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CONTENT ANALYSIS: A RESEARCH TECHNIQUE IN FIELD OF LIBRARY AND INFORMATION SCIENCE

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Abstract:

Content analysis is a widely used research technique; its applicability in field of library and information studies is increasing over time. This article describes content analysis as a scientific technique, quantitative and qualitative technique. Quantitative technique involves counting of occurrences of words and phrases. Whereas, qualitative analysis technique is used to analyze information resources to identify ideas behind word. Content analysis applied quantitative approach, qualitative approach and sometimes applied quantitative and qualitative approach both in research methods. Co-word is a hybrid approach of content analysis it uses occurrences and co-occurrence pattern of words. This article also provides a list of software that may helpful in content analysis.

Keywords: Content analysis; Quantitative Research technique; Qualitative research techniques; Research method; Library and information science.

INTRODUCTION

Content analysis refers to a research technique. It consists of two words viz. 'Content' and 'Analysis'. Content means a text which can be expressed, communicated and comprehended and the process, logic or a systematic way by which theme, ideas and purpose of the content can be explained quantitative and qualitative manner is its Analysis. Thus content analysis is a systematic process for qualitative and quantitative description of content. Content analysts do not collect their data from physical event as many researchers do but collect data from text which are recorded for their purpose and analyzed with such in the mind.

Here, text may be printed matter, articles, letters, communicated material, hand written material, recorded speech, news, videos etc. These texts are recorded form of human interaction and medium of communication. To study this interaction content analysis is a good research technique which uses some inferences from content in context to some research purpose. This technique used to identify particular concept, word and phrases within the content. This tool is very useful to quantify and analyze the presence of meaning of words phrases, idea and concepts and identify relation among them. In simple words content analysis is a systematic way to provide quantitative, numerical and qualitative description to written, spoken and visual communication.

The present paper throws light on quantitative and qualitative approach of content analysis. It describe distinctive feature of both approach as both are used by research scholar who indulged in field of library and information science research. White and Marsh (2006) describes content analysis as a flexible research method that can be applied to many problems in information studies, either as a method by itself or in conjunction with other methods. It is widely used technique, now information scientists are also approaching to content analysis to provide solution to the problem in their field. Figure 1 provides a view how the use of content analysis increasing over years. This article provides comprehensive definition and historical background of content analysis, and goes through different aspect of content analysis. It discuss frame work and component of content analysis given by Krippendorff (2004). Selective studies have been listed out in table-1 that shows border applicability of content analysis in field of library and information science.

MEANING AND DEFINITION

Content analysis refers to a research technique. It consists of two words viz. ‘Content’ and ‘Analysis’. Content means a text which can be expressed, communicated and comprehended, and the process, logic or a systematic way by which theme, ideas and purpose of the content can be explained quantitative and qualitative manner is its Analysis. Thus content analysis is a systematic process for qualitative and quantitative description of content. Content analysts do not collect their data from physical event as many researchers do but collect data from text which are recorded for their purpose and analyzed with such in the mind.

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Content analysis has seen different stages of in which it is defined indifferent by scholars over time its development; it was defined indifferently by scholars at various stage times. All these efforts have certainly revealed various dimension of content analysis. Some prevalent definitions of content analysis are given below;

- 1) Berelson (1952) content analysis is research technique for the objective, systematic and quantitative description of the manifest content of communication.
- 2) Holsti (1969) Content analysis is a technique for making influence by objectively and systematically identifying specified characteristic of message.
- 3) Weber (1990) Content analysis is a research method that uses a set of procedure to make a valid inference.
- 4) Riffe, Lacy and Fico (1998) Qualitative content analysis is a systematic and replicable examination of communication which has been assigned numerical value according to valid measurement rules and the analysis of relationship involving those value using statistical method in order to describe the communication, draw inferences about its meaning or infer from the communication to its context, both of production and consumption.
- 5) Kaplan (1943) Content analysis attempts to characterized the meaning in given body discourse in a systematic and quantitative fashion.
- 6) Krippendorff (2004) Content analysis is a research technique for making replicable and valid inferences from data to their context.

- 7) Raghuvir Sinha(1980) content analysis does not study behavior itself ; rather it process on artifacts produced by behavior that is recorded speech in writing. Content analysts infer the orientation concerns of the speaker, sub-culture or culture from the record of what is said.

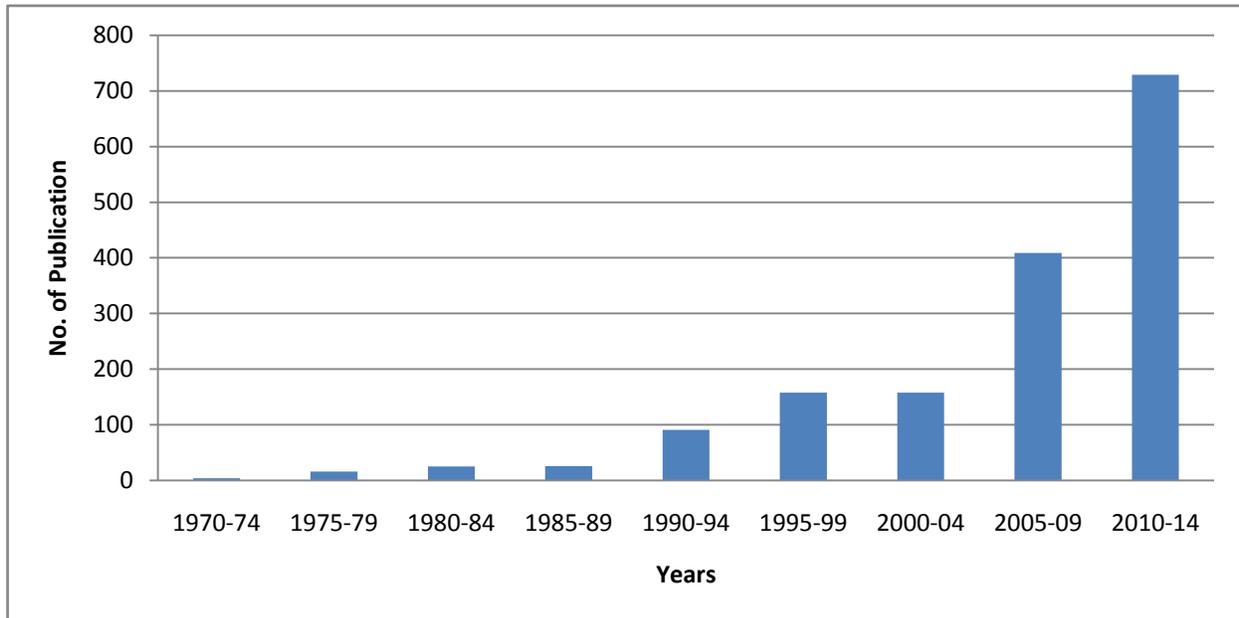
Thus, the above explanation enables us to understand the concept of content analysis. In brief, content analysis is a technique which involves a procedure to describe previously recorded or reported phenomenon and objectively and systematically breaking up it into more manageable unit that are related to the topic under the study, so that it can be analyzed qualitatively and quantitatively making valid and replicable inferences.

CONTENT ANALYSIS AS A RESEARCH METHODOLOGY

An evaluation of content provides a technique to look into development of a profession within a given period of time. As a full phase research methodology ‘content analysis’ is developed in the study of mass communication in 1915(kripendroff, 2004). It was based on basic communication model (Aristotle’s communication model), which includes sender, message, receiver as components. Initially researchers emphasized drawing inferences based on quantified analysis of recurring, easily identifiable aspect of text content and some time it is referred as manifestation of content. From the beginning of 20th century, researchers of different disciplines including anthropology, psychology, social psychiatry, sociology, political science, management and library and information science utilize content analysis. In the course of study, information scientist followed content analysis to answer his/her researcher question identifies a new branch of research technique and approaches. Mertem (as cited by Titscher, Meyer, Wadak, Vetter, 2000 and White and Marsh, 2006) notes that “The range of procedure in content analysis each enormous in terms of both analytical goals and the means are process developed to pursue them.” There are many variants of content analysis such as conversation analysis discourse, analysis, ethnographic analysis and narrative analysis etc.

Content analysis explores the intellectual structure and direction of communication (for, against, neutral), cognitive and historical significance. During the 1950s information scientists started working on the concept of content. Earlier its techniques were applied in Library and Information Science as an information retrieval technique. Now this technique is used to study different sphere of library and information science and it becomes one of the prominent research

technique. In a study, Heting Chu (2015) found that 57% research in the field of Library and Information science have done using content analysis technique. It is a highly flexible research technique that has been widely used in ‘Library and Information Science’ research with various goals and objectives (white and Marsh, 2006). During the first decade of 21st century, some prominent research (on the basis of received citation) articles appeared that utilized different approach of content analysis fulfilling various purposes are listed in **table-1**.



Data Source: LISA Database

Fig 1: Use of Content analysis in Library and Information Science Research

The listed articles methodologies don't have purist approach of content analysis but some time uses hybrid approach. It fulfills the premises of Library and Information Science research that enables practical or theoretical changes to improve the library and information services. **Figure 1** show that numbers of information scientist are consequently increasing who uses content analysis to solve their research problem. Analysis of communicated material (video, image, voice and etc.) especially in the form of documentary source in context to its meaning distinguishes content analysis from the other methods of research.

CONTENT ANALYSIS AS SCIENTIFIC TECHNIQUE

As a research technique content analysis includes some special procedure which can be adopted and rejected by researcher on the basis of personal experience. Like any other research methods, content analysis conforms six basic principle of a scientific method, they are:

1. **Objectivity:** it means analysis is pursued on the basis of some explicit rules which enables researcher to reach at same conclusion from the same content (document, message, etc.).
2. **Systematic:** content analysis is a rule based technique. Under this method content is to be analyzed step by step following rules of a procedure, devising content into analytical unit. It has structured forms that allow analyst to extract relevant information more consistently than if they were reading the same documents only casually.
3. **Generalization:** It is very important criteria for a research method to prove itself to be scientific. Generalization refers to "the degree to which the findings are applicable to other populations or samples" (Ryan and Bernard, 2000, p.786). Thus, it draws on the degree to which the original data were representative of a larger population e.g. after completing a poll of 300 city residents; the researches obviously hope to generalize their findings to all residents of the city.
4. **Replicability:** The replication of a study is a safeguard against over generalizing the findings of a particular research endeavor. Replication involves repeating a study with different case or in different context, checking to see similar result is obtained each time.
5. **Reliability:** it refers to the extent to which a measuring procedure yields the same result on repeated trials. Without acceptable level of reliability, content analysis measures are meaningless.
6. **Validity:** validity refers to the extent to which an empirical measure adequately reflects what humans agree on the real meaning of the concept. In content analysis researcher is a boss, making final decisions on what concept to measure and how to measure, there are good guidelines available for improving validity.

| Article (Author's Name & Year) | Purpose | Source of data | Type of content analysis |
|---|---|--|-------------------------------------|
| Heisig, 2009 | To identify difference and correspondence among different Knowledge management models | research publication & conference proceeding's paper on KM | Quantitative & Qualitative |
| Hall & Davison, 2007 | To identify the use of blog technology | Students' blog comment | Qualitative |
| Kim & Oh, 2009 | to examines the criteria of questioners use to select the best answers in a social Q&A site (Yahoo! Answers) within the theoretical framework of relevance research | comments on Yahoo! Answers | Qualitative |
| Lynch & Smith, 2001 | to identify significant changes in content Advertisement; to identify technology knowledge in job requirements; to identify behavioral skills in job advertisement | advertisements in C&RL News | Quantitative |
| Al-Debei & Avison, 2010 | to study the BM(business Model)concept framework | Literature on BM (business model) | Quantitative |
| Kracker & Wang, 2002 | To investigate students' perceptions of research and research paper anxiety | written paragraph on research experience by students | Qualitative |

| | | | |
|--|---|---|----------------------------|
| Koufogiannakis, Slater & Crumley, 2004 | To identify different type of research in LIS | library and information studies (LIS) literature | Qualitative |
| Himmelboim, Gleave & Smith, 2009 | to identify discussion catalyst on political issue | Message of political Usenet newsgroups | Quantitative & Qualitative |
| Croneis & Henderson, 2002 | to examine electronic services position | job advertisement in College & Research Libraries News | Quantitative |
| Aharony, 2009 | to describe and classify the LIS blogosphere | library professional blogs | Quantitative |
| Quiroga & Mostafa, 2002 | to identify empirical research methods | research papers | Quantitative |
| Shachaf, 2009 | to examine the quality of answer on Wikipedia reference desk | answer on Wikipedia reference desk | Qualitative |
| Mathews & Pardue, 2009 | to identify requirements job analysis | ALA's online Job List | Quantitative |
| Walter & Mediavilla, 2005 | to evaluate the effectiveness of Tutor.com's Live Homework Help service | 100 transcripts of online transactions between teens and the virtual reference librarians in California | Qualitative |

| | | | |
|--------------------------------|--|--|----------------------------|
| Zhang, 2008 | to study undergraduate students' mental models of the Web as on information retrieval system | data collected from questionnaire, semi structured interview, and participant observation, | Quantitative |
| Bar-Ilan, 2004 | to understand the characteristics of self linking | institution web page | Quantitative & qualitative |
| Kim, Coyle & Gould, 2009 | to examine collectivist and individualist cultural influences on the design of organizational websites originating in South Korea and the U.S. | American and South Korean company-sponsored websites | quantitative |
| Hara, Shachaf & Stoerger, 2009 | to identify the values that can be assigned to some categories (relevancy of discussion, boundary crossing, and cultural diversity). | e- mail message of online discussion forums | quantitative |
| McKechnie & Pettigrew, 2002 | to examine the use of theory in LIS research | research publication | Quantitative |
| Aharony, 2009 | To understand the idea of posts that appear in the blogs | librarians' blogosphere | Quantitative & Qualitative |
| Genuis, 2006 | to explored the role of the literature in the diffusion of new information | articles published in medical and consumer publication | Quantitative & Qualitative |
| Aharony, 2010 | To identify emerging trends in the field of information literacy | bibliographical data from web of science | Quantitative |

| | | | |
|----------------------|---|---|------------------------------|
| Mackenzie, 2005 | To analyze on what basis and by what procedure managers select individuals to serve as information sources. | recorded data from interview | Qualitative |
| Shachaf, 2005 | identify the typology of ethics principles proposed by professional associations | Data from English versions of codes of ethics proposed by professional associations | Qualitative & Quantitative |
| Kim & Jeong, 2006 | to examine the state and characteristics of theoretical research in Library and Information Science | Research publications | Qualitative & Quantitative |
| Lee & Bates, 2007 | To examine use, perception and extent of weblog technology used by Irish librarians and the factors behind promoting and discouraging the use of weblogs. | Irish library and librarian weblogs | Quantitative & Qualitative |
| Bar-Ilan, 2007 | To examine the use of blogs by librarians and libraries | content in blogs | Qualitative & Quantitative |
| Corrall, Sheila 2007 | To explore and investigate the development of indicators, to evaluate level of engagement of institutions in UK with information literacy. | Public domain documents which were accessible from institutional websites | Qualitative |
| Jeong & Kim, 2005 | To analyze the knowledge structure of LIS in South Korea | Scholarly research articles | Qualitative and Quantitative |

| | | | |
|------------------------|--|--|------------------------------|
| Marchionini & Mu, 2003 | To analyze how people understand electronic tables and to inform development of a web based statistical table browser. | research publication | Qualitative and Quantitative |
| Kracker, 2010 | To understand the human understanding of libraries and the implications of this understanding for library use and service. | User study and content analysis of user narratives | Qualitative & Quantitative |
| Mbambo & Cronje, 2002 | To study that the use of internet reduce the development gap between developing countries and developed ones. | Discussion list | Quantitative & Qualitative |
| Stansbury, 2002 | To study the role of problem statements in scholarly journals | Problem statements in journal publications | Quantitative & Qualitative |
| Clyde, 2004 | to study changes in school websites | school websites (1996-2002) | Quantitative |
| Wang & Gao, 2004 | to identify technical services | Institutional library websites | Quantitative |

Source of data: LISA Database

Table 1: Use of Content analysis in Library and Information Science Research

Thus the availability of above mention principle in the content analysis makes it a scientific tool to analyze a text.

CONTENT ANALYSIS AS A QUANTITATIVE TECHNIQUE

In the early stage, only quantitative approach was used for content analysis. It is known as classical content analysis. It consist of tabulating of occurrence of content unites (word, phrases etc.). Content analysis was born as a quantitative technique. In 1952, Berelson described content analysis as a quantitative description of manifest content of communication. Counting frequency was the main activity of content analysis in 1940s. Quantitative technique is widely used in mass communication and library and information science as a way to count manifest textual elements. Content analysis, as typical quantitative approach to the study of text, offers in valuable tools for tearing out meaning from text, or any other symbolic material. If confronted with the analysis of 100 of pages of transcripts or symbolic material. This technique certainly helps us reveal pattern in the data. Quantitative content analysis is deductive in its approach and test hypothesis. These hypothesis flows from what is already known about the problem and the extant research question. This method uses random sampling or other probabilistic approaches in selecting data sources, so as to ensure the validity of statistical inference. It produces number that can be manipulated with various statistical methods. Its main objective is to make applicable and valid inference form texts (or other meaningful matter) to context of their use (krippendorff,2004,p.19). One advantage of quantitative analysis is that it is efficient to help us to deal with large quantities of data without getting worried under the sheer volume of material. Its disadvantage is that it may miss out on subtle nuances in the production of meaning.

WHAT TO COUNT

There are seven major elements in a written message that can be counted in content analysis as word, themes, character, paragraph, item, concepts and semantics (Berelson, 1952; Berg, 1983; Merton,1968; Seltiz et al.,1959 as cited by Bruse L. Berg,1963).

Words: The word is the smallest element or unit used in content analysis. Its use generally results in a frequency distribution of specified words or terms.

Themes: In its simplest form, a theme is a simple sentence, a string of words with a subject and a predicate. Because themes may be located in a variety of places in most written documents, it becomes necessary to specify (in advance) which places will be searched. For

example, researchers might use only the primary theme in a given paragraph location or alternatively might count every theme in a given text under analysis.

Characters: In some studies, characters (persons) are significant to the analysis. In such cases, you count the number of times a specific person or persons are mentioned rather than the number of words or themes.

Paragraphs: The paragraph is infrequently used as the basic unit in content analysis chiefly because of the difficulties that have resulted in attempting to code and classify the various and often numerous thoughts stated and implied in a single paragraph.

Items: An item represents the whole unit of the sender's message—that is, an item may be an entire book, a letter, speech, diary, newspaper, or even an in-depth interview.

Concepts: Concepts involve words grouped together into conceptual clusters (ideas) that constitute. For instance, a conceptual cluster may form around the idea of deviance. Word such as crime, delinquency, kiting, and fraud might cluster around the conceptual idea of deviance. To some extent, the use of a concept as the unit of analysis leads toward more latent than manifest content.

Semantics: researchers are interested not only in the number and type of words used but also in how affected the word(s) may be—in other words, how strong or weak a word (or words) may be in relation to the overall sentiment of the sentence.

Marilyn Domas White and Emily E. Marsh (2006) identify following steps for a study using quantitative content analysis

1. Establish hypothesis or hypothesizes
2. Identify appropriate data (text or other communicative material)
3. Determine sampling method and sampling unit
4. Draw sample
5. Establish data collection unit and unit of analysis
6. Establish coding scheme that allows for testing hypothesis
7. Code data
8. Check for reliability of coding and adjust coding process if necessary
9. Analyze coded data, applying appropriate statistical test
10. Write up results

CONTENT ANALYSIS AS QUALITATIVE TECHNIQUE

Qualitative content analysis is dealt with appearance or non-appearance of attributes in message. It examine meaning, theme, patterns that may manifest of latent in a particular text. It allow researcher to understand social reality in a subjective but scientific manner. Qualitative content analysis was developed primarily in anthropology, qualitative sociology and psychology, in order to explore the meanings underlying physical message. A. L. George (1956, p7) “qualitative analysis of a limited number of crucial communication may often yield better clues to the particular intension of a particular speaker at one moment in time than more standardize .” this method mainly uses inductive approach and research question guiding the gathering data and examination of topic and theme as well inferences drawn on the basis of available and unavailable attributes in text sometimes it attempts to generate theory to relate concept and to suggest hypothesis that can be tested deductively. It uses purposively sampling for selecting data source from whole which can inform the research question being investigated and produces description or typologies along with expression form subject reflecting how they view social world. It pays attention to unique themes that illustrate the range of meaning of the phenomenon whether than statistics significance of occurrence of particular text for concept.

Yan Zhang and Barbra M. Wildemuth (2009) suggest following step to conduct qualitative content analysis

1. Prepare data
2. Define the unit of analysis
3. Develop categories and coding scheme
4. Test your coding scheme on a sample text
5. Code all the text
6. Access your coding consistency
7. Draw conclusion from the coded data
8. Reports your methods and findings

Practically, above mention both approach of content analysis are not mutually exclusive and can be used in combination. Smith (1975) says “qualitative analysis deals with the form and antecedent-consequent patterns of form, while quantitative analysis deals with duration and

frequency of forms". Weber (1990) also considers that best content–analytic studies use both qualitative and quantitative operations.

SOURCE OF DATA FOR CONTENT ANALYSIS

Since beginning stage, content analysis dealt with only recorded materials which are recorded to communicate some idea, information and social cultural to their coming generation. These recorded materials are source of data for conducting content analysis. Ram Ahuja (2001) identifies five important for collecting data in content analysis. These sources are given bellow:

1. News Paper
2. Books & magazine
3. Filmed Material
4. Archives documents
5. Records etc.

1. NEWS PAPER:

It is widely available form of written communication, it does not only report local, state, national, international event but also deals with social political economic and cultural issues. They present the opinions of intellectual people, experts as well as the common people. Thus, news paper provides a wealth of information.

2. BOOKS & MAGAZINES:

It serves as possible source for content analysis. Various collections of books, magazines, journals and different types of documents are available in libraries could be used for examining anything from simple to complex issue or from old to current topic.

3. ARCHIVED DOCUMENTS:

Documents available in archives may be more difficult to obtain and if available at all, require special handling and care. Many a time letters written to kin, friends and acquaintances reveal fascinating views of the social situation during the specific period of history.

4. FILMS:

Films including videotapes provide another source of data. By analysis of the content of films, one can pick out themes, issue and beliefs for analysis. For example: Sex and violence, changing value of youth, rights of women, police corruption and so on.

5. RECORDS:

Records are obtained through sorting out files from office, archives, college libraries, information centers, etc. For example: correspondence between viceroy and congress leaders during struggle for independence period. Radio programs and different types of recorded speech into audio format are very important for content analysis.

Except of above mention source there are so many sources of data that can be utilized for content analysis:

- | | |
|--|------------------------------------|
| 1. Periodicals | 11. Recorded voice |
| 2. Research articles | 12. Diary/letter/ e-mail |
| 3. Books chapter | 13. Twit on social network |
| 4. Song Lyrics | 14. Interview |
| 5. Government policy | 15. Web page |
| 6. Parliamentary speech or general speech | 16. Opinion Survey |
| 7. Transcript of news reporting | 17. Censuses |
| 8. Editorials | 18. Laws |
| 9. Conversations | 19. Advertisements |
| 10. Image | 20. Radio programs |
| | 21. T V Serials and programs, etc. |

SOFTWARE PACKAGE FOR CONTENT ANALYSIS

There are many set of programs for dictionary base content analysis e.g. NVivo (2003-2005), QSRN6 (2005), and Atlas TI (Muhr-2004), R's TM library etc. Many programs now allow for storing not only textual documents but also image, audio in electronic form dictionary based content analysis programs rely on several basic functions: word, category, co-occurrence counts and frequency analysis, visualization (including clustering) and some time concordance generation. DIMAP-4 (Litkowski & Mc Tavish, 2001), KEDS (Schrodt, 1996) and TABRT (Schrodt, 2000) are example of developing environments. Word Stat 5.0 (Peladeau, 2005), VBPro (Miller, 2003) and the General Inquire (Stone, 2002) are example of dictionary-based content analysis program. Most of researcher does not reveal the software used in content

analysis. Afosto and Hughes-Hassell (2005) used NVivo; Marsh (2002) used Atlas-TI; White (1998), and Kracker and Wang (2002) used QSR NUD*IST (latest version known as QSR N6); Ravikumar, Agrahari and Singh (2015) used R's TM package in his work. Information about different software in brief given bellow:

CATPAC

Website: <http://www.terraresearch.com/catpac.cfm>

Operating Systems: Windows

License: Commercial \$595; Academic \$295; Student \$49.

Code base: Proprietary (executable only)

Languages: English (ASCII only)

COMPUTER PROGRAMS FOR TEXT ANALYSIS

Homepage: <http://www.dsu.edu/~johnsone/ericpgms.html>

Operating Systems: MS-DOS

License: Freeware

Codebase: Proprietary (executable only)

Languages: English (ASCII only)

CONCORDANCE

Homepage: <http://www.rjcw.freemove.co.uk>

Operating Systems: Windows

License: \$89 + \$10 handling fee. \$40 per subsequent license.

Codebase: Proprietary (executable only)

Languages: English, Chinese

DICTION

Homepage: <http://www.sagepub.com>

Operating Systems: Windows

License: Commercial \$189; Academic \$129

Codebase: Proprietary (executable only)

Languages: English (ASCII only)

HAMLET

Homepage: <http://www.apb.cwc.net/homepage.htm>

Operating Systems: MS-DOS

License: Free “for personal use”

Codebase: Proprietary (executable only)

Languages: English (ASCII only)

T-LAB

Homepage: <http://www.tlab.it>

Operating Systems: Windows

License: \$520 single user license

Codebase: Proprietary (executable only)

Languages: English, Spanish and Italian.

WinATA

Homepage: <http://www-users.aston.ac.uk/~roepj/guide/guide.htm>

Operating Systems: Windows

License: Free

Codebase: Proprietary (executable only)

Languages: English (ASCII only)

TEXTPACK

Homepage: <http://www.social-science-geis.de/en/software/textpack/index.htm>

Operating Systems: Windows

License: Commercial single user E300; Student E100; Network E1500

Codebase: Proprietary (executable only)

Languages: English (ASCII only)

LIWC

Homepage: <http://www.erlbaum.com>

Operating Systems: Windows, Mac

License: Single user \$99

Codebase: Proprietary (executable only)

Languages: English (ASCII only)

MONOCONC / PARACONC

Homepage: <http://www.ruf.rice.edu/~barlow/mono.html>

Operating Systems: Windows

License: Free

Codebase: Proprietary (executable only)

Languages: English (ASCII only)

LEXA

Homepage: <http://nora.hd.uib.no/lexainf.html>

Operating Systems: Windows

License: Free

Codebase: Proprietary (executable only)

Languages: English (ASCII only)

SPSS TEXTSMART

Homepage: <http://www.spss.com/textsmart/>

Operating Systems: Windows

License: Unknown

Codebase: Proprietary (executable only)

Languages: English (ASCII only)

VBPRO

Homepage: <http://excellent.com.utk.edu/~mmmiller/vbpro.htm>

Operating Systems: MS-DOS

License: Free

Codebase: Proprietary (executable only)

Languages: English (ASCII only)

WORDSTAT

Homepage: <http://www.simstat.com/wordstat.htm>

Operating Systems: Windows

License: \$278 (\$129 + required Simstat base \$149)

Codebase: Proprietary (executable only)

Languages: English, French, Spanish and Dutch

DIMAP

Homepage: <http://www.clres.com>

Operating Systems: Windows

License: Commercial \$330; Academic (See below)

Codebase: Proprietary (except perhaps for the Franklin parser)

Languages: English (ASCII only)

VISUAL TEXT

Homepage: <http://www.textanalysis.com>

Operating Systems: Windows

License: (Contact company)

Codebase: Proprietary

Languages: English

KEDS / TABARI

Homepage: <http://www.ku.edu/~keds/>

Operating Systems: MS-DOS, Mac, Unix/Linux

License: Free

Codebase: Open source

Languages: English (ASCII only)

ATLAS-TI

Homepage: <http://www.atlasti.de>

Operating Systems: Windows, MS-DOS

License: \$250

Codebase: Proprietary (executable only)

Languages: English only (?)

NUDIST

Homepage: <http://www.qsr-software.com>

Operating Systems: Windows

License: Single user \$325; 2-30 licenses \$260

Codebase: Proprietary (executable only)

Languages: English only

R'S TM PACKAGE

Homepage: <https://cran.r-project.org/web/packages/tm/index.html>

Operating Systems: Windows, Linux

License: free

Codebase: Open source

Languages: English, Latin and other

TEXTQUEST

Homepage: <http://www.textquest.de/>

Operating Systems: WinXP, Windows Vista, Windows 7, Mac OS-X 10.4 or newer

License: Commercial 800,00 EUR; Academic 600,00 EUR

Codebase: Proprietary (executable only)

Language: English, German, and Spanish.

CONCLUSION

Content analysis is a research technique which is being used in Library and information science studies with varying research goal. This research method uses qualitative, quantitative and some time uses both approach in a study. It employs a wide range of analytical technique to generate findings and put them into context. In the field of Library and information science, content analysis always uses in purist form but occasionally uses a hybrid approach incorporating quantitative and qualitative technique. There is many proprietary and free software that can be used to have accurate and errorless analysis.

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