts traditional system of overhead cost allocation to products and recently the Company lost the export order for product C as the price charged by it was quite high. The Management Accountant of the Company suggested to adopt ABC as he is of the firm view that product C is most competitive and traditional costing distorts the true profitability. He emphasized the need for ABC cost allocation method and identified various activities and cost drivers as under:

Activities	Cost	Cost Driver
Receiving Material	10,000	Time Spent on inspection
Placing Orders	40,000	Number of orders placed
Inspection	30,000	Number of units produced
Maintenance	20,000	Machine hours spent

Total indirect cost and machine hours are 100,000 and 50,000 respectively. Product wise details for cost drivers:

Cost Drivers	A	B	C
Inspection Time	500	250	250
Orders	40	40	20
Units	2000	2000	2000
Machine Hours	16000	16000	18000

The Management Accountant advocates the superiority of ABC over traditional method of overhead cost allocation as follows:

TRADITIONAL COSTING SYSTEM

Machine Hour Rate $100,000/50,000 = 2/-$ per hour

Cost Elements	A	B	C
Raw Material	12	15	21
Direct Labour	9	12	14
Variable Overheads	6	5	8
Overheads	16	16	18
Total Cost	43	48	61

ACTIVITY BASED COSTING

Cost Elements	A	B	C
Raw Material	12	15	21
Direct Labour	9	12	14
Variable Overheads	6	5	8
Overheads*	18	18	13
Total Cost	45	50	56

*Overhead Allocation ABC

	A	B	C
Receiving Material	5,000	2,500	2,500
Placing Orders	16,000	16,000	8,000
Inspection	10,000	10,000	10,000
Maintenance	6,000	8,000	6,000
Total Cost	37,000	36,500	26,500
Units	2,000	2,000	2,000
Cost p/u (~)	18	18	13

CONCLUSION

Implementation of ABC ensures allocation of overheads to products and customers on more scientific and appropriate basis rather using a single absorption rate based on traditional. In the example given above, the company could have secured export order if it had followed ABC method of overhead cost allocation rather traditional method of overhead absorption based on machine hour driver.

RECOMMENDATIONS FOR FUTURE RESEARCH

The present research paper focuses on the theoretical framework behind Activity Based Costing and its related application. The author recommends for future research on the following lines:

1. To introduce mandatory cost accounting standard (CAS) prescribing guidelines on Activity Based Costing for all industries.
2. Studying ABC for companies in service sector.
3. Applying ABC to identify direct cost also in manufacturing products to highlight potential loss or non-permissible waste and improve product profitability.
4. ABC should be simplified by predefining cost drivers and activities for all industries.

REFERENCES

1. Akyol Derya Eren, Gonca Tuncel & G. MiracBayhan (2005). A comparative analysis of activity-based costing and traditional costing, *World Academy of Science, Engineering and Technology*, at <http://www.waset.org/journals/waset/v3/v3-11.pdf>.
2. Anand, M., Sahay, B.S. & Saha, S. (2005). Activity-Based Cost Management Practices in India: *An Empirical Study Decision*, 32(1), 123-152.
3. Anderson, Shannon W. and S. Mark Young (1999). "The impact of contextual and process factors on the evaluation of activity-based costing systems," *Accounting, Organizations and Society*, 24 (7), October, 525-559.
4. Bhatta N SMahabaleshwara (2001), "Activity Based Costing and Accounting", *Management Accountant*, ICWAI, Calcutta, August: 573.
5. Booth, P. & Giacobbe, F. (1997). Activity-based costing in Australian manufacturing firms: Key survey findings. *Management Accounting Issues Report Number 5. Management Accounting Centre of Excellence*. CPA Australia: (March).
6. Booth, P. & Giacobbe, F. (1999). Activity-based costing in Australian manufacturing firms: the 'state of play'. *Contemporary Perspectives on Management Accounting. Management Accounting Centre of Excellence*. CPA Australia, 35-61.
7. Bromwich, M. and Bhimani, A. (1989). *Management Accounting: Evolution not Revolution*, London, UK, Chartered Institute of Management Accountants.
8. Brown, S. J. and Warner J.B. (1980). "Measuring security price performance," *Journal of Financial Economics*, 8(3), September, 205-258.
9. Brown, S. J. and Warner J.B. (1985). "Using daily stock returns: the case of event studies," *Journal of Financial Economics*, 14(1), March, 3-31.
10. Cagwin, D. & Marinus J. Bouwman (2002). "The association between activity-based costing and improvement in financial performance," *Management and Accounting Research*, 13, 1-39.
11. Carter, W. & Usry, M. (2002) *Cost Accounting, 13th edition*, Thompson Learning.
12. Cokins, G. (2002). Activity Based Costing: Optional or Required? *AACE International Transactions*, 03.01.
13. Cooper, R. & Kaplan, R.S. (1988). Measure Costs Right: Make the Right Decisions. *Harvard Business Review*, September-October, 96-103.
14. Debor, E. L. & Eragbhe, E. (2005). Implementing Activity - Based Costing in the Health Service Industry: A survey of some private clinics in Benin City, Nigeria Bayero, *International Journal of Accounting Research* 1(2) 56-67.
15. European University Association (2008): Financially sustainable Universities – Towards full costing in European Universities, www.eua.org.
16. Foster, G. & Dan W. Swanson (1997). "Measuring the success of activity-based cost management and its determinants," *Journal of Management Accounting & Research*, 9, 109-141.
17. Goddard, A., Ooi, K. (1998), Activity-Based Costing and Central Overhead Cost Allocation in Universities: A Case Study, *Public Money & Management*, July-September, CIPFA.
18. Gordon, L. A., & Silvester, K.J. (1999). "Stock market reactions to activity-based costing adoptions," *Journal of Accounting & Public Policy*, 18(3), Autumn, 229-251.
19. Groot, T. (1999). "Activity-based costing in US and Dutch food companies," in Epstein, M. J.; J Y Lee; and K M Poston (eds.), *Advances in Management Accounting*, 7, Elsevier, Jai, 47-63.
20. Gujral, S., Dongre, K., Bhindare, S., Subramanian, P.G., Narayan, H.K.V., Mahajan, A., Batura, R., Hingnekar, C., Chabbria, M., Nair, C.N. (2010). Activity-Based Costing Methodology as Tool for Costing in Hematopathology Laboratory. *Indian. J. Pathol. Microbiol.* 53 (1), 68- 74.
21. Horngren, Datar and Foster, *Cost Accounting - A Managerial Emphasis, 11th edition* (Prentice Hall 2003).
22. Hubbell, William W. (1996). "A case study in economic value added and activity-based management," *Journal of Cost Management*, summer, 21-29.
23. Kennedy, Tom and John Affleck-Graves (2001). "The impact of activity-based costing techniques on firm performance," *Journal of Management Accounting Research*, 13, 19-45.
24. Malmi T. (1999). Activity-based costing diffusion across organizations: an exploratory empirical analysis of finish. *Accounting Organisations and Society*, 24, November, 649-672.
25. Narasimhan, M. S. and Thampy, A. (2002), "Activity Based Costing in Banking Service: A Case Study of a Large Indian Private Sector Bank", *Prajnan*, 31(2):95-110.
26. Rappaport, A. (1986). *Creating Shareholder Value: The New Standard for Business Performance*, N.Y., *The Free Press*.
27. Shekari, A. (2000). Studying the application of activity-based costing in increasing the optimization (A case study: Siman-e-Fars company)". *MA dissertation in Industrial Management, Shiraz University*.
28. Shield M. (1995). "An empirical analysis of firms' implementation experiences with activity-based costing," *Journal of Management Accounting & Research*, 7, Fall, 148-166.
29. Shim, E. and Stagliano A.J. (1997). "A survey of US manufacturers on implementation of ABC," *Journal of Cost Management*, March/April, 39-41.
30. Wegmann, G. (2008) Development Around Activity-Based Costing Method: A State - of - the Art Literature Review available at: <http://ssrn.com/abstract=1012664>.
31. Weygandt, J. J., Kieso, D. E., Kimmel, P. D. (2005). *Managerial Accounting*, Wiley, New York.
32. Wikipedia Free Encyclopaedia, 2008. @ www.google.com.
33. Yerili (2009). Activity-Based Costing and Its Application in a Turkish University Hospital. *AORN Journal*, 89(3), 573-591, March 2009.

E-MARKETING: CHALLENGES AND OPPORTUNITIES

RUCHIKA NACHAAL
ASST. PROFESSOR IN COMMERCE
SHREE ATAM VALLABH JAIN COLLEGE
HUSSAINPURA

ABSTRACT

Marketing is the delivery of customer satisfaction at a profit. The two fold goal of marketing is to attract customers by promising superior value and to keep current customers by delivering customer satisfaction. Numerous technological developments have had a significant impact on marketing. Certainly televisions, household telephones and personal computers are examples. Electronic marketing is conducted through interactive online computer systems which link consumers with sellers electronically. Although still in their infancy internet usage and online marketing are growing explosively. Transforming the web in to marketing tool was made possible by several important developments. Marketers can conduct on line marketing in four ways-by creating an electronic presence online, placing adds online, participating in internet forums, newsgroups or web communities or using online e-mail or web casting. The most basic is the web browser. A browser provides an internet visitor with the necessary application program to look at and interact with individual websites. Now the web is available to virtually anyone with a P.C. Customers gain greater control of interaction with business and have the opportunity to compare products and prices. The information economy poses both challenges and opportunities for marketers. Among the most significant are managing the quality and quantity of information, providing customer services, ethical concerns, ensuring the security transaction and privacy of customers and developing electronic commerce. Despite these challenges, companies large and small are quickly integrating online marketing in to their marketing mixes. As it continues to grow, online marketing will prove to be powerful tool for building customer relationships, improving sales, delivering product and services more efficiently and effectively.

KEYWORDS

e-marketing, customer satisfaction.

INTRODUCTION

Marketing is the delivery of customer satisfaction at a profit. The two fold goal of marketing is to attract customers by promising superior value and to keep current customers by delivering customer satisfaction. The Industrial Revolution, beginning in the second half of 19th century marked the beginning of wide spread application of technology to business. Numerous technological developments have had a significant impact on marketing. Certainly televisions, household telephones and personal computers are examples. Today both the quantity and quality of information is increasing at faster rate in history. Much of this growth is due to improvements in information technology and ability of marketers to find creative ways to make use of it. The result is that marketers are entering an information economy in which new ways of doing business are being designed and some existing ways are being reconfigured

IMPORTANCE OF INFORMATION IN MARKETING

Significant increases in marketing productivity required a different kind of technology. The job of marketing is to direct the organization in how to most effectively satisfy customers. In short, marketing is driven by information. Sellers must learn what buyers like and dislike by monitoring their behavior, asking them questions, and inviting their questions. And all the marketers must gather data on current or potential markets to determine their status and to anticipate how they are likely to change. For example, it results in:

- Better products: A Refined understanding of the buyer allows a marketer to develop products that more closely fit the buyer's need, requiring fewer compromises and greater satisfaction.
- Better prices: What customers are willing to pay for a product depends on how much they value it. Knowing how important a product is to a customer and what resources the customers have available to purchase it helps sellers set attractive prices.
- Better distribution: The likelihood of having a product available when and where a customer wants to find it is enhanced if the seller knows the shopping habits and preferences of the buyer.
- Better promotion: A product and its benefits can be communicated in many ways. Both the form and the content of advertisements and other promotions can be improved if the marketers understand the buyer's motivations and expectations.
- Better implementation: Quicker feedback on marketing programs permits managers to access their performance and make adjustments before losses mount up or opportunities are missed. Today the response of customers to price changes and promotion programs can be monitored in real time rather than days or weeks after they introduced.

ELECTRONIC MARKETING

Electronic marketing is conducted through interactive online computer systems which link consumers with sellers electronically. Although still in their infancy internet usage and online marketing are growing explosively. Transforming the web in to marketing tool was made possible by several important developments.

RAPID GROWTH IN E-MARKETING

Although still in their infancy, internet usage and online marketing are growing explosively. This explosion of internet usage heralds the drawing of a new world of electronics commerce. **Electronics Commerce** is the general term of a buying and a selling process that is supported by electronics means. Electronics markets are "market spaces" rather than physical "market places", in which seller offer their products and services electronically, and buyer search for information m identify what they want m and place orders using a credit card or other mean offer electronic payment.

CONDUCTING ELECTRONIC MARKETING

Marketers can conduct Electronic marketing in four ways:

1. CREATING AN ELECTRONIC ONLINE PRESENCE

A company can establish an electronic online presence in two ways: It can buy space on a commercial online service or it can open its own website. Buying a location on commercial online service's computer or establishing a link from the company's own computer to the online service's shopping mall.

In addition to buying a location on an online services, or as an alternative most companies have now created the own websites. The most basic type is a corporate website. These sites are designed to build customer goodwill and to supplement other sales channels rather than to sell the company's product directly.

2. PLACING ADVERTISEMENT ONLINE

Companies can use online advertising to build their internet brands or to attract visitors to their web sites. Online ads popup when internet users are surfing online services or web sites. Such ads include banners, ads, popup, windows, and tickers.

3. PARTICIPATING IN FORUMS, NEWSGROUPS AND WEB COMMUNITIES

Companies may decide to participate or in sponsor Internet forums, newsgroups and bulletin boards that appeal to specific special interest groups.

Forums are discussed group or commercial online services. A forum may operate a library, a "chat room" for real time message exchanges and even a classified ad directory.

Newsgroups are limited to people posting and reading messages on a specific topic.

Web communities can be either social or work related. One successful work related community is Agriculture Online.

4. USING E-MAIL AND WEB CASTING

A company can exchange prospects and customers to send questions, suggestions and even companies to the company via e-mail. Such line provides an excellent opportunity to introduce the company and to offering to new customers and to build ongoing relationship with current ones.

THE IMPACT OF INTERNET ON MARKETS

Transforming the Web in to a marketing tool was made possible by several important developments. The most basic is the Web browser. A browser provides an internet visitor with the necessary application program to look at and interact with individual websites. Use of Internet by business and consumers has grown rapidly. Several implications of this phenomenon on how markets operate are described below:

- **Control of Interactions:** The traditional model of marketing communication has the seller largely in control of the information flow. In the online environment the interactions are controlled by the recipient. It is the Internet user who must sit down at the computer, search out a website, and what pages to examine and ignore.
- **More and Better Information:** One of the features of the Internet is easy access to more and better information. Consumers can acquire information previously available only to sellers. For example, knowing what a car dealer pays for a particular make of car and the cost to dealer for specific options can be valuable negotiating tools for a consumer.
- **Customized Products:** Customization has been relatively common in business- to-business marketing. All consumers' products are highly standardized. The reason for the difference is quite simple-the flow of information. Getting the customization details from the buyer to seller, arranging to have suppliers provide the necessary parts and other functions took too much time. The Internet speeds up that flow and makes customization not only possible but practical.
- **Restructured Channels:** In traditional arrangement, manufacturer produces product and sells it to the next level in the distribution channel when a firm sells on the Web and therefore skips one or more channel levels, it must create the systems to provide the fulfillment. Even a traditional retailer that goes on the Web must arrange to process orders and get the product to the buyer.
- **Buyer Communication:** Marketers recognize word-of-mouth communication as a potent force because it is seen as an assessment by an objective third party with nothing to gain or lose from a purchase decision. Of course, word of mouth can be negative as well as positive. Thus, firms go to considerable effort to encourage positive word of mouth and to resolve unfavorable impressions that might lead to negative word of mouth.

THE IMPACT OF THE INTERNET ON MARKETING STRATEGY

The internet has created opportunities for firms to create their own websites to communicate with other businesses and customers, and to conduct transactions. The objectives of these sites are to reduce costs, generate revenue, or both. In addition to creating new businesses, the Web has existing ways of doing business. As the following discussion suggests many areas have been affected:

1. MARKET RESEARCH

Like all good marketers, firms making use of the internet want to segment markets and then concentrate on selected targets. Gathering data about websites visits and visitors and relating that data to other information about visitors is a useful place to begin. Traditional marketing research techniques including surveys and focus groups are being conducted on the web. Clearly using the web for research doesn't eliminate all the problems on conventional methods. But it does offer some unique opportunities. For example, the graphics now possible on the internet allow respondents in a focus group or survey to look at visual images of a product in motion and from many different angles. Probably the biggest advantages of conducting research over the internet are the speed with which it can be completed, the comparatively low cost and the geographic research. There are other research techniques to identify segments that involve gathering data through electronic observation of site visitors. One approach called clustering, tracks the pages visited, amount at a page, and items purchased by individuals while they navigate sites. It then creates groups or clusters of visitors with very similar pattern. As the competition intensifies, Internet marketers recognize the importance of segmentation and targeting.

2. CHANNEL RELATIONSHIPS

The attraction of the web for manufacturers is a closer link with the final consumer. By selling the web and eliminating middlemen, both business and consumer product makers are able to decide which of their products to present, how they will be presented, and what level of service will accompany them. Changing the way a product is sold and distributed has impact on the individuals and organizations currently selling the product. Anticipating their reaction and insuring they are fairly is not an obvious. By moving some of its sale to the web, a firm risks losing the loyalty and commitment of existing channel. Because the majority of sales for most manufactures are still made through traditional channels, the risk of alienating important business patterns has affected web strategies. Some of the approaches used by manufacturers to avoid internet-related channel conflict are:

- Use the web as a lead generator only: Some manufacturers, notably the auto companies, use their websites to collect sales leads, and then direct potential customers to dealers located near them.
- Offer different products online: Mattel offers collectibles online that are not available in stores.
- Sell on line at the retail list price: To avoid undercutting retail stores, Polaroid sells its digital cameras and photo printers online at the same price consumers find in stores.
- Target a different market segment: Clinic, which offers customized cosmetics and hair-care products on its website, targets consumers who avoid the counters in department stores.

3. PROMOTION

A website without visitors is wastage of money. Equally ineffective is a site without the right visitors- the target audience of the organization. Part of the problem is simply the number of websites and the fact that the search engines can't keep track of them all. Another complicating factor is that visits to web sites are always initiated by the visitor-a customer, supplier, or even a competitor. There is no passive exposure, as occurs with mass media such as television or radio, and very little incidental exposure. The first issue is attracting the right audience to a website. Several approaches are being used:

- Banner ads on other websites: A banner ad is a boxed-in promotional message, often appearing at the top of a web page. A site visitor who clicks on a banner ad is transported to the advertiser's home page. As web visitors become familiar with banner ads, they tend to ignore them and their effectiveness diminishes. Banner ads also the least targeted ads.
- Portal arrangements: This is an ad format that creates a new browser window, either a top the browser the visitor to a site is viewing or behind the site currently being viewed. Pop-under fill the screen when the visitor closes a browser
- Portal arrangements: For a fee, portal gives a site a prominent position when a visitor undertakes an appropriately directed search.
- Sponsorship: For a sponsorship fee, an advertiser is given a permanent place on the host's side.
- Targeted e-mail: With this method, a firm directs e-mail to current or potential customers, inviting them to visit its site. When this approach is not properly targeted, it becomes electronic "junk mail" and creates ill will among the recipients.

- Affiliate promotion: Under this approach, a firm includes on its site linked to related sites, usually in exchange for a commission on any sales the arrangement produces. For example, a site selling sporting goods might have as affiliates a sports magazine, a camping equipment site.

CHALLENGES AND OPPORTUNITIES IN E-MARKETING

The information economy and the internet pose major challenges for marketers. Among the most significant are:

1. INFORMATION QUALITY AND QUANTITY

The internet demonstrates how valuable information can be. A prospective car buyer who can compare the prices of several sellers has an advantage in negotiations. However, as internet grows, the issues of quality and quantity of information providing is becoming a largest issue. The web also creates instant critics. The challenge for marketers using the internet is to understand their target markets well enough to provide them with the right amount of useful information. Doing any less will frustrate customers in short-term and possibility alienate them in long run.

2. CUSTOMER SERVICE

Infatuated with the technology and the ability to conduct transactions, some online marketers overlook the importance of services. Presale information, operating instructions, and post sale problem resolution frequently receive too little attention.

Many thoughts the Web could replace retail stores for consumers or the sales people for business-to-business customers. However, experience indicates that it is difficult to eliminate the services provided by these middlemen. Thus online marketers must address challenges such as returned merchandise, payment problems, and performance complaints. Providing service may be the single biggest hurdle for firms contemplating a move to the internet. Many of more successful internet retailers have found that combining stores with online access is the best formula. Consumers can visit the store to see merchandise firsthand or to return merchandise. Alternatively, consumers can shop from or use Internet kiosks in the store to obtain detailed information about products or search for items that are not on the store's shelves.

3. SECURITY AND PRIVACY

As many as 90% of customers with Web access have never made an online purchase. The two major reasons are privacy and security. Customers still worry that unscrupulous snoopers will eavesdrop on their online transactions or intercept their credit card numbers and make unauthorized purchases. In turn, companies doing business online fear those others will use internet to invade their computers systems for the purposes of commercial espionage or even sabotage. Online marketers are developing solutions to such security problems. Online security systems, which involve encryption, digital certification, virtual account numbers, and other sophisticated technology, are not likely to be understood by consumers. However, what they can understand is the assurance of the seller. Net marketing. Com, for example, briefly describes its elaborates security system and then offer an absolute guarantee of safe shopping. Privacy cancers focus on how data about internet visitors are collected and used.

Internet marketers collect the data to better understand their current and potential markets. However, a number of consumer protection concerns have been raised:

- Gathering Information: Should marketers ever gather information without the express consent of consumer? Even of permission is guaranteed, should there be limits on the information considered appropriate to gather? Another challenging question is whether customers should be compensated for the information they provide because it obviously has value to the organizations collecting it.
- Using information: Once consumer information is gathered, should its application be constrained?
- Selling, exchanging, or combining information: Is it acceptable for a website that has gathered information legitimately to sell it to another firm? For example, an online investment broker or insurance agency would find information about an online bank's customers very valuable. What about combining catalogue purchase behavior with online shopping behavior, as several research firms are planning to do?

Marketers prefer self regulation. However, there are calls for provision of greater control of internet security and privacy by the government.

4. LIMITED CONSUMER EXPOSURE AND BUYING

Although expanding rapidly, online marketing still reaches only a limited market space. More ever, many Web users do more windows browsing than actual buying. One source estimates that although 65% of current internet users have used the Web to check out products and compare prices prior to a purchase decision, only 14% of internet users have actually purchased anything online. Still fewer have used their credit card.

5. SKEWED USER DEMOGRAPHICS AND PSYCHOGRAPHICS

Although the Web audience is becoming more mainstream, online users still tend to be more upscale and technically oriented than the general population. This makes online marketing ideal for marketing computer hardware and software, consumer electronics, financial services, and certain other classes of products. However it makes online marketing less effective.

6. ETHICAL CONCERNS

Privacy is a primary concern. Marketers can easily track Web site visitors, and many consumers who participate in Web site activities provide extensive personal information. This may leave consumers open to information abuse if companies make unauthorized use of information in marketing their products or exchanging electronic lists with other companies. There are also concerns about segmentation and discrimination. The internet currently serves upscale consumers well. However, poorer consumers have less access to the internet, leaving them increasingly less informed about products, services and prices.

CONCLUSION

Information has always played a major role in marketing. The effective Utilization of information leads to better products, prices, distribution and promotion. Technology combined with information is especially powerful. The information **economy** poses both challenges and opportunities for marketers. Marketers can conduct on line marketing in four ways-by creating an electronic presence online, placing adds online, participating in internet forums, newsgroups or web communities or using online e-mail or web casting. Among the most significant are managing the quality and quantity of information, providing customer services, ethical concerns, ensuring the security transaction and privacy of customers and developing electronic commerce. Despite these challenges, companies large and small are quickly integrating online marketing in to their marketing mixes. As it continues to grow, online marketing will prove to be powerful tool for building customer relationships, improving sales, delivering product and services more efficiently and effectively. Although its impact will be felt by all business, it's not likely that the internet will entirely replace traditional marketing.

REFERENCES

1. Etzel J. Michael, "Marketing Concepts And Cases"
2. Kotler and Armstrong, "Principles of Marketing"
3. Lovelock Phristooher "Servicing Marketing"
4. Onlineassociate.net
5. R. Srinivasan "Services Marketing –The Indian Context"
6. Ravi Shankar "Services Marketing- The Indian Perspective"
7. Reeter R. Robert "Industrial Marketing"
8. Saxsena Rajan "Marketing Management"
9. www.emarketer.com

PERFORMANCE EVALUATION OF TURKISH PENSION FUNDS BY USING ELECTRE METHOD

HASAN UYGURTÜRK
ASST. PROFESSOR
BULENT ECEVİT ÜNİVERSİTİ
DEVREK VOCATIONAL SCHOOL
DEVREK

ABSTRACT

The pension funds are very important for the deepening and development of the private pension system. The pension funds managers heavily invested in financial markets instruments. The primary choices are stocks, bonds, bills and international financial markets instruments. Being voluntarily, effective financing, and professional fund management are the most important mainstays of the private pension system. In this study, portfolio performances of Turkish Gov't bonds and bills (FX) pension funds are analyzed with ELECTRE method, which is one of the multicriteria decision making methods, for the period 2010-2012. For that purpose, performance measurement methods, which are accepted in the literature widely, are calculated separately for each fund. Then, performance values are turned into a point that shows general portfolio performance by using ELECTRE method. According to the results, the performance ranking of funds carried out.

KEYWORDS

Portfolio Performance Measurement, Pension Fund, Multicriteria Decision Making Methods, ELECTRE.

JEL CLASSIFICATION

G11, G20, H55

1. INTRODUCTION

Changes in financial instruments included in the portfolio composition of pension funds managed by professional managers have shown a direct impact on the returns of pension funds. This situation can create a significant impact on the investment's potential return. For this reason, whether pension funds have been managed successfully must be determined. This situation is understood by evaluating the performance of the funds.

In this paper, the performance of Turkish Gov't bonds and bills (FX) pension funds is evaluated by using ELECTRE method, which is one of the multicriteria decision making methods (MCDM). Generally, pension or mutual funds are evaluated according to their risk and return. At this point, traditional performance measurement techniques of funds are used such as Sharpe ratio, Treynor index, Information ratio, Fama's performance measure and Jensen's performance measure (Jensen's alpha). Although several multicriteria methods may be used in portfolio performance measurement, ELECTRE method is opted in this study. Because, ELECTRE method deals with all of these fund performance measurement techniques and provides more reasonable performance measurement. In addition to that, ELECTRE method is capable of handling qualitative criteria and it is easily updated, taking into account the dynamic nature of the decision environment as well as the changing preferences of the decision-maker.

2. LITERATURE REVIEW

The historical roots of portfolio performance evaluation date to the work of Nobel laureate Harry Markowitz (1952). Markowitz and subsequent researchers, such as Jack Treynor and Nobel laureate William Sharpe, established the field of modern portfolio theory the analysis of rational portfolio choices based on the efficient use of risk. Modern portfolio theory revolutionized investment management. Modern portfolio theory helped spread the knowledge and use of quantitative methods in portfolio management. Today, quantitative and qualitative concepts complement each other in investment management practice (Maginn et al., 2007).

The empirical literature upon the evaluation measurements of the performance of portfolios referred to Treynor index (1965), Sharpe ratio (1966), Jensen's performance measure (1968), Treynor-Mazuy model (1966), Henriksson-Metron model (1981), the CAPM, and several optimization models, etc. Even though these performance measurements, adjusted to risk, have been widely used in the assessment of portfolio performance, researchers have needed new methods that deal with all of these funds performance measurement techniques and provide a more reasonable performance measurement. Multicriteria decision making methods provide the requisite methodology framework in handling the problem of portfolio selection and management through a realistic and an integrated approach (Pendaraki and Zopounidis, 2003). Many researchers have used multicriteria decision making methods on different dates to evaluate portfolio performance.

Martel and et al. (1988), applied an alternative approach, namely the ELECTRE methods, to portfolio comparisons. Hurson and Zopounidis (1997) proposed the use of different multicriteria decision methods for management of stocks' portfolios. The ELECTRE method and the MINORA (Multicriteria Interactive Ordinal Regression Analysis) system were used to sort and rank respectively a sample of stocks.

Pendaraki and Zopounidis (2003) used PROMETHEE II (Preference Ranking Organisation Method for Enrichment Evaluations) method to solve the ranking problem of the performance of mutual funds, originated from the field of the multicriteria decision method. Chang and et al. (2010) aimed to evaluate the performance of mutual funds under the broad framework of multicriteria decision analysis approach.

Sielska (2010) used three multicriteria outranking methods (PROMETHEE, WSA and TOPSIS) to construct rankings of investment funds to assess their performance. Babalos and et al. (2011) proposed an alternative mutual funds performance evaluation measure in the context of multicriteria decision making. The evaluation of the performance of funds in their study is based on a multicriteria approach implemented within the SMAA-2 (Stochastic Multicriteria Acceptability Analysis) framework. Stankevičienė and Bernatavičienė (2012) aimed to test the multicriteria evaluation method as a complex system of evaluation of the efficiency of pension fund performance.

3. DATA AND RESEARCH METHODOLOGY

3.1. Funds Included in the Study and Analysis Period. This study, it is aimed at evaluating performance of Turkish Gov't bonds and bills (FX) pension funds in the period January 2010-December 2012 by using daily returns of the funds. The daily returns of these ten pension funds are obtained from Capital Markets Board of Turkey (CMB) official website (CMB, 2013). Funds names and codes which are used in the research are given in Table 1.

TABLE 1: PENSION FUNDS AND FUNDS' CODES

Fund Name	Code
Allianz Hayat ve Emeklilik A.Ş. Gov't Bond and Bills Income (FX) PMF*	AZD
Avivasa Emeklilik ve Hayat A.Ş. Gov't Bonds and Bills (FX) Income PMF	AVG
Avivasa Emeklilik ve Hayat A.Ş. Gov't Bonds and Bills Income Group PMF	AVB
Ergo Emeklilik ve Hayat A.Ş. Gov't Bonds and Bills (Euro) PMF	EIF
Ergo Emeklilik ve Hayat A.Ş. Gov't Bonds and Bills Income (USD) PMF	EIK
Garanti Emeklilik ve Hayat A.Ş. Gov't Bonds and Bills (Eurobond) PMF	GHG
Groupama Emeklilik A.Ş. Gov't Bonds and Bills (FX) Income PMF	BED
Groupama Emeklilik A.Ş. Gov't Bonds and Bills (FX) PMF	BKB
Vakıf Emeklilik A.Ş. Gov't Eurobond Income PMF	VET
Yapı Kredi Emeklilik A.Ş. Gov't Bonds and Bills (Euro) Income PMF	YGE

*PMF (Pension Mutual Fund)

3.2. Performance Evaluation Techniques. Performance evaluation of funds is an important issue for fund management and is an important part of the investment activities. Attracting and keeping investors depend on performance of a fund or a portfolio manager (Moy, 2002). In this paper, Sharpe ratio, Treynor index, Information ratio, Fama's measure and Jensen's measure are used in performance evaluation of funds. Performance evaluation techniques that are used in the analysis and their calculation methods are shown in Table 2.

TABLE 2: PERFORMANCE EVALUATION TECHNIQUES USED IN THE RESEARCH

Performance Evaluation Techniques	Model	Explanations on the Parameters
Sharpe Ratio	$(r_p - r_f) / \sigma_p$	r_p portfolio return, r_f risk free rate, σ_p portfolio risk (standard deviation of the portfolio returns).
Treynor Index	$(r_p - r_f) / \beta$	β portfolio beta (the measure of systematic risk)
Information Ratio	$E(r_p) - E(r_B) / \sigma(r_p - r_B)$ or $\delta_p / \sigma(e_p)$	r_B return on the benchmark portfolio, δ_p residual portfolio return, $\sigma(e_p)$ standard deviation of residual return.
Fama's Measure	$(r_p - r_f) - (\sigma_p / \sigma_B)(r_B - r_f)$	σ_B standard deviation of the benchmark returns.
Jensen's Measure	$r_{p,t} - r_{f,t} = \alpha_p + \beta_p(r_{B,t} - r_{f,t}) + e_{p,t}$	$r_{p,t}$ is the portfolio return in time period t, $r_{f,t}$ is the risk free return in time period t, $r_{m,t}$ is the return on the market portfolio in time period t, e is the error term, α_p (Jensen Alpha) and β_p both are parameters of the model.

3.3. Risk-free Rate, Benchmark and Calculation of Returns. Risk-free rate and comparison criteria (benchmark) are needed to measure the performance of the funds. In this study, Turkish Institutional Investment Managers' Association (KYD) O/N Net Repo Index is used as the risk-free rate. Benchmark is made up of 10% KYD O/N Repo Indices Gross, 45% KYD Eurobond Indices USD-TL and 45% KYD Eurobond Indices EUR-TL. The data used in the calculation of the index returns are obtained from the KYD official web site (TKYD, 2013). Daily returns of the funds and indices included in the study are calculated using the following formula.

$$R_t = \ln(R_t / R_{t-1})$$

R_t = i fund / index daily logarithmic return,

R_t = i fund / index end of day price in period t,

R_{t-1} = i fund / index end of day price in period t-1.

3.4. ELECTRE Method. The acronym ELECTRE stands for: ELimination Et Choix Traduisant la REALité (Elimination and Choice Translating Reality). ELECTRE method was proposed by Benayoun, Roy and Sussman in 1966, and it was developed and improved by Roy in 1971. ELECTRE concentrates the analysis on the dominance relations among the alternatives. ELECTRE method includes seven-step process of a solution. Steps of the ELECTRE method are described below.

Step 1: Determining the Decision Matrix (A). Decision matrix is formed in the first step of the method. In this matrix, the rows indicate alternatives and columns indicate the value of criteria for each alternative.

$$A_{ij} = \begin{bmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ a_{m1} & a_{m2} & \dots & a_{mn} \end{bmatrix}$$

Here, m shows the number of alternatives and n shows the number of criteria values.

Step 2: Calculation of the Normalized Decision Matrix (X). This procedure transforms various units in the decision matrix into dimensionless comparable units by using the following Equation (1) (Dodangh et al., 2010).

$$x_{ij} = \frac{a_{ij}}{\sqrt{\sum_{i=1}^m a_{ij}^2}} \quad i = 1, \dots, m \quad j = 1, \dots, n \quad (1)$$

Therefore, the normalized matrix X is defined as follows:

$$X_{ij} = \begin{bmatrix} x_{11} & x_{12} & \dots & x_{1n} \\ x_{21} & x_{22} & \dots & x_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ x_{m1} & x_{m2} & \dots & x_{mn} \end{bmatrix}$$

Where m is the number of alternatives and n is the number of criteria, and X_{ij} is the new and dimensionless preference measure of the i -th alternative in terms of the j -th criterion (Triantaphyllou et al., 1998).

Step 3: Calculation of the Weighted Normalized Decision Matrix (V). The column of the X matrix is then multiplied by its associated weights which were assigned to the criteria by the decision maker. Thus the weighted matrix depends on normalized matrix assigned to it is given by: $V_{ij} = w_j * x_{ij}$.

$$V_{ij} = \begin{bmatrix} w_1 x_{11} & w_2 x_{12} & \dots & w_n x_{1n} \\ w_1 x_{21} & w_2 x_{22} & \dots & w_n x_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ w_1 x_{m1} & w_2 x_{m2} & \dots & w_n x_{mn} \end{bmatrix}$$

$$\sum_{j=1}^n w_j = 1$$

Where $0 \leq w_1, w_2, \dots, w_n \leq 1$ or $\sum_{j=1}^n w_j = 1$. The weights of the attributes are expressed by these constants.

Step 4: Determining the Concordance and Discordance Sets. The concordance set C_{pq} of two alternatives A_p and A_q ($1, 2, \dots, m$ and $p \neq q$), is defined as the set of all criteria for which A_p is preferred to A_q . That is, the following is true:

$$C_{(p,q)} = \{j, \text{ such that: } V_{pj} \geq V_{qj}\}, \text{ for } j = 1, 2, 3, \dots, n.$$

The complementary subset is called the discordance set and it is described as follows:

$$D_{(p,q)} = \{j, \text{ such that: } V_{pj} < V_{qj}\}, \text{ for } j = 1, 2, 3, \dots, n.$$

Step 5: Calculation of Concordance and Discordance Indexes. The relative power of each concordance set is measured by means of the concordance index. The concordance index C_{pq} represents the degree of confidence in the pair wise judgments of (A_p, A_q) . The concordance index of $C_{(p,q)}$ is defined as:

$$C_{pq} = \sum_{j^*} w_{j^*} \quad (2)$$

Where j^* are attributes which belong to concordance set $C_{(p,q)}$. On the other hand, the discordance index, measures the power of $D_{(p,q)}$. The discordance index of $D_{(p,q)}$, which indicates the degree of disagreement in (A_p, A_q) , can be defined as:

$$D_{pq} = \frac{\max |V_{pj} - V_{qj}|, j \in D_{(p,q)}}{\delta} \quad (3)$$

$$\delta = \sum_j |V_{pj} - V_{qj}|, j = 1, 2, 3, \dots, n$$

Where V_{pj} indicates the performance of alternative A_p in terms of criterion C_j , and

Step 6: Outrank the Relationships. A higher concordance index C_{pq} and a lower discordance index D_{pq} means the dominance relationship of alternative A_p becomes stronger over alternative A_q . When the $C_{pq} \geq \bar{C}$ and $D_{pq} \leq \bar{D}$, that represents A_p outranks A_q ($A_p \rightarrow A_q$). Here, \bar{C} and \bar{D} are the averages of C_{pq} and D_{pq} respectively.

Step 7: Calculation of Net Concordance and Discordance Indexes. The application of the method proceeds with the calculation of the net concordance and discordance indexes, where the net concordance index constitutes a measure of relative dominance of an alternative A_p over other alternatives when compared with a measure of dominance of other alternatives over the alternative A_p , and a net discordance index provides a measure of relative weakness of alternative A_p over other alternatives when compared with a measure of weakness of other alternatives over alternative A_p (Charilas et al., 2009). The net concordance and discordance indexes are calculated by equations (4) and (5) as follows:

$$C_p = \sum_{\substack{k=1 \\ k \neq p}}^m C_{pk} - \sum_{\substack{k=1 \\ k \neq p}}^m C_{kp} \quad (4)$$

$$D_p = \sum_{\substack{k=1 \\ k \neq p}}^m D_{pk} - \sum_{\substack{k=1 \\ k \neq p}}^m D_{kp} \quad (5)$$

Obviously, an alternative A_p has a greater preference with a higher C_p and a lower D_p . Hence the final selection should satisfy the condition that its net concordance index should be at a maximum and its net discordance index at a minimum. If both these conditions are not satisfied, the alternative that scores the highest average rank can be selected as the final solution (Yoon and Hwang, 1995).

4. EMPIRICAL RESULTS

The performance evaluation methods, which are calculated for each fund in the analysis, are used for determining the fund performances for 2010, 2011 and 2012 years separately. Calculated performance evaluation methods are turned into one point that shows the general performance of the fund via ELECTRE method. Then, the funds are ranked and the performance measurement is completed.

Step 1: Determining the Decision Matrix (A). In the first stage of the research, 5 evaluation methods, which explain performance of funds, are determined and evaluation methods are calculated for each fund. In the test, usability of ELECTRE method of funds are included in the analysis; decision matrices are formed separately for the 2010, 2011 and 2012 years by using performance evaluation methods that are determined in the previous step. In decision matrices, decision points (funds) are placed in the lines and valuation factors (performance evaluation methods) which used in decision making are placed in the columns. There are 10 decision points and 5 valuation factors in this study (10x5). Accordingly, decision matrix of 2012 for the funds that are included in this study are shown in Table 3. As an example, data from the year 2012 are shown in the tables.

TABLE 3: 2012 DECISION MATRIX (A)

2012	Valuation Factors				
Fund Code	Sharpe Ratio	Treynor Index	Information Ratio	Fama's Measure	Jensen's Measure
AZD	0,092	0,034	0,041	0,006	-0,007
AVG	0,048	0,019	-0,017	-0,011	-0,022
AVB	0,078	0,025	0,012	0,001	-0,017
EIF	-0,043	-0,017	-0,169	-0,046	-0,079
EIK	-0,027	-0,009	-0,135	-0,035	-0,060
GHG	0,081	0,029	0,022	0,002	-0,013
BED	0,070	0,023	-0,008	-0,001	-0,010
BKB	0,046	0,018	-0,019	-0,012	0,014
VET	0,058	0,018	-0,026	-0,005	-0,029
YGE	0,022	0,009	-0,065	-0,021	-0,038

Step 2: Calculation of the Normalized Decision Matrix (X). The normalized decision matrix that is in Table 4 is constructed by using elements of A matrix in Table 3 and equation (1).

TABLE 4: THE NORMALIZED DECISION MATRIX (X)

2012	Valuation Factors				
Fund Code	Sharpe Ratio	Treynor Index	Information Ratio	Fama's Measure	Jensen's Measure
AZD	0,479	0,500	0,175	0,099	-0,064
AVG	0,250	0,284	-0,071	-0,167	-0,186
AVB	0,407	0,371	0,050	0,017	-0,149
EIF	-0,227	-0,252	-0,723	-0,716	-0,682
EIK	-0,141	-0,138	-0,576	-0,549	-0,517
GHG	0,422	0,426	0,095	0,035	-0,112
BED	0,366	0,331	-0,035	-0,022	-0,090
BKB	0,239	0,269	-0,081	-0,181	0,122
VET	0,300	0,266	-0,111	-0,083	-0,250
YGE	0,113	0,126	-0,279	-0,326	-0,328

Step 3: Calculation of the Weighted Normalized Decision Matrix (V). In the third step, weighted normalized values are calculated by weighted degree of evaluation factors multiplied by normalized values computed in the previous step.

The Weighted Normalized Decision Matrix in Table 5 is formed by giving equal weights ($w_1 = 0,20$, $w_2 = 0,20$, $w_3 = 0,20$, $w_4 = 0,20$, $w_5 = 0,20$) to the each valuation factor in the study. Accordingly, the weights of the evaluation factors in 2012 are calculated below:

TABLE 5: 2012 THE WEIGHTED NORMALIZED DECISION MATRIX (V)

2012	Valuation Factors				
Fund Code	Sharpe Ratio	Treynor Index	Information Ratio	Fama's Measure	Jensen's Measure
AZD	0,096	0,100	0,035	0,020	-0,013
AVG	0,050	0,057	-0,014	-0,033	-0,037
AVB	0,081	0,074	0,010	0,003	-0,030
EIF	-0,045	-0,050	-0,145	-0,143	-0,136
EIK	-0,028	-0,028	-0,115	-0,110	-0,103
GHG	0,084	0,085	0,019	0,007	-0,022
BED	0,073	0,066	-0,007	-0,004	-0,018
BKB	0,048	0,054	-0,016	-0,036	0,024
VET	0,060	0,053	-0,022	-0,017	-0,050
YGE	0,023	0,025	-0,056	-0,065	-0,066

Step 4: Determining the Concordance and Discordance Sets. The concordance (C) and discordance (D) clusters are established for each pair-wise comparison of alternatives. The concordance (C) and discordance (D) clusters of all funds are shown in Table 6.

TABLE 6: THE CONCORDANCE (C) AND DISCORDANCE (D) CLUSTERS

Concordance Clusters		Discordance Clusters	
C (AZD,AVG)	(1,2,3,4,5)	D (AZD,AVG)	-
C (AZD,AVB)	(1,2,3,4,5)	D (AZD,AVB)	-
C (AZD,EIF)	(1,2,3,4,5)	D (AZD,EIF)	-
C (AZD,EIK)	(1,2,3,4,5)	D (AZD,EIK)	-
C (AZD,GHG)	(1,2,3,4,5)	D (AZD,GHG)	-
C (AZD,BED)	(1,2,3,4,5)	D (AZD,BED)	-
C (AZD,BKB)	(1,2,3,4)	D (AZD,BKB)	(5)
C (AZD,VET)	(1,2,3,4,5)	D (AZD,VET)	-
C (AZD,YGE)	(1,2,3,4,5)	D (AZD,YGE)	-
C (AVG,AZD)	-	D (AVG,AZD)	(1,2,3,4,5)
C (AVG,AVB)	-	D (AVG,AVB)	(1,2,3,4,5)
C (AVG,EIF)	(1,2,3,4,5)	D (AVG,EIF)	-
C (AVG,EIK)	(1,2,3,4,5)	D (AVG,EIK)	-
C (AVG,GHG)	-	D (AVG,GHG)	(1,2,3,4,5)
C (AVG,BED)	-	D (AVG,BED)	(1,2,3,4,5)
C (AVG,BKB)	(1,2,3,4)	D (AVG,BKB)	(5)
C (AVG,VET)	(2,3,5)	D (AVG,VET)	(1,4)
C (AVG,YGE)	(1,2,3,4,5)	D (AVG,YGE)	-
C (AVB,AZD)	-	D (AVB,AZD)	(1,2,3,4,5)
C (AVB,AVG)	(1,2,3,4,5)	D (AVB,AVG)	-
C (AVB,EIF)	(1,2,3,4,5)	D (AVB,EIF)	-

Concordance Clusters		Discordance Clusters	
C (AVB,EIK)	(1,2,3,4,5)	D (AVB,EIK)	-
C (AVB,GHG)	-	D (AVB,GHG)	(1,2,3,4,5)
C (AVB,BED)	(1,2,3,4)	D (AVB,BED)	(5)
C (AVB,BKB)	(1,2,3,4)	D (AVB,BKB)	(5)
C (AVB,VET)	(1,2,3,4,5)	D (AVB,VET)	-
C (AVB,YGE)	(1,2,3,4,5)	D (AVB,YGE)	-
C (EIF,AZD)	-	D (EIF,AZD)	(1,2,3,4,5)
C (EIF,AVG)	-	D (EIF,AVG)	(1,2,3,4,5)
C (EIF,AVB)	-	D (EIF,AVB)	(1,2,3,4,5)
C (EIF,EIK)	-	D (EIF,EIK)	(1,2,3,4,5)
C (EIF,GHG)	-	D (EIF,GHG)	(1,2,3,4,5)
C (EIF,BED)	-	D (EIF,BED)	(1,2,3,4,5)
C (EIF,BKB)	-	D (EIF,BKB)	(1,2,3,4,5)
C (EIF,VET)	-	D (EIF,VET)	(1,2,3,4,5)
C (EIF,YGE)	-	D (EIF,YGE)	(1,2,3,4,5)
C (EIK,AZD)	-	D (EIK,AZD)	(1,2,3,4,5)
C (EIK,AVG)	-	D (EIK,AVG)	(1,2,3,4,5)
C (EIK,AVB)	-	D (EIK,AVB)	(1,2,3,4,5)
C (EIK,EIF)	(1,2,3,4,5)	D (EIK,EIF)	-
C (EIK,GHG)	-	D (EIK,GHG)	(1,2,3,4,5)
C (EIK,BED)	-	D (EIK,BED)	(1,2,3,4,5)
C (EIK,BKB)	-	D (EIK,BKB)	(1,2,3,4,5)
C (EIK,VET)	-	D (EIK,VET)	(1,2,3,4,5)
C (EIK,YGE)	-	D (EIK,YGE)	(1,2,3,4,5)
C (GHG,AZD)	-	D (GHG,AZD)	(1,2,3,4,5)
C (GHG,AVG)	(1,2,3,4,5)	D (GHG,AVG)	-
C (GHG,AVB)	(1,2,3,4,5)	D (GHG,AVB)	-
C (GHG,EIF)	(1,2,3,4,5)	D (GHG,EIF)	-
C (GHG,EIK)	(1,2,3,4,5)	D (GHG,EIK)	-
C (GHG,BED)	(1,2,3,4)	D (GHG,BED)	(5)
C (GHG,BKB)	(1,2,3,4)	D (GHG,BKB)	(5)
C (GHG,VET)	(1,2,3,4,5)	D (GHG,VET)	-
C (GHG,YGE)	(1,2,3,4,5)	D (GHG,YGE)	-
C (BED,AZD)	-	D (BED,AZD)	(1,2,3,4,5)
C (BED,AVG)	(1,2,3,4,5)	D (BED,AVG)	-
C (BED,AVB)	(5)	D (BED,AVB)	(1,2,3,4)
C (BED,EIF)	(1,2,3,4,5)	D (BED,EIF)	-
C (BED,EIK)	(1,2,3,4,5)	D (BED,EIK)	-
C (BED,GHG)	(5)	D (BED,GHG)	(1,2,3,4)
C (BED,BKB)	(1,2,3,4)	D (BED,BKB)	(5)
C (BED,VET)	(1,2,3,4,5)	D (BED,VET)	-
C (BED,YGE)	(1,2,3,4,5)	D (BED,YGE)	-
C (BKB,AZD)	(5)	D (BKB,AZD)	(1,2,3,4)
C (BKB,AVG)	(5)	D (BKB,AVG)	(1,2,3,4)
C (BKB,AVB)	(5)	D (BKB,AVB)	(1,2,3,4)
C (BKB,EIF)	(1,2,3,4,5)	D (BKB,EIF)	-
C (BKB,EIK)	(1,2,3,4,5)	D (BKB,EIK)	-
C (BKB,GHG)	(5)	D (BKB,GHG)	(1,2,3,4)
C (BKB,BED)	(5)	D (BKB,BED)	(1,2,3,4)
C (BKB,VET)	(2,3,5)	D (BKB,VET)	(1,4)
C (BKB,YGE)	(1,2,3,4,5)	D (BKB,YGE)	-
C (VET,AZD)	-	D (VET,AZD)	(1,2,3,4,5)
C (VET,AVG)	(1,4)	D (VET,AVG)	(2,3,5)
C (VET,AVB)	-	D (VET,AVB)	(1,2,3,4,5)
C (VET,EIF)	(1,2,3,4,5)	D (VET,EIF)	-
C (VET,EIK)	(1,2,3,4,5)	D (VET,EIK)	-
C (VET,GHG)	-	D (VET,GHG)	(1,2,3,4,5)
C (VET,BED)	-	D (VET,BED)	(1,2,3,4,5)
C (VET,BKB)	(1,4)	D (VET,BKB)	(2,3,5)
C (VET,YGE)	(1,2,3,4,5)	D (VET,YGE)	-
C (YGE,AZD)	-	D (YGE,AZD)	(1,2,3,4,5)
C (YGE,AVG)	-	D (YGE,AVG)	(1,2,3,4,5)
C (YGE,AVB)	-	D (YGE,AVB)	(1,2,3,4,5)
C (YGE,EIF)	(1,2,3,4,5)	D (YGE,EIF)	-
C (YGE,EIK)	(1,2,3,4,5)	D (YGE,EIK)	-
C (YGE,GHG)	-	D (YGE,GHG)	(1,2,3,4,5)
C (YGE,BED)	-	D (YGE,BED)	(1,2,3,4,5)
C (YGE,BKB)	-	D (YGE,BKB)	(1,2,3,4,5)
C (YGE,VET)	-	D (YGE,VET)	(1,2,3,4,5)

Step 5: Calculation of Concordance and Discordance Indexes. In the fifth step, the concordance and discordance indexes are calculated by using concordance and discordance clusters. The concordance (C) and discordance (D) indexes of all funds are shown (second and fifth columns) in Table 7.

Step 6: Outrank the Relationships. Primarily, C and D indices' average value $\bar{C} = 0,50$ and $\bar{D} = 0,50$ are calculated for a comparison of dominance. Then, the analyze processes are carried out in accordance with the rule of $C_{pq} \geq \bar{C}$ and $D_{pq} \leq \bar{D}$, that represents A_p outranks A_q ($A_p \rightarrow A_q$).

TABLE 7: OUTRANK THE RELATIONSHIPS

C_{pq}		$C_{pq} \geq \bar{C}$	D_{pq}		$D_{pq} \leq \bar{D}$	$A_p \rightarrow A_q$
C (AZD,AVG)	1,00	Yes	D (AZD,AVG)	0,00	Yes	AZD→AVG
C (AZD,AVB)	1,00	Yes	D (AZD,AVB)	0,00	Yes	AZD→AVB
C (AZD,EIF)	1,00	Yes	D (AZD,EIF)	0,00	Yes	AZD→EIF
C (AZD,EIK)	1,00	Yes	D (AZD,EIK)	0,00	Yes	AZD→EIK
C (AZD,GHG)	1,00	Yes	D (AZD,GHG)	0,00	Yes	AZD→GHG
C (AZD,BED)	1,00	Yes	D (AZD,BED)	0,00	Yes	AZD→BED
C (AZD,BKB)	0,80	Yes	D (AZD,BKB)	0,16	Yes	AZD→BKB
C (AZD,VET)	1,00	Yes	D (AZD,VET)	0,00	Yes	AZD→VET
C (AZD,YGE)	1,00	Yes	D (AZD,YGE)	0,00	Yes	AZD→YGE
C (AVG,AZD)	0,00	No	D (AVG,AZD)	1,00	No	No
C (AVG,AVB)	0,00	No	D (AVG,AVB)	1,00	No	No
C (AVG,EIF)	1,00	Yes	D (AVG,EIF)	0,00	Yes	AVG→EIF
C (AVG,EIK)	1,00	Yes	D (AVG,EIK)	0,00	Yes	AVG→EIK
C (AVG,GHG)	0,00	No	D (AVG,GHG)	1,00	No	No
C (AVG,BED)	0,00	No	D (AVG,BED)	1,00	No	No
C (AVG,BKB)	0,80	Yes	D (AVG,BKB)	0,86	No	No
C (AVG,VET)	0,60	Yes	D (AVG,VET)	0,52	No	No
C (AVG,YGE)	1,00	Yes	D (AVG,YGE)	0,00	Yes	AVG→YGE
C (AVB,AZD)	0,00	No	D (AVB,AZD)	1,00	No	No
C (AVB,AVG)	1,00	Yes	D (AVB,AVG)	0,00	Yes	AVB→AVG
C (AVB,EIF)	1,00	Yes	D (AVB,EIF)	0,00	Yes	AVB→EIF
C (AVB,EIK)	1,00	Yes	D (AVB,EIK)	0,00	Yes	AVB→EIK
C (AVB,GHG)	0,00	No	D (AVB,GHG)	1,00	No	No
C (AVB,BED)	0,80	Yes	D (AVB,BED)	0,22	Yes	AVB→BED
C (AVB,BKB)	0,80	Yes	D (AVB,BKB)	0,31	Yes	AVB→BKB
C (AVB,VET)	1,00	Yes	D (AVB,VET)	0,00	Yes	AVB→VET
C (AVB,YGE)	1,00	Yes	D (AVB,YGE)	0,00	Yes	AVB→YGE
C (EIF,AZD)	0,00	No	D (EIF,AZD)	1,00	No	No
C (EIF,AVG)	0,00	No	D (EIF,AVG)	1,00	No	No
C (EIF,AVB)	0,00	No	D (EIF,AVB)	1,00	No	No
C (EIF,EIK)	0,00	No	D (EIF,EIK)	1,00	No	No
C (EIF,GHG)	0,00	No	D (EIF,GHG)	1,00	No	No
C (EIF,BED)	0,00	No	D (EIF,BED)	1,00	No	No
C (EIF,BKB)	0,00	No	D (EIF,BKB)	1,00	No	No
C (EIF,VET)	0,00	No	D (EIF,VET)	1,00	No	No
C (EIF,YGE)	0,00	No	D (EIF,YGE)	1,00	No	No
C (EIK,AZD)	0,00	No	D (EIK,AZD)	1,00	No	No
C (EIK,AVG)	0,00	No	D (EIK,AVG)	1,00	No	No
C (EIK,AVB)	0,00	No	D (EIK,AVB)	1,00	No	No
C (EIK,EIF)	1,00	Yes	D (EIK,EIF)	0,00	Yes	EIK→EIF
C (EIK,GHG)	0,00	No	D (EIK,GHG)	1,00	No	No
C (EIK,BED)	0,00	No	D (EIK,BED)	1,00	No	No
C (EIK,BKB)	0,00	No	D (EIK,BKB)	1,00	No	No
C (EIK,VET)	0,00	No	D (EIK,VET)	1,00	No	No
C (EIK,YGE)	0,00	No	D (EIK,YGE)	1,00	No	No
C (GHG,AZD)	0,00	No	D (GHG,AZD)	1,00	No	No
C (GHG,AVG)	1,00	Yes	D (GHG,AVG)	0,00	Yes	GHG→AVG
C (GHG,AVB)	1,00	Yes	D (GHG,AVB)	0,00	Yes	GHG→AVB
C (GHG,EIF)	1,00	Yes	D (GHG,EIF)	0,00	Yes	GHG→EIF
C (GHG,EIK)	1,00	Yes	D (GHG,EIK)	0,00	Yes	GHG→EIK
C (GHG,BED)	0,80	Yes	D (GHG,BED)	0,06	Yes	GHG→BED
C (GHG,BKB)	0,80	Yes	D (GHG,BKB)	0,24	Yes	GHG→BKB
C (GHG,VET)	1,00	Yes	D (GHG,VET)	0,00	Yes	GHG→VET
C (GHG,YGE)	1,00	Yes	D (GHG,YGE)	0,00	Yes	GHG→YGE
C (BED,AZD)	0,00	No	D (BED,AZD)	1,00	No	No
C (BED,AVG)	1,00	Yes	D (BED,AVG)	0,00	Yes	BED→AVG
C (BED,AVB)	0,20	No	D (BED,AVB)	0,78	No	No
C (BED,EIF)	1,00	Yes	D (BED,EIF)	0,00	Yes	BED→EIF
C (BED,EIK)	1,00	Yes	D (BED,EIK)	0,00	Yes	BED→EIK
C (BED,GHG)	0,20	No	D (BED,GHG)	0,94	No	No
C (BED,BKB)	0,80	Yes	D (BED,BKB)	0,35	Yes	BED→BKB
C (BED,VET)	1,00	Yes	D (BED,VET)	0,00	Yes	BED→VET
C (BED,YGE)	1,00	Yes	D (BED,YGE)	0,00	Yes	BED→YGE
C (BKB,AZD)	0,20	No	D (BKB,AZD)	0,84	No	No
C (BKB,AVG)	0,20	No	D (BKB,AVG)	0,14	Yes	No

C_{pq}		$C_{pq} \geq \bar{C}$	D_{pq}		$D_{pq} \leq \bar{D}$	$A_p \rightarrow A_q$
$C_{(BKB,AVB)}$	0,20	No	$D_{(BKB,AVB)}$	0,69	No	No
$C_{(BKB,EIF)}$	1,00	Yes	$D_{(BKB,EIF)}$	0,00	Yes	BKB→EIF
$C_{(BKB,EIK)}$	1,00	Yes	$D_{(BKB,EIK)}$	0,00	Yes	BKB→EIK
$C_{(BKB,GHG)}$	0,20	No	$D_{(BKB,GHG)}$	0,76	No	No
$C_{(BKB,BED)}$	0,20	No	$D_{(BKB,BED)}$	0,65	No	No
$C_{(BKB,VET)}$	0,60	Yes	$D_{(BKB,VET)}$	0,28	Yes	BKB→VET
$C_{(BKB,YGE)}$	1,00	Yes	$D_{(BKB,YGE)}$	0,00	Yes	BKB→YGE
$C_{(VET,AZD)}$	0,00	No	$D_{(VET,AZD)}$	1,00	No	No
$C_{(VET,AVG)}$	0,40	No	$D_{(VET,AVG)}$	0,48	Yes	No
$C_{(VET,AVB)}$	0,00	No	$D_{(VET,AVB)}$	1,00	No	No
$C_{(VET,EIF)}$	1,00	Yes	$D_{(VET,EIF)}$	0,00	Yes	VET→EIF
$C_{(VET,EIK)}$	1,00	Yes	$D_{(VET,EIK)}$	0,00	Yes	VET→EIK
$C_{(VET,GHG)}$	0,00	No	$D_{(VET,GHG)}$	1,00	No	No
$C_{(VET,BED)}$	0,00	No	$D_{(VET,BED)}$	1,00	No	No
$C_{(VET,BKB)}$	0,40	No	$D_{(VET,BKB)}$	0,72	No	No
$C_{(VET,YGE)}$	1,00	Yes	$D_{(VET,YGE)}$	0,00	Yes	VET→YGE
$C_{(YGE,AZD)}$	0,00	No	$D_{(YGE,AZD)}$	1,00	No	No
$C_{(YGE,AVG)}$	0,00	No	$D_{(YGE,AVG)}$	1,00	No	No
$C_{(YGE,AVB)}$	0,00	No	$D_{(YGE,AVB)}$	1,00	No	No
$C_{(YGE,EIF)}$	1,00	Yes	$D_{(YGE,EIF)}$	0,00	Yes	YGE→EIF
$C_{(YGE,EIK)}$	1,00	Yes	$D_{(YGE,EIK)}$	0,00	Yes	YGE→EIK
$C_{(YGE,GHG)}$	0,00	No	$D_{(YGE,GHG)}$	1,00	No	No
$C_{(YGE,BED)}$	0,00	No	$D_{(YGE,BED)}$	1,00	No	No
$C_{(YGE,BKB)}$	0,00	No	$D_{(YGE,BKB)}$	1,00	No	No
$C_{(YGE,VET)}$	0,00	No	$D_{(YGE,VET)}$	1,00	No	No

According to the information in Table 7, 43 dominance relationships of alternatives are observed in 90 comparisons of dominance. Accordingly, fund AZD has superiority over fund AVG, AVB, EIF, EIK, GHG, BED, BKB, VET and YGE, fund AVG has superiority over fund EIF, EIK and YGE, fund AVB has superiority over fund AVG, EIF, EIK, BED, BKB, VET and YGE, fund EIK has superiority over fund EIF, fund GHG has superiority over fund AVG, AVB, EIF, EIK, BED, BKB, VET and YGE, fund BED has superiority over fund AVG, EIF, EIK, BKB, VET and YGE, fund BKB has superiority over fund EIF, EIK, VET and YGE, fund VET has superiority over fund EIF, EIK and YGE, fund YGE has superiority over fund EIF and EIK.

Step 7: Calculation of Net Concordance and Discordance Indexes. Net concordance and discordance indexes are calculated to determine which alternative is more dominant than the other. The calculated net concordance indexes (C_p) are sorted by descending order and net discordance indexes (D_p) are sorted by ascending order. Accordingly, the generated ranking is shown in Table 8.

TABLE 8: CP AND DP VALUES AND RANKINGS (2012)

Fund Code	C_p Value	Rankings	D_p Value	Rankings
AZD	8,600	1	-8,688	1
AVG	-0,200	6	1,769	7
AVB	4,200	3	-3,930	3
EIF	-9,000	10	9,000	10
EIK	-7,000	9	7,000	9
GHG	6,200	2	-6,396	2
BED	3,400	4	-2,864	4
BKB	0,200	5	-2,277	5
VET	-1,400	7	1,386	6
YGE	-5,000	8	5,000	8

Table 9 includes 2010-2012 analysis period values of C_p and D_p and performance rankings of the funds that are made according to these values.

TABLE 9: C_p AND D_p VALUES AND

Fund Code	2010				2011				2012			
	C	Rankings	D	Rankings	C	Rankings	D	Rankings	C	Rankings	D	Rankings
AZD	6,000	2	-6,000	2	2,200	4	-2,155	4	8,600	1	-8,688	1
AVG	-0,400	6	1,518	7	5,000	2	-5,676	2	-0,200	6	1,769	7
AVB	1,400	5	-0,246	5	8,600	1	-8,988	1	4,200	3	-3,930	3
EIF	-8,200	10	7,929	9	-5,000	9	3,454	7	-9,000	10	9,000	10
EIK	2,200	4	-2,695	4	-0,600	6	0,432	6	-7,000	9	7,000	9
GHG	9,000	1	-8,000	1	5,000	3	-4,816	3	6,200	2	-6,396	2
BED	-3,800	8	3,956	8	-7,800	10	8,796	10	3,400	4	-2,864	4
BKB	-2,200	7	1,200	6	-3,400	7	4,198	8	0,200	5	-2,277	5
VET	3,800	3	-4,733	3	0,600	5	-0,794	5	-1,400	7	1,386	6
YGE	-7,800	9	8,071	10	-4,600	8	5,549	9	-5,000	8	5,000	8

PERFORMANCE RANKINGS OF THE FUNDS

According to Table 9, AZD and GHG coded funds achieved the first two places in the year 2010, but these funds reduced their performance in 2011. In 2012, both funds received the first places with a performance increase. AVG and AVB coded funds take part in mid-table in 2010, but in 2011, they showed a rapid rise and took the first two places. However, these funds could not maintain their current situation in 2012, and fell down to the middle ranks.

EIF and YGE coded funds took the last places in all the analysis period and showed low performance when compared to other funds. EIK and VET coded funds took place near the first row in the year 2010. However, these funds showed a poor performance in 2011 and 2012. Therefore, they took place in the last rows. BED and BKB coded funds achieved better ranking value by showing performance improvement in 2012 than in 2010 and 2011.

5. CONCLUSION

In this study, Turkish Gov't bonds and bills (FX) pension funds' portfolio performance are determined by using their daily data for the period 2010-2012. In the first part of the analysis, in order to determine the performance of the funds performance measurement methods, which are accepted in the literature widely, are calculated separately for each fund. In the second part of the analysis, the calculated performance values are used as input of ELECTRE method. According to the results, the performance ranking of funds carried out.

As a result of the study, according to the calculated Cp and Dp values of funds in the analysis period, the performance of funds is found variable. In the analysis period, AZD and GHG coded funds generally took place in the higher ranks and its high level performance position did not change so much. This situation highlights AZD and GHG coded funds. In addition, the performance of EIF and YGE coded funds is found to be generally low during the analysis period.

The results of this study provide information to the portfolio managers and existing or potential investors about the portfolio performance status of Turkish Gov't bonds and bills (FX) pension funds in the Turkish Private Pension System. Even though the success of the fund depends directly on the performance of the fund manager, this study compares the performance of the funds within a given period rather than that of the fund managers. Since the calculations are based on historical data, the results cannot be regarded as indicators for the following year's performance and it neither reflects the change of management nor measures the skills of managers.

REFERENCES

1. Babalos, V., Philippas, N., Doumpos, M. and Zopounidis, C. (2011), "Mutual Funds Performance Appraisal Using a Multicriteria Decision Making Approach," Working Paper, Financial Engineering Laboratory, Technical University of Crete.
2. Chang, C.H., Lin, J.J., Lin, J.H. and Chiang, M.C. (2010), "Domestic Open-End Equity Mutual Fund Performance Evaluation Using Extended TOPSIS Method With Different Distance Approaches," *Expert Systems with Applications*, Vol. 37, pp. 4642-4649.
3. Charilas, D.E., Markaki, Q., Psarras, I.J. and Constantinou, P. (2009), "Application of Fuzzy AHP and ELECTRE to Network Selection," *First International ICST Conference, MOBILIGHT*, Athens, Greece.
4. CMB (2013), Viewed on January 05, 2013 <http://www.cmb.gov.tr>.
5. Dodangh, J., Mojahed, M. and Nasehifar, V. (2010), "Ranking of Strategic Plans in Balanced Scorecard by Using Electre Method," *International Journal of Innovation, Management and Technology*, Vol. 1, No. 3, pp. 269-274.
6. Hurson, C. and Zopounidis, C. (1997), "On The Use of Multicriteria Decision Aid Methods to Portfolio Selection," *Multicriteria Analysis*, Editors: João Clímaco, pp. 496-507.
7. Maginn, J.L., Tuttle, D.L., McLeavey, D.W., Pinto, J.E., (2007), "Managing Investment Portfolios: A Dynamic Process." 3rd Edition, John Wiley & Sons Ltd, New Jersey.
8. Martel, J.M., Khoury, N.T. and Bergeron, M. (1988), "An Application of a Multicriteria Approach to Portfolio Comparisons," *The Journal of The Operational Research Society*, Vol. 39, No.7, pp. 617-628.
9. Moy, R.L. (2002), "Portfolio Performance Illustrations From Morningstar," *Journal of Education for Business*, Vol. 77, No. 4, pp. 226-229.
10. Pendaraki, K. and Zopounidis, C. (2003), "Evaluation of Equity Mutual Funds' Performance Using a Multicriteria Methodology," *Operational Research An International Journal*, Vol. 3, No. 1, pp. 69-90.
11. Sielska, A. (2010), "Multicriteria Rankings of Open-End Investment Funds and Their Stability," *Operations Research and Decisions*, No. 1, pp. 111-129.
12. Stankevičienė, J. and Bernatavičienė, A. (2012), "Evaluation of Lithuanian Mutual Funds Performance Using The Multi-Criteria Evaluation Model," *Current Issues of Business and Law*, Vol. 7, No.2, pp. 404-422.
13. TKYD (2013), Viewed on January 03, 2013 <http://www.tkyd.org.tr>.
14. Triantaphyllou, E., Shu, B., Sanchez, S.N. and Ray, T. (1998), "Multi-Criteria Decision Making: An Operations Research Approach," *Encyclopedia of Electrical and Electronics Engineering*, Vol. 15, pp. 175-186.
15. Yoon, K.P., Hwang, C.L., (1995), "Multiple Attribute Decision Making: An Introduction." Sage Publications, Inc., California.

FROM CHANGE MANAGEMENT TO CHANGE READINESS: KEYS TO SUCCESSFULLY IMPLEMENTING CHANGE

AJIT KUMAR KAR
DEPUTY LEAD (HRD)
WOMS
BHUBANESWAR

LOPAMUDRA PRAHARAJ
LECTURER
GANDHI INSTITUTE FOR TECHNOLOGY
BHUBANESWAR

ABSTRACT

Today's business environment is unprecedented, in terms of the richness of its opportunities — and the scope of its challenges. The need to be nimble, to be able to make quick and effective changes in organizations, is vital in order to remain both relevant and competitive. But, the troubling statistics regarding efforts in change initiatives in organizations show that, on average, only about 33 percent of such initiatives are successful. Thus, in this competitive era of today's business world, the change, whether it is planned or unplanned, is inevitable. It depends on the organization how it handles the change for a constructive purpose or it leads to destruction. The way organizations have been approaching change for the past 20 years is no longer producing the desired results the organization is hoping for. As stated in the article, Terms of engagement, by author Richard Axelrod, "The current management paradigm actually increases bureaucracy, reinforces top-down management, and increases cynicism and resistance..." Therefore, changing the paradigm of change is now changing itself. The following paper looks at the new way versus the old way of handling change within an organization to achieve for the effectiveness.

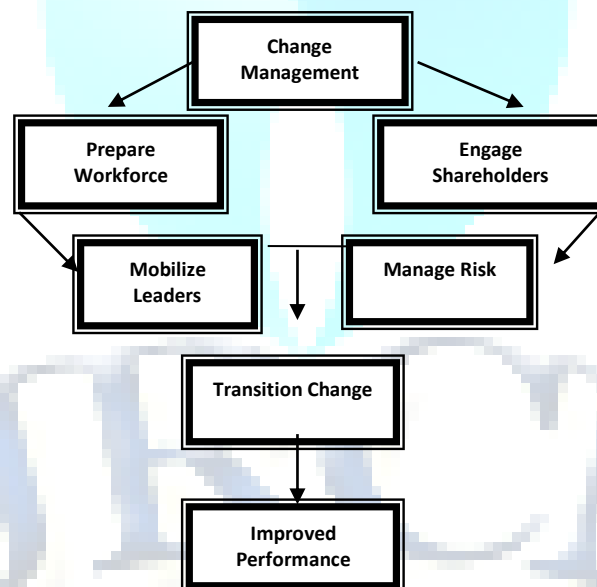
KEYWORDS

Change, Change Leadership, Innovation, Management, Risk.

INTRODUCTION

UNDERSTANDING CHANGE

Planned change is an effort to move an organization to a higher level. Unplanned change happens when pressures of external factors are so overwhelming that resistance to change is unavoidable. Having some guidelines for implementing change will assist in the success of the change process. There are certain factors that come into play under the old paradigm to change. Here is a list of few: 1) allowing the few to decide for the many, 2) separating the design process from the implementation process, and 3) making process improvements primary and cultural shifts secondary. In other words the change comes from the top and is not shared throughout the organization.



In the new paradigm of change, Richard Axelrod, suggest four key principles that should be applied:

- 1) widening the circle of involvement,
- 2) connecting people to each other,
- 3) Creating communities of action, and
- 4) embracing democracy and participation.

Widening the circle of involvement suggest that an organization go outside the typical top management, and to involve employee from all levels. This would enhance the second principle of connecting people to each other. "When people connect with each other, creativity and action are ensured". People learn how their actions fit in to the organization as a whole. When employees understand that they too make a difference it can only enhance the change process. The above figure shows the management cycle for improved performance.

INDICATORS OF CHANGE

There are four primary indicators of major work-place change. They are a change to the organizational structure, a new product or service, new management, and new technology. Organizational structure may change through major downsizing, outsourcing, acquisitions, or mergers. These actions are often

accompanied by layoffs, particularly as certain positions become redundant. A new product or service has implications for changes in production, sales, and customer service. Additionally, by changing product or service the organization may face new competitors or new markets. New management, such as a change in Chief Executive Officer or President, often brings a period of transition during which upper-level managers are likely to alter existing business processes and personnel policies. Finally, new technology can create vast changes to the organization. Technology can change the production process or the working conditions (i.e., telecommuting), and these changes may influence the skills that employees use on the job.

TYPES OF CHANGE - In addition to some of the major indicators of organizational change and the broad distinction of routine versus non-routine change, change can be categorized even more specifically into four categories: structural change, cost change, process change, and cultural change.

Routine versus non-routine change - There are changes in organizations that are routine (e.g., they are commonplace and often expected), and there are those that are not routine (e.g., unique and unexpected). Examples of routine changes are organizational turnover and staffing replacements, small changes to products or services, or changes in human resources policies. Routine changes are the easiest to manage, and employees are somewhat accustomed to routine changes.

Non-routine change is much more difficult than routine change; it can be unpredictable, significant, or even radical, and employees are much less likely to adapt well to non-routine change. In general, a nonroutine change is seen as threatening, and employees are likely to be resistant. For instance, if a company announces a merger with a former competitor, this non-routine change is very likely to create anxiety about compensation and job security.

Structural change occurs when there is an alteration to the company's organizational structure. This reorganization may occur due to a merger or acquisition, or it may be the result of a restructuring. For instance, an organization that is intent on increasing its innovation may reorganize its traditional functional structure into a more flexible matrix structure that uses small, self-managed teams. Or, an organization that is expanding into new markets may adopt a divisional structure in which different geographic locations operate nearly independently of one another.

Cost changes are those that occur when an organization attempts to reduce costs in order to improve efficiency or performance. Major adjustments may be made to departments to cut costs; reducing budgets, laying off employees in redundant positions, and eliminating nonessential activities may all be a result of cost change.

Process changes are implemented to improve efficiency or effectiveness of organizational procedures. This may occur in production settings; there may be changes to how a product is created, assembled, packaged, or shipped. Or, in a service organization, there may be changes to the procedures used to accomplish work; new computer systems may create the need to change how paperwork is completed, or a new manager may modify the process used to handle customer complaints.

Cultural change- is distinct from the concept of organizational climate. Climate refers to more temporary attitudes, feelings, and perceptions of individuals.

Cultural changes are the least tangible of all the types of change, but they can be the most difficult. An organization's culture is its shared set of assumptions, values, and beliefs. A prototypical culture is the very bureaucratic, top-down style in which stability and standard processes are valued. When such an organization tries to adopt a more participative, involved style, this requires a shift in many organizational activities. Primarily, manager-employee relations are altered with a change in culture.

OTHER IMPORTANT CHANGES – There are certain other changes which are crucial to an organization which can be discussed under the following heads.

TECHNOLOGICAL CHANGE-

It is of 2 types – (i) **Quantum technological change**-It refers to fundamental shift in technology that revolutionizes products. Example-The introduction in 1971 of Intel's 4004 micro-processor the first "computer on a chip" (ii) **Incremental technological change**-It refers to the change that represents a refinement of some base technology. Ex- Intel has produced a series of improvements in its original 4004 micro-processor .These are include 8088, 8086,286,386,486 & Pentium chips. Robot & TQM are incremental innovations.

Leadership 2020 Model: As Profiled In The 2020 Workplace book

Being This Kind of Leader...	Requires These Management Behaviors
Collaborative Mind-set	<ul style="list-style-type: none"> • Inclusive decision making • Genuine solicitation of feedback
Developer of People	<ul style="list-style-type: none"> • Mentors and coaches team • Provides straight feedback
Digitally Confident	<ul style="list-style-type: none"> • Uses technology to connect to customers and employees
Global Citizen	<ul style="list-style-type: none"> • Has a diverse mind-set • Prioritizes social responsibility
Anticipates and Builds for the Future	<ul style="list-style-type: none"> • Builds accountability across levels • Champions innovation

LEADERSHIP CHANGE- The most challenging aspect of business is leading and managing change. Successful change management requires a large commitment from executives and senior managers, whether the change is occurring in a department or in a complete organization. One recent survey respondent said, "a change effort cannot be optional for senior staff. They must lead or get out of the way. The new system will ultimately have to stand on its own feet, but every new system needs support and nurture." Thus, Modern business must adapt and be flexible to survive & problems in leading change stem mainly from human resource management. The leaders of today's generation need to comprehend the leadership behaviours shown in the picture leadership 2020 Model to bring change and make it a success.

ENVIRONMENTAL CHANGE-

This change leads to the organizational environmental change by external or internal .The internal environment is affected by the external change .External environment like- **P**-Political, **E**-Economical, **S**-Social, **T**-Technological, **E**-Environmental, **L**-Legal, **D**-Demographic, **C**-Customer, **G**-Geographic, **S**-Supplier Environmental changes that affect the organization's ability to obtain scarce resources may lead to organizational decline. The greater the uncertainty in the environment, the more likely that some organizations in population, especially organizations affected by inertia, will go in to decline.

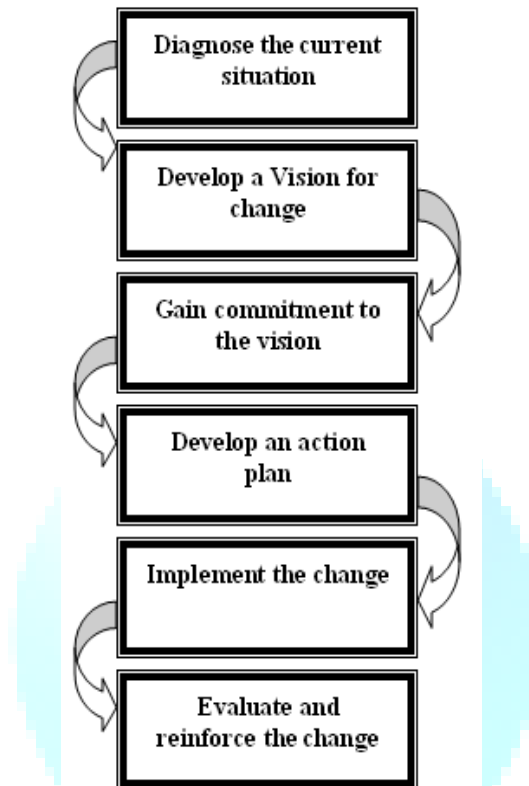
MANAGING RESISTANCE TO CHANGE

There are steps an organization can take to reduce resistance to change. Communicating information in regards to the change in simple easy-to-understand terms to all employees would reduce the fear factor. Involving all key employees the change will affect, whether or not the employees are on the management team, or a subordinate level. Support the change by having resources available to help with the change.

Among the new trend of implementing change in an organization, is the use of an **organizational behavior consultant or change agent**. These change agents, can be from external or internal sources; they focus on the people side of an organization, along with the working side of an organization. Their perspective from the outside looking in could be a great asset when implementing change. The purpose of a change agent is to help minimize resistance. One of the ways a change agent can do this is by making sure everyone involved understands the benefits.

Dealing with resistance to change can be approached in a positive manner. It can be handled through education and communication, or through participation and involvement. Communicating and educating people before change happens mean that the change will be met with less resistance. Allowing people to be involved and participate will ensure cooperation. Supporting through actively listening to problems and complaints helps others to overcome fear. (Schermerhorn 1)

CHANGE MANAGEMENT PROCESS - This is a core tool showing the steps needed to instigate and implement change successfully:



Diagnose the current situation

- identify what needs to change and what does not
- ensure that there is an overwhelming reason for change

Develop a vision for change

- create a compelling vision of the future state with sufficient detail to interest all impacted by it

Gain commitment to the vision

- identify key stakeholders and develop plans to gain their commitment to the vision and the change initiative

Develop an action plan

- start with a high level plan showing the overall change journey, its phases and timescale
- develop detailed plans for each aspect of the change and allocate responsibilities for delivery

Implement the change

- Use an effective project management tool to ensure the change initiative is delivered successfully

Evaluate and reinforce the change

- measure the results of the change to ensure it has been delivered successfully
- identify areas needing further action and re-plan
- communicate regularly throughout

IMPLEMENTING CHANGE

To properly implement change, management must take a number of steps: involving key people, developing a plan, supporting the plan, and communicating often.

KEYS TO SUCCESS

1. **Gather and use data** - Attempts to design and implement change will always meet with resistance. Human beings are often more comfortable with other conditions — even with a painful one — than with an unknown future. The key to getting employees to embrace change is to provide them with a compelling reason for it: the “why” that everyone can relate to.
2. **Understand the potential of the change and define its scope accurately** - The potential for change includes both the hoped-for benefit of making the change (included in the “why”), as well as the readiness of the organization to undertake it. Attempting new change will not be successful when changes from the past are incomplete, or if there is widespread dissatisfaction with management. We must assess the readiness of the organization for change before proceeding.
3. **Those doing the work should re-define the work** - There are two reasons why those doing the work should be the ones to re-define it:

- i. They know the work and the need better than anyone else
 - ii. We need them to support the implementation if it is to go well.
4. **Make sure everybody wins** - At a minimum, if we are talking about a change that will make us more productive. Optimally, you want to make a tangible win for those being asked to go through the trauma of the change. In a profit-making environment, a profit-sharing incentive will work. In a non-profit environment, you will need more creative solutions. Examples: investment in continuing education; flex time; job expansion; paid time off for the overtime invested in designing and implementing the change; maybe a celebration.
 5. **Involving the key people** - The most important step in implementing change is involving the key people; this typically means stakeholders and other executives whose processes and employees will be affected by the change. Stakeholders could be a union, top management, they might be board members with a keen operational interest, or they might be consultants. Regardless, we need to be sure that everyone whose cooperation we need, is on board.
 6. **Get your design team "outside the box"** - We need to have team thinking "outside the box". To do innovation, the team must, literally, be in a different space and in a different frame of mind. We should use an exercise that can expose the barriers to thinking outside the box. It can change realities and create excitement for fundamental changes.
 7. **Gather and use existing performance data** -To sell yourself, and everyone involved, on the investment of time and other resources to make the change, we must gather data on the performance of existing processes or systems. Performance data will help to:
 - i. Make the case for why and where to change.
 - ii. When compared with target performance data for the new process design, will make the case for why we need to invest.

Define and take advantage of the "low-hanging fruit" - Sometimes Management loses patience and comes to doubt that the return on investment will be realized. The irony here is that, even though it was management's idea to begin with, management is often the first to lose patience. To remedy this, define some changes we can make now, before the equipment, or software, or renovation, is in place.

Define and execute a tight implementation plan - Teams need to be trained to manage in different ways to get different results. Effective planning and project management can produce on-time and on-budget results, time and again.

Manage the human side of the change process - Managing the human side of the change process has been the missing element that contributes to the 66+ percent failure rate of attempted change efforts. Unless you understand, are sensitive to, and manage the personal journeys of each individual whose support you need to make the change, you will suffer. Educating HR on transition theory and methods, or bringing in a resource to assist you would make change successful.

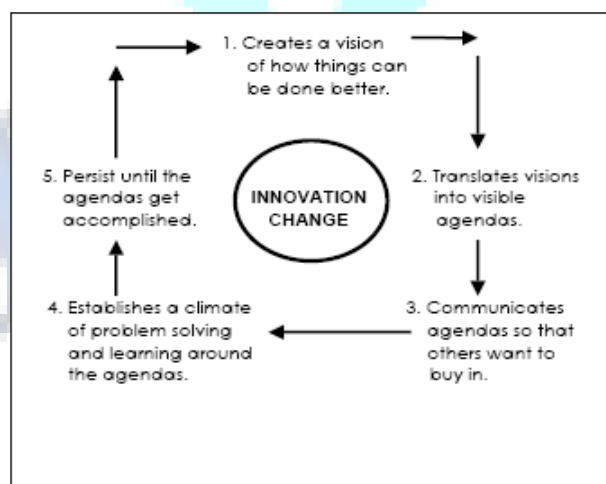
CASES AND EXAMPLES

Innovation is the engine of change and the possession of positive cultural characteristics provides the organization with necessary ingredients to innovate. Organizational culture allowed an organization to address ever-changing problems of adaptation to the external environment and the internal integration of organization resources, personnel and policies. Therefore, it is expected that certain types of culture might facilitate the change process while other types of culture might not. The interesting question will then be which type of organizational culture favors organizational change. This can be a challenging task for top managers, as the managers have to decide how to implement changes in their organization. Some have argued that the process has to start at the top while others have suggested that it should also start with the bottom-up approach. As such, it appears that there may be a relationship between organizational culture and attitudes toward organizational change.

The types of attitudes toward change described in this study refer to affective, cognitive and behavioral attitudes. The important question is which of the three attitude types is more critical. One common obstacle of change facing by organizational members is fear of the unknown or unfamiliar situation, where the cognitive mode can be an effective mode to be addressed first. This is because once a person has information and knowledge of the potential changes that to be made, his or her feelings toward change may be adjusted to favor such changes. It should also be noted that handling the cognitive component on attitude toward change can also be a daunting task if it is not well communicated, and this will be demonstrated by the action or behavioral mode of the person in responding to the changes. As such, this model provided a comprehensive approach in understanding the attitudes toward organizational change.

Example -

- **Apple** computer changed the face of the computer industry when it introduced its personal computer
- **Honda** changed the face of small motor bike market when it introduced small 50CC motor cycles. In 2005 Honda announced mass produce fuel cells to power not only cars, but homes & businesses as well.
- **Mary Kay** cosmetic changed the nature both the way cosmetics are sold when it introduced its at-home cosmetic parties and personalized style of selling
- **Toyota** revolutionized the car production system to increase product quality In 2002 Toyota announced new SUV that was powered by fuel-cell technology which acted as threat to the car industry.
- **Chrysler's** adoption of a new operating system, the production team structure, was an innovation that many other companies have copied.



Source: <http://www.ocfs.state.ny.us/ohrd/materials/30370.pdf>

There is typically little concern over implementing such changes. However, if not handled properly by management, even routine change can prove to be difficult. If changes are not implemented properly or not well communicated, problems may arise. For example, a small change to the company vacation policy may seem insignificant to management, but if employees are not properly apprised of the change it could result in considerable difficulty if employees do not follow the new policy.

CONCLUSION

With business today reaching new levels of technology, and spanning around the globe, change within an organization is inevitable. The old way of doing business and promoting change is no longer effective. An organization needs to change the way it approaches changes within their organization when implement change in business itself. In today's business world organizational change is a requirement for success. Organizational change is needed to address innovations, new technology, shifting customer demands, and other business critical issues. Thus, Change management has become a structured approach for ensuring that changes are thoroughly and smoothly implemented, and that the lasting benefits of change are achieved. The focus is on the wider impacts of change, particularly on people and how they, as individuals and teams, move from the current situation to the new one. The change in question could range from a simple process change, to major changes in policy or strategy needed if the organization is to achieve its potential.

REFERENCES**JOURNAL AND OTHER ARTICLES**

1. Andrews Jane, Cameron Helen, Harris Margaret, 2008 All change? Managers' experience of organizational change in theory and practice, Journal of Organizational Change Management, Volume: 21 Issue: 3
2. Booz Allen Hamilton, 2007 Ready Willing and Engaged – A practical guide for Change Sponsors <http://www.booz.com/media/uploads/READYWILLINGANDENGAGED.pdf>
3. Branson Christopher M. 2008, Achieving organisational change through values alignment, Vol.46 Issue 3, Journal of Educational Administration
4. Callan Victor J, & Latemore G, Winter/Spring 2004 The Best-Laid Plans: Uncertainty, Complexity and Large-Scale. Organisational Change. Mt Eliza Business Review
5. Kotter, J. P. (1996). Leading change. Boston: Harvard Business School. Kotter, J. P. (1998). Leading change: Why transformation efforts fail. In Harvard Business Review on Change, 1–21. Boston: Harvard Business School.
6. Littlejohn, S., & Domenici, K. (2001). Systemic conflict. Thousand Oaks, CA: Sage.

WEBSITES

7. Change Management Basics – Roles <http://www.change-management.com/tutorial-cm-basicswho.htm>
8. Change Program Roles http://www.businessperform.com/html/change_program_roles.html
9. Five change management principles, and how to apply them: <http://www.teamtechnology.co.uk/changemanagement.html>
10. Greenleaf Publishing, 2003 Sustainability, governance and organisational change "" <http://www.greenleaf-publishing.com/content/pdfs/lcch5.pdf>
11. Heathfield Susan M, 2009, Communication Is Key in Change Management, http://humanresources.about.com/od/changemanagement/a/change_lessons2.htm
12. <http://www.ocfs.state.ny.us/ohrd/materials/30370.pdf>
13. InfoKit Change Management Toolkit (jisc): <http://www.jiscinfonet.ac.uk/infokits/change-management>
14. Kanter Rosabeth Moss, 1983 The Change Masters New York Simon & Schuster;
15. Lewin Kurt, 1951 Field Theory in Social Science Dorwin Cartwright New York, Harper;
16. Lewin Kurt, 1958 Group Decisions and Social Change, Readings in Social Psychology, New York, Holt Rinehart & Winston
17. Managing Change Toolkit: http://www.lindsay-sherwin.co.uk/guide_managing_change/index.htm
18. McKinsey & Co, The 7-S model http://www.12manage.com/methods_7S.html
19. Prosci, 2007, Change Management Best Practices Benchmarking Report, <http://www.changemanagement.com/tutorial-communications.htm3>
20. Prosci, The ADKAR model <http://www.change-management.com/tutorial-adkar-overview.htm>;

A STUDY TO MAXIMIZE INTERPERSONAL EFFECTIVENESS TO OVERCOME GENERATION GAP USING AURA AS A TOOL

V. VAIDEHIPRIYAL
RESEARCH SCHOLAR
PSG INSTITUTE OF MANAGEMENT
COIMBATORE

DR. N. RAMKUMAR
ASST. PROFESSOR
PSG INSTITUTE OF MANAGEMENT
COIMBATORE

ABSTRACT

Generation gap is the most critical issue of any person's work and family life. Due to generation gap there is increase in conflicts between younger and older, therefore employees are stressed out and lack peace of mind in workplace and family resulting in increased health issues. Also, in an organization, human resource managers find difficulty in understanding generational differences due to lack of awareness and knowledge. Thus, the research study is to identify the ways to increase interpersonal effectiveness in order to overcome generation gap using aura as a tool. Therefore the three research variables are interpersonal effectiveness, generation gap and aura. This is a literature-based paper to arrive at the theoretical framework for the research. The literatures collected were classified under three research variables: interpersonal effectiveness (IE), generation gap (GG) and aura. The literatures collected under interpersonal effectiveness focuses on identifying factors effecting interpersonal effectiveness, concept and constituents of IE, measures involved, and benefits of IE. The literatures collected under generation gap focuses on concept of GG and its measures, and what leads to GG. Similarly, literatures collected under aura focuses on what is aura and, its measures and application. Based on the review, it is observed that Interpersonal effectiveness and productivity are correlated. So, for increase in productivity and organisational growth, there must be increased interpersonal effectiveness. As generation gap is due to deficiency in interpersonal understanding between young and old, which is believed that would be overcome by effective interpersonal effectiveness. Also, since the aura of the person is strongly associated with interpersonal attraction and communication, aura has been considered as a tool, for bridging generation gap by increasing interpersonal effectiveness.

KEYWORDS

interpersonal effectiveness, generation gap.

1. INTRODUCTION

The term 'Interpersonal Effectiveness' is effective relationship with self and others. When there is a lack of interpersonal effectiveness in the work environment there cannot be any favourable outcomes. Only with effective interpersonal relationships there can prevail, a conducive environment for people involved in work, thereby leading to positive results, in terms of performance, productivity and organizational development.

Generation Gap means difference in values and attitudes between one generation and another, especially between younger and older people. For the first time in history, people from four different generations Traditionalists, Baby Boomers, Generation Xers and Millennials are working together in workplace resulting in generational conflict. To fill in the generation gap it requires an intimate understanding of what makes these generations so different and how to integrate them into one unified team for the betterment of the organisation.

Aura or electromagnetic (EM) field commonly called the Ethereal Body is a product of creation of matter by electrofield manifestation through the quantum particles onto the physical plane. Aura can be quantified and tangibly studied in an experimental manner. Indeed, since colors of light are defined by frequency, subtle energies and the bioenergy that emanates from all living things can be quantified as electromagnetic field energy that resonates with different frequencies of light can be measured using 'Aura Video Station'. AVS is an interactive multimedia biofeedback aura imaging computer system.

To overcome generation gap, the most traditional method of increasing positive aura or energy is followed, which increases interpersonal effectiveness. Thus, the research study is to identify how to increase the interpersonal effectiveness in order to overcome generation gap using aura as a tool. Therefore the three research variables are, interpersonal effectiveness, generation gap and aura. This is a literature-based paper to examine the relationship among the variables and arrive at the theoretical framework for the research.

2. METHODOLOGY

About 80 literatures were collected and classified under three research variables: interpersonal effectiveness (IE), generation gap (GG) and aura. The literatures collected under interpersonal effectiveness focuses on identifying factors effecting interpersonal effectiveness, concept and constituents of IE, measures involved, and benefits of IE. The literatures collected under generation gap focuses on concept of GG and its measures. Similarly, literatures collected under aura focuses on what is aura and, its measures and application. The sources of literatures collected are from ProQuest, EBSCO and ScienceDirect databases. The literatures collected, range from the period 1965-2012.

3. LITERATURE REVIEW

The review of literature is categorised under three variables Interpersonal Effectiveness, Generation Gap and Aura

3.1 REVIEW ON INTERPERSONAL EFFECTIVENESS

Foo (2011) researched on team developing business ideas, how member characteristics and conflict affect member-rated team effectiveness. Randolph-Seng and Norris (2011) theorized about the effects of shared social theories on the quality of group decisions and about certain interactive effects of SSTs and cross-understanding on the quality of group decisions.

Clarke (2010) aimed to identify whether relationships exist between emotional intelligence (EI) and specific teamwork behaviours that are associated with transition, action and interpersonal team processes using the ability model of EI. Emelo (2010) examined e-mentoring's impact on productivity and introduce readers to social learning. Khetarpal (2010) aimed to study the influence of interpersonal communication in creating conducive organisational climate. Taylor (2010) researched on linking personality to interpersonal citizenship behavior through the moderating effect of empathy.

Manning, et al. (2009) aimed to present some further research findings that explore the relationship between influencing behaviour and team role behaviour. He also aimed to present and discuss research into the relationship between influencing behaviour and impact, including gender and seniority differences. O'Rourke (2009) researched to understand self-awareness through a heuristic study of the relationship with self and others.

Bandelli (2008) provided an introduction to a theoretical model of socio-affective competence. Betts (2008) aimed to examine online personal style assessment through style awareness for online interpersonal effectiveness and improved emotional intelligence. Downie, et al. (2008) used an event-contingent daily recording strategy, the Rochester Interaction Record (RIR), to examine the motivational dynamics of interpersonal relations. Manning, et al. (2008) aimed to present findings, and discuss the relevance of those findings, with regard to research undertaken about interpersonal influence in the workplace. Davies and Kanaki (2006) investigated interpersonal characteristics associated with Belbin's team roles in work groups. Frye, et al. (2006) investigated the relationship between the emotional intelligence of self-directed teams and two dimensions of team interpersonal process - team task orientation and team maintenance function. Peltokorpi (2006) studied the impact of relational diversity and socio-cultural context on interpersonal communication at Nordic subsidiaries in Japan.

Kanov (2005) aimed to explore the nature and significance of interpersonal disconnections in work organizations. Mahoney and Stasson (2005) studied interpersonal and personality dimensions of behaviour using firo-B and the big five. Kunnanatt (2004) researched that a carefully drafted emotional intelligence training program changes both the inside aspects and the outside relationships of participants and cultivates a host of virtues and attributes, including better attitudes, clearer perceptions, and productive affiliations in life. McDowall and Fletcher (2004) examined possible links between elements of perceived procedural justice, global fairness perception and attitudinal measures in a review/development context.

Brok, et al (2002) investigated that increased external societal pressure on schools via developments such as accountability and accreditation, there is a growing need of schools for instruments that provide them with information on the quality of the teaching and learning processes they organize. De Dreu and Van Vianen (2001) revealed that team effectiveness and satisfaction suffer when teams experience relationship conflict - conflict related to interpersonal issues, political norms and values, and personal taste.

Allen-Meyer and Starkeova (1998) explored the meaning of insight as a way to enhance individual and interpersonal effectiveness. According to Yrle & Galle (1993), supervisors are chosen on the basis of their knowledge and their ability to use their knowledge. Rahim, et al. (1992) attempted to provide some guidelines so that organizational members can use the styles of handling interpersonal conflict, they are integrating, obliging, dominating, avoiding and compromising with the superiors, subordinates and peers ethically and effectively. From study and observation Covey (1991) isolated eight discernible characteristics of people who are principle-centered leaders, they are continually learning, they believe in other people, they lead balanced lives, they are service-oriented, they see life as an adventure, they are synergistic, they exercise for self-renewal.

Mezoff (1982) explained that the effectiveness of human relations training (HRT) can be increased by recognizing the differential effectiveness of various kinds of training with different types of participants. Watson (1982) presented a specific communication methodology for the study of organizational behavior at the level of the interpersonal relationship. Getter, et al. (1981) developed Interpersonal Problem Solving Assessment Technique guided by Rotter's Social Learning Theory, problem-solving and assertiveness research, a semi-structured free response format designed to assess components of interpersonal effectiveness. Hill and Baron (1976) conducted an experimental investigation of interpersonal openness and communication effectiveness.

INFERENCE

The above review indicates that interpersonal effectiveness plays an important role in increased productivity, conducive organizational climate, employee development, improved emotional intelligence, and individual and team performance through quality group decisions. There are various measures and techniques to increase and assess the interpersonal effectiveness for the betterment of individual and organization. The few measures are e-mentoring, emotional intelligence, motivational dynamics, interpersonal openness and socio-affective competence. The techniques for assessment are interpersonal problem solving assessment technique, FIRO-B, big five, and event-contingent daily recording strategy.

3.2 REVIEW ON GENERATION GAP

Srinivasan (2012) researched those organisations the world over in today's rapid growth context is faced with the challenge of understanding a multi-generational workforce and devising policies and processes to build collaboration between them. According to Beekman (2011), for the first time in history, people from four different generations Traditionalists, Baby Boomers, Generation Xers and Millennials are working shoulder to shoulder in workplace. Despite these differences, everyone is working together toward a common goal-the success of your business. To fill in the generation gap it requires an intimate understanding of what makes these generations so different and how to bring every one together as a unified team.

Geise (2011) stated that people of various cultures and generation process, retain information in different ways, making effective communication a challenge. And when you are training workers to be safe on the job, effective communication is key. Townsend (2011) explained, according to a recent report produced by Millennial, today's younger generation will bring change to the workplace by continuing to shake up how we communicate, consume media, browse the Web and make products.

According to Binder and Reeves (2010), loyalty is a critical element of organizational success. Loyalty activities in the healthcare arena, however, are spottier. The more patients who return to recommend and become champions for a hospital, the more fiscally healthy the organization. Elmore (2010) expressed that it is the problem of distinct generations-the Baby Boomers, Gen X and Gen Y-working together and often colliding as their paths cross. Individuals with different values, different ideas, different ways of getting things done and different ways of communicating in the workplace have always existed.

Gesell (2010), in an article quoted that in American organization today there is a diverse group of workers with differences in attitude affecting everything from recruiting, building teams, dealing with change, motivating, managing, maintaining and increasing productivity. Anonymous (2009), in an article stated that a national survey of American white workers found that while technology is widely embraced among working professionals, significant gaps exist among generations regarding its use and application in the workplace.

Ott, et al (2008) reported that a recent Gallup Panel survey asked a targeted sample of job seekers - Generation Y (ages 18 to 31), Generation X (ages 32 to 42), and Baby Boomer (ages 43 to 61) generational parameters - are looking for the same attributes and characteristics of potential organizations and jobs regardless of what generational definition they fall into. According to Sulewski (2008), in an article have given pointers, which can help Generation Y and their veteran coworkers achieve, a smooth transition. Anonymous (2007), stated that Generation Y, Echo Boomers or Millennials, there is a growing movement of new brand entrepreneurs and they would be lost without the web.

According to Deal (2007), the generation gap proves that in reality, the generation gap does not exist. According to Wagner (2007), today's workers come from one of the four generations - each characterized by different values based on an individual's experiences growing up. In an article (Giancola, 2006), according to generational consultants, today's conflict often will occur in the workplace, where, for the first time in our history, we have four diverse generations being asked to work together. Anonymous (2005) stated there are steps that CPA firms can take to ease the differences between the various generations that work in a firm to enhance productivity.

Wood (2005) stated that in many organisations, multiple generations are arguing together besides working together that resulted in a level of generational conflict. Hui-Chun & Miller (2003) researched to identify differences in work characteristics between Baby Boomers and Xers in a non-western context, in manufacturing industry in Taiwan and compare results with the results achieved from similar western studies. Selix (2002) stated companies have studied everything from gender differences to ethnicity to Myers Briggs profiles.

Govitvatana (2001) described that generation gaps in perspectives, attitudes, and behaviors are nothing new, but they can be difficult to reconcile in the workplace. Poskaitis (1999) described that inside most businesses today, there is an illusive tension raging between management and staff that can slow company's growth and retention to a slow grind. Sforza and Thomas (1997) stated that age matters when choosing the right recognition award. Longenecker, et al. (1989), investigated that insider-trading scandals seemed to involve young professionals more than older workers. Booher (1968) stated that business community at large is not really communicating with the present generation who are interested in a peaceful, civilized world and basic improvement in the values men live by.

INFERENCE

The review on generation gap indicates that generational gap conflict is mainly due to lack of understanding between the young and the old, and through effective strategies, devising policies and procedures help to fill in this generation gap. Bridging the generation gap leads to diversity conscious and harassment-

free workplace, enhance productivity, strengthen work relationship between and among employees, productive staff and retain customers. There were also explanations from authors that in reality generation gap do not exist, since there are more similarities than differences.

3.3 REVIEW ON AURA

Seeman (2010) described that a balanced view recognizes the benefits of personal observation and the scientific method. Parra (2008) explained aura vision has a long tradition in the religious, occult, and psychical research literatures. Perceptual illusions, afterimages, and contrast effects have been offered as scientific explanations for aura reports. According to anonymous (2002), aura or electromagnetic (EM) field commonly called the Ethereal Body is a product of creation of matter by electrofield manifestation through the quantum particles onto the physical plane.

Smith (2002) says, if there is one single concept that helps to explain much about human interpersonal communication, it is the concept that humanity has an inherent connection with its environment, the basis of which is human consciousness itself, something that is now quantifiable, at least on a theoretical basis. Lang (2001) conducted the human aura research experiment. The goal of this experiment was to measure the degree to which each student could observe an aura, and to determine the degree of consistency between what each viewer observed.

Murstein and Hadjolan (1977) believed that fingertip auras (Kirlan Effect) might be associated with interpersonal attraction; four hypotheses were advanced to test this assertion. Tart (1972) discussed primarily the methodological problems of trying to study the human aura and defined the aura in a very minimal way, as simply a something that is perceived by human beings, and is perceived as a something that surrounds a person.

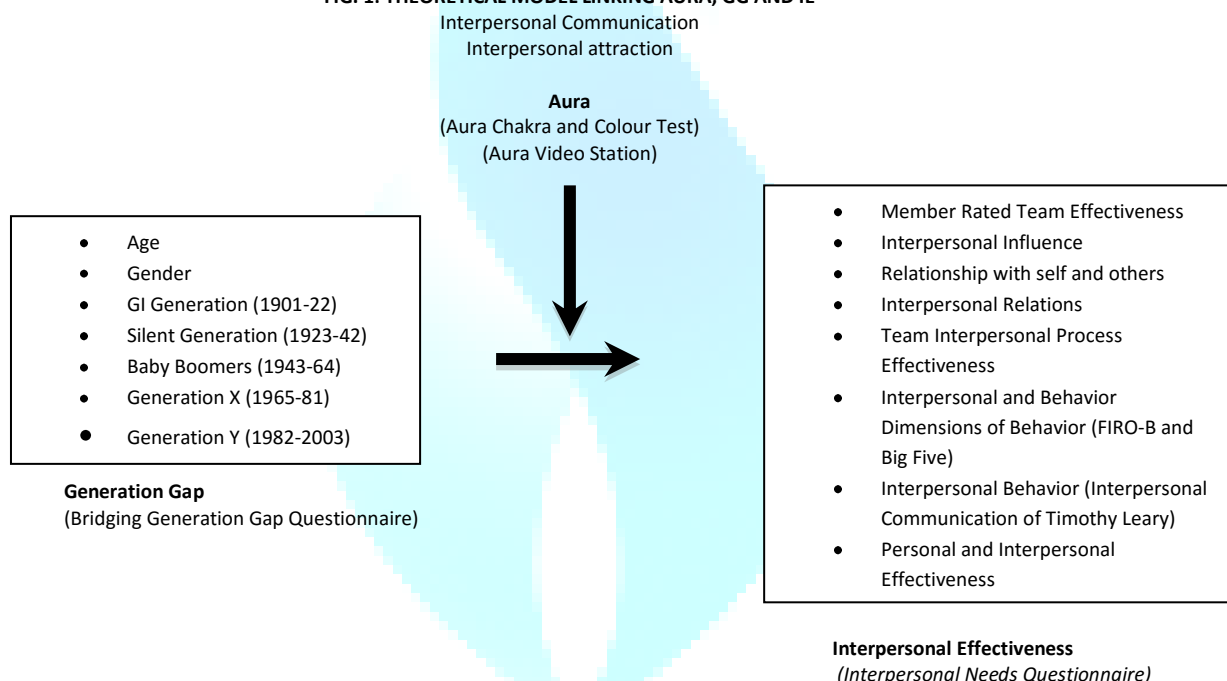
INFERENCE

From the above review on aura, few authors have emphasised on balanced research orientation, methodological and logical complexities in the study of human aura. They have also concluded that through the results obtained from aura research experiments, there is some degree of consistency in some factors yet a highly subjective variation in other factors. The few techniques used to measure the aura vision experience were betts vividness of imagery scale (visual and tactile), barrett's hallucinations questionnaire (visual and tactile) and the creative experiences questionnaire (measuring fantasy proneness). Researches also proves that aura is strongly associated with interpersonal attraction and communication.

4. THEORETICAL FRAMEWORK

Based on the previous researches, it can be observed that aura has a linkage with generation gap and interpersonal effectiveness, and the same is depicted below:

FIG. 1: THEORETICAL MODEL LINKING AURA, GG AND IE



5. IMPLICATIONS

The outcome of the study helps to strengthen HR of the organisation as follows:

5.1 INDUSTRY

This research helps to understand the generation gap conflicts among the employees using aura as a tool to increase the productive work efficiency of the employees through training modules, which improves the interpersonal effectiveness. The Training Module will be a 5-day programme and its details are given below,

1. Pre-evaluation using Questionnaire
2. Lecture cum demonstration on Generation Gap conflicts and Positive Aura awareness
3. Aura Video Station report and discussion with the employees on Aura report
4. Workshop on Energy Meditation, Reiki Shower etc.
5. Post-evaluation with questionnaire and AuraVS

The outcome of this research also helps to develop modules for enhancing the academic and research capabilities of students and teachers:

5.2 ACADEMIC

- To empower the physical and mental strength of the students
- To create a cordial atmosphere between teacher and students in schools, colleges and other institutions

5.3 RESEARCH

- To develop an awareness of the concept Aura and take the research to a new level of understanding

6. CONCLUSION

Based on the review, it is observed that interpersonal effectiveness is relatively proportional to productivity. So for increase in productivity and organisational growth there must be increased interpersonal effectiveness. As generation gap is due to deficiency in interpersonal understanding between young and old which is believed that would be overcome by effective interpersonal effectiveness. Also, since the aura of the person is strongly associated with interpersonal attraction and communication, aura has been considered as a tool for bridging generation gap by increasing interpersonal effectiveness.

7. REFERENCES

1. Allen-Meyer, G., & Starkeova, T., (1998), "Self and Interpersonal insight: How People Gain Understanding of Themselves and Others in Organisations", *Administrative Science Quarterly*, Vol. 43 No. 1, pp. 220-222.
2. Anonymous, (2002), "Understanding Auras and Bioenergies", *Innovation Technologies and Energy Medicine*, www.item-bioenergy.com.
3. Anonymous, (2005), "Ways to Bridge a 'Generation Gap'", *Accounting Office Management & Administration Report*, Vol. 05 No. 10, pp. 7-13.
4. Anonymous, (2007), "New Entrepreneurs: Please Mind the Generation Gap", *Brand Strategy*, pp. 25.
5. Anonymous, (2009), "New Study Examines Technology Generation Gap in the Workplace", *Business Wire*.
6. Bandelli, A. C., (2008), "Facilitating Communication and Effective Interpersonal Relationships at Work: A Theoretical Model of Socio-Affective Competence", *University of South Florida*.
7. Beekman, T., (2011), "Fill in the Generation Gap", *Strategic Finance*, pp. 15-17.
8. Betts, G. P., (2008), "Online Personal Style Assessment: Style Awareness for Online Interpersonal Effectiveness and Improved Emotional Intelligence", *University of Phoenix*.
9. Binder, J. L., & Reeves, J., (2010), "Bridging the Generation Gap", *MHS Spring 2010*, pp. 22-25.
10. Booher, E. E., (1968), "Business and the Generation Gap", *Business Horizons*, Vol. 11 No. 6, pp. 50-52.
11. Brok, P. D., Brekelmans, M., Levy, J., & Wubbels, T., (2002), "Diagnosing and Improving the Quality of Teachers Interpersonal Behavior", *The International Journal of Educational Management*, Vol. 16 No. 4/5, pp. 176-184.
12. Clarke, N., (2010), "Emotional Intelligence Abilities and Their Relationships with Team Processes", *Team Performance Management*, Vol. 16 No. 1/2, pp. 6-32.
13. Covey, S. R., (1991), "Personal and Interpersonal Effectiveness", *Managing Office Technology*, Vol. 36 No.10, pp. 14-16.
14. Davies, M. F., & Kanaki, E., (2006), "Interpersonal Characteristics Associated with Different Team Roles in Work Groups", *Journal of Managerial Psychology*, Vol. 21 No.7, pp. 638-650.
15. De Dreu, C. K. W., & Van Vianen, A. E. M., (2001), "Managing Relationship Conflict and the Effectiveness of Organizational Teams", *Journal of Organizational Behavior*, Vol. 22 No. 3, pp. 309-328.
16. Downie, M., Mageau, G. A., & Koestner, R., (2008), "What Makes for a Pleasant Social Interaction? Motivational Dynamics of Interpersonal Relations", *The Journal of Social Psychology*, Vol. 148 No. 5, pp. 523-534.
17. Elmore, L., (2010), "The Workplace Generation Gaps", *Women in Business*, pp. 8-11.
18. Emelo, R., (2010), "Increasing Productivity with Social Learning", *Industrial and Commercial Training*, Vol. 42 No. 4, pp. 203-210.
19. Foo, M., (2011), "Teams Developing Business Ideas: How Member Characteristics and Conflict Affect Member-Rated Team Effectiveness", *Small Bus Econ*, Vol. 36, pp. 33-46.
20. Frye, C. M., Bennett, R., & Caldwell, S., (2006), "Team Emotional Intelligence and Team Interpersonal Process Effectiveness", *American Journal of Business*, Vol. 21 No. 1, pp. 49-56.
21. Geise, A., (2011), "The Barriers to Effective Safety Training: Finding Training Techniques that Bridge Generation Gaps", *EHSToday*, pp. 72-76.
22. Gesell, I., (2010), "How to Lead When the Generation Gap Becomes Your Everyday Reality", *The Journal for Quality and Participation*, Vol. 32 No. 4, pp. 21-24.
23. Getter, H., & Nowinski, J. K., (1981), "A Free Response Test of Interpersonal Effectiveness", *Journal of Personality Assessment*, Vol. 45 No. 3, pp. 301-308.
24. Giancola, F., (2006), "The Generation Gap: More Myth than Reality", *People and Strategy*, Vol. 29 No. 4, pp. 32-37.
25. Govitvatana, W. V., (2001), "Generation Gap in the Workplace Between Baby Boomers and Generation X", *University of Wisconsin-Stout*.
26. Hill, R. E., & Baron, L. S., (1976), "Interpersonal Openness and Communication Effectiveness", *Academy of Management Proceedings*, Vol. 8 No. 1, pp. 408-411.
27. Hui-Chun, Y., & Miller, P., (2003), "The Generation Gap and Cultural Influence – A Taiwan Empirical Investigation", *Cross Cultural Management*, Vol. 10 No. 3, pp. 23-41.
28. Kanov, J. M., (2005), "Re-envisioning Feeling and Relating at Work: An Inductive Study of Interpersonal Disconnection in Organizational Life", *University of Michigan*.
29. Khetarpal, V., (2010), "Role of Interpersonal Communication in Creating Conducive Organisational Climate", *ASBM Journal of Management*, Vol. 3 No. 1&2, pp. 77-88.
30. Kunnanatt, J. T., (2004), "Emotional Intelligence: The New Science of Interpersonal Effectiveness", *Human Resource Development Quarterly*, Vol. 15 No. 4, pp. 489-495.
31. Lang, C. R., (2001), "Human Aura Research Experiment", www.kevinhogan.com.
32. Longenecker, J. G., McKinney, J. A., & Moore, C. W., (1989), "The Generation Gap in Business Ethics", *Business Horizons*, pp. 9-14.
33. Mahoney, J. M., & Stasson, M. F., (2005), "Interpersonal and Personality Dimensions of Behavior: FIRO-B and the Big Five", *North American Journal of Psychology*, Vol. 7 No.2, pp. 205-216.
34. Manning, T., Pogson, G., & Morrison, Z., (2008), "Interpersonal Influence in the Workplace: Influencing Behaviour, Personality and Context", *Industrial and Commercial Training*, Vol. 40 No.4, pp. 188-196.
35. Manning, T., Pogson, G., & Morrison, Z., (2009), "Interpersonal Influence in the Workplace: Influencing Behavior and Team Role Behaviour", *Industrial and Commercial Training*, Vol. 41 No.1, pp. 20-26.
36. Manning, T., Pogson, G., & Morrison, Z., (2009), "Interpersonal Influence in the Workplace: Influencing Behavior and 360-Degree Assessments", *Industrial and Commercial Training*, Vol. 41 No.5, pp. 258-269.
37. McCaffree, J., (2007), "The Generation Gap at Work: Myth or Reality?", *Journal of the American Dietetic Association*, Vol. 107 No. 12, pp. 2043-2044.
38. McDowall, A., & Fletcher, C., (2004), "Employee Development: An Organizational Justice Perspective", *Personnel Review*, Vol. 33 No. 1, pp. 8-29.
39. Mezoff, B., (1982), "Cognitive Style and Interpersonal Behavior: A Review with Implications for Human Resource Training", *Group & Organization studies*, Vol. 7 No.1, pp. 13-34.
40. Murstein, B. I., & Hadjolan, S. E., (1977), "Fingertip Aura and Interpersonal Attraction", *Journal of Personality Assessment*, Vol. 41 No. 3, pp. 255-265.
41. O'Rourke, S. J., (2009), "Understanding Self Awareness: A Heuristic Study of the Relationship with Self and Others", *The George Washington University*.
42. Ott, B., Blacksmith, N., & Royal, K., (2008), "What Generation Gap?", *The Gallup Management Journal*.
43. Parra, A., (2008), "Aura Vision as a Hallucinatory Experience: Its Relation to Fantasy Proneness, Absorption and other Perceptual Maladjustments", *The Parapsychological Association & The Society for Psychical Research Convention*, August 13-17, 2008, pp. 166-175, West Downs Centre, The University of Winchester.
44. Peltokorpi, V., (2006), "The Impact of Relational Diversity and Socio-Cultural Context on Interpersonal Communication: Nordic Subsidiaries in Japan", *Asian Business & Management*, Vol. 5, pp. 333-356.
45. Poskaitis, M., (1999), "The Generation Gap Comes of Age-In Your Office", *The National Public Accountant*, Vol. 44 No. 3, pp. 10-12.
46. Rahim, M. A., Garrett, J. E., & Buntzman, G. F., (1992), "Ethics of Managing Interpersonal Conflict in Organisations", *Journal of Business Ethics*, Vol. 11 No. 5/6, pp. 423-432.
47. Randolph-Seng, B., & Norris, J. I., (2011), "Cross-Understanding and Shared Social Theories", *Academy of Management Review*, pp. 422-424.
48. Seeman, G., (2010), "Psychological Change in the Human Aura: How We Know", www.drgaryseeman.com.
49. Selix, C., (2002), "Authors Detail Ways to Effectively Deal with Generation Gap in Workplace", *McClatchy – Tribune Business News*, pp. 1.

50. Sforza, N., & Thomas, K., (1997), "The Generation Gap", *Incentive*, Vol. 171 No. 6, pp. 33-44.
51. Smith, W. L., (2002), "The Human Electromagnetic Energy Field: Its Relationship to Interpersonal Communication", *Journal of Theoretics*, Vol. 4 No. 2, Retrieved February 2012, from www.journaloftheoretics.com.
52. Srinivasan, V., (2012), "Multi Generations in the Workforce: Building Collaboration", *IIMB Management Review*, Vol. 24, pp. 48-66.
53. Sulewski, T., (2008), "Bridging the Gap – Helping the Millennium Generation Find Bliss at the Firm", *CPA Practice Management Forum*, pp. 2, 8-10.
54. Tart, C. T., (1972), "Concerning the Scientific Study of the Human Aura", *Journal of the Society for Psychical Research*, Vol. 46 No. 751, pp. 1-22.
55. Taylor, S. G., Kluemper, D. H., & Mossholder, K. W., (2010), "Linking Personality to Interpersonal Citizenship Behavior: The Moderating Effect of Empathy", *Journal of Occupational and Organizational Psychology*, Vol. 83, pp. 815-834.
56. Townsend, J., (2011), "Managing Generation Gaps in the Workplace", *Baseline*, Vol. 109, pp. 14.
57. Wagner, K. L., (2007), "Filling the Gap", *JPM*, pp. 29-35.
58. Watson, K. M., (1982), "A Methodology for the Study of Organisational Behavior at the Interpersonal Level of Analysis", *Academy of Management Review*, Vol. 7 No. 3, pp. 392-402.
59. Wood, S., (2005), "Spanning the Generation Gap in the Workplace", *Journal of the American Water Works Association*, Vol. 97 No. 5, pp. 86-88.
60. Yrle, A. C., & Galle, W. P., (1993), "Using Interpersonal Skills to Manage More Effectively", *Supervisory Management*, Vol. 38 No.4, pp-4.



APPLICATION OF ROLE OF PROFESSIONAL MARKETING MANAGERS IN A DYNAMIC BUSINESS ENVIRONMENT

DR. ABDULSALAM JIBRIL
DEAN
FACULTY OF ARTS, SOCIAL & MANAGEMENT SCIENCES
ADAMAWA STATE UNIVERSITY
MUBI

DR. MUHAMMAD ISA BAZZA
SR. LECTURER
FACULTY OF MANAGEMENT SCIENCES
DEPARTMENT OF BANKING & FINANCE
UNIVERSITY OF MAIDUGURI
BORNO STATE
NIGERIA

ABSTRACT

The study analyses the role of professional marketing managers in a dynamic business environment. The researchers made use of secondary information of Henry Mintzberg ten management roles in doing the explanation of the applications of individual role. The researchers grouped these roles into three categories into a chart, and its role attached. The roles are categorized into interpersonal, informational and decisional respectively. The key objective of this paper is to improve understanding and management skills of managers as per management roles of Mintzberg, its applications and change management of business environment. The concept of dynamic environment were discussed, which involves management and change and two different situations which could produce the need for change-the performance gap and change as a result of knowledge of in balance in the organization. ADKAR model that identified five building blocks of successful change was presented and among others is awareness of the need for change management. The study reviewed that to respond quickly to jolts to the economy or market change, organization must build sets of capabilities-One of it is the need for incremental improvement which helps managers to become better at executing the current business model. The paradigm of changing in environment of business was clearly presented to form the basis of dynamism in organization-traditional and new organizations. The challenges of marketing managers often have to make do with limited resources was identified. The study based on the review, recommended that the general applications to individual role should be strictly adhered to and it should be based on the marketing managers' prevailing situation(s).

KEYWORDS

marketing managers, business environment.

1. INTRODUCTION AND MANAGEMENT DISSECTIONS

It is very difficult to give a precise definition of the term "Management". Different scholar from different disciplines' view and interpret Management from their own angles. The economists consider management as a resource like, land, labor, capital and organization. The bureaucrats look upon it as a system of authority to achieve business goals. The sociologists consider managers as a part of the class elite in the society. Now, let's consider some of the leading management thinkers and practitioners' definitions:

A. Management consists in guiding human and physical resources into dynamic, hard-hitting organization unit that attains its objectives to the satisfaction of those served and with a high degree of morale and sense of attainment on the part of those rendering the service (Appley, 1963).

B. Management is the process used to accomplish organizational goals through planning, organizing, leading, and controlling people and organizational resources (Nickels, McHugh & McHugh, 1999).

C. Management is a multipurpose organ that manages a business and manages managers and manages workers and work (Drucker, 1954.)

D. Marketing management is a business discipline which is focused on the practical application of marketing techniques and the management of a firm's marketing resources and activities (Joshi, 2005). Marketing managers are often responsible for influencing the level, timing, and composition of customer demand. In part, this is because the role of a marketing manager can vary significantly based on a business' size, corporate culture, and industry context. (Kotler & Keller, 2006).

Professional managers, probably fulfill many different roles every day. They lead their team; they might find themselves resolving a conflict; they negotiate new contracts and issues, they represent their department or unit at a board meeting, and they approve a request to purchase new office equipment, raw materials and other items. When you put all these in a simple language, you are constantly switching roles as tasks, situations and expectations change.

This paper adopted Henry Mintzberg concept of managerial roles which has ten roles or behaviors that can be used to categorize a manager's different functions. The marketing managers are not exception of these roles. The analysis of these roles and how marketing managers can use their understanding of them to improve their management skills and other relevant issues in their organization is of key objective in this study. The paper is an analysis of Mintzberg managerial roles and it's therefore a secondary descriptive study. Mintzberg (1998) stated in "inside our strange world of organization" published his Ten Management Roles.

S/N	Category	Role
1.	Interpersonal (Providing information)	a. Figurehead b. Leader c. Liaison
2.	Informational (Processing information)	a. Monitor b. Disseminator c. Spokes person
3.	Decisional (Using information)	a. Entrepreneur b. Disturbance Handler c. Resource Allocator d. Negotiator

Source: Author's Concept, 2013.

We look at the **provision of information and ideas as category "A"**.

1. FIGUREHEAD: professional marketing managers are expected to have responsibilities which may include social, economical, ceremonial and legal. They are also expected to be a source of inspiration and eye-opener for their subordinates in various offices which they manned. Generally, people regarded them as a source of authority and as an apparent head of the organization.

In application, they should represent their teams, organizations and need to do the followings; 1. The manager here is in charge and need to improve and build confidence in his/her subordinates to make success, 2. The manager has to start with their image to make organization successful in their undertakings. The image issue is a serious matter in marketing and professionals must maintain good image both in person characteristics and products' characteristics, 3. Good behavior and reputation of both persons and products are not left beside in marketing. Ability to be courteous and diplomatic to customers makes a manager successful; 4. The head of a unit, department, or an organization should cultivate humility and empathy in his management principles, and; 5. The need for managers to bring in good example into practice at work and think how to be a good role model cannot be over emphasized.

2. LEADER: This is where marketing manager provide leadership for their team; department/unit or probably the entire organization. It is about how to manage performance and responsibilities of all workers in the group. This is the role managers probably spent most of their time fulfilling. Managers need to be an authentic leader to earn lots of respect from his/her team. They should improve on their emotional intelligence to bring skills that managers need to make an effective leadership. A skilled and well-supported leadership team in organizations can help foster a sense of ownership and purpose in the way that employees approach their job.

Francois (2012) states that two levels of communication required in most leadership roles: group presentation and interpersonal. Leaders must have excellent public speaking and presentation skills. The ability to inspire, motivate, and communicate is a central requirement of this role. Professionals who aspire to this type of position should take courses in public speaking to learn this essential skill. Interpersonal communication includes the ability to persuade, negotiate, and resolve issues. The written and oral communication standards should be very high, as this is a central leadership competency.

Leaders should have multiple writing styles, depending on the situation, strategic position, and long-term goals. The ability to work with people from a wide range of industries and very different backgrounds is essential in any leadership role.

Managers must acknowledge that it is important to remember that business ethics must play a large part in all interpersonal relationships. Good leaders are able to resolve issues without resorting to heavy-handed tactics.

3. LIAISON: Marketing managers must communicate with internal and external contacts. They need to network effectively on behalf of their organizations. Applying the model, managers need to improve their liaison skills and work on their professional networking techniques. They need diplomatic and good communication model to succeed in these undertakings. The managers have mandate to coordinates communication between employees and groups, management and labor, organization and other party (ies) as the case may be. This role is vitally very important as outsiders usually depend on relationship of liaison officer of an organization for more information on issues of importance. Then training is very important for workers in this unit.

The Category "B" involves processing information.

4. MONITOR: Information related to professional marketing manager's organization and industry is usually sought for by managers and other stakeholders. They look for relevant changes in the business environment and are concerned about development that can yields positive results. Managers therefore, monitor their team in terms of both productivity and well-being.

Application of this model and to improve monitoring, they learn how to gather information effectively and overcome information overload. They use effective reading strategies so as to process material quickly and thoroughly. They learn how to keep up-to-date with industry news.

5. DISSEMINATOR: This role has to do with where marketing manager communicates potentially useful information to their colleagues and team. To be a good disseminator, professional marketers need to know how to share information within and outside his company and have a good use of management of information effectively. This means that communication skills are very vital to marketing management and their subordinates in organization.

6. SPOKESPERSON: Managers represent and speak for their department/unit and organization. In this role, managers are responsible for transmitting information about their organization and its goals to the people outside it. External environment application: To be effective in this role, Managers must make sure that they know how to represent their organization at a conference. Managers may also need related articles for delivering great presentations and working with the media (if applicable to his/her role). The presentation from managers portrays who they are and their capabilities in the industry.

Category "C" involves using information.

7. ENTREPRENEUR: Professional marketing managers create and control change within the organization. They solve problems, generating new ideas and implementing them. The managers have a key and important role to play here. They also have certain applications to apply and observe systematically. Marketers must build on their change management skills and learn what to do when implementing change in their organization. This is a policy issue; believing in what to do and what not to do abiding company regulations. Managers must also need to work on their problem solving and creativity skills so that they can come up with new ideas and implementing them successfully.

The secret of entrepreneur success also involves having to offer your customers more value than your competitors do; take advantage of economies of scale – being flexible, innovation that really come from entrepreneur because of their independent invention; and close relationship to customers and neighborhood on a personal level brings more success to business (Hatten, 2000).

Application: Managers must build on their change management skills and learn what not to do when implementing change in their organization. Marketing managers also need to work on their problem solving and creativity skills so that they can come up with new ideas and implement them successfully.

8. DISTURBANCE HANDLER: If there is any unexpected roadblock, it's the manager who must take charge. Professionals need to help mediate disputes within his/her department/unit or organization.

Application: In this role, a manager needs to excel at conflict resolution and know how to handle team conflict. This role is also helpful to be able to manage emotion in their team as it happens. The knowledge of origin of problem is very crucial and paramount to enable managers understand the root causes or situations accordingly. So, as a handler of disturbance, they need to know more of the problem and be proactive in solving conflicts.

9. RESOURCE ALLOCATOR: Manager needs to determine where organizational resources are best applied. This role involves allocating funding as well as assigning staff and other organizational resources.

The application of this role is to improve on resources allocator's needs to learn how to manage budgets. Know how to cut costs and prioritize on what to do with resources so that they can make the best use of it. This role application is very vital as it affect management of resources of the organization.

10. NEGOTIATOR: Manager may be needed to take part in, and direct important negotiations within their team, department/unit or organization.

The application of this role involves managers' need to improve on their negotiation skills. Learning about Win-win Negotiation and Distributive Bargaining is a necessary weapon for professional manager as a negotiator. Manager needs to read article on role-playing to get technique which can help him prepare for difficult negotiations.

2. THE CONCEPT OF DYNAMIC BUSINESS ENVIRONMENT

Creating an environment for new ideas and initiatives is the essence of social relationships. The global business environment becomes more complex following recurring dynamics that comes from external environment of a business. Professional managers both in public and private sectors have specific ways to perform their role and do what is ethically right in their environment.

Adaptation to the environment or changing environment to Manager's "Capabilities" is in fact, the process of managing change. However, this idea is dependent on our approach to change and power to change the environment on the other side.

Management and change, which may be "acceptance or resistance" depends on the rational approach that involves the identification of mechanisms of change; which may come from the internal or external and build a strategy towards a dynamic environment. Environment that characterizes the current period is more dynamic and turbulent (i.e. marked by changes and unrest).

The dynamics that arise as a result of changes in all aspects of business environment includes; Technological, economical, social, political, ethical, cultural, demographical, ecological, and competition; while the turbulence characteristics upset by the changes of environment targets and levels (Tushman, 2002).

The totality of dynamic and turbulent environment provides special complicated and difficult features that are expressed as indices that are hard to measure and uncertain for the future of an organization.

The basic question is who can resist this environment?

This study as explained earlier, acknowledges the management concept and managerial role of professional marketing managers in dynamic environment as two different situations can produce the need for change. The **first is a performance gap**; where real problems trigger the change, **and second, everyone knows the organization has to change because it's not doing very well**. Managers initiate change because they see opportunity. They also make a move because they have to, addressing an opportunity gap (Tushman, 2012).

IMPORTANCE OF MANAGERS AND SUPERVISORS IN TIMES OF CHANGE ENVIRONMENT

In times of change, managers and supervisors can be both the greatest ally and the greatest obstacle for change teams. Getting managers and supervisors together and taking the lead in supporting employee change is crucial. Here, good relationship between these officers is very important.

In discussing the times of change importance, the application of this role is coaching. Here, coaching is very important to stakeholders in the organization. This role involves supporting employees through the process of change they experience.

The Prosci's (2012) ADKAR model describes this individual change as five building blocks of successful change. The model states simply that for someone to effectively engage in their role in change management, the managers need to understand the followings:

- (i) Awareness of the need for change management.
- (ii) Desire to participate and support the application of change management.
- (iii) Knowledge on how to management change.
- (iv) Ability to implement the required skills and behaviors of their role in change management.
- (v) Reinforcement to sustain change management.

This model makes a compelling case for the value change management delivers, and how it directly supports the work of managers.

A. How Manager's Job is Changing in a Dynamic Business Environment

The increasing importance of customers is an issue and reason that organization exists.

- (i) Managing customer relationships is the responsibility of all managers and employees.
- (ii) Consistent high quality customer service is essential for survival.

B. Innovation - This involves doing things differently, exploring new territory, and taking risks. To survive over long periods of time, managers in organizations must be able to simultaneously exploit their existing business model and innovate into new spaces. To respond quickly to jolts to the economy or market change organization must build two very different sets of capabilities;

A. they need capabilities for incremental improvement which help them become better at executing the current business model and;

B. they must have executives who are skilled at leading change, developing innovations, and maximizing the value of the innovations that emerge (Tushman, 2012). The application here is that managers need to encourage employees to be aware of and act on opportunities for innovation.

C. Changes Impacting the Manager's Job:

S/N	Changes	Impact of Changes
i.	Changing Technology (Digitization)	Shifting organizational boundaries. Virtual workplaces, flexible work arrangement.
ii.	Increased threats to security	Risk management. Globalization Concerns. Restructured workplace.
iii.	Increased emphasis on organizational and managerial ethics	Redefined values. Rebuilding trust. Increased accountability.
iv.	Increase competitiveness	Customer service. Innovation. Globalization. Efficiency/Productivity

Source: Robbins, S.P. and Coulter, M. (2005) Management 8th edition, Prentice Hall, Inc.

D. The changing organization: The paradigm of changing in environment of business clearly shows one that forms the basis of dynamism in organization. We need to observe the tradition and new organizations to show these changes.

Traditional Organization	New Organization
a. Stable	1. Dynamic
b. Inflexible	2. Flexible
c. Job-focused	3. Skills-focused
d. Work is defined by job position	4. Work is defined in terms of tasks to be done.
e. Individual oriented	5. Involvement-oriented
f. Managers always make decisions	6. Diverse workforce
g. Relatively homogenous workforce	7. Work anywhere, anytime.
h. Work at organizational facility during specific hours	

Source: Authors' concept, 2013.

E. Challenges of Being a Professional Manager:

The challenges of professional marketing managers are common and related to other managers' in other fields. These are some of them mentioned below;

- i) To create a work environment in which organizational members can work to the best of their ability, managers do hard work.
- ii) Managers have to deal with a variety of personalities. These pluralities create difficulty for managers.
- iii) Managers often have to make do with limited resources.
- iv) Sometimes professional managers motivate workers in disordered and uncertain situations.
- v) Manager's success depends on others' work performance. This is a true and very difficult situation for managers.

CONCLUSION AND RECOMMENDATION

In conclusion, managers not only manage people, they provide guidance, run operations, and in some cases may be involved in innovative strategies that could bring positive changes in the organization. Effective managers should possess managerial skills and knowledge of the Mintzberg's ten roles of management and applications of the role as suggested in this study is an important issue for them to note in their various organizations. The change environment is always dynamic and turbulent. This usually provides special complicated and difficult features that are expressed as indices that are hard to measure and uncertain for the future of an organization.

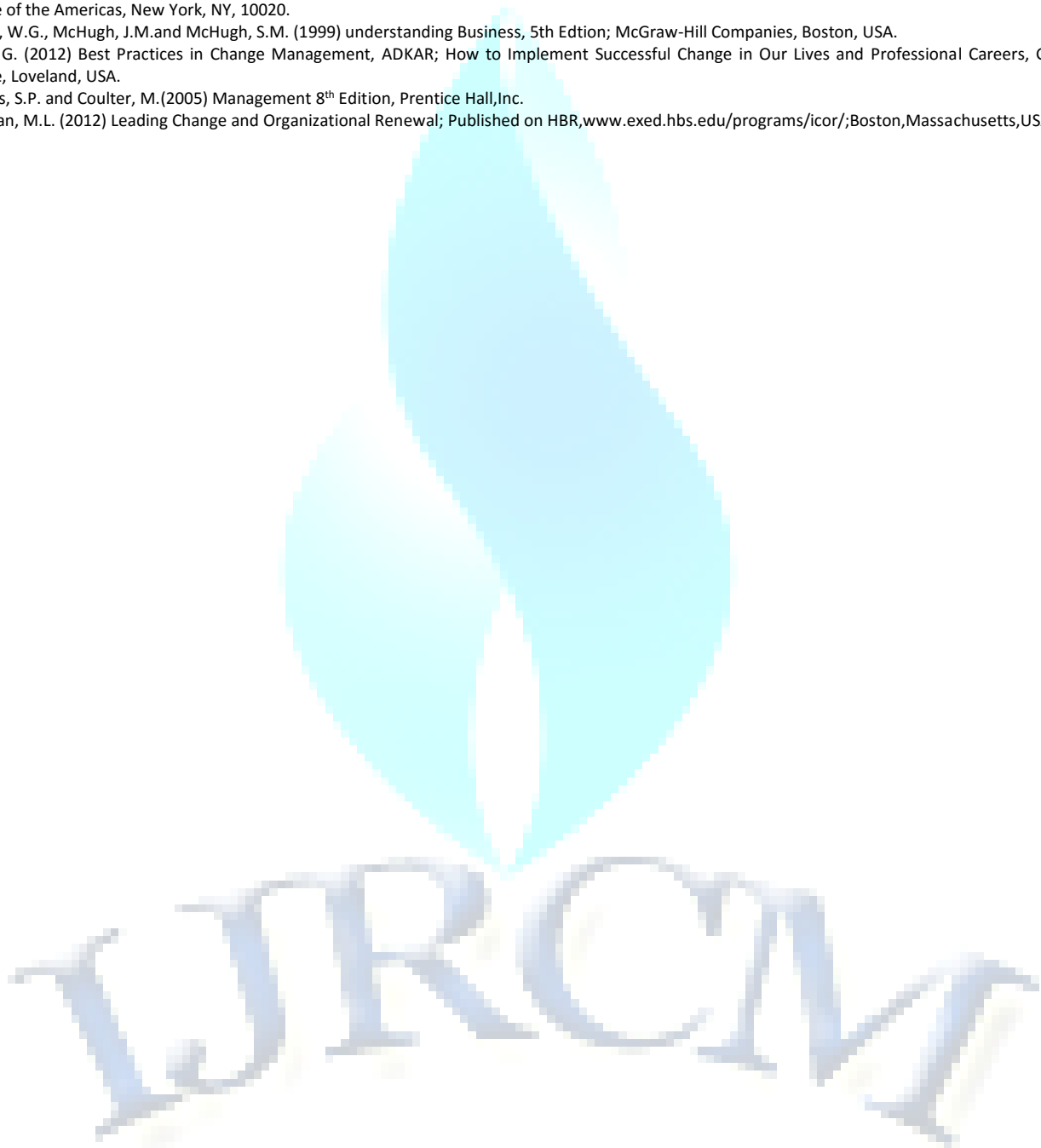
Based on this study, the analysis of Mintzberg Management Roles, it's possible applications and changes in organization, the following recommendations are necessary to observe;

1. That the general applications to individual role should be strictly adhered to and it should be based on the Marketing manager's prevailing situation(s).
2. Managers should be encouraged to focus on the basis of dynamism in organizations. That they should acknowledge that work can be done anywhere and anytime. - This is the spirit of new global trend.

3. Managers should clearly understand the trend of internal and external environments which they must study well to know how to take internal decisions and lobby the external agents to cope with individual factors under study.
4. The principle of managers' success that depends on other's performance is putting managers in tight situations, so subordinates of managers should be trained accordingly to earn the desired results as expected.

REFERENCES

1. Appley, L.A.(1963)The Management Evolution; American Management Association; New York, NY, USA.
2. Drucker,P.(1954)The Practice of Management; Harper Business; Reissue Edition, October 3, 2006.USA.
3. Francois, C. (2012) what are the Different Leadership Comptencies? Edited By Heather Bailey; Conjecture Corporation: NY, USA.
4. Hatten, T.S. (2000) Small Business Management, Entrepreneurship and Beyond, 3rd Edition, Houghton Mifflin Company, Boston, New York, USA.
5. Joshi, R.M. (2005) International Marketing, Oxford University Press, New York, USA.ISBN:0-19-567123-6.
6. Kotler, P.and Keller, K.L. (2006) Marketing Management, 12th Edition, Pearso Prentice Hall, New York, USA.ISBN:0-13-145757-8.
7. Mintzberg, H. (1998) Mintzberg on Management: Inside Our Strange World of Organization; The Free Press, A Division of Simon and Schuster Inc,1230 Avenue of the Americas, New York, NY, 10020.
8. Nickels, W.G., McHugh, J.M.and McHugh, S.M. (1999) understanding Business, 5th Edtion; McGraw-Hill Companies, Boston, USA.
9. Prosci, G. (2012) Best Practices in Change Management, ADKAR; How to Implement Successful Change in Our Lives and Professional Careers, Garfield Avenue, Loveland, USA.
10. Robbins, S.P. and Coulter, M.(2005) Management 8th Edition, Prentice Hall,Inc.
11. Tushman, M.L. (2012) Leading Change and Organizational Renewal; Published on HBR,www.exed.hbs.edu/programs/icor/;Boston,Massachusetts,USA.



ANALYSIS OF CORPORATE SOCIAL DISCLOSURE PRACTICES IN ANNUAL REPORTS: AN EXPERIENCE WITH THE PRIVATE COMMERCIAL BANKING SECTOR OF BANGLADESH

SHARMIN SHABNAM RAHMAN

SR. LECTURER

BRAC BUSINESS SCHOOL

BRAC UNIVERSITY

DHAKA

ABSTRACT

The purpose of this study is to investigate the practices of corporate social disclosure of the private commercial banks of Bangladesh. For content analysis, data samples are basically taken from the secondary sources, such as annual reports of 25 (83.33%) banks out of 30 listed private commercial banks in Dhaka Stock Exchange (DSE) for a four year period (2008-2011). A list of 34 items related to Corporate Social Reporting Disclosure is developed from different literature which contains four major aspects such as Background/General Corporate Information; Directors Information; Employees Information and Community & other services. No other studies have previously explored the commitment to environmental and social disclosure by the private commercial banking sector in Bangladesh using a multi-year data. Being a developing country, most commonly reported items of corporate social disclosure on the annual reports are information on bank's official address, email address of the bank, name of the directors, number of employees working, training and development programs for employees and scholarship to students and donation to art, sports and charity. This study shows that banks are well aware of disclosing their general corporate information (39.36% - 43.50%). But the percentages of information revealed about community service and employees for a four year period are (23.41% - 26.73%) and (18.56% - 23.12%) respectively. However, the directors information (12.72% - 16.95%) disclosed in the annual reports are not that much satisfactory. Interestingly, majority of the banks devoted a considerable space in the annual report related to community involvement activities such as tree plantation, city beautification, scholarships to students, health care, sponsoring sports tournaments, art competitions and musical concerts. Although employees featured prominently, photographs of social activities were included in the annual reports of these banks. The study contributes to the existing literature by providing empirical evidence of the status of Corporate Social Responsibility reporting in the developing country context for a multi-year period.

KEYWORDS

Corporate Social Responsibility, Corporate Social Disclosure, Developing country, Social Reporting Disclosure Index (SRDI).

1. INTRODUCTION

In Bangladesh, the concept of Corporate Social Responsibility (CSR) and related disclosure practices still persist as a very new issue. Moreover, in recent times, various agencies are creating pressures on the companies to act in a responsible manner and be accountable for the social, political, ecological and environmental impacts of their business activities. As a result, certain numbers of private commercial banks are engaged in philanthropic activities like social and community development, setting up health care facilities, providing relief and rehabilitation after natural disasters to demonstrate sustainable responsible business. However, at the same time, the cultural environment in which accounting has developed is also important for analyzing financial reporting practices. In the recent times in Bangladesh, CSR is just a matter of self interest (Azim, Ahmed and Islam, 2009) and as this sector was not researched in great extent, there is high need of a thorough study of the qualitative and quantitative aspects of such kind of reporting. The reason behind selecting private commercialized banks is to build our understanding and knowledge of the corporate social responsibility (CSR) of this sector.

Bangladesh Bank, being the central bank, is the main regulatory authority of banking sector of the country. Bangladesh bank has taken initiative to encourage private commercial banks in CSR activities. And for this purpose, National Board of Revenue (NBR) issued rules on tax rebate for CSR activities. Another relevant angle regarding disclosure is the investors' perspectives who do take into consideration the social and environmental disclosure factors as well as their sustainability and growth. By disclosing information regarding social and environmental issues, these financial institutions can improve their image and at the same time gain competitive advantage.

Social accounting is the process of communicating the social and environmental effects of organizations' economic actions to particular interest groups within society and to society at large. D. Crowther defines social accounting in this sense as "an approach to reporting a firm's activities which stresses the need for the identification of socially relevant behavior, the determination of those to whom the company is accountable for its social performance and the development of appropriate measures and reporting techniques." This includes the effect on the local community who might have to live in the shadow of its premises, and how it engages with the community, its customers and workforce. Corporate social reporting (CSR) has been defined (Parker 1986, p. 72) as having the following roles: assessing the social (and environmental) impact of corporate activities; measuring effectiveness of corporate social (and environmental) programs; reporting upon a corporation's discharging of its social (and environmental) responsibilities; and external & internal information systems allowing comprehensive assessment of all corporate resources and impacts (social, environmental and economic). Guthrie and Mathews (1985, p.78) define CSR as "the provision of financial and nonfinancial information relating to an organization's interaction with its physical and social environment." Radebaugh and Gray (2002, p. 119) emphasize that CSR refers to "accountability to society as a whole with respect to matters of public interest such as community welfare, public safety, and the environment". CSR information, in broad terms, comprises the organization's relationships with its stakeholders (i.e. shareholders, employees, creditors, customers, suppliers, government and the community). More precisely, CSR information might include (e.g. Ng, 1985; Epstein and Freedman, 1994; Gray et al., 1995b; Hackston and Milne, 1996; Williams and Pei, 1999; Deegan, 2002) environment and energy related disclosure; community involvement related disclosure; work place (i.e. human resources) related information; product and consumer relations. It might also include doing business with repressive regimes (Freedman and Wasley, 1983; Rockness and Williams, 1988). The CSR issue has become an essential aspect of business in society (e.g. Deegan and Gordon, 1996; Gray et al., 1996; Gray et al., 1997; Brown and Deegan, 1998; Hooghiemstra, 2000). There is a growing recognition within the business community of the significance key stakeholders attach to socially, environmentally and ethically responsible behavior by business enterprises (Zadek et al., 1997). As business organizations increasingly recognize the broad duties of accountability implied by their stakeholders' non-financial expectations, the role of CSR takes on increasing importance as a means through which such duties of accountability may be discharged (Gray et al., 1996). In addition to the discharge of accountability to investors, CSR also plays a significant role in different aspects. It has been asserted (e.g. Gray et al. 1988; Gray et al. 1995a; Patten, 1990; Owen, et al., 1997; O'Dwyer and Gray, 1998; Alnajjar, 2000; Gray and Bebbington 2001; Friedman and Miles, 2001; O'Dwyer, 2004) that formal CSR processes should enhance corporate transparency, develop corporate image and provide useful information for investment decision making. CSR can contribute a positive impact to share prices and staving off potential regulatory pressure to be more socially responsible. Business enterprises may also use CSR to manage their stakeholders in order to have their support and approval through the creation of environmental reputation (e.g. Toms, 2002).

Gray et al. (2001) suggests CSR has been the interest of substantial academic studies for more than 30 years. Increasingly the business community, the media, and academia are paying more attention to CSR issues. This increase in attention is demonstrated by the number of academic researchers entering the area, and by the increased focus being applied by governments, professional accounting bodies, industry bodies and business enterprises to various related issues. The trend of having separate CSR report is also increasing worldwide. An international survey conducted by KPMG in 2008 found that, of the world's 250 largest companies almost 70 percent companies issue separate corporate social reporting reports, which was near to 52 percent in 2005. The top two countries, in the

national level, in terms of having separate CSR reports are Japan (88% in 2008; 80% in 2005) and The United Kingdom (84% in 2008; 71% in 2005). However, countries of the South-East Asian region such as India, Pakistan and China have very small number of companies that report on corporate environmental and social disclosure issues.

The remainder of the paper is organized as follows: Section 2 discusses the literature review which involves the theoretical framework as well as regulatory framework related to corporate social reporting. Section 3 describes the collection of data and research methodology used. Section 4 presents the findings with discussion and section 5 concludes the paper.

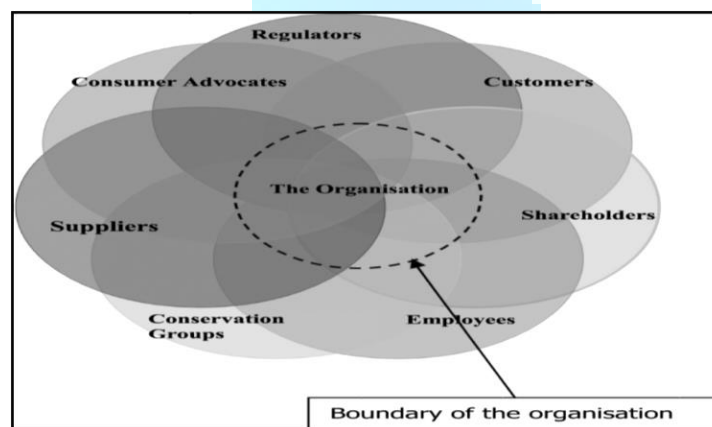
2. REVIEW OF LITERATURE

2.1 THEORETICAL FRAMEWORK

CSR is an area of accounting research that covers voluntary disclosures made by firms regarding issues considered important to the community at large and of more than just an economic nature. The theoretical reasons why companies should issue reports on corporate social reporting include political economy, legitimacy and stakeholder theories. According to Azim (2009), some companies are reluctant in disclosing such report because they: (i) do not have information; (ii) do not want to disclose this information since it signals bad performance, and (iii) this is an expensive process. This study is based on two theories namely legitimacy theory and stakeholder theory that describe the extent of corporate social disclosures. All previous studies are based on either legitimacy theory or stakeholder theory. Suchman (1995) defined legitimacy as "a generalized perception or assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed system of norms, values, beliefs and definition". Several researchers have used legitimacy theory as the framework for examining the practices of corporate social disclosure. According to legitimacy theory, the firm needs to legitimate its activities to the society in which it operates. Guthrie and Parker (1989) argued that social disclosures legitimize actions and that this theory is based upon the notion that business operates in society via a social contract where it agrees to perform various socially desired actions in return for approval of its objectives and other rewards, which ultimately guarantees its survival. It therefore needs to disclose enough social information to assess whether it is a good corporate citizen or not. In legitimizing its actions via disclosure, the firm hopes ultimately to justify its continued existence.

On the other hand, stakeholder theory has stakeholder as the central focus. Stakeholders include a variety of people and interested parties who are related in some capacity with organizations. (Price, 2004). Freeman (1984, p. 25) drew attention to the role of external stakeholders and defined external stakeholder as "any group who can affect, or is affected by, the accomplishment of organizational purpose". This theory supports the reason behind having report on corporate social responsibility. A stakeholder approach from an analytical perspective can help the managers by allowing an analysis of how the company fits into the larger environment or social context, and how the stakeholders (employees, managers, stockholders) and immediately beyond the company parties (customers, suppliers, financiers) are affected by the standard operating procedures of such approach. The following figure illustrates these issues.

FIGURE 1: STAKEHOLDERS OF AN ORGANIZATION



(Source: Foster and Jonker, 2007)

One of the earliest studies was a series of surveys by Ernst and Ernst (1972-1978), who measured average pages of corporate social disclosure in the annual reports of US Fortune 500 companies in the areas of environment, energy, fair business practices, human resources, community involvement, products and other. Their surveys showed a trend of increasing corporate social disclosure, with 89% of Fortune 500 companies making at least one corporate social disclosure in 1977. Most previous studies have used content analysis based on Ernst and Ernst's method (Adams, Hill and Roberts, 1998), although some research (e.g. Gamble, Hsu, Kite and Radtke, 1995) has measured corporate social disclosure using significantly different methods of content analysis than used by Ernst and Ernst (1972-1978).

The few longitudinal studies examining large samples of companies have used content analysis to measure corporate social disclosure, extending the analysis over a number of years. Gray et al. (1995a) documented a general increase (with some fluctuations) in corporate social disclosure in UK companies over a 13-year period, and Trotman (1979) also documented increasing levels of corporate social disclosure by Australian companies. Ng (1985) examined corporate social disclosure in 32 New Zealand companies, concluding that over a three-year period there was no clear trend of increasing corporate social disclosure, and that companies appeared to make disclosures when it benefited them or when specific issues arose that required disclosure. A series of studies have shown that CSR by companies is increasing. Deegan and Gordon (1996), focusing on environmental disclosure practices concluded that the "amount of voluntary environmental disclosures is typically low" but that a "general increase in environmental disclosures occurred" (p. 198) over the 11 year period 1980 to 1991.

There has been a growing amount of research into CSR in Australia, the UK and US. In a comparative study of 150 companies in the US, UK and Australia, Guthrie and Parker (1990) stated that 58% of US, 98% of UK and 56% of Australian companies made some kind of social disclosure in their annual reports. The study also mentioned that report related to community involvement was 31%, which was 13% for environmental activities and 7% for energy and product related issues. In recent literature, particular attention has been paid to CSR in Europe and South East Asia. One study conducted by Gamble et al. (1996) of 276 companies from 27 countries (and again limited to environmental disclosures) concluded that over the relatively short period of 1989 to 1990 there was a significant increase in individual and overall disclosures across all countries (see also: Tsang, 1998 (Singapore); Andrew et al., 1989 (Malaysia and Singapore); Adams et al., 1998 (six Western European countries). Research on voluntary disclosure tried to examine the nature and patterns of CSR as well as the determinants such as size, profits and industry affiliation (Cormier and Magnan, 2003). The literature also recognizes that the disclosure practices vary from country to country and between developed and developing countries (Imam, 2000). Survey of CSR activities in Western countries reveal that greatest emphasis is put on disclosing human resources such as employee remuneration, equal opportunities, employee share ownership, disability policies, training and development (Gray et al., 2001) whereas sensitive areas like trade union activities, pay awards are disclosed less. (Adams et al., 1998a, 1998b). Moreover, most of the disclosures related to CSR are qualitative in nature.

Two interesting points that have important ramifications for those considering the CSR of companies have been noted by a number of researchers. First, there is almost a total absence of any "negative" information, and second, some of the information reported may in fact be misleading. Deegan and Gordon (1996) found that only 14 companies provided information that could be classed as negative, and even then this disclosure was minimal. They concluded that "The

environmental disclosures are typically self-laudatory, with little or no negative disclosures being made by all firms in the study" (p. 198). This study supported earlier findings by Guthrie and Parker (1990), who found in a study of Australian, UK and US firms that absolutely no 'bad news' was disclosed. Some authors have gone even further. Not just suggesting that the information provided by CSR is biased, but that it may in fact misrepresent the actual situation. Harte and Owen (1991, p. 59) indicate that "social information provided within annual reports tends not to be directly related to quality of actual performance and can indeed be positively misleading". This concern was echoed by Wiseman (1982) who concluded that voluntary environmental disclosures could misrepresent a company's environmental performance. Researchers such as Buzby and Falk (1979), Rockness and Williams (1988), Epstein and Freedman (1994) and Deegan and Rankin (1997) advocated the decision usefulness approach. Firms are seen as providing social disclosures because they are useful for stakeholders. This approach does not explain why firms produce social disclosures that are ranked as not important by respondents. This led towards conducting the study on corporate social disclosure of 25 listed private commercial banks in Bangladesh.

2.2 REGULATORY FRAMEWORK: CORPORATE SOCIAL RESPONSIBILITY AREAS

There are a number of broadly recognized standards relevant to CSR, including the *GRI Sustainability Guidelines*, *Accountability Assurance Standards 1000 & 1000S* and the *ISO 14001 Series*. The *GRI guidelines* focuses on issues that should be reported (Maitland, 2002a,b). GRI develops these guidelines involving the companies, report readers as well as users like employees, investors and non-governmental organizations. The first set of guideline by GRI was issued in 2000, the second in 2002 and third in late 2006 (KPMG, 2008).

Under the Statutory Rules and Orders (SRO) No. 270-Ain/2010, dated 01.07.2010, issued by the Government of People's Republic of Bangladesh, 22 areas of CSR activities are identified for enjoying 10% tax rebate. The areas are (1) Donation to organizations engaged in clean water management (2) Donations to organization engaged in afforestation; (3) Donations to organization engaged in beautifications of cities; (4) Donations to organization engaged in waste management; (5) Donations for redressing the hardships caused by natural calamities such as cyclone, earthquake, tidal wave and flood challenged through Government organizations; (6) Donations to organizations engaged in establishment and management of old persons homes; (7) Donations to organizations engaged in the welfare of mentally or physically handicapped; (8) Donations to educational institutions run for the purpose of education of rootless children; (9) Donations to organizations engaged in projects on accommodation for the 8 slum dwellers; (10) Donations to social organizations engaged in publicity of movements relating to women's rights and anti-dowry practices; (11) Donations to organizations engaged in feeding and clothing and sheltering and rehabilitation of orphan/rootless children; (12) Donations to organizations engaged in research on independence war, regaining and expansion of the consciousness of the independence war and the act of honorable living of the freedom fighters; (13) Donations to organizations engaged in health situated in Chittagong Hill Tracts, char areas and areas surrounding breaking up of bank of river; (14) Grants to organizations engaged in treating cleft lips, cataract, cancer, and leprosy; (15) Grants to the organizations engaged in treating acid victims; (16) Donations to hospitals engaged in providing free medical treatment to poor patients and specialized for developing the quality of treatment, such as cancer, liver, kidney, thalassemia, eye and cardio; (17) Donations to organizations distributing freely at the level of use of birth-control products with a view to solving the population problem and to conduct camps for voluntary sterilization; (18) Grants to Public Universities; (19) Expenditure incurred through educational institutions recognized by Government for providing technical and vocational education for meritorious poor students; (20) Money invested in establishing lab for providing training on computer or information technology and in establishing infrastructure or in purchasing educational materials for implementing English education in public /private educational institutions (under Monthly Pay Order or MPO); (21) Donations to organizations engaged in providing technical and vocational training to unskilled or semi-skilled labor for export of human resources; and (22) Donations to organizations involved with infrastructure of sports and provision of training at national level.

A focus on process and content of disclosure and involvement of stakeholders through dialogue can result in the company discharging accountability instead of simply complying with the list of disclosure items. (Adams, 2004)

3. RESEARCH METHODOLOGY

3.1 COLLECTION OF DATA AND SAMPLE SIZE

The prime objectives of the study are as follows:

- To identify the disclosure factors of social reporting.
- To evaluate the disclosure factors disclosed by listed Banks.
- To suggest the policy makers in order to achieve excellent performance in social reporting.

The data collected for the purpose of the study involves the examination of annual reports for 25 private commercial banks out of 30 listed in the Dhaka Stock Exchange (DSE) for four years: 2008, 2009, 2010 and 2011. The year 2011 was considered in this study for two reasons. First, it was the latest year when the study is conducted. Second, at the middle of 2010, there was some encouragement and incentives from regulators to become involved in and report community and employee information. A list of banks surveyed has been included in the appendix Table A-1.

The annual reports of the banks selected were examined subsequent to downloading from the respective banks official website. The official web addresses of all sample banks were collected from the 'companies profile section' maintained by DSE. Consequently, all the sample banks' annual reports were examined in the current study. The study made a thorough investigation of the different sections of the annual reports such as vision, mission and goal statement, chairman's message, directors' section, financial statements, operating review, corporate governance report and other parts enclosing miscellaneous section not covered by any other section. While the banks may exercise other medium of communication through for exhibiting CSR reporting such as internet, newspaper and other media, this study concentrate on published annual reports of sample banks. Furthermore, a reason for choosing annual reports is that they are considered to be the most widespread and accepted document produced by Bangladeshi banks on a regular basis. These 25 banks represent around 85% of the total private commercial banks in Bangladesh. To identify the types of social information are disclosed on a company's annual report, a Social Reporting Disclosure Index (SRDI) of 34 items (Annexure - Table A-2) was developed. With the help of literature review 34 items of SRDI were categorized into 4 major aspects – 1) Background/General Corporate Information; 2) Directors Information; 3) Employees Information; 4) Community and other services. The disclosure category includes the following variables: 1) Background/General Corporate Information (8 items) contained the Brief History of the Company, Structure/Chart/Description of corporate structure, General Description of business activities, Official address/registered address/address for correspondence, Web/e-mail address of the company, Corporate vision, Corporate mission, Corporate objective. 2) Directors Information (5 items) included the name of the Director, Age of the Directors, Educational Qualifications (academic and professional), Commercial experience of the Executive Directors, and Other Directorship held by the Executive Directors. 3) Employees Information (11 items) focused on the Number of employees, Establishment of training center, Human Resource Development/ Training Program, Number of employees, trained, Information about support for day-care, Maternity and Paternity leave, Recreation clubs and public libraries, Accidental statistics, Ethical guideline, Information on the qualification of employees recruited, Information on the company/management relationships with the employees to improve the job satisfaction and employee motivation, Company's relationship with trade union and/or works. 4) Community and others Services (10 items) tried to measure the Company's Donation to the charity, arts, sports etc, Social welfare, Seminars and conferences, Canteen, Transportation, and crèches for the employees' children, Rehabilitation program, Establishment of educational institution, Medical establishment, Establishment of Park and Garden, Scholarship to the students, Establishment of Public hall and auditorium.

This study tries to identify the nature and extend of information disclosed in the annual report of an organization. To examine each of the variables mentioned in the checklist, a dichotomous procedure was followed using "1" and "0". "1" is used when the company contained information, else "0". Afterwards, the scores of each company are added to find out the individual total scores of the company and the following formula is used to calculate the SRDI:

$$\text{SRDI} = \frac{\text{Total Score of the Individual Company}}{\text{Maximum Possible Score Obtained by Company}} \times 100 \quad (1a)$$

The maximum possible score obtained by a company is 34, as 34 items are used for the analysis. So, SRDI for this study becomes:

Total Score of the Individual Company

SRDI = _____ X100 (1b)

34

3.2 CONTENT ANALYSIS

The content analysis of annual report method has been used for coding Corporate Social Reporting disclosure. According to Guthrie et al. (2003), content analysis is a quantitative technique by which standardized measurements are applied to metrically defined units. For CSR research, content analysis of annual reports has been widely used and is empirically valid (Gray et al, 1995; Guthrie and Parker, 1990). In the process of collecting data, this method engages in codifying qualitative and quantitative information into pre-defined categories so as to derive outlines in the presentation and reporting of items. Table A-2 in the appendix shows the list of categories of disclosure and their sub-classifications.

For analyzing published information methodically, neutrally and dependably, the technique of content analysis plays a significant role (Krippendorff, 1980; Guthrie and Parker, 1990; Guthrie, 1983). Many studies have used content analysis method to investigate voluntary and mandatory annual report disclosures in different countries (Guthrie et al., 2004). Content analysis includes three steps (Raman, 2006). First, a relevant document is selected. For this study, director's report, chairperson's report, financial statements, corporate social responsibility report, corporate governance report and sustainability report were selected. Second, unit of measuring contents is determined. Different researchers used different units of measurement like number of words, number of lines or number of pages. In this paper the unit of measure is number of pages. To keep consistency, relevant contents were copied in a word file and measured the portion of pages occupied by them as different companies use different measurement, line spacing and page margins. Third, categories are identified into which blocks of content can be classified. For this purpose, four categories are identified as Background/General Corporate Information; Directors Information; Employees Information and Community & other services. Ernst and Ernst (1978), Guthrie and Parker (1990) and Gray et al. (1995a) classified information into four categories. *Theme, Form, Amount and Location*. *Theme* was based on different categories like environment, human resource, and community involvement and miscellaneous. The *Form* included quantified data, both monetary and non-monetary and qualitative or declarative data. *Amount* measures the proportion of pages devoted to social responsibility issues. *Location* refers to director's and/or chairperson's reports, separate sections of the annual report, corporate governance report or separate stand-alone reports. In CSR disclosures, the technique of content analysis captures if a bank is disclosing an item of CSR in the annual report and awards "1" and if not "0" is awarded. The score of the each item is then added to arrive at the total score of the firm.

4. RESULTS AND DISCUSSIONS

A corporate social responsibility disclosure worksheet was constructed for the purpose of this study with the following headings: Background/General Corporate Information; Directors Information; Employees Information and Community & other services. Presently, none of the listed private commercial banks implemented GRI G3 guideline disclosure in their annual report. So, it created difficulty in preparing a corporate social responsibility worksheet according to the standard breakdown such as GRI Performance indicators or Global Compact Principles.

In Table 1, CSR related disclosure items by frequency are reported for 25 Bangladeshi private commercial banks for the year 2008 – 2011.

TABLE 1: THEME OF DISCLOSURE ITEMS BY FREQUENCY

Aspects of Social Reporting	Number of banks disclosing (n = 25)			
	2008	2009	2010	2011
A. Background/General Corporate Information:				
1. Brief History of the Corporation	18	20	19	19
2. Structure/Chart/Description of corporate structure	14	13	11	11
3. General Description of business activities	18	19	20	22
4. Official address/registered address/address for correspondence	23	23	25	25
5. Web/e-mail address of the corporation	23	23	25	24
6. Corporate vision	18	18	20	21
7. Corporate mission	18	19	21	22
8. Corporate objective	8	10	13	15
B. Directors Information:				
9. Name of the Directors	25	25	25	25
10. Age of the Directors	0	0	1	2
11. Educational Qualifications (academic and professional)	9	7	11	13
12. Commercial experience of the executive directors	0	3	8	9
13. Other directorship held by the executive directors	11	9	15	13
C. Employees Information:				
14. Number of employees	16	10	20	19
15. Establishment of training center	11	19	9	9
16. Human Resource Development/ Training Program	18	17	19	17
17. Number of employee trained	15	14	15	14
18. Information about support for day-care, maternity and paternity leave	0	0	0	0
19. Recreation clubs and public libraries				
20. Discussion of accidental statistics	3	3	3	2
21. Ethical guidelines	0	0	0	0
22. Information on the qualification of employees recruited	11	10	2	8
23. Information on the company/management relationships with the employees to improve the job satisfaction and employee motivation	0	0	0	1
24. Discussion on the company's relationship with trade union and/or works	6	6	8	5
	0	0	0	0
D. Community and others:				
25. Donation to the charity, arts, sports etc	18	16	20	21
26. Social welfare	20	19	22	23
27. Seminars and conferences	5	4	7	7
28. Canteen, Transportation, and crèches for the employees' children	1	1	0	1
29. Rehabilitation program	11	9	9	11
30. Establishment of educational institution	4	9	11	11
31. Medical establishment	5	9	11	15
32. Park and Garden	4	4	2	3
33. Scholarship to the Students	13	15	14	6
34. Public hall and auditorium	0	0	0	0

The results indicate that the practices of private commercial Bangladeshi banks in relation to providing background and corporate information are pretty high in relation to the total list of items. All the sample banks reported more information on such items as details of bank's official address, email address of the bank, name of the directors, number of employees working, training and development programs for employees and scholarship to students and donation to art, sports and charity.

As noted above, many items are reported by the sample banks, with name of the director, as the most notable CSR attribute in the annual report over the number of years. The second most reported item is the official address and email address jointly. Interestingly, majority of the banks devoted a considerable space in the annual report related to community involvement activities such as tree plantation, city beautification, scholarships to students, health care, sponsoring sports tournaments, art competitions and musical concerts. Although employees featured prominently, photographs of social activities were included in the annual reports of these banks.

TABLE 2: SUMMARY STATISTICS OF THEMES OF CORPORATE SOCIAL DISCLOSURE

Categories	2008		2009		2010		2011	
	Total	%	Total	%	Total	%	Total	%
Background/General Corporate Information	140	40.46%	145	40.96%	154	43.50%	159	39.36%
Directors Information	45	13.01%	45	12.72%	60	16.95%	62	15.35%
Employees Information	80	23.12%	78	22.03%	79	22.32%	75	18.56%
Community and others	81	23.41%	86	24.29%	96	24.67%	108	26.73%
Total	346	100%	354	100%	389	100%	404	100%

Over the four years examined, it was found that private commercial banks of Bangladesh demonstrated a significant increase in the categories of CSR reporting as shown in Table 2. However, the number of items reported is significantly higher in 2011 than those of the earlier years. Specifically, during 2010, 35 items were more reported than that of 2009. This substantial increase in the reporting can be interpreted as demonstrating the influence of Bangladeshi regulators. Based on the study results, we can argue that with the encouragement in corporate social reporting and monitoring from the central bank, the Revenue board as well as SEC, it is likely that Bangladeshi private commercial banks will start disclosing more information related to social responsibility and may exhibit full company accountabilities' in the coming future.

TABLE 3: FORM OF CORPORATE SOCIAL RESPONSIBILITY DISCLOSURES

Quantification Category	2008		2009		2010		2011	
	No.	%	No.	%	No.	%	No.	%
Both monetary and non-monetary quantification	5	20%	6	24%	7	28%	10	40%
Monetary quantification	8	32%	8	32%	10	40%	8	32%
Non-monetary quantification	6	24%	4	16%	6	24%	3	12%
Qualitative	6	24%	7	28%	2	8%	4	16%
Total	25	100%	25	100%	25	100%	25	100%

The disclosure of the above CSR items was further analyzed according to the degree of quantification which is presented in Table 3. Content analysis revealed that Bangladeshi private commercial banks publish both monetary and non-monetary disclosure which was highest in the year 2011 whereas generalized qualitative statements are lowest in that year. It is not possible to say concretely that monetary quantification increased over the years but as stakeholders are becoming more aware of the social responsibility issue, we may argue that the firms are now motivated to present the corporate social disclosures in a more quantitative way.

TABLE 4: LOCATION OF CORPORATE SOCIAL RESPONSIBILITY DISCLOSURES

Location	2008		2009		2010		2011	
	No.	%	No.	%	No.	%	No.	%
Director's report	8	32%	7	28%	5	20%	2	8%
Chairperson's report	4	16%	3	12%	3	12%	2	8%
Both in Director's report and Chairperson's report	5	20%	7	28%	4	16%	3	12%
Separate Corporate social reporting report	6	24%	7	28%	11	44%	15	60%
Other Sections of annual report	2	8%	1	4%	2	8%	3	12%
Total	25	100%	25	100%	25	100%	25	100%

In this study, an attempt was made to identify the location of the CSR information while conducting the content analysis of CSR reporting. In relation to the location of the CSR reporting, the findings revealed that almost all banks reported CSR items in the director's report or in a corporate social responsibility report. Only a few banks had CSR information in the other sections of the annual report.

TABLE 5: NUMBER OF PAGES DEVOTED TO CORPORATE SOCIAL RESPONSIBILITY DISCLOSURES

Pages Devoted	2008		2009		2010		2011	
	No.	%	No.	%	No.	%	No.	%
One sentence - quarter of a page	12	48%	9	36%	5	20%	2	8%
Quarter of a page - half of a page	2	8%	4	16%	4	16%	3	12%
Half of a page - three quarters of a page	3	12%	2	8%	4	16%	5	20%
Three quarters of a page - one page	3	12%	3	12%	5	20%	6	24%
More than one page.	5	20%	7	28%	7	28%	9	36%
Total	25	100%	25	100%	25	100%	25	100%

Table 5 shows the space occupied in the annual reports by the banks in reporting corporate social responsibility. To be consistent, a word file was created where all the information related to the banks corporate social responsibility was copied. This word file was in A4 format, 12pt Times New Roman, margin: top -1.5 cm, bottom, left and right -1.0 cm each. In the later years, majority of the private commercial banks in the sample used separate statements for corporate social responsibility which was only limited to quarter of a page in earlier years.

5. CONCLUSION

Over the last few years, Social disclosure is a hardly researched area in the academic and corporate sectors in Bangladesh. This area is now getting huge attention from both academics and corporate professionals, as people are becoming more environmentally conscious. With this long-standing interest in such issues, this paper is considering social disclosure issues brought to centre stage in business debates. As corporate social reporting (CSR) has become a core concern in today's business world, this paper provides some insights into how banks in Bangladesh are disclosing their social information, which indicates the social responsibilities they are performing for their stakeholders. Using content analysis technique, this study investigates the extent of CSR reporting and its trend in four years of annual reports of 25 Bangladeshi private commercial banks listed in Dhaka Stock Exchange (DSE). Overall, the results show that the sample

banks did disclose CSR items but below moderate level. More specifically those banks disclose more information on bank's official address, email address of the bank, name of the directors, number of employees working, training and development programs for employees and scholarship to students and donation to art, sports and charity. The study reveals that over time, the CSR reporting is increasing, possibly driven by the initiatives from the regulators. It is found that banks are well aware to disclose their general corporate information in the annual reports, but their attentions to reveal the information about the directors, employees, and also about the community services are not at all satisfactory. Given the presence of widespread corruption, an unstable political situation, deteriorating law enforcement and great influence by a special class of the society, tendency to non-compliance with the regulatory requirements often encourage the companies to not engage in social and environmental commitments or disclose them very inadequately. By considering these facts, policy makers should emphasize on greater disclosure of social information in the annual report for the interest of the stakeholders.

Although this study found some useful information, it is not free from limitations. The study only considers four year period but the findings of the study might change if longer period of time taken. Moreover, the findings are based only on the annual reports of the banks. Sample banks might report CSR issues in other disclosure means such as print and broadcast media, brochures and newsletters. However, most corporate social disclosures are qualitative in nature. So, independent verification of this information is not possible which makes the credibility of the information questionable.

Nowadays CSR has a great influence in the corporate performance. Taking this situation into consideration, study can be done to measure whether Corporate Social Reporting has any impact on the performance of the organization or not. Further research is needed regarding the philanthropic motivation of the banking companies and how these philanthropic strategies can be integrated with corporate social reporting. This will add value to the image and reputation and can enhance brand value. Finally, the findings of the study must be interpreted within the private commercial banking sector only. Thus, further research could seek to include all the listed firms on the DSE, thereby increasing the generalizability of the findings.

REFERENCES

- Adams, C. A. and harte, G. (1998a) "The changing portrayal of the employment of women in British Banks' and retail companies" corporate annual report', Accounting, Organizations and Society, Vol. 23, pp.781-812.
- Adams, C. A., Hill, W. Y. and Roberts, C. B. (1998b), "Corporate social reporting practices in Western Europe: Legitimizing Corporate Behavior?" The British Accounting Review Vol. 30, pp. 1-21.
- Adams, C., W. Hill and C. Roberts (1998), "Corporate Social Reporting Practices in Western Europe: Legitimizing Corporate Behavior?", British Accounting Review, Vol. 30, No. 1, pp. 1 – 21
- Adams, C. A. (2004) "The ethical, social and environmental reporting performance portrayal gap", Accounting, Auditing and Accountability Journal, Vol. 17, No. 5, pp.731-757.
- Alnajjar, F. (2000), Determinants of Corporate Social Responsibility Disclosure of US For-tune 500 Firms: An Application of Content Analysis, Advances in Environmental Accounting & Management, vol. 1, pp. 163-200.
- Andrew, B., F. Gul, J. Guthrie & H. Teoh (1989), "A Note on Corporate Social Disclosure Practices in Developing Countries: The Case of Malaysia and Singapore", British Accounting Review, Vol. 21, No. 1, pp. 371 - 376.
- Azim, m. I., Ahmed, S., and Islam, M. S. (2009), "Corporate Social Reporting Practices: Evidence from Listed Companies in Bangladesh", Journal of Asia-Pacific Business, Vol. 10, No. 2, pp. 130-145.
- Baydoun, N. and Willett, R. (1997), "Islam ethical issues in the presentation of Financial Information" , Accounting, Commerce & Finance: the Islamic Perspective Journal, Vol.1, No. 1, pp. 1-25.
- Belal, A. T. (1999), "Corporate social disclosure in Bangladesh annual reports", The Bangladesh Accountants, ICAB, Vol. 27, No. 1, pp 76-81.
- Bhuiyan, Biswas, and Chowdhury (2007), "Corporate Internet Reporting Practice in developing Economics: Evidence from Bangladesh", The Cost and Management, Vol 35, No. 5, pp 5-20.
- Brown, N. and Deegan, C. (1998), "The Public Information – A Dual Test of Media Agenda Setting Theory and Legitimacy Theory" Accounting and Business Research, vol. 29, no.1, pp. 21-41.
- Bubzy, S.L. and Falk, H. (1979), "Demand for social responsibility information by university investors". The Accounting Review, Vol. 54, No. 1, pp. 23-37
- Cormier, D., and Magnan, M. (2003) "Environmental reporting management: A continental European perspective" Journal of Accounting and Public Policy. Vol. 22, pp.43-62.
- Crowther, Social and Environmental Accounting (London: Financial Times Prentice Hall, 2000), p. 20.
- Deegan, C. & B. Gordon (1996), "A Study of the Environmental Disclosure Practices of Australian Corporations", Accounting and Business Research, Vol.26, No.3, pp.187 – 199
- Epstein M. and Freedman M.(1994), " Social Disclosure and the Individual Investor". Accounting, Auditing & Accountability Journal, Vol. 7, No. 4, pp. 94-109
- Ernst and Ernst (1972-1978) Social responsibility disclosure: Surveys of Fortune 500 annual reports. Cleveland: Ernst and Ernst.
- Foster, D. and Jonker. J. (2007) "Searching for a theoretical re-conceptualization of contemporary organizations based on the notions of stakeholders and transactivity", International Journal of Quality & Reliability Management, Vol. 24, No.7, pp.683-703.
- Freedman, M. and Wasley, C. (1983), "An Assessment of the Information Content of Social Disclosures" Proceedings of the Mid-Atlantic Regional American Accounting Association Meeting, pp. 46-54.
- Freeman. R. (1984), Strategic Management: A Stakeholder Approach, Boston: Pitman Publishing.
- Friedman, A.L. and Miles, S. (2001) "Socially Responsible Investment and Corporate Social and Environmental Reporting in the UK: An Exploratory Study", British Accounting Review, vol. 33, pp. 523-548.
- Gamble, G., K. Hsu, C. Jackson & C. Tollerson (1996), "Environmental Disclosures in Annual Reports: An International Perspective", The International Journal of Accounting, Vol. 31, No. 3, pp. 293 - 331.
- Gamble, G.O., Hsu, K., Kite, D., and Radtke, R.R. (1995). "Environmental disclosures in annual reports and 10ks: An examination". Accounting Horizons, 9(3), 34-54.
- Gray, R, Kouhy, R. and Lavers, S. (1995), "Methodology themes: constructing a research database of social and environmental reporting by UK companies", Accounting, Auditing and Accountability Journal, Vol 8. No. 5, pp.78-101.
- Gray, R. and Bebbington, J. (2001), Accounting for the Environment, London: Sage Publications.
- Gray, R., Kouhy, R., and Lavers, S. (1995). "Corporate social and environmental reporting: A review of the literature and a longitudinal study of UK disclosure". Accounting, Auditing & Accountability Journal 8(2) 47-77.
- Gray, R., Owen, D. and Maunders, K. (1988), "Corporate Social Reporting: Emerging Trends in Accountability and The Social Contract" Accounting, Auditing and Accountability Journal, vol. 1, no.1, pp. 6-20.
- Gray, R., Owen, D., and Adams, C. (1996). Accounting and Accountability. London: Paul Chapman Publishing Ltd.
- Guthrie, J. & L. Parker (1990), "Corporate Social Disclosure Practice: A Comparative International Analysis", Advances in Public Interest Accounting, Vol. 3, pp. 159 - 176.
- Guthrie, J. (1983), "Corporate social accounting and reporting: an Australian Empirical Study", Proceedings of the AANZ Conference 1983, Griffith University, Queensland.
- Guthrie, J. and Mathews, M. (1985), Corporate Social Reporting in Australia, Research in Corporate Social Performance and Policy, vol. 7, pp. 251-271.
- Guthrie, J., Johnson, U. Bujh, P. and Sanchez, P. (2003), "Intangible and the transparent enterprise: new strands of knowledge", Journal of Intellectual Capital, Vol. 4, pp.429-40.

33. Guthrie, J., Petty, R., Yongbanich, K. and Ricceri, F. (2004), "Using content analysis as a research method to inquire into intellectual capital reporting", *Journal of Intellectual Capital*, Vol. 5 No. 2 pp. 283-93.
34. Guthrie, J.E. and Parker, L.D. (1989), "Corporate Social Reporting: a Rebuttal of Legitimacy Theory". *Accounting and Business Research*, Vol. 9 No. 76, pp. 343-52
35. Harte, G. & D. Owen (1991), "Environmental Disclosure in the Annual Reports of British Companies: A Research Note", *Accounting, Auditing and Accountability Journal*, Vol. 4, No. 3, pp. 51 - 61.
36. Imam, S. (2000), "Corporate social performance reporting in Bangladesh", *Managerial Auditing Journal*, Vol. 15, pp. 133-141.
37. Khan, M. H. U. Z., Halabi, A.K. and Samy, M (2009), "Corporate social responsibility (CSR) reporting: a study of selected banking companies in Bangladesh", *Social Responsibility Journal*, Vol. 5 No. 3 pp.43-57.
38. Khan, M. H. U. Z., Khan, M.R. (2010), "Human Capital Disclosure Practices of top Bangladeshi companies", *Journal of Human Resource Costing & Accounting*, Vol.14, Issue 4, pp.329-349.
39. Krippendorff, K (1980) *Content Analysis: An Introduction to its Methodology*, Sage, Beverly Hill, CA.
40. Maitland, A. (2002a) "Pressures mount for greater disclosure: Social Reporting: to win trust, companies are responding to Government influences, campaigners, investors and consumers", *Financial Times*, 10 December.
41. Maitland, A. (2002b) "Rise in environmental reporting: Corporate disclosure pressure to reveal non-financial performance" *Financial Times*, 29 July.
42. Mathews, M.R. (1993). *Socially Responsible Accounting*. London: Chapman & Hill.
43. Ng, L.W. (1985). *Social responsibility disclosures of selected New Zealand companies for 1981, 1982 & 1983*. Occasional Paper no. 54. Faculty of Business, Massey University.
44. O'Dwyer, B. (2004), "The Construction of Social Account: A Case Study in An Overseas Aid Agency", *Accounting, Organizations and Society*, vol. xxx, pp. 1-18.
45. Owen, D., Gray, R.H. and Bebbington, J. (1997), "Green Accounting: Cosmetic Irrelevance or Radical Agenda for Change", *Asia-Pacific Journal of Accounting*, Vol.4, no.2, pp.175- 198.
46. Parker, L. (1986), "Polemical Themes in Social Accounting: A Scenario for Standard Setting", *Advances in Public Interest Accounting*, Vol. 1, pp. 67 - 93.
47. Patten (1990), "The Market Reaction to Social Responsibility Disclosures: The Case of the Sullivan Principles Signings", *Accounting, Organizations and Society*, vol. 15, no. 6, pp. 575-587.
48. Price, A. (2004) *Human Resource Management in a Business Context (2nd Edition)* London: Thomas Learning Publisher.
49. Radebauh, L. H. and Gray, S.J. (2002), *International Accounting and Multinational Enterprises*, New York: John Wiley & Sons Inc.
50. Raman, S. R. (2006), "Corporate social reporting in India – A view from the top". *Global Business Review*, Vol. 37, pp.313-224.
51. Rockness, J. and Williams, P. (1988), "A Descriptive Study of Social Accounting Responsibility Mutual Funds", *Accounting, Organizations and Society*, Vol. 13, No. 4, pp. 397- 411.
52. Seidler, L. & L. Seidler (1975), "Social Accounting: Theory, Issues, and Cases", Melville Publishing Company, US.
53. Suchman, M. (1995), "Managing Legitimacy: strategic and institutional approaches", *Academy of Management Review*, Vol. 20, pp.571-610.
54. Toms, J.S. (2002), "Firm Resources, Quality Signals and the Determinants of Corporate Environmental Reputation: Some UK Evidence," *British Accounting Review*, Vol.34, pp. 257-282.
55. Trotman, K.T. (1979). *Social responsibility disclosures by Australian companies*, Chartered Accountant in Australia, 24-28.
56. Tsang, E. (1998), "A Longitudinal Study of Corporate Social Reporting in Singapore: The Case of the Banking, Food and Beverages and Hotel Industries", *Accounting, Auditing and Accountability Journal*, Vol. 11, No. 5, Internet Issue (<http://www.emerald-library.com>).
57. Wiseman, J. (1982), "An Evaluation of Environmental Disclosures Made in Corporate Annual Reports", *Accounting, Organizations and Society*, Vol. 7, No. 1, pp. 53 – 63.
58. Zadek, S., Pruzan, P. and Evans, P. (1997), *Building Corporate Accountability – Emerging Practice in Social and Ethical Accounting, Auditing and Reporting*, London: Earthscan

APPENDIX

TABLE A-1: LIST OF PRIVATE COMMERCIAL BANKS USED IN THE STUDY

1	IFIC Bank	14	Dutch Bangla Bank
2	Islami Bank	15	Eastern Bank
3	Jamuna Bank	16	EXIM Bank
4	Mercantile Bank	17	IDLC Bank
5	Mutual Trust Bank	18	Prime Bank
6	NCC Bank	19	Pubali Bank
7	National Bank	20	Shahjalal Islami Bank
8	One Bank	21	Social Investment Bank
9	AB Bank	22	Southeast Bank
10	Al-Arafah Islami Bank	23	Standard Bank
11	Bank Asia	24	The City Bank
12	BRAC Bank	25	Uttara Bank
13	Dhaka Bank		

TABLE A-2: LIST OF DISCLOSURE ITEMS

A. Background/General Corporate Information:

1. Brief History of the Corporation
2. Structure/Chart/Description of corporate structure
3. General Description of business activities
4. Official address/registered address/address for correspondence
5. Web/e-mail address of the corporation
6. Corporate vision
7. Corporate mission
8. Corporate objective

B. Directors Information:

9. Name of the Directors
10. Age of the Directors
11. Educational Qualifications (academic and professional)
12. Commercial experience of the executive directors
13. Other directorship held by the executive directors

C. Employees Information:

14. Number of employees
15. Establishment of training center
16. Human Resource Development/ Training Program
17. Number of employee trained
18. Information about support for day-care, maternity and paternity leave
19. Recreation clubs and public libraries
20. Discussion of accidental statistics
21. Ethical guidelines
22. Information on the qualification of employees recruited
23. Information on the company/management relationships with the employees to improve the job satisfaction and employee motivation
24. Discussion on the company's relationship with trade union and/or works

D. Community and others:

25. Donation to the charity, arts, sports etc
26. Social welfare
27. Seminars and conferences
28. Canteen, Transportation, and crèches for the employees' children
29. Rehabilitation program
30. Establishment of educational institution
31. Medical establishment
32. Park and Garden
33. Scholarship to the Students
34. Public hall and auditorium

Source: Compiled based on review of the literature

M-LEARNING CONTEXTS COUPLED WITH CONNOTATION OF 4G CONNECTIVITY**B.AYSHWARYA****LECTURER****DEPARTMENT OF COMPUTER SCIENCE****KRISTU JAYANTI COLLEGE****BANGALORE****M.DHANAMALAR****LECTURER****DEPARTMENT OF COMPUTER SCIENCE****KRISTU JAYANTI COLLEGE****BANGALORE****ABSTRACT**

An immense deal of consideration has been given in recent times to the prospective applications of mobile devices in educational environments. The evolution to 4G (fourth generation mobile technology) with its enhanced technical features and cost efficiency provides a unique opportunity for developing applications focused on the modern requirements of learners and facilitators. It is widely predictable that portability, coverage, and access to mobile networks (among other elements) prove great potential for the exploration of a wide range of applications of this technology in education. At the same time, significant research is necessary in order to understand the psychological, ergonomic, organizational, and social factors that conclude how people interact with and function using these networks in learning environments. This article proposes research strategies intended to integrate the technical, educational, and usability aspects of mobile technology in education and briefly discusses the potential of 4G as a detonator of converging and appropriate m-learning applications.

KEYWORDS

M-Learning; 4G Networks; Educational Technology

I INTRODUCTION

The hi-tech development of wireless networks and their fiery penetration in practically all regions of the world has shaped opportunities, not previously available, for exploring applications of mobile devices in communal, cultural, economic, and educational contexts. The consumption of 3G (third generation technology) is advancing and fueled by converging applications that consist of multi-functional features which enable the user to capture advantage of services such as MMS (Multimedia Messaging Services), mobile video and more importantly, mobile Internet, that allow access to social network applications and other related services. With the emergence of 3G and its evolution to 4G, the mobile device is seen more as a platform rather than just a telephone, creating challenges for its usability and acceptance by ordinary users. On the other hand, service providers and device manufacturers are in the hunt for strategies to facilitate the adoption of mobile telephones as worldwide terminals for communication and access to the Internet.

The fiery penetration of mobile technology, pooled with its portability and technical capabilities for Internet access, has captured the attention of educators fascinated in exploiting these capacities in learning environments. The ubiquity and mobility features have been considered as key assets for elevating personal learning environments (PLE) in which handheld devices with 3G and ultimately 4G connectivity are key components. The promising control of mobile learning, coined as m-learning and primarily conceived as an extension to e-learning, has been the theme of pilot projects and initiatives designed to discover the use of mobile devices in education in many parts of the world. Even though the fact that the number and scope of such projects is increasing, it is accepted that significant research on the educational aspects of m-learning is necessary. The use of additional advanced mobile technologies with enhanced technical capabilities such as 4G does not guarantee the implementation and penetration or the successful application of mobile devices in educational contexts.

II ADVANCEMENT TO 4G AND ITS RELATIVE TO M-LEARNING

In the evolution of 3G to 4G (fourth generation mobile technology), two key technologies contend for power in the market: WiMax (Worldwide Interoperability for Microwave Access) and LTE (Long term Evolution). It is anticipated that both technologies resolve converge and become parallel in operational features. WiMax is paying attention on open systems, while LTE, offered by the major cellular incumbents, will still have to make major adjustments to obtain the degree of openness WiMax providers already offer. In both cases the applications are centered on IP technology, while their broadband capabilities are enhanced in comparison to 3G. It is most likely that firmware and integrated chips with both technologies embedded in the mobile terminals will provide worldwide and flawless access to the mobile Internet, despite of the type of 4G involved.

The main technical differences between 3G and 4G are that 4G offers higher data rates (in the order of 100Mbps compared to a peak 3 Mbps of 3G) and better quality of service and security. 4G will also provide global mobility, service portability, and ubiquitous and smooth roaming with expected lower cost. Various technology experts consider 4G more as a conceptual framework, given that it integrates different kinds of technologies with efficient standards in order to provide services and applications in a faultless and transparent fashion. We will have at our disposal a powerful technological tool with great potential for impacting the value and exposure of education.

III EDUCATIONAL IMPLICATIONS OF 4G EVOLUTION

Taking into consideration the market dynamics in the evolution toward 4G and the surplus of mobile devices available, increasingly better informed and knowledgeable users will take benefit of the fast moving mobile technology situation. This is part of a "mobile divide" created by fiery technology growth in which teachers, more than students, are affected. New generations - termed digital natives - will be better able to manage with this divide due to their skills, orientation, and natural adoption of digital technologies. Teachers will face the challenge of requiring constant attention and training, not only so they will be able to use the new generation mobile technologies, but more prominently, in order to contribute to the progress of applications relevant to education.

The accelerated pace at which mobile technologies are evolving has created a space of basic research regarding m-learning. As an end result, we can observe that in order to create a notional framework for m-learning, researchers sketch on existing learning theories such as behaviorism, constructivism, situated learning and others. In many instances the resulting contributions become only theoretical in nature with realistic implications of m-learning limited to the teachers' or researchers' interpretations.

Undoubtedly 3G and 4G technologies create encouraging circumstances to acquire, operate, represent, process, and understand information. However, as Coll mentions, information *per-se* is not synonymous to knowledge, nor does the efficient reception and access to such information guarantee learning. The key is to generate an environment or context for learning supported by semiotic resources conducive to the construction of meanings.

The word "mobile" has been connected with technology, learning, telephone and quite a few other concepts and devices. However, the importance must be placed on the mobility of the person - the student or teacher - more than on the mobility of the device. It is the learning activity connected with a "moving person" who is supported by an m-device that distinguishes m-learning from other types of learning. Mobility of individuals and devices in conjunction with wireless Internet connectivity grant the platform where models of interactivity and interactions must be developed.

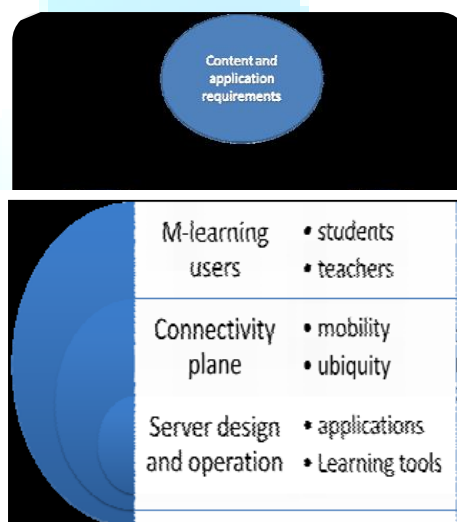
It is also suitable to point out that the educational modalities or formats are favorable toward the differentiated use of mobile technologies. Thus, the traditional in-classroom format makes use of mobile technology out of the conservative educational environment to allow for the contact between teacher-student-teacher and student-student and providing the option of conforming social networks among all of them. In the case of the on-line and hybrid formats, the use of mobile devices is extended and enhanced to allow for a higher degree of communication and collaboration. The use of advanced handheld devices with 4G connectivity will play an important role providing a more efficient communications channel and an improved user experience based on the design of relevant and pertinent content that includes, among others, the involvement of pedagogues, information technology experts, psychologists, and instructional designers.

The accessibility of a more vigorous and improved communications channel with wide coverage allowing ubiquitous and mobile communications will have an impact in a location-dependent, time-dependent and situation-dependent traditional educational system. In this circumstance the role of the teachers will evolve transitioning from topic experts to facilitators and coaches. In order to take advantage of the benefits of 4G connectivity, the handheld device must have the capacity of processing and managing major flows of information.

Concerning the above mentioned ideas, an approach to the educational process that involves the triad teacher-student-content from the perspective of the potential support of 3G and 4G technologies is presented in Table 1. The Triad Teacher-Student(s)-Content

Relation	Characteristics
Teacher-Content	The teacher can have right to use and transport content connected to his or her course at several time and any place. The availability of superior data rates provided by 4G and the emergence of additional resourceful processors and operating systems will be crucial for content management and creation as well as for mobile videoconferencing applications. The knowledge gained in e-learning can be extrapolated to m-learning; however, screen size, memory, and processing capacities of handheld devices are important restrictions.
Student-Content	The student can contact and transport content at any time and any place. This communication takes place out of the habitual educational context; the emergence of 4G (LTE and WiMax) might offer a universal multifunctional device that, in conjunction with standardized tools, could bear content management and creation for the m-learning context.

A layered structure (shown in Figure 2) considers the following elements as part of this framework:



Capability of Instant Communication: This communication capacity in the form of voice or text messaging, mobile video, and Internet connectivity provides the access and provides social networks with potential to maintain the learning process in the form of interactions with teachers and students, relatives, and friends regarding academic or daily life concerns. 4G will improve the user's experience, enhancing in this way the quality and quantity of interactions and interactivity involved in the educational processes.

Message size restriction: Handheld devices have imperfect processing capacities compared to laptops or other computers. This limitation, connected with the screen size, restrains the kind of content to be managed by the devices. 4G will get better communications features (coverage and connectivity) and extra powerful devices are currently available. On the other hand, the size of the devices is still an important concern for developing significant educational applications.

- **Context management:** Context is a key factor connected with learning. Students and teachers can practice and speak about the different types of information when moving during the length of a voyage or in route to school or home. The management and understanding of interactions and interactivity with the contexts using mobile technology becomes critical to establish a relevant framework for m-learning. Context personalization is another important factor to consider.

- **Impulsiveness:** The portability and accessibility of handheld devices with 3G and 4G connectivity provide immediate opportunity to communicate with other parties or to set up a social network for solving a specific academic need. It will be important to identify which applications are applicable and relevant for taking full gain of this capacity.

- **Informal learning:** The use of mobile devices in non-traditional academic environments using m-learning applications provides opportunities for informal learning experiences. There are many pilot projects all over the world that have exploited the technological benefits of m-learning in informal settings using 3G technology. These projects have created an important platform to identify the main challenges involved in developing relevant applications of m-learning in different academic environments.

- **Technology skills:** In order to take gain the full potential of 4G mobile devices, it is important to understand their main capacities, functions, and applications. The common contact of teachers and students with mobile devices allows the development of skills to properly operate such devices. Teachers who might practice the "mobile divide" perhaps reject the use of mobile technology and will face important challenges for adopting or participating in m-learning educational efforts.

FIG: FRAMEWORK OF M-LEARNING



Fig. 3. WML wapsite.

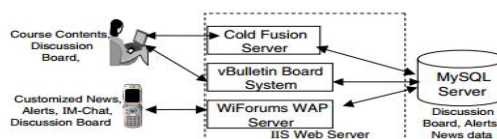


Fig. 4. Mobile learning application architecture.

IV THE ROLE OF CONNECTIVITY AND COVERAGE

Connectivity and coverage are essential factors in m-learning environments. It is accredited that with the first generations of wireless technologies (1G and 2G), m-learning applications were incomplete. The emergence of 3G and 4G provides a platform to get better the transport and exchange of content, also enhancing the possibilities of meaningful interactions and interactivity. Wireless providers and device manufacturers, on their part, are developing dominant tools that allow for a better user experience; however, there is still a lot to do in the processes of establishing and putting into practice effective contexts. Given the complication of the mobile development, our present research suggests a multivariate and integrated approach to better understand the new models of interactivity emerging from mobile personal learning environments.

Definitively-improved connectivity and coverage allow flexibility in the interactions and interactivity processes, making the use of handheld mobile devices more gorgeous. The screen size is still an important constraint, but it is predicted that the development of new mobile interfaces and healthier understanding of human-terminal-human interaction will bring about enhanced tools to support education and learning. With all the elements in place, the m-learning scenario will progress from its exploratory stage to a more established situation.

V THE CHALLENGES AND RISKS OF A TECHNOLOGY-CENTRIC APPROACH

The diffusion of mobile technology in practically all endeavors of society and the fiery growth of wireless technologies present special challenges and risks for educational processes and contexts. On the one hand, it is tempting to apply the evident and immediate benefits of mobility and Internet connectivity in the learning environment in an effort to increase the coverage, efficiency, and effectiveness of education in all social strata. On the other hand, the vertiginous pace of technology development necessitates notice to factors that, if not considered, may render mobile broadband and connectivity technologies such as 3G and 4G intangible tools for supporting learning. Some of these factors are:

The need to develop strategies and programs for training teachers and administrators in the use and application of emerging wireless technologies. This aspect is key if we wish to mitigate the effects of an ever-increasing mobile digital divide.

- The importance of stressing the educational elements of m-learning by creating frameworks that focus on the mobility and interactivity of learners and educators, rather than just on the portability features and technical capabilities of current and future converging devices.
- The challenge of developing suitable and pertinent content for handheld devices, considering the limiting factors of screen size, memory capacity, processing speed, and data rate connectivity. One element observed in our current research is that handheld technology centric designs may become extremely intrusive and not necessarily conducive to supporting learning.
- Applications should stress simplicity and usability, while taking into consideration real scenarios regarding student ownership of 3G and 4G handheld devices and the connected fees of local wireless providers. The structure and fees of wireless plans, the plethora of handheld devices available in the market, and technical compatibility issues, as well as a lack of standardized frameworks and platforms for interoperability, may become limiting factors to deploying significant applications to support learning.
- Security and ethical issues are factors that are increasingly relevant in relation to the use of mobile devices. The improper use of handheld devices in the educational environment is more and more becoming an important concern of teachers, students, administrators, and parents. This is an area that needs special attention, and not only requires more research and development, but also a higher degree of collaboration and multidisciplinary focus to understand all the issues involved.

VI CONCLUSIONS

With the evolution toward 4G, it is anticipated that the improved technical capabilities of mobile devices will afford a greatly improved experience for users. The case in point of this paper is that technical progress is not enough, since due to the lack of substantial research there are still countless challenges to be faced in developing comprehensive theoretical frameworks for m-learning. There is also a coursework space with relevant and pertinent content for the m-learning context. To what amount will the development to 4G overlay the way for better and more insightful m-learning experiences? The answer to this question requires a multidisciplinary vision and focus. To date, content for entertainment and communications capture the attention of students all over the world, as 4G provides better connectivity and the potential of a better user experience. On the other hand, the urgent need now is to develop adoption and usability strategies and to create educational content suited for specific m-learning environments, taking into account the cultural, social, and human development issues involved.

VII REFERENCES

1. Futurelab (2004) Mobile Technologies and Learning report
2. Jane Lunsford, "Using Handheld Technologies for Student Support: A Model," Journal of the research center for educational technology, Vol 6.
3. Koole, M.L. (2009) 'A Model for Framing Mobile Learning', in Ally, M. (ed.), Mobile Learning: Transforming the Delivery of Education and Training, Edmonton, 2009, p.38)
4. Liu Jianshe, "Summary of Mobile Learning Research," Education Research2007 Robin Deegan, "A Classification of M-Learning Applications from a Usability Perspective," Journal of the research center for educational technology, Vol 6.
5. Park, Y. (2011) 'A Pedagogical Framework for Mobile Learning: Categorizing Educational Applications of Mobile Technologies into Four Types' (The International Review of Research in Open and Distance Learning, 12(2), February 2011)
6. Phil Marston. "Further Development of the Context Categories of a Mobile Learning Framework," Journal of the research center for educational technology, Vol 6.
7. Wingkvist, A. & Ericsson, M. (2010) 'A Framework to Guide and Structure the Development Process of Mobile Learning Initiatives' (in Montebello, M., et al. mLearn 2010: Conference Proceedings, 2010)

IMPORTANCE OF OPEN ACCESS IN FLOW OF INFORMATION: WITH SPECIAL EMPHASIS ON RESEARCH**A. SIVA KESAVULU****RESEARCH SCHOLAR****DEPARTMENT OF LIBRARY & INFORMATION SCIENCE****S. V. UNIVERSITY****TIRUPATI****B.DEENADHAYALU****RESEARCH SCHOLAR****DEPARTMENT OF LIBRARY & INFORMATION SCIENCE****S. V. UNIVERSITY****TIRUPATI****ABSTRACT**

In the 21st Century open access becomes an important part of the society by the students, researchers, scholars, even faculties get solutions of their problems with just a click from their PC's. According Daniel Burris "Knowledge is Power, not information. Information is power only if you can take action with it". This rules same follows in the time of ICT as many thing available on the internet is not information. Information can become remedies by using it in right manner. In this paper, authors highlight the importance of Open Access resources in various steps of research, which is a part of Information flow.

KEYWORDS

Open Access, Information Flow, Research, ICT.

1. INTRODUCTION

By 'Open Access' is meant the opportunity to see and examine the Book collection with as much freedom as in one's own private library"

S.R.Ranganathan, 1931; reprinted 1957, p.258-259.

Open access resources make knowledge and discovery freely available for those who need it. As search technologies gradually improve, knowledge seekers shall undoubtedly find it much easier to surface the pieces of knowledge needed from among a great variety of available information. Open access resources allow those who seek information to find those whose prior seeking has resulted in new perspectives, new data, and new knowledge. Open access publishing is an especially natural way for university research to be distributed for the greater good. The salaries paid to university researchers normally come from public money, by extension from the tax payers. Ethically, it seems a good principle that knowledge generated through the support of the general public should be equally available and, perhaps beneficial, to all the members of society.

No one is ever fully competent, because knowledge advances with increasing speed. Throughout the world, knowledge is being generated in incremental pieces; those envisioning innovation must seek out important pieces of knowledge everywhere and all the time.

In developing innovations and products for all including individuals or user groups, with special needs (e.g. the physically, cognitively, affectively, or sensory challenged), product innovators must be able to discover and be inspired by the knowledge generated through university research and company implementation. Open access publishing can play a vital role in disseminating both research knowledge and the results of applied experimentation.

If universities keep the new knowledge behind their walls or offer limited access to it, then they have overlooked their duties to society. And if government officials, who make decisions regarding university funding for research and dispersal of research knowledge, do not see that new scientific innovations must be easily and effectively offered for the use of society, then the barriers to innovative use of new ideas slow down the availability of knowledge to those who need it and who have paid through their taxes to create it.

The time seems right to give up the old images and practices regarding research, knowledge, and innovation. Open access publishing makes it possible, but also necessary to look at the role of basic knowledge within society and the roles of university research in the webs of innovation management in a new way. Keeping the above in view an attempt is made in the present paper, to highlight the importance of open access resources in various steps of research, which is a part of information flow.

1.1 INFORMATION FLOW

Diffusion or information transfer is a process by which an innovation or new idea spreads among the members of a social system-it is a type of communication process. It is spread of a new idea from its source of invention, creation or generation to its ultimate users or adopters, i.e., to the destination or recipients

The total flow of information consists (1) information seeking behaviour (2) information generation and (3) information dissemination / transfer.

Along with the conventional sources of information, accessing the web for timely, relevant latest information will yield to quality productivity of research.

1.2 OPEN ACCESS

Open Access is the "free, immediate, permanent, full-text, online access, for any user, web-wide, to digital scientific and scholarly material, primarily research articles published in peer-reviewed journals".

Open access provides direct links from bibliographical data of publications to the actual full text. As well as being of use and benefit to the academic community, it also allows free access to research publications to any online users.

1.3 OPEN ACCESS RESOURCES

Open-access resources are those that can be accessed by anyone at any time without restraint. When the resource is abundant, relative to the demand for it, an open-access regime may not only be unproblematic, it may actually be the best management regime since it involves so little oversight.

However when the resource is scarce, open-access resources may be subject to excessive use. Since the users claim over that the resource is only established by "the rule of capture", users have an incentive to harvest as much as they can as rapidly as they can. Instead of more conservative behavior preserving the resource in this circumstance, it could simply lead to resource degradation as other users simply increase their share.

Open-access literature is digital literature that is available on the web, free of charge, and free of most copyright and licensing restrictions. Committing to open access requires dispensing with the financial, technical and legal barriers that are designed to limit access to scientific research articles to paying customers. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited.

1.4 BENEFITS OF OPEN ACCESS RESOURCES

1. Making the research easy
2. Helps in long-term benefits
3. Strengthens the research literature
4. Immediate access to literature with penny less expenditure
5. Easy access of institutional repositories
6. Open access is the best option
7. Acts as boost to the developing countries scholars
8. Encouragement by legislative initiators
9. Popularity by open approach

1.5 RESEARCH

Research is composed of two words 're' and 'search' which means to search again or a careful investigation to understand or re-examine the facts or to search for new facts or to modify older ones in any of knowledge.

Research is an inquiry into the nature of the reasons for and the consequences of any particular set of circumstances whether these circumstances are experimentally controlled or recorded just as they occur. Further research is interested in the repeatability of the results and in the extension to more complicated and general situations.

At every step of research, the open access resources come to the rescue of the researcher in support of his/her research.

1.6 DEFINITIONS

Francis Rummel: "Research is a careful enquiry or examination to discover new information or relationships and to expand and to verify existing knowledge."

Lundberg: "Research is sufficiently objective and systematic to make possible classification generalization and verification of the data observed."

According to Dr.S.R.Ranganathan, the father of library science in India, "Research represents a critical exhaustive investigation to discover facts, to interpret them in the light of known ideas, theories and laws in order to apply the conclusions to practical purposes."

In simple words research can be defined as "any scholarly investigation in search of truth for facts and for certainties".

2 STEPS IN RESEARCH**OPEN ACCESS RESOURCES VIS-A-VIS VARIOUS STEPS INVOLVED IN CONDUCTING A SOCIAL SCIENCE RESEARCH**

It can be witnessed that innumerable open access resources are available free of cost to any user at any time. The question is how best the users are utilizing that research. It is obvious that research in general and social science research in particular, is time consuming because to search information that supports research is as difficult as searching a needle in the haystack. A humble attempt is made in this paper to create awareness on some of the open access resources which help in various steps of research.

2 IDENTIFICATION AND SELECTION OF A RESEARCH PROBLEM

Selection of a research problem is a very important job for a researcher. The range of potential topic for socio economic research problem is as broad as the range of socio economic behavior itself. Socio economic life in modern times is full of innumerable problems which provide a researcher ample scope for identification of a research problem. The problem begins to appear when the need for this expansion or solution is urgently required. The existence of unsolved problems is the first symptom for locating a research problem.

3 REVIEW OF LITERATURE: PRELIMINARY REVIEW PRIOR TO PROBLEM SELECTION AND SYSTEMATIC REVIEW AFTER SELECTION ARE NECESSARY

An examination of the body of research literature reveals the accomplishment, current trends and the future requirements in the subject of the concerned research project.

Full text journal articles, e-books, conference papers, reports, etc are available in the form of open access resources in abundance to meet the purpose.

www.doaj.org/

<http://www.springer.com>

<http://www.unescobkk.org/information-resources/e-library/reference-resources/free/access-journals/>

<http://www.openj.gate.com/Browse/BySubject.aspx>

3.1 FORMULATION OF THE SELECTED PROBLEM

This stage includes definition of the problem, conceptual mode, elimination of the study, formulation of the objectives of the study and the hypotheses/investigating questions.

3.2 OPERATIONALIZATION OF CONCEPTS: DEFINITION OF THE CONCEPTS, CONSTRUCTION OF INDEXES/SCALES FOR MEASURING VARIABLES**IDENTIFICATION OF VARIABLES**

The most important aspect of research is to identify the variables as this will help the researcher to operationalise the methods to be used for collection of data. The independent, dependent and if possible the intervening variables should be identified.

DEFINITION OF CONCEPTS

The researcher needs to know clearly the meaning and contents of every term he uses. It clarifies the issue and explains to the researchers, respondents and other readers of the research reports specifically and pointedly. The term concept must be defined both the abstract term and the general meaning it is intended to convey. This may be called the formal definition. The operational term by which it will be represented particular study should be given. This type of concept is known as 'operational definition' "the operational definition helps in collection of data in carrying out all research".

3.3 PREPARATION OF THE RESEARCH PLAN; STATEMENT OF THE PROBLEM, OBJECTIVES OF THE STUDYING HYPOTHESES, OPERATIONAL DEFINITION OF THE CONCEPTS, GEOGRAPHICAL AREA OF THE STUDY, METHODOLOGY, SAMPLING DESIGN, RULES FOR COLLECTION OF DATA, PLAN OF ANALYSIS, OVERVIEW OF THE RESEARCH REPORT, TIME SCHEDULE**METHODOLOGY****3.3.1 METHOD OF INVESTIGATION**

The decision pertaining to method of investigation is to be done in the section. The researcher has to decide whether the research project is going to be empirical, in the sense of being based on primary data collected from the field, or analytical in the sense of being based on secondary data collected from published reports.

3.3.2 METHODS OF COLLECTING DATA

Depending upon the nature of the respondent and the type of data to be collected, the methods of collecting data need to be decided. Also various sources and nature of document or records should be listed out.

3.3.3 SAMPLING DESIGN

The researcher has to decide the method, either census method or the sampling method to be adopted in the study with justification and the reason of the same. <http://www.vidyanidhi.org.in/home/firstpage.htm>.

3.3.4 CONSTRUCTION OF TOOLS OF DATA COLLECTION

Identification of data needs, delineation of data sources, drafting observation schedule, interview schedule/guide, mailed questionnaire and/or check list or experimental design, pre-testing and possible reason.

<http://scinceray.com/techonology/information/the-three-main-types-of-data-collecton-tools/>

3.4 COLLECTION OF DATA: EXPERIMENTAL/FIELD WORK: PREPARING SAMPLE FRAME, DRAWING SAMPLE OF RESPONDENTS; INTERVIEWING THEM/MAILING QUESTIONNAIRES' TO THEM AND FOLLOW-UP

The social networking groups are helpful in collection of data. Questionnaires can be mailed to a group of professional members through these groups, which are membership free.

Some of the examples are;

<http://groups.yahoo.com/group/nmlis>

<http://www.facebook.com>

www.orkut.com

3.5 PROCESSING OF DATA: THIS STEP INCLUDES EDITING, CODING, TRANSCRIPTION, TABULATION, CONSTRUCTION OF TABLES AND CHARTS

<http://www.geovisite.com/en/directory/data-processing.php>

<http://www.staff.vu.edu.au/mcaonline/units/statistics/presentation.html>

3.6 ANALYSIS OF DATA

Suitable statistical techniques are to be applied to analyse the data. Computer software packages are available for application of various statistical techniques like correlation co-efficients, regressions, multivariate analysis and the like. They facilitate complex analysis with great ease and tremendous speed.

<http://www.freestatistics.info/en/stat.php>

http://www.psychnet-uk.com/experimental_design/software_packages.html

3.7 REPORT -WRITING

Report writing is a crucial step in the entire process of research. A carelessly prepared report affects the degree of respect the research commands and at the same time a carefully prepared report will bring reorganization to writer and the work in to the limelight. Therefore, writing of the report should be taken as an equally important task in the entire research process and sufficient time should be devoted to it.

http://portal.acs.org/portal.fileFetch/C/CTP_005606/pdf/CTP_005606.pdf.

Another key part of the research work is bibliography which is a list of documents that are prepared. This has to be prepared basing on specific standard. Following are some of the examples.

www.mlastyle.com

www.apastyle.org

www.chicagomanualofstyle.org

4. BARRIERS TO LIMITED USE OF OPEN ACCESS RESOURCES

- 1) Lack of knowledge in the use of computer and the internet.
- 2) Lack of information sources.
- 3) Lack of involvement in research.
- 4) Lack of financial resources to produce quality research.
- 5) Lack of encouragement from parent and professional bodies.
- 6) Lack of congenial environment.
- 7) Lack of proper infrastructure facilities.

5. SUGGESTIONS

While appreciating the initiative of U.G.C in the complication of electronic thesis database, the authors of this paper propose the following for better utilization of open access resources.

1. Universities need to compile in house electronic thesis database both at department and submit it to U.G.C, as well as university level to make a comprehensive and authentic open access sources available to the interested researchers.
2. Periodical orientation programs are to be organized by the libraries, to the researchers to enhance the efficiency in the use of open access resources.
3. There is a need to provide sufficient financial assistance and infrastructure facility by the U.G.C and academic institutions concerned, to produce quality research.

6. CONCLUSION

Open access helps to ensure long term access to scholarly information. Unlike articles that are licensed in traditional article date bases, libraries and others can create local copies and repositories of these resources, libraries, by working together to make repositories of open access literature, can ensure continued access to these scholarly publications in the distant future.

REFERENCES

1. An introduction to open access <http://www.esrcsocietytoday.ac.uk> (last access date: 28 Oct 2010).
2. <http://en.wikipedia.org/wiki/open> (last access date: 28 Oct 2010).
3. Kishore (A) and Kiranmai(A). Innovative change: Library and information services for the present and future. 38th APLA. Jan 10-11. Guntur, 2009.P.362.
4. Krishna Swami(O R) and Ranganadham (M). Methodology of research in Social Sciences. Himalaya Publishing House, Mumbai 2009 P.60
5. Muttaiah (B C). Research methodology. Dr. B.R. Ambedkar Open University Hyderabad. 1998. P.6
6. Saracevic (T) and Wood (J S). Consolidation of information; a hand book of evolution, restructuring and repackaging of scientific and technical information. 1981 Paris.
7. Sharma (Hemanth) and Jain (Yogesh Kumar). Free flow of information and its constraints. Library Herald. 39.2001; P. 56-64.

VIRTUAL LEARNING ENVIRONMENT: ISSUES AND SUGGESTIONS

SUNIL KUMAR SHARMA
RESEARCH SCHOLAR
SAI NATH UNIVERSITY
JHARKHAND

ABSTRACT

In the era of ICT and Internet it is important to keep pace with rapid changes in the technology that are taking place in the world, especially for developing countries with strong emphasis on the Education sector. For this, changes ought to be introduced in the teaching-learning process. The Use of Internet is becoming an engine of innovation in education. The Internet or indeed ICT and all its interactive elements are able to have an extremely positive impact to the learning potential of students as well as teachers. Virtual Learning Environment (VLE) is a web-based toolkit that facilitates learning through the provision and integration of online teaching and learning materials. This paper shows the concept of virtual learning environment, virtual community, characteristics of present virtual learning environment/classrooms; differentiate with traditional learning environment, demerits and suggestions of VLE, proposed model and some innovative initiatives by the government of India.

KEYWORDS

ICT, VLE, Collaborative Learning, Virtual community, Video Conferencing, e-Library, Virtual Classroom.

INTRODUCTION

As we know the field of Information and Communication Technology is a challenging field. The rapid growth and uses of Internet made in the field of ICT have led to a revolutionary shift in the field of education and training and the Open library plays a vital role. More and more learners/students are taking education via these open sources to relish their dreams. To cater to this large segment of learners, a number of institutions including the virtual institutions have started offering a wide range of courses on the web called web-based education tutorials or online courses or virtual courses. They can access these tutorials any time any where from the web. Thus, it acts as collaborator between the creators and learners of knowledge and formed a global knowledge network. Again the availability of free Open Source Software like ELMS[1] has also brought a drastic change the way how information is delivered and accessible freely. There are a number of universities in India which are working for creating such type of open learning system which can be freely accessed by anyone. Such advancements in ICTs have enabled to provide education by adopting maximum technologies in a Virtual Learning Environment (VLE). Modern library systems are also coming up to deliver their services in such an environment.

VIRTUAL LEARNING ENVIRONMENT (VLE)

A VLE is a virtual classroom that allows teachers and students to communicate with each other online. Class information, learning materials, and assignments are typically provided via the Web. Students can log in to the class website to view this information and may also download assignments and required reading materials to their computers. In a virtual classroom, the teacher may communicate with the students in real-time using video or Web conferencing. This type of communication is typically used for giving lectures and for question and answer sessions. If the teacher only needs to send out a homework assignment, he or she can simply post a bulletin on the class website. The students may also receive an e-mail notification letting them know a new assignment has been posted. If class members have questions about the homework, they can participate in online forums or submit individual questions to the teacher. Virtual learning environments are a popular method of e-learning, which refers to learning through electronic means. While a VLE cannot fully replace the traditional classroom, it can be a useful way of teaching students who reside in many different locations. VLE contains the online learning services. This is a learning platform that organizes and provides access to online learning services for the students, teachers and administrators. In VLE, the learner is at a far off place from the tutor or teacher or instructor. He/She uses some form of technology (obviously internet connected computer) to access the learning resource materials which are web-based and also interacts with the teacher/tutor or instructor and other learners.

VIRTUAL COMMUNITY

A virtual community or online community is a group of people who, initially or basically communicate via the internet, instead of face to face. Virtual community is computer mediated space where there is an integration of content and communication with an emphasis on member-generated content [2]. They usually utilize some type of collaboration software (social networking software) and adopt an appropriate name for their purpose, such as open source communities producing software in open code [3]. The web environment provides a number of opportunities to both the teachers and learners. In the environment, learner gets access and share a wide range of knowledge. They can develop new ways for learning. The web also provides support for high tech learning where teacher acts as a facility provider for the students.

Virtual Learning Environments are diverse in size, capability and service offered. There can be three models of Virtual schools i) Asynchronous, ii) Synchronous and iii) broadcast. According to Russell (2001) in Asynchronous model there is no direct communication between teacher and students, as they do not avail of chat or video conferencing facilities. Synchronous models usually involve more communication and collaboration through video conferencing and live chats. Broadcast models allow students to access lectures or broadcasts on the Internet [4]. All these models offer a wide range of learning flexibility in virtual environments that serve the individual needs of the learners regardless of their age, gender, religion, nationality or disability. Virtual learning with innovative applications of ICT has become today a boon. The University of Delhi set up an Institute of Lifelong Learning (ILL) with major responsibility towards teacher training, development of learning material and delivery system. There are many other universities and IITs which are also working in the development of Virtual Learning Environment such as Indira Gandhi National Open University (IGNOU), Aligarh Muslim University, Jamia Hamdard University, Delhi University, Hyderabad University IIT Roorkee, IIT Kanpur and many more.

CHARACTERISTICS OF VIRTUAL LEARNING CLASSROOMS

Virtual classroom also needs equivalent equipment and tools in the form of network-based software application to allow a group of instructors and students to carry out the learning process. It facilitates self learning at the learner's convenient time and place. Electronic publication is cheaper and faster. It facilitates faster and cheaper delivery of the material. No physical boundary is required for getting access to virtual learning. Entire universe is the classroom. It enables to update learning materials speedily. The output of virtual teaching-learning process depends upon the factors like students' motivation for self-learning, subject expertise and communication skills of the teacher, on-line problem-solving facility, connectivity to e-library, and use of technology based lightly interactive multimedia, etc.

DEMERITS OF VIRTUAL LEARNING ENVIRONMENT AND SUGGESTIONS

Unlike formal school learning, virtual learning is a collaborative process and emphasizes on cooperative effort and interactions. The medium of instruction in virtual learning in India is broadly restricted to English and Hindi languages, and occasionally some regional programmes are being telecasted. It would take some time to develop the software for teaching-learning in vernacular languages.

Basically, there are four principles to be kept in mind for successful teaching in the virtual classroom i) media richness, ii) timely responsiveness, iii) organization and iv) interaction.

In the traditional classroom learning environment, a pleasing voice, occasional jokes, dramatic gestures, eye contact with the teacher and the classroom interaction can help to bear a long lecture. But in virtual classrooms, there is only the computer screen and the printed pages. Even if the multimedia is there, long segments of lecture-type materials are boring. Hence, in order to maintain interest, the instructor should use written language in a skillful way by putting some humour and metaphors. It is better to active participation by the students and stimulate collaborative assignments that involve both social and task-oriented activities. The instructor should deliver small segments of lecture with print/pre-recorded materials accompanied with opportunities for students' participation. Secondly, unlike the traditional classrooms, the students in the virtual classroom will not receive an immediate response to their questions and comments. This can be very frustrating, especially if they are unable to solve a mathematics problem or project assignment in the middle. In this case, in order to encourage the students, the instructor can promote more active participation / interaction and provide the feedback to students in the virtual classroom more frequently/daily. Thirdly, unless the study materials of online courses/virtual classrooms get organized, students will become very confused. Therefore, the instructor must establish regular rhythms and schedules, based on dividing the course into modules which last a week, a week and half, or two weeks each so that the participants can plan ahead in terms of when they will need to sign online and when work will be due, and so that the group moves through the topics in an orderly manner.

Another strategy is for the instructor to enter the stimulus materials for each week's work on a regular basis, with new material predictably appearing at least twice a week. The most significant determinant of the students' satisfaction in the online courses/virtual classrooms is the amount and quality of interaction between the instructor and the students, and/or among the students. Collaborative learning is encouraged in case of virtual classrooms which emphasize group / cooperative efforts among faculty and students. In this context, knowledge is viewed as a social construct, and therefore, the educational process is facilitated by social interaction in an environment that facilitates peer interaction evaluation and cooperation [5, 6]. The "teacher" becomes primarily a facilitator who structures learning opportunities, serves as a resource, and encourages the students to work together to build a common body of knowledge. The virtual classroom/learning environment not only facilitates collaborative learning but also supports independent learning and generative, active learning techniques that are self-paced by each participant. Besides these, there are other drawbacks of virtual Learning Environment like:

- The teacher is not present physically. Thus, virtual classroom lacks the human touch. The virtual students seem more frustrated, not only from the technology but from the inability to ask the teacher questions in a face-to-face environment. As the virtual learning environment lacks human face-to-face interaction, critics are of the opinion that probably it has a long-term effect on the children's emotional development and interpersonal relationship when they would be grown up as adults in society.
- It is thought that children will miss out on the important friendships that are usually formed in traditional schools and this will lead to poor social skills in adulthood. Virtual classrooms are suitable for higher learning only, not for primary level children. For availing the facilities of virtual learning the learner has to be matured, self-motivated, computer literate and well versed with the components of virtual classroom. Primarily the teacher in the virtual classroom follows the Lecture-cum-demonstration method with multi-media use which is suitable for higher level courses.
- It is not suitable for lab-based and activity oriented courses. There is no scope for testing the entry level behaviors; thus a teacher cannot judge the degree of disparity among students.
- Also the differences in learning styles and ranging aptitude levels would result in further discrepancy.
- In a virtual classroom set up, the role of a teacher is significant but students' response is secondary. Hardly the teacher does have the scope to get an immediate feedback regarding his teaching.
- There is little scope for direct teacher-student intervention and two-way communication. The factors, like subject expertise, communication skill, expression through body language, personality, skill of holding students' interest and attention play a very crucial role in virtual learning and the success of the programming course primarily depends on these factors.

PROPOSED VIRTUAL LEARNING ENVIRONMENT MODEL

To boost the ICT based Virtual Learning Environment Education it is essential to adopt:

- Intensive and rigorous short term training courses.
- Continuing education programme.
- Workshops/conference/seminars.
- In-service training.
- Project based learning.
- Computer assisted instruction.
- Creation, storage and access the learning resources.
- Lesson planning and assessment.
- Manage access to learner's information and resources and also tracking of progress and achievement.
- Communication with learners via emails, notices, chat, blogs.
- Self assessment quizzes.
- Formal assessment functions such as examination, presentation of projects etc.
- Provision for necessary hyperlinks to create a unified presentation to the students.
- Interaction in vernacular language
- Integrate heterogeneous technologies and multiple pedagogical approaches.
- Upgradation of teachers' skills in developing and delivering the course content through networks.
- Developing intelligence learning technology by having self teaching guides or do it yourself series.

SOME INITIATIVES IN VLE BY IGNOU IN INDIA

E-GYANKOSH

It is a digital repository initiated by IGNOU to enhance the accessibility of knowledge to share its valuable resources with educational institutions and learners internationally. This national Digital Repository acts as a podium to store, index, preserve and share the digital learning resources developed by the Open and Distance Learning Institutions in the country [7].

GYAN DARSHAN

A satellite based TV channel devoted to educational and developmental needs of the society [8].

NODLINET (NATIONAL OPEN AND DISTANCE LEARNERS' LIBRARY AND INFORMATION NETWORK)

The Library and Documentation Division of IGNOU has started giving efforts to take higher education to the doorsteps of the hitherto un-reached through its various modes of Information and Document Delivery Services [9].

IUC-TEFED

Inter University Consortium for Technology-Enabled Flexible Education and Development (IUC-TEFED) is the latest initiative of IGNOU which works as a nodal point to undertake all types of collaborative activities involving Open and Distance Learning, e-learning new knowledge creation, appropriate technology, etc. [10].

CONCLUSION

As an impact of the globalization and ICT revolution as well, there is generally an agreed implication that education and training should go in the tune of the same. Virtual Learning schools all over the world, as such, are accepting the new technologies. In this regard, India is lagging behind in comparison with other advanced countries like, US, UK, etc. The establishment of the Indian Training and Education Network for Development (INTEND) by the Ministry of Human Resource Development, Government of India is a good approach of the government. The initiatives taken up by IGNOU and other Universities are a good signal in the country. The future of virtual learning environments has many innovative and exciting possibilities. At the same time adventures in learning call for creative and potent environments where individuals share meaningful knowledge and experiences in constructing new information and ideas. These adventures foster mutual collaboration that allows learners to apply newly acquired learning in the design of insightful, cognitive processing without detachment/ obscurity from real-life situations. A judicious blend of both traditional and virtual learning environment with special attention to students' needs and satisfaction can create constructive and creative learners, teaching community and learned society. The use of new ICT by the Indian Schools/Universities should be encouraged to produce professionals to manage knowledge resources in the VLE.

REFERENCES

1. Bruffee K. A. (1984), Background and History to Collaboration Learning in American Colleges, *College English* 46, 7, 635-652
2. Chesbrough, H.W. and D.J. Teece (1996). When is virtual virtuous? *Harvard Business Review*. 1; 65-73.
3. Hagel, J., & Armstrong, A. (1997). *Net gain: Expanding markets through virtual communities*. Boston, MA: Harvard Business School Press.
4. <http://www.egyankosh.ac.in>, accessed on 09/04/2013.
5. <http://www.ignou.ac.in/ignou/aboutignou/icc/iuc/introduction>, accessed on 09/04/2013
6. <http://www.ignou.ac.in/NODLINET/aboutnodlinet>, accessed on 09/04/2013
7. <http://www.ignouonline.ac.in/Broadcast>, accessed on 09/04/2013.
8. <http://www.openelms.org/> accessed on 09/04/2013.
9. Russell, G. (2001) Virtual schools and educational futures. *Educational Technology* November-December.
10. Whipple W. R. (1987), Collaborative Learning: recognizing it when we see it, *Bulletin of the American Association for Higher Education* 40, 2, 3-7.

THE IMPACT OF INTEREST RATES ON THE PERFORMANCE OF BANKS: A CASE STUDY OF CANARA BANK AND HDFC BANK

MANASA ELURU

STUDENT

**COLLEGE OF CO-OPERATION BANKING & MANAGEMENT
KERALA AGRICULTURAL UNIVERSITY
THRISSUR**

SAHLE YEIBIYO ASGHEDE

STUDENT

**COLLEGE OF CO-OPERATION BANKING & MANAGEMENT
KERALA AGRICULTURAL UNIVERSITY
THRISSUR**

SHIFERAW MITIKU TEBEKA

RESEARCH SCHOLAR

**COLLEGE OF CO-OPERATION BANKING & MANAGEMENT
KERALA AGRICULTURAL UNIVERSITY
THRISSUR**

ABSTRACT

This study analyzed the impact of Interest rate hike on the performance of Banks and Canara Bank and HDFC Bank in particular. In order to achieve the objectives, the study employed a comparative case study approach to address the particular phenomena in particular settings. The banks were selected purposefully to assess the impact of Interest rate on the performance of the commercial banks. Secondary source of data were used particularly, from RBI reports, Canara Bank and HDFC Bank annual reports as well as other published and unpublished reports and online materials has been used for the past three financial years (2010 to 2012). The impact of interest rates on the performance of the bank has been assessed on the basis of the bank's asset quality, profitability, liquidity and capital adequacy. Various types of data like interest rates which are applicable in India has been collected and analyzed in terms of its impact on the performance of bank. Percentage growth and Ratio analysis were employed to analyse the data. Accordingly, suggestions and conclusion have been drawn in order to see the banks' competitiveness in the competitive banking industry.

JEL CODE

E5, E4, G1, G28, G32, G33

KEYWORDS

Asset quality ratio, Profitability ratio, Liquidity ratio, Capital adequacy.

INTRODUCTION

The economic progress of a country is sensitive to the monetary policy. Interest rate is a tool used by the RBI to monitor the money flow in the market. RBI has increased Repo Rate and Reverse Repo rate fourteen times within three financial years (2009-2012) to combat inflation. This has risen up the interest rates. This ultimately had impact on the deposit rate, base rate, bench mark prime lending rates and other lending rates of banks. Everything has cost and the cost of money is the interest rate. Hence, the cost of money due to the interest hike increased and the circulation of money have been slowed down. The bank performance is associated with the circulation of money in the market. Therefore, the performance of banks has been affected by the interest rate fluctuations.

It is apparent that banks are sensitive to minor change in interest rates. The continuous increment of interest rates was affected by the overall conditions of economic environment particularly inflation. The rise of interest rates, in turn, affect the condition of the economy in our case the performance of banks by escalating the price of money that results tightening the circulation of money, high spending on borrowing, and reducing the net income of the banks.

LITERATURE REVIEW

A study by John H. Boyd and Bruce Champ (2006), on Inflation, Banking, and Economic Growth and they found higher inflation can decrease the real rate of return on assets. Lower real rates of return discourage saving but encourage borrowing. CRISIL (2011) noted on the High interest rates to impact bank's asset quality. CRISIL believes that the significant increase in interest rates over the past three years can adversely impact the asset quality and profitability of India's banks. Ho and Saunders (1981) stated that a banking firm that maximizes the utility of shareholder wealth selects an optimum loans and deposits that minimize the risks.

Bodie, Kane and Marcus (1996) made it clear that the demand for loans is importantly affected when interest rates increase since this implies higher interest payments. Consequently; the cost of capital is seen to be more expensive. Bank interest rate spreads are an adequate measure of bank intermediation efficiency (Sologoub 2006). Such spreads reflect the costs of intermediation that banks incur, inclusive of their normal profits (Robinson 2002). Mishkin (1977) also proved that lower interest rates increase stock prices which in turn reduce the probability of financial distress.

Ehrmann and Fratscher (2004) analyzed that monetary policy affects individual stocks in a strongly diversified manner. Rizwan and Khan (2007) also examined role of macroeconomic variables and global factors as a consequence of interest rate, exchange rate, industrial production, and money supply to investigate the effect of changes in interest rates on the stock returns and volatility in Karachi stock exchange and the study revealed that conditional market returns and variance parameters are very close to each other.

STATEMENT OF THE PROBLEM

The Reserve Bank of India (RBI) increased the repo and reverse repo and reverse repo rates for fourteen times with in three years to reduce inflation. Though, the involvement of regulatory bodies is essential to help to monitor free movement of market to the preferred direction (RBI home page). However, the interest rates hike causes immense challenge to the national economy in general and in the banking sector in particular. As finance is the blood line of the business, a

tight monetary policy with high and rising interest rates causes high pressure in the circulation of money in the market which adversely impacts the banks performance.

OBJECTIVE OF THE STUDY

The objective of the study was to analyze the impact of Interest rate hike on the performance of Banks.

SCOPE OF THE STUDY

To study the impact of interest rates on bank performance is all-embracing and complex since most bank parameters change with changes in the economic environment and interest rate is just one. Hence, the impact of interest rate on bank performance only covers those aspects concerning to Canara Bank and HDFC (Housing Development Funding Corporation) Bank performance in relation to interest rate hike.

MATERIALS AND METHODS

The study employed a comparative case study approach to address the particular phenomena in particular settings. The banks were selected purposefully to assess the impact of Interest rate on the performance of the commercial banks. The study employed secondary source of data particularly from RBI reports, Canara annual reports and HDFC annual reports as well as other published and unpublished reports including online materials for three financial years (2010 to 2012) in order to assess the impact of interest rates in asset quality, profitability, liquidity and capital adequacy. The data collected were those various types of interest rates applicable in India and analyzed in terms of its impact on the performance of bank. Accordingly, a three years data were measured the impact in the performance of Canara and HDFC banks. Finally, percentage growth and ratio analysis has been employed.

DISCUSSION AND FINDINGS OF THE STUDY

TABLE 1: FINANCIAL PERFORMANCE INDICATORS RATIOS OF THE BANKS (2010-2012)

	Canara Bank			HDFC Bank		
	FY 2010	FY 2011	FY 2012	FY 2010	FY 2011	FY 2012
Repo rate	5	6.75	8.5	5	6.75	8.5
Asset Quality Ratios						
NPA/gross loans & advances	1.53	1.48	1.73	1.05	1	1.42
NPA/total asset	0.97	0.93	1.06	0.61	0.59	0.82
Net NPAs / Net Loans	1.08	1.11	1.47	0.18	0.18	0.31
Total provisions/ total loans & advances	1.22	0.99	1.16	2.39	1.94	2.76
Profitability Ratios						
Net Interest Income(NII)/Total income	65.93	73.26	71.15	66.71	69.83	69.63
Noninterest income/ Total Income	34.07	26.74	28.85	4.14	30.37	33.29
NII /Net loans and advances	3.40	3.71	3.33	6.60	6.29	6.69
G. total income/total loans & Advances	5.08	5.01	4.62	68.55	9	9.87
Liquidity Ratios						
Liquid asset /total asset	7.40	9.07	7.45	10.74	6.21	13.49
Liquid asset/customer deposits	8.41	10.47	8.64	14.33	8.59	17.98
Total loans and advances/customer deposits	72.26	71.97	71.19	77.58	80.92	76.57
Capital Adequacy Ratios						
Tier I capital ratio	8.54	10.87	10.35	13.26	12.23	11.60
Tier II capital ratio	4.89	4.51	3.41	4.18	3.99	4.92

Note: figures in the tables are percentage, FY indicates financial year

Source: Annual report of Canara Bank and HDFC Bank

ASSET QUALITY RATIOS

The ratio of total provisions to total loans and advances grew from 1.22% to 1.16 % within three years in Canara Bank whereas, 2.39 % to 2.76% in HFDC bank from the year 2010 to 2012. While, the Net NPA to net loans and advances increased from 1.08 to 1.44 percent and from 0.18 to 0.31 percent in Canara bank and HDFC Bank respectively. These ratios reveal small increase in NPA ratios which results in bad Bank performance.

When the NPA ratio increases the asset quality also becomes more standard and substandard and assets become changing to loss assets. Hence, the bank has to make more provisions which are not expected to bear income. The increases in the provisions show the amount profit frozen to cover the loss in bad loans. The data from the table reveals that, there is a considerable increase in the non performing assets from the year 2010 to 2012. This is mainly because, the increase in the bad loans both in the form of interests and the principle amounts which is not paid back by the customers.

The asset performance of the HDFC bank from the past three years (2010 to 2012) was not the same as in case of Canara bank. In HDFC bank there is a considerable increase in the nonperforming assets which is less when compared to Canara bank. This problem could be mainly due to the increase in the interest rates. Comparing all the above ratios the Non performing asset has increased in the accounting year ended in 2012. Hence, this can bring to a close that the year 2012 has more bad debts compared to the preceding two years.

An increase in NPA account not only reduces profitability of banks by provisioning in the profit and loss account, but also their carrying cost is also increased which results in excess & avoidable management attention. With rising in interest rates the banks' interest incomes have declined considerably which would result in the poor asset performance of the bank. With rising in interest rates the banks' interest incomes has been declined considerably though, banks may not have enough profits to make provisions for NPAs.

PROFITABILITY RATIO

In Canara Bank the ratio of Net Interest Income (NII) to total income has slightly grown from 65.93% to 71.15% as the NII and total Income have equally grown at CAGR 16.15%. On the other hand, the ratio of noninterest income to total income also decreased from 34.85% to 28.07 % at the same time the total income grew a bit better. The Ratio of NII to Net loans and advances and the gross total income to total loans and advances have also decreased from 5.08 % to 4.62 % and from 3.40 % to 3.33 % respectively. This is because of the loans has been increased higher than the NII and gross total income. Whereas, in HDFC Bank the ratio of NII to Total Income increased from 66.71% to 69.63% and the ratio of Noninterest income to total income decreased from 33.29% to 30.36%. Similarly, the ratio of NII to Net loans and advances slightly decreased from 6.69% to 6.20%. The ratio of gross income to total loans and advances has declined substantially from 9.87% to 9%. It has made it clear that the income has declined from its proportion in 2010.

The effort made by the bank to increase selling more advances did not yield enough income. Hence, the impact of interest rate is clearly marked on the deterioration of profitability in Canara Bank. This clearly shows that there was an increase in both interest and noninterest income while total income was much below than its proportion in 2010 and the interest and noninterest income has grown substantially. With rising in interest rates, the banks gross interest income increased but the net interest incomes declined considerably. Hence, the interest rate hike can be the reason. From the table it is clear that there is decrease in the percentage of gross income over loans and advances same as in Canara bank due to decisions taken by the bankers to maximize profits. In this case, a purely competitive bank issues loans such that the marginal cost of an additional loan equals the marginal revenue from such loans. The marginal revenue from an additional loan is simply the market determined interest rate. Profits are maximized when marginal cost equals interest rate. Therefore, it is evident that profits

can be maximized if more and more loans are extended at a given rate of interest. This may result in poor assessment of the borrower leading to new generation of NPAs. The increase in NPAs finally leads to decrease in profits and performance of the banks. There is increase in the noninterest income and net interest income. In the profitability ratio parameter the performance of HDFC bank accounts better than the performance of Canara bank but both banks were affected by the interest hike.

LIQUIDITY RATIOS

In Canara Bank the ratio of liquid asset to total asset and liquid asset to costumers' deposits grew especially in the financial year 2011 hence, higher liquidity is sign of bad performance. Whereas, the ratio of total loans and advances to the customers' deposits decreased gradually as the interest rates increases from 72.26% to 71.19%.

While, in HDFC Bank the ratio of liquid assets to total assets increased from 10.74% to 13.49% from year 2010 to 2012 while, the ratio of liquid asset to customer deposit increased from 14.33% to 17.98%. The ratio of total loans and advances to Customers deposits decreased from 77.58% to 76.57% from year 2010 to 2012. This is suggesting that the customers' deposits also grew slower than asset.

An increase in liquid assets is mainly because of the increase in the idle money with the bank which is not borrowed by the customers due to high interest rates. With the increase in the interest rates the customers should pay the more amounts in the form of interest to the banks. Because of the high interest, there is decline in the borrowings from the banks as well as there is liquid cash with the banks which is in greater proportion when compared with the deposits. Thus, the liquidity is un-invested money accumulated at the bank because of the cost of leverage money can't easily be lent to customers. The increase in the interest rates will leads to the declining trends in the loans taken by the customers which leads to the decrease in the proportion of loans and advances with deposits. Because of increase in interest rates customers may not willing to take loans from banks as they should have to pay the more interest to the banks.

CAPITAL ADEQUACY RATIOS

The Tier II capital in Canara Bank, which can absorb losses in the event of a winding-up decreased from 4.89% to 3.41% which is not desirable because, it provides a lesser degree of protection to depositors. While, in HDFC bank Tier II capital has improved from 4.18% to 4.92% which indicates that the bank is stronger in case it faced with the case of weathering away all the funds can be called back to save the business hence the funds are invested in safer projects. This increase can be attributed to the success of HDFC which has scored in noninterest income.

Hence, with the increase in interest rates the bank's financial strength seems to be weakened. The Reserve Bank of India (RBI), currently prescribes a minimum capital of 9% of risk-weighted assets, which is higher than the internationally prescribed eight percent.. Most banks in India have a capital adequacy of more than 12 %. A bank with a higher capital adequacy is considered safer because if its loans go bad, it can cover up from its capital. However, in the case of Canara bank most likely due to the interest rate hike, it is much less than industry average in terms of Tier I capital adequacy ratio. This indicates that the bank had really bad time that consumed or reduced the assets in both Teir I and Teir II capital. This shows the reduction in owned capital from 2011 to 2012.

SUGGESTIONS

The increase in the Interest rates was a mixed blessing while reducing the inflation which affected the performance of the banks and blocked the flow of fund in the market. Which has very bitter effect in the economic environment specially; in the recent times the impact has become clear when the industrial growth rate, GDP and exchange value of Rupee has been negatively impacted. It has also fuelled the sustainability of inflation due to loss in production capacities of industries. Although, money is pulled out of market, demand pulled inflation has been enhanced. Therefore, the increase of repo rate and reverse repo rate was not the best measure hence it has to be reversed back to the lowest possible to support the production capacity of the economy because, strong and well supported production can only heal inflation. The financial system has to establish an efficient and effective interest hedging mechanism that would enables the financial intermediations to be secure.

Additionally, it is suggestible area to be addressed for undertaking further studies on the impact of GDP, inflation and the devaluation of Value of domestic currency on the performance of banks and the impact of interest rate hike on Industrial growth, employment, entrepreneurial growth and foreign exchange.

CONCLUSION

In the context of escalated inflationary scenario increasing interest rate was introduced by RBI as a standardized strategy to fight inflation. Interest rate is major macroeconomic factor (like GDP, inflation and exchange rates) that affects the performance of banks in various ways. In Canara bank the spread percent of asset, the ROA, capital adequacy, and profitability declined while the NPA, interest expended and liquidity soared that led the bank to manifests the disadvantages of interest rate hike in the banks.

The effect of interest rates can be reduced by protecting the profit of the banks through other sources of income like in the case in HDFC bank which excelled in the investment income and other non-interest income. The strategy of maintaining the lending rates stable and as low as possible in volatile and interest rates hike scenario benefited HDFC bank. To conclude the elevated interest rates adversely affects the profitability, asset quality, and return on asset, liquidity, and capital adequacy of the banks.

LIMITATIONS OF THE STUDY

This is a Case Study for Canara and HDFC banks and some essential data were used from the annual reports of public sector banks. Further, the study largely depended on secondary data. Access to some data was not possible as it is considered confidential information; as a result the researchers could not perform certain analyses. For instance, data for computation of capital Adequacy Ratio of Tier I and Tier II were not accessible to the public.

REFERENCES

1. Bodie, Kane and Marcus; (1996), " Investments." 5th Ed., McGraw-Hill ,Irwin
2. Canara Bank Home Page: <http://www.canarabank.com/English/Scripts/pblinternatbranches.aspx> : accessed 25 January 2012
3. CRISIL home page of 2011 : <http://www.crisil.com/>
4. Ehrmahh, M. and Fratscher M.(2004), "Taking Stock: Monetary Policy Transmission to Equity Markets", Journal of Money, Credit and Banking, Vol.36, No.4. 719-737.
5. HDFC home page :<http://www.hdfcbank.com/>
6. John H. Boyd & Bruce Champ .(2006). Inflation, banking, and economic growth" Economic Commentary, Federal Reserve Bank of Cleveland, issue May 15
7. Mishkin, Frederic. (1977). "What Depressed the Consumer? The Household Balance Sheet and the 1973-1975 Recession," Brookings Papers on Economic Activity1, 123- 164.
8. RBI Bulleting.(2011). Supplement to RBI Bulleting , Financial stability report Published by Reserve Bank of India Mumbai.
9. Reserve Bank of India home page: <http://www.rbi.org.in/> accessed 2 January 2012
10. Rizwan, Faisal M.; Khan, Ullah S. (2007). Stock Return Volatility in Emerging Equity Market (Kse): The Relative Effects of Country and Global Factors, International Review of Business Research Papers, Vol.3, No.2, pp. 362 – 375.
11. Robinson, J.W. (2002). Commercial Bank Interest Rate Spreads in Jamaica: Measurement, Trendand Prospects. www.boj.org.jm/uploads/pdf/papers_pamphlets.pdf. accessed on 12 February 2012
12. Saunders and Schumacher.(2000). Regulatory Trends and Macroeconomic Factors, Source Economic survey (2011-12) .Financial Intimidation and Markets Echap 5(P 106).
13. Sologoub, D. (2006). The determinants of Bank Interest Margins and Profitability: Case of Ukraine.
14. www.bof.fi/bofit/seminar/bofcef06/sologub.pdf. 2 January 2012

REQUEST FOR FEEDBACK

Dear Readers

At the very outset, International Journal of Research in Computer Application and Management (IJRCM) acknowledges & appreciates your efforts in showing interest in our present issue under your kind perusal.

I would like to request you to supply your critical comments and suggestions about the material published in this issue as well as on the journal as a whole, on our E-mail infoijrcm@gmail.com for further improvements in the interest of research.

If you have any queries please feel free to contact us on our E-mail infoijrcm@gmail.com.

I am sure that your feedback and deliberations would make future issues better – a result of our joint effort.

Looking forward an appropriate consideration.

With sincere regards

Thanking you profoundly

Academically yours

Sd/-

Co-ordinator

ABOUT THE JOURNAL

In this age of Commerce, Economics, Computer, I.T. & Management and cut throat competition, a group of intellectuals felt the need to have some platform, where young and budding managers and academicians could express their views and discuss the problems among their peers. This journal was conceived with this noble intention in view. This journal has been introduced to give an opportunity for expressing refined and innovative ideas in this field. It is our humble endeavour to provide a springboard to the upcoming specialists and give a chance to know about the latest in the sphere of research and knowledge. We have taken a small step and we hope that with the active co-operation of like-minded scholars, we shall be able to serve the society with our humble efforts.

Our Other Journals

