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Sabitri Majhi

P.G. Department of Library & Information Science, Sambalpur University, sabitriindia@gmail.com

Chanda Jal

Sambalpur University

Bulu Maharana

Sambalpur University, bulumaharana@gmail.com

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Content analysis of Journal articles on Wiki in Science Direct Database

Mrs. Sabitri Majhi

Lecturer, P.G. Department of Library and Information Science, Sambalpur University,
Odisha, E-mail: sabitriindia@gmail.com

Ms. Chanda Jal

P.G. Department of Library and Information Science, Sambalpur University, Odisha,

Dr. Bulu Maharana,

Reader and H.O.D, P.G. Department of Library and Information Science, Sambalpur
University, Odisha, E-mail: bulumaharana@gmail.com

Abstract

The study aims for analyzing the contents of articles on *wiki* that were published in the journals of science direct database, to find out the methods of research used, type of data analysis techniques used for *wiki* articles, most productive country contributing highest number of articles, highest contributing author, year wise publication, authors subject background etc. Out of total 142 hits, from Science Direct database, the articles without having abstract and full text were excluded from the study and a total of 89 numbers of articles were analyzed. The study reveals that Majority of the articles on *wiki* are research articles and used Survey method. Again descriptive data analysis seemed to be the favored method used in majority of articles. Germany and USA are the most productive country contributing majority of articles on *wiki* and majority of the authors contributing the articles on *wiki* are from Computer science background.

Keywords

Content analysis, wiki, Wikipedia, Science Direct and Web2.0

Introduction

A *wiki* is a collection of easily editable web pages, which enable anyone who accesses it to contribute or modify content, using a simplified markup language. *Wiki* can be used for collaborative writing and problem solving tasks. Over the period of time many remarkable wikis were developed, such as *Mediawiki*, *PBWorks*, *Wikipedia*, *Wikibooks* etc. A great example of a large Wiki is the *Wikipedia*, a free encyclopedia which can be edited by anyone on the web. (Anderson, 2012).

As wiki creates a platform for content posting and has an important place in the publishing world. It can be used as a great platform to plan and manage a project, business organizations can use *Wiki* to put the manuals online for the workers, Wikis are the great platforms for event management, Libraries can use wiki as reference source and subject guides for the users. By providing a collaborative learning environment, it enables the learners to collectively contribute the content while building the website and editing new pages. In the present knowledge society wiki is beneficial for learner engagement, collaborative learning, instructional design and many more.

As explained above *Wiki* is having lot of implication and being used for various purposes , the importance of research in wiki in today's world is undisputable.

Research publications are the epithet of intellectual discoveries primarily aiming to transmit new ideas or information for bringing advancement in knowledge and applying in all areas. As *wiki* is having lots of implications as mentioned earlier, it is highly essential to analyze the contents of the publications on *wiki*, by taking different aspects, such as, research method applied in the wiki articles, the subject background of authors publishing articles on *wiki*, quantity of publications on *Wiki* etc.

Review of literature

Content analysis is a set of procedures for collecting and organizing information in a standardized format that allows analysts to make inferences about the characteristics and meaning of written and other recorded material (GAO, 1989). It is a powerful tool for examining trends, patterns in documents, authorship pattern etc. The values and intentions of the authors can be inferred from the data which may reveal underlying themes and associations (Duriau, Reger and Pfarrer, 2007).

Number of studies has been made to analyze the content of the documents. Alias et.al (2013) made a content analysis of studies in the field of *Wikis* that were published in six major journals: TOJET, Educational Technology & Society, Educational Technology Research & Development, Computers & Education, Australasian Journal of Educational Technology and British Journal of Educational Technology. The result reveals that, there has been an increase in the number of articles written on the use of wiki for collaborative learning. The articles were mainly on research but employed a variety of research designs. The articles written from 2007 to 2012 covered several themes: learner engagement, collaborative learning, effectiveness, assessment and instructional design. Aharony (2011) in the study entitled "Web 2.0 in the professional LIS literature: An exploratory analysis" made a content analysis of descriptors and journal titles extracted from the Library and Information Science Abstracts (LISA) database, focusing on the keyword *Web 2.0* and its popular applications: *wiki*, *blog*, *social network* and *tags*. The findings divulge that the percentage of peer-reviewed

articles relating to Web 2.0 is quite low, and a close link between Web 2.0 and library issues. Alias et.al.(2013) made content analysis of studies in the field of Twitter that were published in seven major journals and the study revealed that the use of Twitter is still new in the arena of teaching and learning as it was first introduced in 2006. However, it was proven through the articles that Twitter can be the trending networking medium and learning method. This implies that role of wiki in education is becoming more important and is being realized by the researchers in this field.

Research objectives

The main objective of the study is to identifying the trend of research in wiki and to analyze the content of the articles on wiki published in the journal of science direct database. Besides, the study is primarily aims at the following objectives:

1. To find out type of methods of research used in wiki articles in the journal of science direct database.
2. To find out the type of data analysis techniques used for wiki articles in the journal of science direct database.
3. To find out the most productive country contributing highest number of articles on Wiki
4. To find Authorship pattern of publications.
5. To find out the year wise publication of wiki articles in the journal of science direct database.
6. To identify subject background of the authors publishing articles on wiki.

Methodology

For the present work wiki articles were retrieved on 1st February 2014, from the science direct database using the advanced search facility. Both the keywords “wiki” and “Wikipedia” were taken for searching, and they were combined with the Boolean operator ‘OR’. Under the ‘field’ option in the database ‘title’ was chosen in order to retrieve those articles having at least one of the keywords from “wiki” or “Wikipedia in the title of the article. Again, only ‘Journals’ option was selected in order to retrieve the articles appearing in the journals under Science Direct Database. As *Wikipedia* is the most popular *Wiki* on web and a lot of research is carried on *Wikipedia*, both the keyword *Wiki* and *Wikipedia* has been taken for retrieving the articles from the Science direct database. Out of total 142 hits, the articles without having abstract and full text were excluded from the study and a total of 89 numbers of articles were selected for Analysis. The data were collected, organized and analyzed from different aspects such as Highest contributing author, year wise publication , research method applied, authorship pattern, authors subject background etc. using MS-EXCEL.

Analysis and interpretation

Data analysis is a practice in which raw data is ordered and organized so that useful information can be extracted from it. The process of organizing and thinking about data is key to understanding what the data does and does not contain.

For the present work journal articles on wiki were collected from the science direct database from the Year 2005 to till date, using the advanced search facility. Both the keywords “wiki” and “Wikipedia” were taken for searching, and they were combined with the Boolean operator ‘OR’. Under the ‘field’ option in the database ‘title’ was chosen in order to retrieve those articles having both the keywords “wiki” and “Wikipedia in the title of the article. The data were collected, organized and analyzed from different aspects such as Highest contributing author, year wise publication , research method applied in the article, authorship pattern, authors subject background etc. using MS-EXCEL.

The table and graphs were generated in accordance with the objectives of the study and necessary analysis work is done keeping in view the objectives of the study

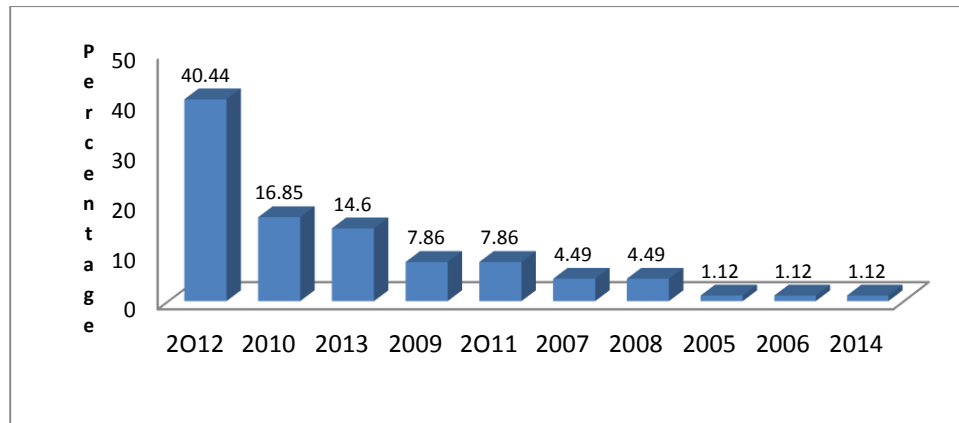
Year wise Growth of publication.

Year wise measure of publication is one of the very important indicators in order to assess the year wise degree of growth of publication and to find out the most productive year of publication. In the following table,

Table-1

sl no	Year	Number of articles published	Percentage
1	2012	36	40.44
2	2010	15	16.85
3	2013	13	14.6
4	2009	7	7.86
5	2011	7	7.86
6	2007	4	4.49
7	2008	4	4.49
8	2005	1	1.12
9	2006	1	1.12
10	2014	1	1.12
		total=89	

Figure-1 Year-wise growth of wiki articles



Above table presents year wise publication of journal articles on wiki in science direct database over a period of 10 years that is during 2005 to 2014. The year 2012 is the highest productive year in which 36 (40.44%) number of *wiki* articles published in the journal of science direct database, Followed by next majority 15(16.85) in the year 2010 and lowest number of articles published in the year 2005, 2006, 2014 in which on '1', (1.12%) *wiki* articles published. As the year 2005 is the year of inception of the concept '*wiki*', lowest number of paper that is only 1 paper is published as reflected in the science direct database.

Authorship pattern

Authorship pattern discloses how the papers are distributed among the authors, authors collaboration etc. Authorship pattern is one of the very important indicators in order to assess the degree of collaboration of the authors in a particular discipline.

Table-2 authorship pattern

sl no	Authorship pattern	Number of contribution	Percentage
1	collaborative author	48	53.93
2	joint author	27	30.33
3	single author	14	15.73
		total=89	

Table-2 indicates the highest 48 (53.93%) of articles have collaborative authors followed by 27 (30.33%) with joint authors, 14 (15.73%) single author respectively published the *wiki* articles in the journal of science direct data base. Data relating to authorship pattern as above is evident that authors of *wiki* have a tendency to work in collaboration

Country Wise distribution of the Publications

The standard or the growth in research of country could be known from its contributions to the publication world. Unless and until a country is undertaken research in the current topics or topics of high importance to the society, it will lagging behind in all respect. The study of ranking of countries is not only interesting but also become crucial.

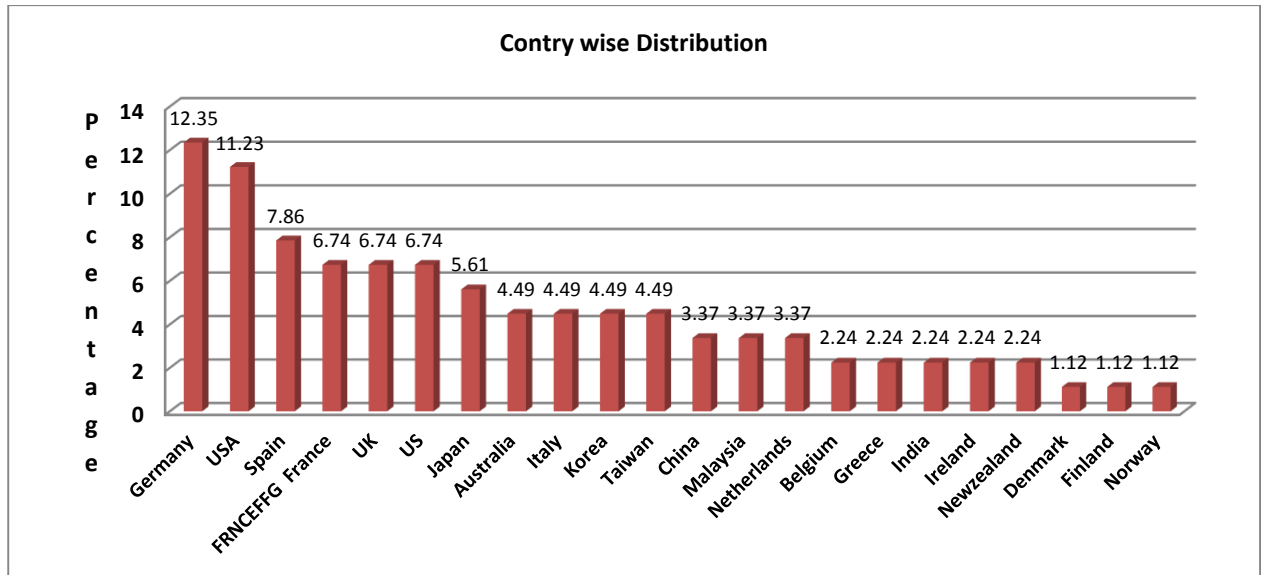
Table-3

Country	Frequency	Percentage
Germany	11	12.35
USA	10	11.23
Spain	7	7.86
France	6	6.74
UK	6	6.74
US	6	6.74
Japan	5	5.61
Australia	4	4.49
Italy	4	4.49
Korea	4	4.49
Taiwan	4	4.49
China	3	3.37
Malaysia	3	3.37
Netherlands	3	3.37
Belgium	2	2.24
Greece	2	2.24
India	2	2.24
Ireland	2	2.24
Newzealand	2	2.24
Denmark	1	1.12
Finland	1	1.12
Norway	1	1.12
	Total= 89	

Above table-3, presents the data relating to publication of *wiki* articles during 10 years i.e. from 2005-2014 from different countries. At a look towards the geographical distribution of journal articles of *wiki*, the *table* depicts that, highest amount of article published by the author from Germany that is 11(12.35%), followed by next majority that is 10(11.23%) by

authors from USA . Very less number of contribution i.e. 1(1.12%) is by the author from Finland, Denmark and Norway.

Figure-2 Country wise distribution of Publications



Data analysis techniques used in articles

Data analysis techniques may vary in different research articles. In the present study different type of data analysis technique used are presented in the following table.

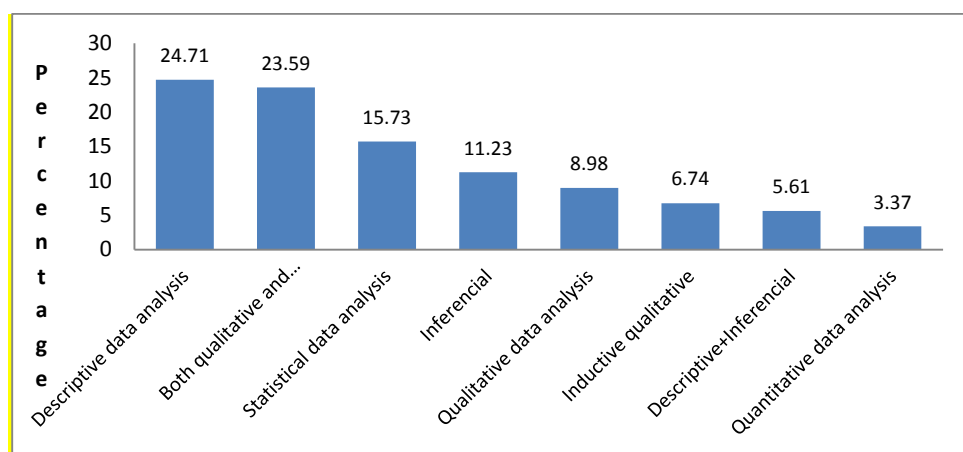
Table-4 Data analysis Techniques Used

Dataanalysis Techniques	Frequency =(89)	Percentage
Descriptive data analysis	22	24.71
Both qualitative and quantitative	21	23.59
Statistical data analysis	14	15.73
Inferencial	10	11.23
Qualitative data analysis	8	8.98
Inductive qualitative	6	6.74

Descriptive+Inferencial	5	5.61
Quantitative data analysis	3	3.37
	Total=89	

As reflected in the Table-4, Descriptive data analysis seemed to be the favored method used in majority i.e.22 (24.71) of articles, followed by 21 (23.59%) used combination of both qualitative and quantitative data analysis technique. Very less number of articles used Quantitative data analysis and Descriptive+Inferencial data analysis technique.

Figure-3 Data analysis techniques used in Articles



Categories of articles according to research method

Research methodology may vary in different research articles. In the present study different type of Research methodology used are presented in the following table.

Table-5

Research method	Frequency =(89)	Percentage
Survey method	24	26.96
Case study method	20	22.47
Experimental method	13	14.6
Delphi study	8	8.98
Observation method	11	12.35

Survey and content analysis method	2	2.24
Cognitive mapping	2	2.24
Content analysis	2	2.24
	Total=89	

Figure-5 Categories of articles according to research method

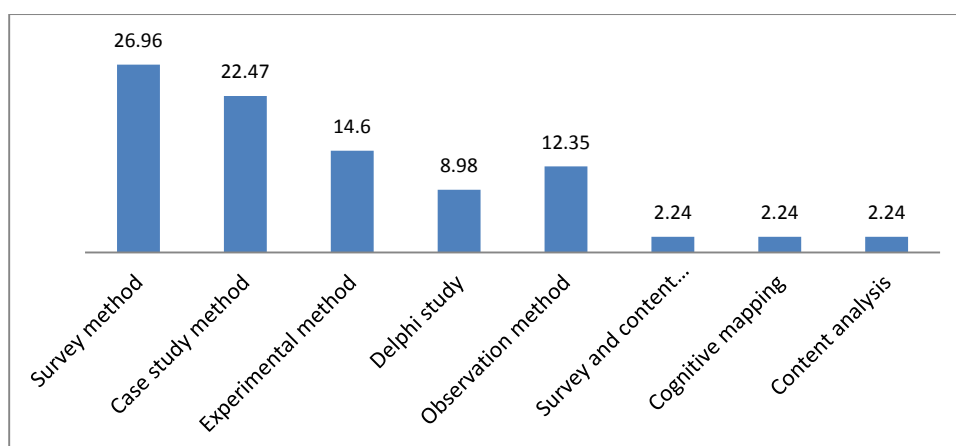


Table-5 describe about the research method is used for the wiki articles in the journal of science direct data base. Majority of the articles i.e. 24(26.96) were used Survey method, followed by next majority 20(22.47) used Case study method and very less number of articles i.e 2(2.24%) used Cognitive mapping and Content analysis

Subject background of the authors

Study of Subject background of the authors is an important indicator to find more quantum of research taken place by the people of particular disciplines. Table number-4, presents subject background of authors those who published wiki articles in the journal of science direct database

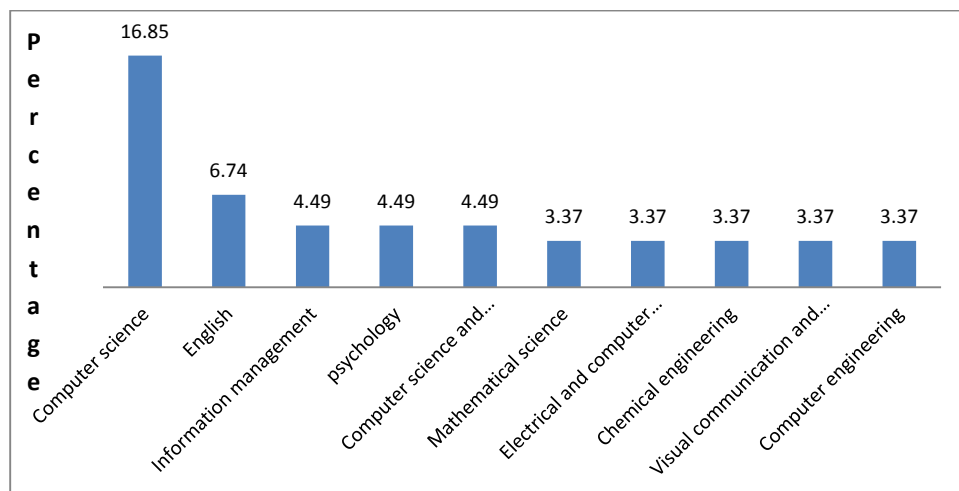
Table-6

Subject background of author	Frequency=(89)	Percentage
Computer science	15	16.85
English	6	6.74
Information management	4	4.49
psychology	4	4.49
Computer science and artificial intelligence	4	4.49
Mathematical science	3	3.37
Electrical and computer engineering	3	3.37
Chemical engineering	3	3.37
Visual communication and technology education	3	3.37
Computer engineering	3	3.37
Computer science and mathematics	2	2.24
Information technology	2	2.24
Education	2	2.24
Information system	2	2.24
Information science	2	2.24
Economics	2	2.24
Computing languages and system	2	2.24
Adverting and public relation	2	2.24
Educational study	2	2.24
physiology	2	2.24
Media studies	2	2.24
Molecular and experimental medicine , biochemistry and molecular biology	2	2.24
Educational policy, organization and leadership	2	2.24
Management information system	2	2.24
Philosophy, sociology, education and applied psychology	2	2.24
Computer language system and computer science	2	2.24
Computer science and information engineering	2	2.24
Information systems and advance computing	1	1.12
Food science and technology	1	1.12
Human resources and organization , applied cognitive psychology and media psychology	1	1.12

Education and professional studies , chemical and physical science	1	1.12
Information science	1	1.12
Library and information science	1	1.12
Tourism, leisure, hotel and sport management	1	1.12
	Total=89	

As reflected in the table, majority (16.85%) of the authors are from Computer science, followed by next majority of articles is published by authors from English. Very less number of contributions (1.12) are from Information systems and advance computing, Human resources and organization , applied cognitive psychology and media psychology, Education and professional studies , chemical and physical science, information science, Library and information science, Tourism, leisure, hotel and sport management.

Figure-6 Subject background of the authors



Findings and discussion

As a result of systematic analysis of data obtained for the present study, the investigator observes the following facts about the study of content analysis of wiki articles on the journal of science direct data base

1. Study of year wise publication of journal articles on wiki in science direct database over a period of 10 years i.e. is during 2005 to 2014, reveals that, the year 2012 is the most productive year in which highest number of wiki articles published, in the journal of science direct database and Followed by next majority are published in the year 2010 and lowest number of articles were published in the year 2005, 2006, 2014.

As the year 2005, is the year of inception of Wiki, very less number of articles might have been published in the year 2005 and 2006 because of this reason. On the

other hand as the year 2014 is the continuing year, very insignificant number of publication on Wiki is appearing in Science Direct and it may increase at the end of the Year.

2. Out of 89 numbers of publications only 14 are single authored and rest 75 number of articles is co-authored. So it is evident that authors of wiki articles have a tendency to work in collaboration with other researchers.
3. At a look towards the geographical distribution of journal articles of wiki, the result reveals that, highest amount of article published by the author of Germany, followed by next majority by the authors from USA. Very less number of contributions is made by the author from Finland, Denmark and Norway. From the analysis it is revealed that Germany and USA predominate in the research on Wiki.
4. Descriptive data analysis seemed to be the favored method used in majority i.e.22 (24.71) number of articles, followed by 21 (23.59%) used combination of both qualitative and quantitative data analysis technique. Very less number of articles used Quantitative data analysis (only) and Descriptive+Inferencial data analysis technique.
5. Majority of the articles used Survey method followed by next majority used Case study method and very less number of articles used Cognitive mapping and Content analysis
6. The multidisciplinary nature of Wiki research is evident from the fact that, the research publications are drawn from a large array of subjects from computer Science to Humanities. However the Majority of the authors are from Computer science, followed by next majority is from English. Very less number of contributions is from Food science and technology, Human resources and organization, applied cognitive psychology and media psychology, Education and professional studies, chemical and physical science, Library and information science, Tourism, leisure, hotel and sport management. This is quite clear from the above discussion that the system aspects of Wiki constitute a major area of research in Computer Science disciplines.

Conclusion

Wiki represents the most popular Web 2.0 genre technological tool. In the present knowledge society wiki is beneficial for learner engagement, collaborative learning, instructional design and many more. Research and development in this new technology emanates from a multiple disciplines starting from computer science to humanities and cognitive sciences. The present study carries a high empirical value as it analyzes the content of the wiki articles to make an assessment of various dimensions of the research taking place on Wiki. Although papers on Wiki are published from countries across the world, Germany and USA have a lion share of these publications.

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