

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, ECONOMICS & MANAGEMENT

I
J
R
C
M



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.](#), [Google Scholar](#),

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

[The American Economic Association's electronic bibliography, EconLit, U.S.A.](#),

[Index Copernicus Publishers Panel, Poland](#) with [IC Value of 5.09](#) & [humber of libraries all around the world](#).

[Circulated all over the world & Google has verified that scholars of more than 5000 Cities in 187 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.	GEOGRAPHIC DIVERSIFICATION AND BANK PERFORMANCE: EVIDENCE FROM ETHIOPIA <i>DR. P. HRUSHIKESAVA RAO & ELEFACHEW MOSSISA</i>	1
2.	RELATIONSHIP BETWEEN FIRM RESOURCES AND SMALL FIRM GROWTH IN BANGLADESH <i>MD. MOSHARREF HOSSAIN, YUSNIDAH IBRAHIM & MD. MOHAN UDDIN</i>	6
3.	INNOVATION NETWORK IN TAIWAN TELECOMMUNICATION INDUSTRY BASED UPON SOCIAL NETWORK PERSPECTIVE <i>CHUN-YAO TSENG & TZU-LIN CHIANG</i>	11
4.	ADVENT OF THE RETAIL SECTOR IN INDIAN ECONOMY: A PERSPECTIVE ACROSS DECADE <i>SWATI SAXENA & DR. HUSEIN ABDULRAHIM HASAN</i>	16
5.	GOODS AND SERVICES TAX: A LEAP FORWARD ECONOMIC GROWTH AND DEVELOPMENT <i>MINAKSHI GUPTA</i>	19
6.	INITIAL PUBLIC OFFERING UNDER-PRICING: A CASE STUDY OF TWITTER IPO <i>SAVITHA, P & B. SHIVARAJ</i>	25
7.	THE CONFINE OF EFFICIENT CONTRACT BETWEEN PRINCIPALS AND DISTRIBUTORS PERFECTLY CONTROL MARKETING MIX STRATEGIES: CHANNEL MANAGEMENT PERSPECTIVE OF FAST MOVING CONSUMER GOODS (FMCG) INDUSTRIES IN INDONESIAN <i>DR. AGUS TRIHATMOKO, R., DR. MUGI HARSONO, DR. SALAMAH WAHYUNI & DR. TULUS HARYONO</i>	31
8.	AN ANALYSIS OF NON PERFORMING ASSETS OF INDIAN BANKS <i>OMBIR & SANJEEV BANSAL</i>	37
9.	FINO'S TECHNOLOGICAL SOLUTIONS FOR THE YESHASVINI COOPERATIVE FARMERS HEALTH CARE SCHEME <i>DR. G. KOTRESHWAR & V.GURUSIDDARAJU</i>	43
10.	PERFORMANCE OF FISH WORKERS COOPERATIVE SOCIETIES <i>A. NALINI & DR. P. ASOKAN</i>	46
11.	A STUDY ON ASSOCIATION AND CAUSALITY RELATIONSHIP BETWEEN NSE EQUITY SPOT AND DERIVATIVE MARKETS <i>SATYANARAYANA KOILADA</i>	48
12.	DIVIDEND POLICY AND ITS IMPACT ON STOCK PRICE: A CASE STUDY ON SENSEX COMPANIES <i>BHAGYA LAKSHMI.K & DR. N. BABITHA THIMMAIAH</i>	54
13.	IMPACT OF GLOBALIZATION ON THE EXTERNAL SECTOR OF INDIAN ECONOMY <i>IBRAHIM CHOLAKKAL</i>	58
14.	A STUDY ON GROWTH AND INSTABILITY IN INDIA'S BANANA CULTIVATION AND EXPORT <i>DR. R. GANESAN</i>	62
15.	ROLE OF ASHA WORKERS IN RURAL DEVELOPMENT WITH REFERENCE TO KOTTAYAM DISTRICT <i>TISSY ERUTHICKAL</i>	66
16.	ROLE OF MECHANIZATION IN AGRICULTURAL IN THE PRESENT SOCIO-ECONOMIC SITUATIONS: A CASE STUDY OF ANDHRA PRADESH <i>H. RAMANJINEYULU & DR. K. SOMASEKHAR</i>	70
17.	CRITICAL ANALYSIS OF THE RIGHT TO FAIR TRIAL <i>RIDDHIMA MUNSHI & DR. SANJAY SOLANKI</i>	73
18.	DYNAMIC CAUSALITY RELATIONSHIP BETWEEN FDI INFLOWS, TRADE BALANCE, AND ECONOMIC GROWTH IN WORLDWIDE SELECTED TOP 25 HOST COUNTRIES DURING POST LIBERALIZATION REGIME: A QUANTITATIVE APPROACH <i>SARMITA GUHA RAY</i>	78
19.	WORKING CONDITIONS OF THE UNORGANISED SECTOR IN KERALA: REFERENCE TO SALES WOMEN IN THE TEXTILE SHOPS <i>FREEDA V SIMON</i>	84
20.	INTRA-GENERATIONAL RELATIONSHIPS AMONG THE AGED PENSIONERS OF BHUBANESWAR, ODISHA <i>AMITA MOHAPATRA</i>	86
	REQUEST FOR FEEDBACK & DISCLAIMER	91

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. BHAVET

Faculty, Shree Ram Institute of Engineering & Technology, Urjani

ADVISORS

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

FORMER CO-EDITOR

DR. S. GARG

Faculty, Shree Ram Institute of Business & Management, Urjani

EDITORIAL ADVISORY BOARD

DR. RAJESH MODI

Faculty, Yanbu Industrial College, Kingdom of Saudi Arabia

PROF. SIKANDER KUMAR

Chairman, Department of Economics, Himachal Pradesh University, Shimla, Himachal Pradesh

PROF. SANJIV MITTAL

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

PROF. RAJENDER GUPTA

Convener, Board of Studies in Economics, University of Jammu, Jammu

PROF. NAWAB ALI KHAN

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

PROF. S. P. TIWARI

Head, Department of Economics & Rural Development, Dr. Ram Manohar Lohia Avadh University, Faizabad

DR. ANIL CHANDHOK

Professor, Faculty of Management, Maharishi Markandeshwar University, Mullana, Ambala, Haryana

DR. ASHOK KUMAR CHAUHAN

Reader, Department of Economics, Kurukshetra University, Kurukshetra

DR. SAMBHAVNA

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

DR. MOHENDER KUMAR GUPTA

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

DR. VIVEK CHAWLA

Associate Professor, Kurukshetra University, Kurukshetra

DR. SHIVAKUMAR DEENE

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

ASSOCIATE EDITORS**PROF. ABHAY BANSAL**

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

PARVEEN KHURANA

Associate Professor, Mukand Lal National College, Yamuna Nagar

SHASHI KHURANA

Associate Professor, S. M. S. Khalsa Lubana Girls College, Barara, Ambala

SUNIL KUMAR KARWASRA

Principal, Aakash College of Education, ChanderKalan, Tohana, Fatehabad

DR. VIKAS CHOUDHARY

Asst. Professor, N.I.T. (University), Kurukshetra

FORMER 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 the 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/Mkt./HRM/General Mgt./Engineering/Economics/Computer/IT/ Education/Psychology/Law/Math/other, please specify)

DEAR SIR/MADAM

Please find my submission of manuscript titled ' _____ ' for likely publication in one of your journals.

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

I affirm that all the co-authors of this manuscript have seen the submitted version of the manuscript and have agreed to inclusion of their names as co-authors.

Also, if my/our manuscript is accepted, I agree to comply with the formalities as given on the website of the journal. The Journal has discretion to publish our contribution in any of its journals.

NAME OF CORRESPONDING AUTHOR

Designation/Post* :

Institution/College/University with full address & Pin Code :

Residential address with Pin Code :

Mobile Number (s) with country ISD code :

Is WhatsApp or Viber active on your above noted Mobile Number (Yes/No) :

Landline Number (s) with country ISD code :

E-mail Address :

Alternate E-mail Address :

Nationality :

* i.e. Alumnus (Male Alumni), Alumna (Female Alumni), Student, Research Scholar (M. Phil), Research Scholar (Ph. D.), JRF, Research Assistant, Assistant Lecturer, Lecturer, Senior Lecturer, Junior Assistant Professor, Assistant Professor, Senior Assistant Professor, Co-ordinator, Reader, Associate Professor, Professor, Head, Vice-Principal, Dy. Director, Principal, Director, Dean, President, Vice Chancellor, Industry Designation etc. **The qualification of author is not acceptable for the purpose.**

NOTES:

- a) The whole manuscript has to be in **ONE MS WORD FILE** only, which will start from the covering letter, inside the manuscript. **pdf. version is liable to be rejected without any consideration.**
 - b) The sender is required to mention the following in the **SUBJECT COLUMN of the mail:**
New Manuscript for Review in the area of (e.g. Finance/Marketing/HRM/General Mgt./Engineering/Economics/Computer/IT/ Education/Psychology/Law/Math/other, please specify)
 - c) There is no need to give any text in the body of the 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 expected to be below **1000 KB.**
 - e) Only the **Abstract 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 within twenty-four hours** and in case of non-receipt of acknowledgment from the journal, w.r.t. the submission of the manuscript, within two days of its submission, the corresponding author is required to demand for the same by sending a separate mail to the journal.
 - g) The author (s) name or details should not appear anywhere on the body of the manuscript, except on the covering letter and the cover page of the manuscript, in the manner as mentioned in the guidelines.
2. **MANUSCRIPT TITLE:** The title of the paper should be typed in **bold letters, centered and fully capitalised.**
 3. **AUTHOR NAME (S) & AFFILIATIONS:** Author (s) **name, designation, affiliation (s), address, mobile/landline number (s), and email/alternate email address** should be given underneath the title.
 4. **ACKNOWLEDGMENTS:** Acknowledgements can be given to reviewers, guides, funding institutions, etc., if any.
 5. **ABSTRACT:** Abstract should be in **fully Italic printing**, ranging between **150 to 300 words**. The abstract must be informative and elucidating the background, aims, methods, results & conclusion in a **SINGLE PARA. Abbreviations must be mentioned in full.**
 6. **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 stop at the end. All words of the keywords, including the first one should be in small letters, except special words e.g. name of the Countries, abbreviations etc.
 7. **JEL CODE:** Provide the appropriate Journal of Economic Literature Classification System code (s). JEL codes are available at www.aea-web.org/econlit/jelCodes.php. However, mentioning of JEL Code is not mandatory.
 8. **MANUSCRIPT:** Manuscript must be in **BRITISH ENGLISH** prepared on a standard A4 size **PORTRAIT SETTING PAPER. It should be free from any errors i.e. grammatical, spelling or punctuation. It must be thoroughly edited at your end.**
 9. **HEADINGS:** All the headings must be bold-faced, aligned left and fully capitalised. Leave a blank line before each heading.
 10. **SUB-HEADINGS:** All the sub-headings must be bold-faced, aligned left and fully capitalised.
 11. **MAIN TEXT:**

THE MAIN TEXT SHOULD FOLLOW THE FOLLOWING SEQUENCE:**INTRODUCTION****REVIEW OF LITERATURE****NEED/IMPORTANCE OF THE STUDY****STATEMENT OF THE PROBLEM****OBJECTIVES****HYPOTHESIS (ES)****RESEARCH METHODOLOGY****RESULTS & DISCUSSION****FINDINGS****RECOMMENDATIONS/SUGGESTIONS****CONCLUSIONS****LIMITATIONS****SCOPE FOR FURTHER RESEARCH****REFERENCES****APPENDIX/ANNEXURE****The manuscript should preferably be in 2000 to 5000 WORDS, But the limits can vary depending on the nature of the manuscript.**

12. **FIGURES & TABLES:** These should be simple, crystal **CLEAR, centered, separately numbered** & self-explained, and the **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.**
13. **EQUATIONS/FORMULAE:** These should be consecutively numbered in parenthesis, left aligned with equation/formulae number placed at the right. The equation editor provided with standard versions of Microsoft Word may be utilised. If any other equation editor is utilised, author must confirm that these equations may be viewed and edited in versions of Microsoft Office that does not have the editor.
14. **ACRONYMS:** These should not be used in the abstract. The use of acronyms is elsewhere is acceptable. Acronyms should be defined on its first use in each section e.g. Reserve Bank of India (RBI). Acronyms should be redefined on first use in subsequent sections.
15. **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 may follow Harvard Style of Referencing. **Also check to ensure that everything that you are including in the reference section is duly cited in the paper.** 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 italic printing. 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 parenthesis.
 - **Headers, footers, endnotes and footnotes should not be used in the document.** However, **you can mention short notes to elucidate some specific point**, which may be placed in number orders before the references.

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, 19–23

UNPUBLISHED DISSERTATIONS

- 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 Gas Policy, Political Weekly, Viewed on January 01, 2012 <http://epw.in/user/viewabstract.jsp>

INNOVATION NETWORK IN TAIWAN TELECOMMUNICATION INDUSTRY BASED UPON SOCIAL NETWORK PERSPECTIVE

CHUN-YAO TSENG

PROFESSOR

DEPARTMENT OF BUSINESS ADMINISTRATION

TUNGSHAI UNIVERSITY

TAIWAN

TZU-LIN CHIANG

DEVELOPMENT & QUALITY ENGINEER

JULI ENTERPRISE

TAIWAN

ABSTRACT

This study uses social network perspective to investigate the innovation network of the telecommunication industry in Taiwan. Moreover, this study attempts to understand and explains the relative position and the invention relationship among Taiwan's telecommunication innovation network, and discusses Taiwan's telecommunication industry in the structural characteristics. Based on patent and citation analysis from USPTO data, this study investigates innovation network in Taiwan telecommunication industry from 1979 to 2008. This study uses three network centrality indicators (degree centrality, betweenness centrality, and closeness centrality) to elevate innovation network in Taiwan's telecommunication industry. Additionally, this study employs neighbor analysis to investigate connection in sub-group. The study found the relative position of individual in innovation network would influence the innovation information obtained. The result revealed that it has no critical inventor in innovation network, but has a lot of small and less linkage groups in one. There are many strong ties relationships, but less weak ties relationships in innovation network of Taiwan communication industry. According to Granovetter's (1973) weak tie theory, it should encourage creating more innovation with weak ties in Taiwan telecommunication industry.

KEYWORDS

innovation network, social network, telecommunication industry, weak tie, patent citation.

INTRODUCTION

Because innovation is the dominating resource in the knowledge-based economy, effective management of knowledge and innovation thus has become a key to corporate success, technology progress and economic development (Babco, 2004). Many studies found that the ability to establish effective relationships in innovation network for developing organizational innovative capacity. Innovation network is defined as the linkages between organizations or individuals, in order to create, capture and integrate the different knowledge needed to develop technologies. In Taiwan, the high-tech firms cooperate mutually from the beginning of the invention input to the end of innovation product, and they build an innovation network with a tight relationship. Firms create innovations and protect them through patent application. In innovation network, members connect with each others and share information. Moreover, inventors might utilize innovation network to create new inventions and patents. To understand the relationship of the innovation network, this study would investigate the relationship between patent inventors in Taiwan telecommunication industry.

REVIEW OF LITERATURE AND OBJECTIVE OF THE STUDY

Social network perspective utilizes "relationship" to be a tool to evaluate the status of members (Garton, Hyaythornthwaite, and Wellman, 1997) and understand how the network influences each other (Scott, 1991; Waeeerman & Faust, 1994). Innovation network, taking a view of social network perspective, likes a social network and owes various connections with others behind it. Social network analysis provides a viewable system to analyze the connection of a network (Beaucage and Beaudry, 2006). In generally, networks have five kind of special characteristics: size, heterogeneity, density, linking, and overlapping. There are three basic elements in network, including actors, relationship among actors, and the connection among actors. To take an actor as a node, and the relationship among actors as lines, and then it forms a social network (Granovetter, 1973). An actor could be one person (Wellman, 1996; Wellman et al., 1997), an organization, a company, a unit or an event (Laumann and Knoke, 1990). An actor might be shown in several networks, and play a different kind of roles at the same time. The different roles of an actor could induce the connection effect with others. With a social network perspective, it points up the critical actor in the social network by illustrating map. According to this, it could know the most critical strategy role. Freeman (1979) pointed out that there is three indicators to elevate the criticality of an actor, including degree centrality, betweenness centrality, and closeness centrality. From three network centralities, we could find out "the star" of the network. The star is center point, and lot of connection link to the star or around. For example, a giant social network must have a center point, and this point owns the important strategy power in the whole network. For the whole network, the center point is the highlight and the whole network would all focus on it. Restated, this study uses social network perspective to investigate the innovation network of the telecommunication industry in Taiwan. Moreover, this study tries to understand and explains the relative position and the invention relationship among Taiwan's telecommunication innovation network, and discusses Taiwan's telecommunication industry in the structural characteristics

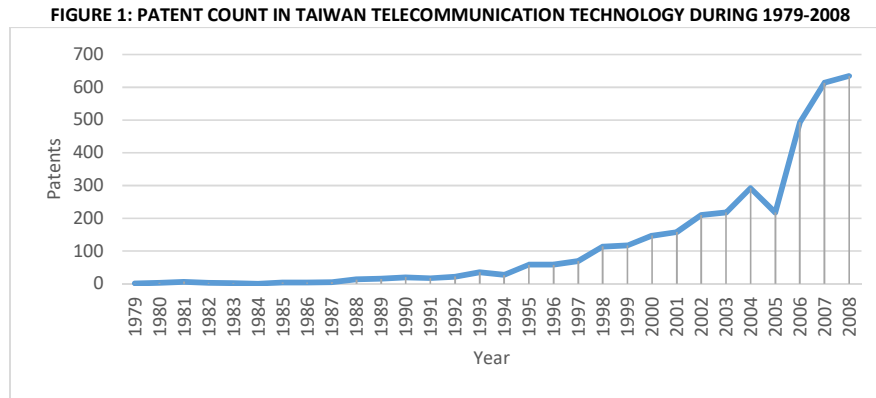
RESEARCH METHODOLOGY

Patents contain references to relevant prior art, including other patents. These references are called citations. Backward citations of a central patent are the references cited by the central patent. Forward citations of a central patent are the patents that refer to the central patent. A citation network consists of patents as nodes and citation relationships between them as links. The nodes and links form a network or graph. This study investigates innovation network of Taiwan communication industry based on citation network, and it was formed by citing patents and cited patents (Stuard & Podolny, 1996; Lai & Wang, 2009). With a social network perspective, it appears the relationship among the patent or innovation information. In addition, we also could realize the degree of citation and the relative status. This study employed Netminer software to build up an innovation network and analyzes the connection of it.

Patents and citation data set used in this study are collected from the patent pilot database which based on the U.S. Patents and Trademark Office (USPTO). Due to the classification of International Patent Classification (IPC) set up by WIPO (World Intellectual Property Organization), it could show a clear filed of an industry in code. Each patent application is assigned by patent examiners to one main technology code and one (or more) secondary technology codes. This study adopted a technology-oriented classification by Breschi et al. (2003), telecommunication related technologies belong to 19 different sub-patent categories: H03b, H3c, H03d, H03h, H03k, H03l, H03m, G08b, H01p, H01q, H04b, H04h, H04j, H04k, H04l, H04n1, H04n7, H04n11, and H04q. Based on patent and citation analysis from USPTO data, this study investigates innovation network in Taiwan telecommunication industry from 1979 to 2008.

ANALYSIS AND RESULTS

Figure 1 displays the patent count in Taiwan telecommunication industry from 1979 to 2008. It had a low level of patent count in ICT before the 2000 year, and it had increased incrementally over time after the 2005 year, peaking in 2008 year. The total patent count of Taiwan telecommunication industry is 3577 from 1979 to 2008.



To examine innovation network in Taiwan telecommunication industry, this study utilized patent inventor has at least 3 patents, and analyzed the relationship of their connection. This study found that it has 406 patent inventors and 692 connection lines. Based upon citation network analysis, innovation network in Taiwan telecommunication industry is shown as Figure 2.

From the innovation network, it could appear the core member by using evaluating the degree centrality (Krackhardt, 1993). In analysis of the whole innovation network, the result of in degree centralization index (InDegree) is 39.91%, and out degree centralization index (OutDegree) is 35.455%. It means that in this network it is less similar to Star-shaped, and the network has no critical patent highly connected with others (Krackhardt, 1993). (Figure 3 and 4). In analysis of individual inventors, results from analyzing the degree of centrality, we obtained the minimum is 0, and the maximum is 0.41. The inventors has the maximum degree centrality are Feng; Sheng, Lien; Jung-Cheun, Liu; Tong. Therefore, in this innovation network of Taiwan telecommunication industry, these three investors stand at the critical status and have most powerful impact on their network.

FIGURE 2: INNOVATION NETWORK IN TAIWAN TELECOMMUNICATION TECHNOLOGY BASED UPON CITATION NETWORK DURING 1979-2008

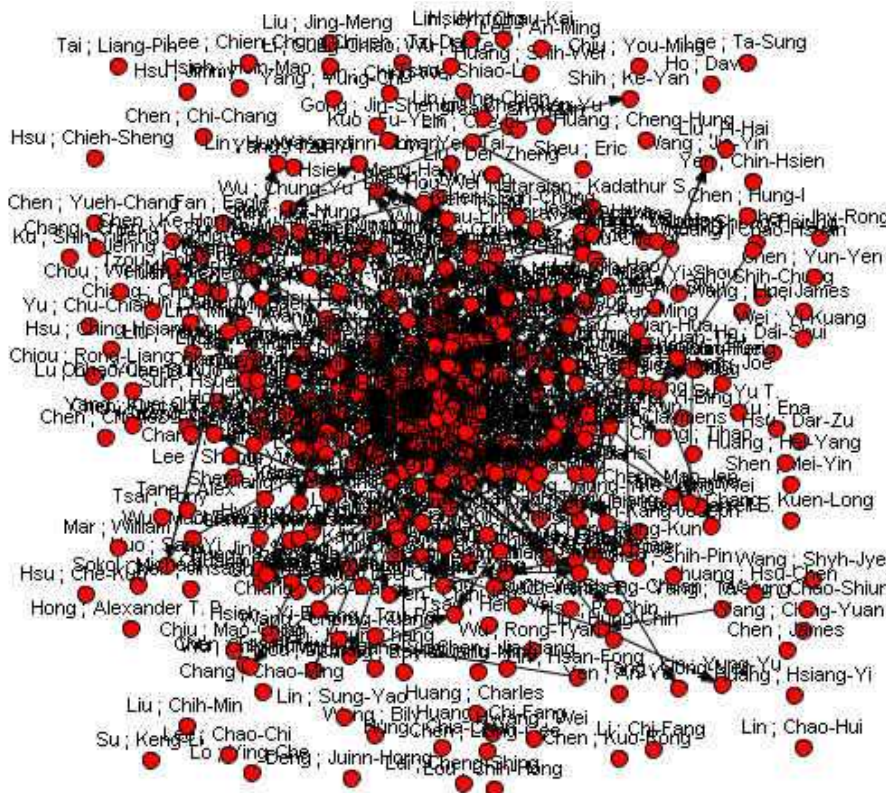


FIGURE 3: INDEGREE CENTRALITY IN INNOVATION NETWORK

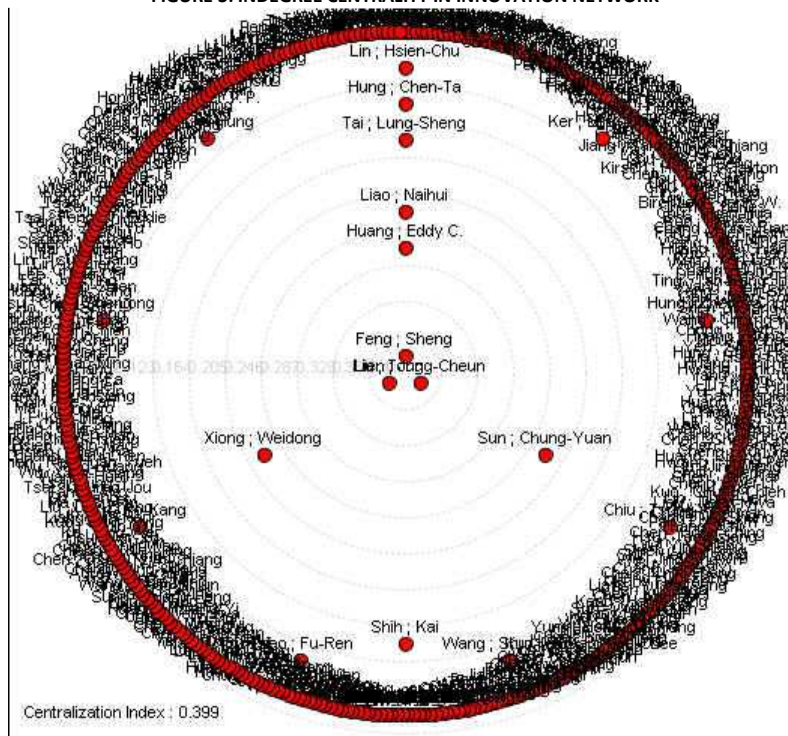
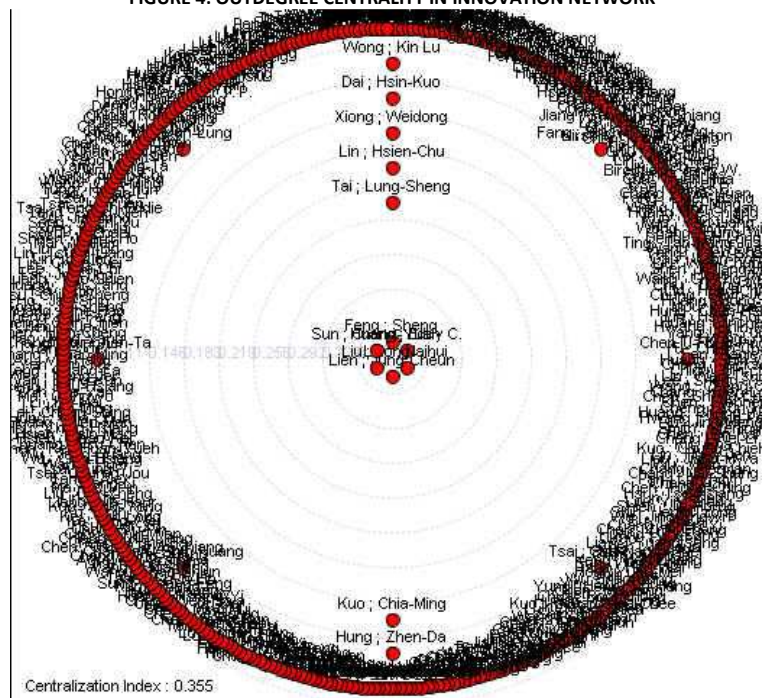


FIGURE 4: OUTDEGREE CENTRALITY IN INNOVATION NETWORK

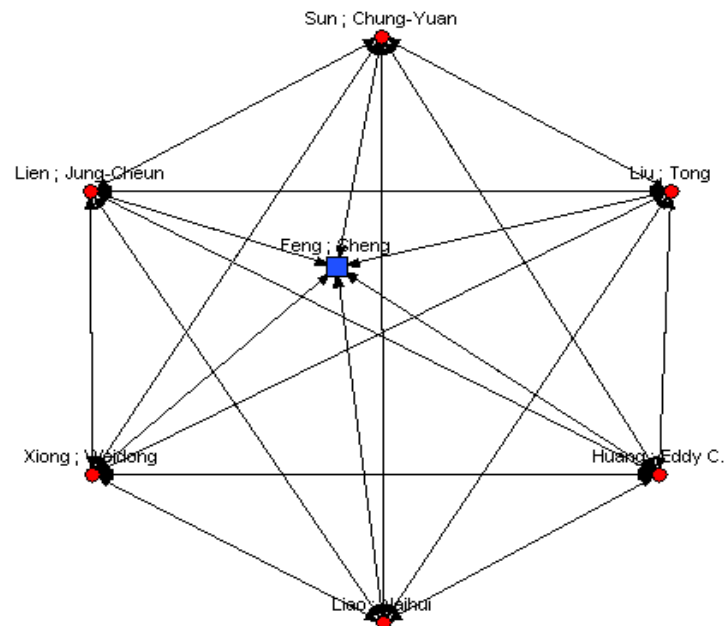


Closeness centrality is an indicator evaluated the shortest distant for a point to the others. The closeness centrality of Taiwan telecommunication innovation network could reveal the citing relationship with other inventors. In analysis of the whole network, results show the inCloseness is 10.321% and outCloseness is 12.971%. They are smaller than degree centralities. In analysis of individual inventors, Chiu; Tsung-Wen and Tseng; Kuo-Hua, has the maximum closeness centrality, and it means that these inventors are highly connected with others.

Betweenness centrality is a measure of the influence a node has over the spread of information through the network. In analysis of the whole network, results show the betweenness network node between central index is only 0.482%, and it is very low. In analysis of individual inventors, inventors with the maximum betweenness centrality are Chiu and Tsung-Wen. In other words, Chiu and Tsung-Wen play most intermediary role in the Taiwan telecommunication innovation network.

To discuss Taiwan's telecommunication industry in the structural characteristics, this study use neighbor analysis to investigate connection in sub-group. The study employed the inventor "Feng; Sheng" who citing 166 patents in Taiwan telecommunication industry as a research representative. Based upon the result of neighbor analysis, this study found that 7 inventors, including "Feng; Sheng", are full connected (FIGURE 5). In the illustration, every node has mutual connection with each other, that is, every inventor cites the patents of the other 6 inventor.

FIGURE 5: SUB-NETWORK WITH THE CENTER OF "FENG; SHENG"



Knowledge flows of innovation in ICT between India and China. Main knowledge sources of innovation in ICT between India and China are same from external knowledge inflow (99.65% and 97.65%). Both USA and Japan are main knowledge sources of innovation in India and China. France and Germany are third and fourth knowledge sources of innovation in India. In China, Taiwan and South Korea are found to be third and fourth knowledge sources of innovation in China. Top 10 countries of knowledge outflow for India and China are similar to results of knowledge inflow. India and China have high interrelationships with fully developed countries, but China has a higher level of knowledge spillover with Asia's newly industrialized countries (Taiwan, South Korea). On the other hand, knowledge inflows are more eight times than knowledge outflows in India and China. India and China are found to be knowledge accepters more than knowledge creators.

CONCLUSIONS AND DISCUSSION

Based on the social network analysis, this study examines the innovation network of Taiwan telecommunication industry from 1979 to 2008. The relative position of individual in the innovation network would influence the information which could acquire. For example, member in the center of network has most linkages with actors and stand a key position of knowledge flow. Though the linkages, it could acquire the most information and resource. Many researchers (Ibarra, 1993; Tsai, 2001) believed that the one who is closer to the center of network might touch the innovation knowledge and resource more. The study found the relative position of individual would influence the innovation information obtained.

In analysis of the whole innovation network, the mean of degree centrality, betweenness centrality, and closeness centrality are 0.012, 0, and 0.008. The three indicators of centrality are very low. It demonstrates little inventors can stand on the most core status in innovation network of Taiwan telecommunication industry, and the connection of this innovation network is less. There are so many inventors have no connection with others in the whole telecommunication industry network, but only a part of the inventors have higher degree of connection. In addition, with Neighbor analysis it found that 7 inventors are full connected, and that cause a situation of Strong Ties. For small group analysis, we could realize members of the small group only tightly connected with the one from the same group and did not connected with other groups. In a word, there no core inventors in the innovation network of telecommunication industry, but there are a lot of small groups has less connections with outside. Granovetter (1973) commended that strong ties facilitate the connections and acts with other individual with similar traits, but weak ties help the communications with other different groups and promotes the transmission of information. We find there are many strong ties, but less weak ties in innovation network in Taiwan communication industry. According to Granovetter's (1973) weak tie theory, ties among members of a social group are likely to be strong. However, ties that reach outside the clique tend to be weak. It also posits that rich networking leads to more non-redundant sources of information, since non-redundant contacts offer information that is additional rather than just overlapping (Burt 1992). The weak ties actually are sources of more knowledge than are strong ties. For an innovation network, the more information it has, the better the knowledge creation promoted. Therefore, it should encourage creating more innovation with weak ties in Taiwan telecommunication industry. The government should encourage inventors walking out of his small group, and enhance forming weak ties. Once the weak tie relationship is established well, telecommunication industry in Taiwan must be very powerful and competitively.

REFERENCES

1. Babco, E. (2004) *Skills for the Innovation Economy: What the 21st Century Workforce Needs and How to Provide It*. Washington, DC: Commission on Professionals in Science and Technology.
2. Beaucage, J.S. and Beaudry, C. (2006) *The importance of Knowledge Networks within Canadian Biotechnology Clusters*, International Schumpeter Conference, Sophia-Antipolis.
3. Breschi, S., Lissoni, F. and Malerba, F. (2003). *Knowledge networks from patent citations? methodological issues and preliminary results*. DRUID summer conference 2003 on creating, sharing and transferring knowledge, the role of geography, institutions and organizations, Copenhagen 12-14
4. Burt, R.S. (1992). *Structural Holes: The Social Structure of Competition*, MA: Harvard University Press.
5. Freeman, L. C. (1979) 'Centrality in social network: I. Conceptual clarification', *Social Networks*, 1, pp.215-239.
6. Garton, L., Haythornthwaite, C. and Wellman, B. (1997). 'Studying Online Social Networks', *Journal of Computer-Mediated Communication*, 3(1).
7. Granovetter, M. (1973) 'The Strength of Weak Ties', *American Journal of Sociology*, 78(6), pp.1360-1380.
8. Herring, S.C., Scheidt, L.A., Bonus, S., and Wright, E. (2005) 'Weblogs as a bridging genre', *Information, Technology and People*, 18(2), pp.142-171.
9. Ibarra, H. (1993) 'Network centrality, power and innovation involvement: Determinants of technical and administrative roles', *Academy of Management Journal*, 36(3), pp.471-501.
10. Krackhardt, D. (1993) *Crisis in a Cluster: Simmelian Ties in Organizations*, International Social Networks Conference, Tampa, Florida, February.
11. Lai, K.K. and Weng C.S. (2009) 'The isomorphic development of insurance - the perspective of social network analysis', *International Journal of Services Technology and Management*, 12, pp.85-104.
12. Laumann, E.O. and Knoke, D. (1987) *Organization State: Social Choice in National Policy Domains*, Madison, WI: University of Madison Press.
13. Nonaka, I. and Takeuchi, H. (1995) *The knowledge-creating company: How Japanese Companies Create the Dynamics of Innovation*, Oxford University Press.

14. Scott, J. (2000) *Social Network Analysis: A Handbook*. Sage Publications, London, 2nd Ed.
15. Stuart, T.E., and Podolny, J.M. (1996) 'Local Search and the Evolution of Technological Capabilities', *Strategic Management Journal*, 17, pp.21-38.
16. Tsai, W. (2001) 'Knowledge Transfer in Intraorganizational Networks: Effects of Network Position and Absorptive Capacity on Business Unit Innovation and Performance', *Academy of Management Journal*, 44, pp.996-1004.
17. Wassermann, S., and Faust, K. (1994) *Social Network Analysis Methods and Applications*, Cambridge University Press, Cambridge.
18. Wellman, B. (1996) *For a Social Network Analysis of Computer Networks: A Sociological Perspective on Collaborative Work and Virtual Community*, ACM SIGCPR/SIGMIS conference, 1-11.
19. Wellman, B., Wng, R., Tindall, D. and Nazer, N. (1997) 'A Decade of Network Change: Turnover, Mobility and Stability', *Social Network*, 9, pp.27-50.

REQUEST FOR FEEDBACK

Dear Readers

At the very outset, International Journal of Research in Commerce, Economics & 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 to an appropriate consideration.

With sincere regards

Thanking you profoundly

Academically yours

Sd/-

Co-ordinator

DISCLAIMER

The information and opinions presented in the Journal reflect the views of the authors and not of the Journal or its Editorial Board or the Publishers/Editors. Publication does not constitute endorsement by the journal. Neither the Journal nor its publishers/Editors/Editorial Board nor anyone else involved in creating, producing or delivering the journal or the materials contained therein, assumes any liability or responsibility for the accuracy, completeness, or usefulness of any information provided in the journal, nor shall they be liable for any direct, indirect, incidental, special, consequential or punitive damages arising out of the use of information/material contained in the journal. The journal, neither its publishers/Editors/ Editorial Board, nor any other party involved in the preparation of material contained in the journal represents or warrants that the information contained herein is in every respect accurate or complete, and they are not responsible for any errors or omissions or for the results obtained from the use of such material. Readers are encouraged to confirm the information contained herein with other sources. The responsibility of the contents and the opinions expressed in this journal are exclusively of the author (s) concerned.

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

