

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, IT & MANAGEMENT

I
J
R
C
M



A Monthly Double-Blind Peer Reviewed Refereed 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., Index Copernicus Publishers Panel, Poland,

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

as well as in Cabell's Directories of Publishing Opportunities, U.S.A.

Circulated all over the world & Google has verified that scholars of more than Hundred & Twenty One 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

www.ijrcm.org.in

CONTENTS

Sr. No.	TITLE & NAME OF THE AUTHOR (S)	Page No.
1.	EFFECT OF SPIRITUAL TOURISM ON FINANCIAL HEALTH OF THE UTTARAKHAND STATE OF INDIA <i>HIMADRI PHUKAN, Z. RAHMAN & P. DEVDUTT</i>	1
2.	A FUZZY EOQ INVENTORY MODEL WITH LEARNING EFFECTS INCORPORATING RAMP –TYPE DEMAND, PARTIAL BACKLOGGING AND INFLATION UNDER TRADE CREDIT FINANCING <i>SAVITA PATHAK & DR. SEEMA SARKAR (MONDAL)</i>	8
3.	DETERMINANTS OF CAPITAL STRUCTURE DECISIONS: EVIDENCE FROM ETHIOPIAN MANUFACTURING PRIVATE LIMITED COMPANIES (PLCs) <i>DR. FISSEHA GIRMAY TESSEMA & Y. L. LAVANYA</i>	19
4.	INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) AND ORGANIZATIONAL PRODUCTIVITY AND GROWTH: UNIVERSITY OF BENIN IN PERSPECTIVE <i>OMOREGBE OMORODION, DR. ANTHONY.A. IJEWERE & BELLO DEVA VINCENT</i>	29
5.	ORGANIZATION DEVELOPMENT IN CITY TRAFFIC POLICE LAHORE- A CASE STUDY <i>BINISH NAUMAN</i>	34
6.	THE RESPONSIBILITY OF THE AUDITOR ABOUT DISCOVERING FRAUD THE FINANCIAL STATEMENTS ACCORDING TO THE IAS. NO. 240 <i>SULTAN HASSAN MOHAMMED AHMED</i>	40
7.	A PERCEPTUAL STUDY ON THE CRITICAL SUCCESS FACTORS FOR ERP ADOPTION IN THE SMALL AND MEDIUM ENTERPRISES <i>S. VIJAYAKUMAR BHARATHI & DR. SHRIKANT PARIKH</i>	44
8.	INFORMATION TECHNOLOGY TOOLS TOWARDS OPTIMIZING ENERGY CONSERVATION AND ENVIRONMENTAL PROTECTION INITIATIVES <i>NISHIKANT C. PRATAPE</i>	50
9.	COST REDUCTION INNOVATION IN SME's – AN EMPHERICAL STUDY (WITH REFERENCE TO HANDLOOM SILK SAREES IN CHIKKABALLAPUR DISTRICT) <i>DR. S. MURALIDHAR, NARASAPPA. P.R, K.S. SAILAJA & K. SHARADA</i>	52
10.	INTERDEPARTMENTAL SOCIAL NETWORK ANALYSIS – A PRACTICAL APPROACH <i>DR. J. SRINIVASAN & K. UMA DEVI</i>	58
11.	AWARENESS TOWARDS E-MARKETS AMONG THE PEOPLE OF KURNOOL CITY OF A. P. <i>DR. G. RAMA KRISHNA, DR. A. HARI HARA NATH REDDY, K. UMA SHANKAR & N.NARASIMHAM</i>	62
12.	MENTAL HEALTH PERSPECTIVES IN ORGANIZATIONS: ISSUES AND CHALLENGES <i>SARVESH SATIJA</i>	66
13.	DOES COMPETATIVE ADVANTAGE WORK IN E.BUSINESS? <i>DR. M. P. NAYAK</i>	77
14.	E-GOVERNANCE AS A CONTRIBUTION TO CITIZENS' IDENTITY - A DISTRICT LEVEL STUDY OF PUNE MUNICIPAL CORPORATION <i>DR. R. K. MOTWANI, DR. MANISH BADLANI & PUSHPA PARYANI</i>	82
15.	DETERMINANTS OF MIGRATION IN PUNJAB, INDIA: A CASE STUDY OF AMRITSAR DISTRICT <i>DR. HARINDER SINGH GILL, JATINDER BIR SINGH & SHIVANI SINGH</i>	85
16.	CONCEPTUAL FRAMEWORK OF PERFORMANCE MANAGEMENT: AN INDIAN PRESPECTIVE <i>DR. SATYAWAN BARODA, CHHAVI SHARMA & PREETI AGGARWAL</i>	89
17.	A COMPARATIVE STUDY OF WORK AUTONOMY AND WORK ENVIRONMENT OF SELECTED ENGEENIARING UNITS OF VITTHAL UDYOGNAGAR <i>RIDDHI A. TRIVEDI & JAIMIN H. TRIVEDI</i>	96
18.	MICROFINANCE IN FINANCIAL INCLUSION <i>DR. S. RAJARAJESWARI & R. SARANYA</i>	99
19.	A SURVEY OF STATISTICAL DISTRIBUTION OF JOURNAL IMPACT FACTORS <i>RAJESHWAR SINGH</i>	103
20.	A STUDY ON STRUTURE AND GROWTH OF STEEL INDUSTRY IN INDIA <i>DR. S. SIVAKUMAR</i>	106
21.	A STUDY: EMPLOYEE'S JOB SATISFACTION, ITS ANTECEDENTS AND LINKAGE BETWEEN CUSTOMER SATISFACTION AND EMPLOYEE SATISFACTION <i>LALITA KUMARI</i>	112
22.	PRODUCT DEVELOPMENT STRATEGIES FOR ROCKET MOTOR DEVELOPMENT - A STUDY ON COST AND TIME COMPRESSION STRATEGIES <i>A. LAXMI & SURESH CHANDRA.CH</i>	120
23.	AN ASSESSMENT ON SERVICE QUALITY IN INDIAN INSURANCE INDUSTRY WITH SPECIAL REFERENCE TO UTTAR PRADESH REGION <i>PRIYANKA ANJOR</i>	126
24.	IMPACT OF REFORMS ON CAPITAL ADEQUACY REQUIREMENTS OF INDIAN BANKS <i>SAHILA CHAUDHRY</i>	130
25.	UNDERSTANDING THE EFFECT OF ENVIRONMENT FRIENDLY TECHNOLOGY USAGE ON CONSUMER PURCHASING PREFERENCES IN KOLKATA CITY <i>HINDOL ROY</i>	134
	REQUEST FOR FEEDBACK	138

CHIEF PATRON

PROF. K. K. AGGARWAL

Chancellor, Lingaya's University, Delhi
Founder Vice-Chancellor, Guru Gobind Singh Indraprastha University, Delhi
Ex. Pro Vice-Chancellor, Guru Jambheshwar University, Hisar

PATRON

SH. RAM BHAJAN AGGARWAL

Ex. State Minister for Home & Tourism, Government of Haryana
Vice-President, Dadri Education Society, Charkhi Dadri
President, Chinar Syntex Ltd. (Textile Mills), Bhiwani

CO-ORDINATOR

AMITA

Faculty, Government M. S., Mohali

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. M. N. SHARMA

Chairman, M.B.A., Haryana College of Technology & Management, Kaithal

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

CO-EDITOR

DR. BHAVET

Faculty, M. M. Institute of Management, Maharishi Markandeshwar University, Mullana, Ambala, Haryana

EDITORIAL ADVISORY BOARD

DR. RAJESH MODI

Faculty, Yanbu Industrial College, Kingdom of Saudi Arabia

PROF. SANJIV MITTAL

University School of Management Studies, Guru Gobind Singh I. P. University, Delhi

PROF. ANIL K. SAINI

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

DR. SAMBHAVNA

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

DR. MOHENDER KUMAR GUPTA

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

DR. SHIVAKUMAR DEENE

Asst. Professor, Government F. G. College Chitguppa, Bidar, Karnataka

MOHITA

Faculty, Yamuna Institute of Engineering & Technology, Village Gadholi, P. O. Gadholi, Yamunanagar

ASSOCIATE EDITORS**PROF. NAWAB ALI KHAN**

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

PROF. ABHAY BANSAL

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

PROF. A. SURYANARAYANA

Department of Business Management, Osmania University, Hyderabad

DR. ASHOK KUMAR

Head, Department of Electronics, D. A. V. College (Lahore), Ambala City

DR. SAMBHAV GARG

Faculty, M. M. Institute of Management, Maharishi Markandeshwar University, Mullana, Ambala, Haryana

DR. V. SELVAM

Divisional Leader – Commerce SSL, VIT University, Vellore

DR. PARDEEP AHLAWAT

Reader, Institute of Management Studies & Research, Maharshi Dayanand University, Rohtak

S. TABASSUM SULTANA

Asst. Professor, Department of Business Management, Matrusri Institute of P.G. Studies, Hyderabad

SURJEET SINGH

Asst. Professor, Department of Computer Science, G. M. N. (P.G.) College, Ambala Cantt.

TECHNICAL ADVISOR**AMITA**

Faculty, Government H. S., Mohali

MOHITA

Faculty, Yamuna Institute of Engineering & Technology, Village Gadholi, P. O. Gadholi, Yamunanagar

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 area of Computer, Business, Finance, Marketing, Human Resource Management, General Management, Banking, Insurance, Corporate Governance and emerging paradigms in allied subjects like Accounting Education; 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; Monetary Policy; Portfolio & Security Analysis; Public Policy Economics; Real Estate; Regional Economics; Tax Accounting; Advertising & Promotion Management; Business Education; Management Information Systems (MIS); Business Law, Public Responsibility & Ethics; Communication; Direct Marketing; E-Commerce; Global Business; Health Care Administration; Labor 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; Public Administration; Purchasing/Materials Management; Retailing; Sales/Selling; Services; Small Business Entrepreneurship; Strategic Management Policy; Technology/Innovation; Tourism, Hospitality & Leisure; Transportation/Physical Distribution; Algorithms; Artificial Intelligence; Compilers & Translation; Computer Aided Design (CAD); Computer Aided Manufacturing; Computer Graphics; Computer Organization & Architecture; Database Structures & Systems; Digital Logic; Discrete Structures; Internet; Management Information Systems; Modeling & Simulation; Multimedia; Neural Systems/Neural Networks; Numerical Analysis/Scientific Computing; Object Oriented Programming; Operating Systems; Programming Languages; Robotics; Symbolic & Formal Logic and Web Design. The above mentioned tracks are only indicative, and not exhaustive.

Anybody can submit the soft copy of his/her manuscript **anytime** in M.S. Word format after preparing the same as per our submission guidelines duly available on our website under the heading guidelines for submission, at the email addresses: infoijrcm@gmail.com or info@ijrcm.org.in.

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, 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.

WEBSITE

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

INTERDEPARTMENTAL SOCIAL NETWORK ANALYSIS – A PRACTICAL APPROACH

DR. J. SRINIVASAN
ASSOCIATE PROFESSOR
PG DEPARTMENT OF COMMERCE
ARIGNAR ANNA GOVERNMENT ARTS COLLEGE
CHEYAR

K. UMA DEVI
ASST. PROFESSOR & HEAD
BBA DEPARTMENT
GURU NANAK COLLEGE (SHIFT –II)
VELACHERY

ABSTRACT

Companies often restore to interdepartmental team work to invent new product line, discuss new promotion strategy or evolve long term plan and short-term tactics. To derive optimal benefit from these teams, it is imperative to understand the team dynamics including who is the natural leader, who will help in quick information dispersal, who has the most influence in the team and how cohesive is the team. One of the tools used to understand this team dynamics is SNA or Social Network Analysis. This study was carried out at a major Automobile parts manufacturer in Chennai. The objectives of the study were: identify the most influential personnel in the team, identify key member who forms the central figure, identify the member who has access to information flow and identify the member who can be used to disseminate information among the team. 25 employees in the most active interdepartmental team were analyzed. The network was analyzed for Degree Centrality, Closeness Centrality and Betweenness Centrality and key personnel were identified to fulfill the study objectives.

KEYWORDS

Social Network Analysis, Centrality Measures, SNA.

INTRODUCTION

The increased competitive environment and squeezing profit margins have forced companies to find new ways to tackle the competition. Interdepartmental teams in companies try to come up with new product line, discuss new promotion strategy or evolve long term plan and short-term tactics. To derive optimal benefit from these teams, it is imperative to understand the team dynamics including who is the natural leader, who will help in quick information dispersal, who has the most influence in the team and how cohesive is the team. One of the tools used to understand team dynamics is SNA or Social Network Analysis. Measuring and mapping of flow between people, groups, organizations and other entities is called Social Network Analysis. It is often abbreviated as SNA. The nodes in the network are the people and groups while the links show relationships between the nodes. Social network analysis is being used in varied fields like study of local communities, politics and power, lobbying, voting network, unclinking terrorist network, economic conspiracies, online social communities, data mining of emails and varied other socioeconomic fields.

One of the Chennai based Auto Parts Company wanted to analyse and get optimal advantage from its most active interdepartmental team. The authors with the help of personnel department carried out Social Network Analysis to achieve the objectives.

OBJECTIVES

1. Identify natural leader in the network instead of the appointed leader.
2. Identify the most influential personnel in the interdepartmental network.
3. Identify the member who has access to information flow in the network and who forms the anchor between various departments in the network.
4. Identify the member who can be used to disseminate information.
5. Measure the length of network.

METHOD**PARTICIPANTS**

Twenty five employees from of the most active interdepartmental team were identified for survey. The key personnel were surveyed to find whom they will contact for work related and personal related doubts. If an employee A looks to personnel B for advice or opinion then an arrow is drawn from node A to node B. The pattern of direct and indirect arrows surrounding a node helps determine the influence of that person.

TABLE 1: PARTICIPANT DESCRIPTIVE STATISTICS

Employee Department	Employee Code	Number of Employees
Marketing	MM01 to MM10	10
Production	PP01 to PP07	7
Finance	FF01 to FF06	6
R&D	RD01 to RD02	2

MEASURE AND PROCEDURE

The participants were administered questionnaire based on Organizational Network Survey. The data was fed into UCInet Matrix spreadsheet editor. The matrix was the basis for calculation of various Social Network indexes including Degree Centrality, Betweenness Centrality and Closeness Centrality. Netdraw software was used for drawing the organisation's interdepartmental personnel Network and Ucinet software was used for analysis.

Key terms: To understand Social Network Analysis, it is imperative to understand some terms. They are delineated below:

1. Nodes: Nodes are people connected to the network. Nodes are also called 'actor'.
2. Size of Network: The size of a network can be determined in terms of the number of nodes of the network, alternatively, as the number of edges in the network. Size in terms of nodes can be critical for the structure of social relations because of the limited resources that each actor may have for building and maintaining ties.
3. Degrees: The number of direct connections a node has.
4. Degree Centrality: Network activity for a node is measured by using the concept of degrees. Common wisdom in social networks is "the more connections, the better." This is not true. What is important is where those connections lead to, and how they connect the otherwise unconnected.

5. Betweenness Centrality : Betweenness centrality views an actor as being in a favored position to the extent that the actor falls on the geodesic paths between other pairs of actors in the network.
6. Degree Centrality: Personnel who have more ties to other personnel may be in advantaged positions. Because they have many ties, they may have alternative ways to satisfy needs, and hence are less dependent on other individuals. A very simple, but often very effective measure of a personnel's centrality and power potential is their degree. In undirected data, actors differ from one another only in how many connections they have. With directed data, however, it can be important to distinguish centrality based on in-degree from centrality based on out-degree. If an actor receives many ties, they are often said to be prominent, or to have high prestige. That is, many other actors seek to direct ties to them, and this may indicate their importance. Actors who have unusually high out-degree are actors who are able to exchange with many others, or make many others aware of their views. Actors who display high out-degree centrality are often said to be influential actors.

SOFTWARES FOR NETWORK ANALYSIS

Many software are available for analysis. Famous software are - UCInet, Cytoscape, ORA, Pajek, GUESS. Private GUI packages are Orgnet, Keyhubs, and KXEN. Other SNA platforms, such as Idir SNA Plus, have been developed for industries such as telecoms and online gaming where massive data sets are analysed. AutoMap, cFinder, Detica NetReveal, Dsicourse Network Analyzer, DyNet, EgoNet, Gephi, Graphviz, Idir SNA Plus, igraph, iPoint, JUNG Framework, NetMiner, SNA-Network are some other main application packages.

DATA ANALYSIS AND RESULTS

DEGREE CENTRALITY

Analysis of degree centrality of the interdepartmental employee network (Appendix: Figure 1) is shown in Table 2. 'In Degree' Centrality refers to the number of ties that the actor (employee) receives and 'Out Degree' centrality refers to the ties that an actor seeks to have. Employee Numbers MM01 and PP02 have the highest out degree of 8 and 8. These two employees are the best node to disseminate information to the network. The 'In Degree' is highest for Employees MM06 and MM10 with a score of 7. It can be concluded that they are the most influential employees.

TABLE 2: DEGREE CENTRALITY

Emp No.	Out Degree	In Degree
MM01	8	4
PP02	8	5
MM04	6	6
MM09	6	4
MM08	5	7
PP07	5	4
MM07	5	4
PP01	5	3
MM03	5	5
PP06	5	6
MM06	5	7
MM02	4	4
MM10	4	7
MM05	4	5
FF05	4	2
PP04	3	5
FF03	3	0
FF01	2	1
PP03	2	6
FF02	2	0
RD02	2	1
FF04	1	2
RD01	1	2
FF06	1	1
PP05	0	5

EIGEN VALUE

Eigen value can be used to determine which employee is more central among high degree employee. It was found in the earlier table that the 'In Degree' is highest for Employees MM06 and MM10 with a score of 7. The 'In Eigen' vector value (Table 3) for Employee MM10 (SCORE: 9.604) is the highest. It means most employees seek his help in the interdepartmental network. Thus he is the natural leader of the network.

TABLE 3: THE EIGEN VECTOR

Emp No.	Out Eigen Vector	In Eigen Vector
MM01	8.769	4.342
MM02	4.044	5.847
MM03	7.361	5.728
MM04	8.227	5.718
MM05	5.268	8.881
MM06	6.304	9.277
MM07	8.415	6.565
MM08	7.147	7.677
MM09	8.956	5.409
MM10	6.019	9.604
PP01	4.672	2.78
PP02	5.624	3.547
PP03	2.036	6.079
PP04	2.009	2.839
PP05	0	4.534
PP06	3.603	5.102
PP07	2.586	1.227
FF01	1.528	0
FF02	2.006	0
FF03	0.831	0
FF04	1.173	0.691
FF05	3.575	1.808
FF06	0.697	0
RD01	0.504	0.846
RD02	0.895	0.352

CLOSENESS CENTRALITY

Analysis of Closeness centrality of the interdepartmental employee network (Appendix: Figure 1) is shown in Table 4. 'inFarness' is the sum of the column of the geodesic distance. 'OutFarness' is the sum of row of the geodesic distance. Employee Number P05 is the closest to highest number of other employees (inCloseness score 43.63). This employee can be used to spread information or new skill in the fastest possible time.

TABLE 4: CLOSENESS CENTRALITY

Emp No.	inFarness	outFarness	inCloseness	outCloseness
P05	55	600	43.636	4
PP03	71	159	33.803	15.094
MM08	71	142	33.803	16.901
MM04	71	143	33.803	16.783
PP06	71	146	33.803	16.438
MM06	72	142	33.333	16.901
MM07	74	144	32.432	16.667
MM10	74	147	32.432	16.327
MM03	75	139	32	17.266
PP02	75	137	32	17.518
PP04	78	150	30.769	16
MM05	80	142	30	16.901
MM02	80	145	30	16.552
MM09	81	143	29.63	16.783
MM01	81	133	29.63	18.045
PP07	84	149	28.571	16.107
PP01	85	139	28.235	17.266
FF05	89	141	26.966	17.021
FF04	92	163	26.087	14.724
RD01	96	165	25	14.545
RD02	108	159	22.222	15.094
FF06	553	137	4.34	17.518
FF01	576	111	4.167	21.622
FF03	600	135	4	17.778
FF02	600	81	4	29.63

BETWEENNESS CENTRALITY

A node with high betweenness has great influence over what flows - and does not - in the network. They form the 'broker' and know the general thought process of the network. Table 5 shows that Employee numbers PP02 and MM01 have 76.9 and 64.7 betweenness. They form the anchor between various departments in the network. To understand the viewpoint of network and to understand the information flow, these employees can be tapped by the management.

TABLE 5: BETWEENNESS CENTRALITY

Emp No.	Betweenness	nBetweenness
PP02	76.978	13.945
MM01	64.799	11.739
MM06	56.105	10.164
MM05	51.969	9.415
FF05	51.82	9.388
MM08	50.021	9.062
PP06	40.648	7.364
PP07	40.464	7.33
MM04	36.751	6.658
MM07	36.212	6.56
MM10	33.879	6.137
MM03	32.17	5.828
PP01	30.073	5.448
PP03	21.969	3.98
PP04	15.896	2.88
MM02	8.881	1.609
FF04	8.266	1.497
MM09	7.088	1.284
FF06	6.344	1.149
RD01	4.056	0.735
FF01	3	0.543
RD02	2.611	0.473
FF03	0	0
PP05	0	0

LIMITATION

The study has the following limitations:

1. The results of this network analysis cannot be extrapolated to other similar shaped network as the nodes and connections in the network may differ in other studies.
2. If some key employees studied in the network leave the organization, the entire network needs to be reanalyzed.
3. The selection of participants was based on Management and employees input. Selection could have been made more objective by management independent survey.

DISCUSSION

Analysis of the Interdepartmental Social Network leads to identification of key personnel of the network.

1. The natural leader in the interdepartmental network is Employee MM10 ('In Eigen' vector value: 9.604).
2. The two influential personnel in the interdepartmental network are Employees MM06 and MM10 with a 'In Degree' score of 7 each.
3. The members who have access to information flow in the network and who form the anchors between various departments in the network are Employee numbers PP02 and MM01 with 'betweenness' value of 76.9 and 64.7 respectively.
4. The member who can be used to disseminate information is Employee Number P05 with a 'inCloseness' score of 43.63. This employee can be used to spread information or new skill in the fastest possible time.
5. Measure the length of network.

CONCLUSION AND IMPLICATIONS FOR FUTURE RESEARCH

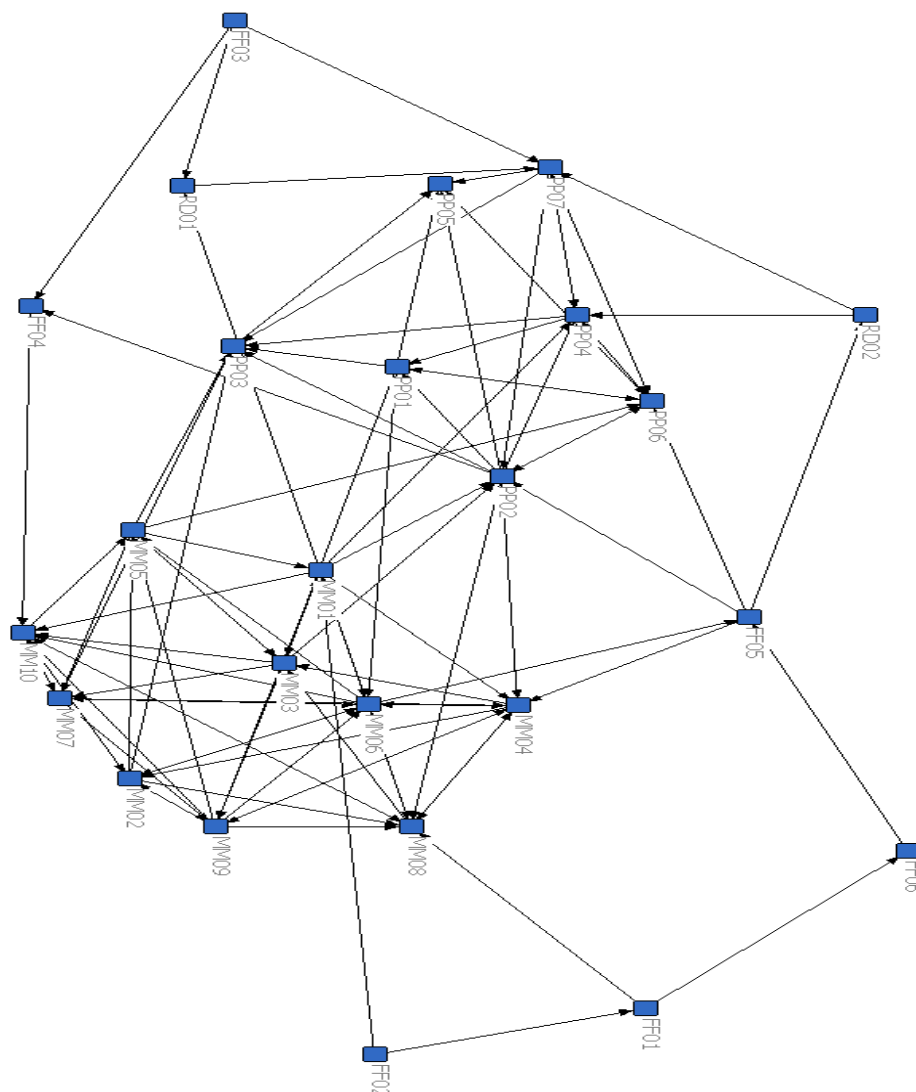
This study has contributed to research in practical use of Social Network Analysis. By establishing that the analysis will be helpful in critical management – interdepartmental negotiations, the study paves the way for other similar research in organization, not only in interdepartmental negotiations but also in routine management aspects like network study of multidisciplinary teams, study of interdepartmental projects, intra department issues, Branding, CRM and similar organizational issues.

REFERENCES

1. Allen, J., James, A. D., & Gamlen, P. (2007). Formal versus informal knowledge networks in R&D: a case study using social network analysis. *R&D Management*, 37(3), 179-196. Blackwell Publishing Limited.
2. Freeman, Linton. (2006). *The Development of Social Network Analysis*. Vancouver: Empirical Pres, 2006; Wellman, Barry and S.D. Berkowitz, eds., 1988. *Social Structures: A Network Approach*. Cambridge: Cambridge University Press.
3. Izquierdo, L. R., & Hanneman, R. A. (2006). *INTRODUCTION TO THE FORMAL ANALYSIS OF SOCIAL NETWORKS USING MATHEMATICA*. Network, 60. University of California–Riverside, CA.
4. Kronenfeld, D. B. (2001). Introduction: The uses of formal analysis re cognitive and social issues. *Anthropological Theory*, 1(2), 147-172.
5. Tilly, Charles. (2005). *Identities, Boundaries, and Social Ties*. Boulder, CO: Paradigm press. ISBN 1-59451-131-4

APPENDIX

FIGURE 1: SOCIAL NETWORK GRAPH OF KEY INTERDEPARTMENTAL MEMBERS



- The numbers in the Graph nodes represent the Employee Numbers (Dummy numbers have replaced the actual employee number in this paper to maintain privacy of employees).
- The Graph picture has been provided as separate file (interdepartmental network.bmp) for publication.

REQUEST FOR FEEDBACK

Dear Readers

At the very outset, International Journal of Research in Commerce, IT 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-mails i.e. **infoijrcm@gmail.com** or **info@ijrcm.org.in** 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

