INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, IT & MANAGEMENT

IJRCM

IJRCM

CONTENTS

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, IT & MANAGEMENT ii

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

www.ijrcm.org.in

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

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, IT & MANAGEMENT iii

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

www.ijrcm.org.in

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, IT & MANAGEMENT iv

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

www.ijrcm.org.in

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We invite unpublished novel, original, empirical and high quality research work pertaining to recent developments & practices in the area of Computer, Business, Finance, Marketing,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.

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, IT & MANAGEMENT
A Monthly Double-Blind Peer Reviewed Refereed Open Access International e-Journal - Included in the International Serial Directories
www.ijrcm.org.in

v

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

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, IT & MANAGEMENT vi

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

www.ijrcm.org.in

ANALYSIS OF PERSISTENCY IN THE MONTHLY COIMBATORE RAINFALL

TAMIL SELVI .S
ASST. PROFESSOR
S.M.K. FOMRA INSTITUTE OF TECHNOLOGY
CHENNAI

SAMUEL SELVARAJ. R
READER
PRESIDENCY COLLEGE
CHENNAI

ABSTRACT

India is basically an agricultural country and the success or failure of the harvest and water scarcity in any year is always considered with the greatest concern. So, we predict that rainfall in the certain period. The Pearson correlation coefficient is computed to check the significance of persistency of Coimbatore monthly rainfall data from the year (1961 -1990). The Pearson correlation shows insignificant results so, a specific method chi-square (χ^2) test statistics is used in this paper for finding the persistency of Coimbatore rainfall.

KEYWORDS

chi-square, pearson correlation coefficient, persistency, rainfall, significance.

INTRODUCTION

Rainfall is most essential for our life. Rainfall is important for food production plan, water resource management and all activity plans in the nature. The occurrence of prolonged dry period or heavy rain at the critical stages of the crop growth and development may lead to significant reduce crop yield. India is an agricultural country and its economy is largely based upon crop productivity. Thus rainfall prediction becomes a significant factor in agricultural countries like India (Kannan et. al, 2010). When an area is subject to the influences of large-scale climatic phenomena, the local weather patterns show features of persistence- at times for several weeks. The persistence may influence consecutive months of weather patterns and rainfall yields recorded in those months. In such cases, statistical independence between monthly yields would not exist.

PEARSON CORRELATION COEFFICIENT

Correlation is a measure of the strength of relationship between random variables. The Pearson correlation coefficient is used for this analysis and is defined as

$$r = \frac{\sum_{i=1}^n (X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum_{i=1}^n (X_i - \bar{X})^2}\sqrt{\sum_{i=1}^n (Y_i - \bar{Y})^2}}.$$

(1)

Where X and Y are the observations of two variables and n is the number of observations.

Pearson correlation coefficient is a measure of the strength of the association between two variables. It ranges from -1 to +1. The other way of defining the correlation between two variables X and Y is:

r (X, Y) = Covariance (X, Y) / {Variance (X) * Variance (Y)} ½

(2)

r is called the Product Moment Correlation Coefficient or simply the Correlation Coefficient. It is a number that summarizes the direction and closeness of linear relations between two variables. The sign (+ or -) of the correlation defines the direction of the relationship. When the correlation is positive (*r* > 0), it means that as the value of one variable increases, so does the other.

If a correlation is negative (*r* < 0), it indicates that when one variable **increases**, the other variable **decreases**. This means there is an inverse relationship between the two variables. This coefficient, r, is a relative measure of the degree of persistence. However, this test implies that persistence, if it exists, is equally active throughout the recorded monthly rainfall sequence. In other words, it does not give pattern of persistence effects, but only evidence of its existence (Hoel, P.G; 1962). The Product Moment Correlation Coefficient computed for the monthly Coimbatore rainfall data gives no evidence of significant persistent effects. Since, the Product Moment Correlation Coefficient results insignificant, a more specific test is required to determine the persistence of Coimbatore rainfall.

CHI SQUARE TEST

A method to test for persistence of this type would be to check whether the sign of the deviation of the monthly rainfall yield from its monthly mean is consistently followed by a similar deviation in the following month. This can be achieved by using a standard statistical test for independence in a 2 x 2 contingency table (Wetherill, 1967).

TABLE 1: DEVIATION OF MONTHLY RAINFALLS FROM THE MEAN

		Month (m + 1)		
		Below mean	Above mean	Total
Month (m)	Below mean	A	B	A+B
	Above mean	C	D	C+D
	Total	A+C	B+D	A+B+C+D

Table 1 represents the frequency of occurrence of monthly rainfall yields above and below the respective means of two consecutive months. A χ^2 test statistic
$\chi^2 = (AD-BC)^2 (A+B+C+D) / (A+B)(A+C)(B+D)(C+D)$

(3)

is used as the criterion of acceptance or rejection of the null hypothesis of independence. The null hypothesis is rejected if
$$\chi^2 > \chi^2_{\alpha,d}$$

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, IT & MANAGEMENT
71
A Monthly Double-Blind Peer Reviewed Refereed Open Access International e-Journal - Included in the International Serial Directories
www.ijrcm.org.in

where $\chi^2_{\alpha,d}$ is obtained from χ^2 tables corresponding to α, the level of significance and d, the number of degrees of freedom. For a 2 x 2 contingency table the number of degrees of freedom d, is one.

RESULTS

The 30 years of complete monthly rainfall records for Coimbatore were tested for persistence. The χ^2 test was applied to the consecutive pairs of months throughout the year. Calculations were performed using equation 3. The null hypothesis is rejected if χ^2 > $\chi^2_{\alpha,d}$ = 3.84 for α = 5% and d=1. Results of the test statistic χ^2 are listed in table 2.

Table 2. Results of applying the test statistic χ^2 to Coimbatore rainfall records. Persistence is assumed if χ^2 > $\chi^2_{\alpha,d}$ = 3.84 .The level of significance for α = 5% is given below.

Months	χ^2
January – February	0.0680
February – March	0.7187
March – April	0.625
April – May	0.7408
May – June	0.0893
June –July	1.5311
July – August	0.0487
August – September	0.2715
September – October	0.6206
October – November	0.9184
November – December	1.1552
December – January	0.6394

CONCLUSION

Thus, by Pearson correlation coefficient the persistence effect is found to be insignificant. The χ2 test also shows insignificant persistence of rainfall between the pairs of months throughout the year. This test does not show satisfactory results at the level of significance for α = 5%. This persistence pattern is important in some hydrological studies, so some other method can be used to find the persistent effect.

REFERENCES

1. Hoel, P.G; (1962); "Introduction to Mathematical statistics", 3rd edition, New York, Wiley.
2. Kannan.M, Prabhakaran S., Ramachandran P; (2010) ," Rainfall Forecasting Using Data Mining Technique"; International Journal of Engineering and Technology Vol.2 , No.6 , pp. 397-401.
3. Wetherill, G.G; (1967); "Elementary Statistical methods", London, Methuen.

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, IT & MANAGEMENT 72
A Monthly Double-Blind Peer Reviewed Refereed Open Access International e-Journal - Included in the International Serial Directories
www.ijrcm.org.in

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

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, IT & MANAGEMENT 73
A Monthly Double-Blind Peer Reviewed Refereed Open Access International e-Journal - Included in the International Serial Directories
www.ijrcm.org.in

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

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, IT & MANAGEMENT   IV

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

www.ijrcm.org.in