
Is User Studies User-oriented? Domain analytic approach to User Studies in Information Organization

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Abstract

In this study, the use of user studies in information organization and a desired future direction can be visualized by investigating how user studies have been shaped in ISKO (International Society of Knowledge Organization) proceedings from 1990 to 2012. Also, the author suggested a holistic view of user in information system.

Keywords: Information organization; knowledge organization; user studies; ISKO; content analysis

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1 Introduction

Technology has provided users with increased access to information that has resulted in increased control of users over information. This has led to an increased importance of satisfying user's needs and improving information systems. Although, the term user has been widely used in library and information science, there have been disagreements in theoretical and methodological frames of user studies. This research aims to explore the value of user studies within information organization - a subfield of library & information science by applying simple domain analytic approaches.

2 Background

As in many other disciplines, in which services and products have developed a user-centered revolution, user studies that reflect users' perspectives have also been widely conducted in information systems and processes (Nahl 1996). Bawden (2006) notes that a history of the study of users' information needs is not short and there was much growth of interest and publication; yet, such studies lack clear foundations in methods and conceptual framework (Bawden 2006; Hjørland 1997 & 2013; Wilson 1981 & 1997).

Hjørland (2013) examined the theoretical basis of user studies in IO, pointing out the lack of theory and questioning their usefulness for development of core principles of IO. He questioned the validity of user studies, criticizing cognitive approaches that have drawn attention as popular approaches to be friendly to users. He appears to support a cultural view on the human mind; that the mind is shaped culturally, socially, and individually, rather than traditional cognitive psychology's view on the universal born human mind. Regardless of the validity of his critique, it seems that at the least it is very true that we do not have enough theoretical backgrounds to support the previously conducted empirical studies.

3 Methodology

Analysis of terms found in literature was performed in order to examine whether the concept of 'user studies' has been used and elaborated. Twelve volumes of *Advances In Knowledge Organization*, the proceedings of the International Society for Knowledge Organization's (ISKO) International Conference – biennial from 1990 to 2012- were examined. The ISKO conference is one of the most active international venues where recent research streams on IO come out. Among a total of 650 articles, only 138 articles considered user studies and were selected for analysis of terms. User studies included research that conducted analysis with direct user input or discussed user-oriented approaches or (user) information needs.

In a pilot study with four digitized volumes from 2006 to 2012, six terms relating to user studies were used to select user studies from entire four volumes of articles. Three of them are reflective of approach – information need, user, and cognitive, and the other three terms reflect methodologies for collecting data from users – transaction, word association, and interview. The selection of terms is based on Hjørland's *Lifeboat for Knowledge Organization*¹. Figure 1 shows frequencies of the six terms in total 224 articles from four volumes in pilot study.

¹ www.iva.dk/bh/lifeboat_ko/home.htm

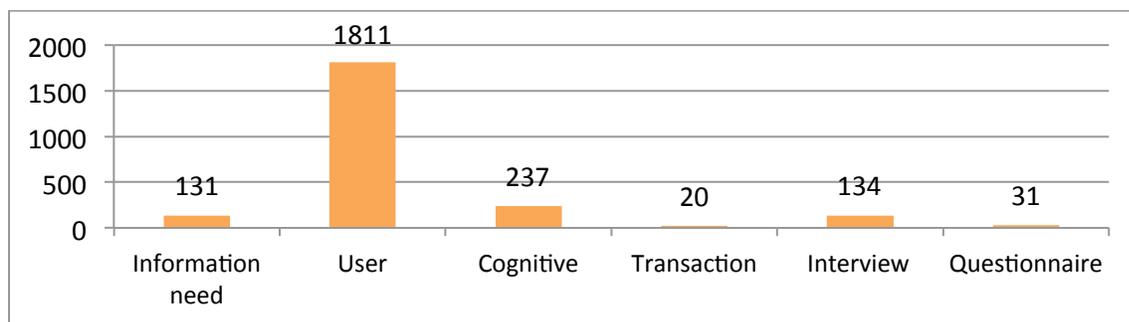


Figure 1 Frequency of six terms

Given that the frequency of three terms of methodologies for collecting data from users is relatively small except for interview, only approach relative terms – information need, user, and cognitive were used for the current study.

A criterion of selection of ‘user studies’ among a total 12 volumes of ISKO was based on:

- a) Appearance of at least one of the three keywords in abstract
- b) Appearance of at least one of the three keywords in body of paper
- c) No appearance in the paper, but classified as at least one of the keywords by editorials (E.g. classified as “cognitive approach” or “user profile”)

Within the selected 138 articles, titles and abstracts were used for analysis of terms. The tool used in this analysis was WordStat 6.1.17. This software has functions for content analysis of text based data and easy visualization of data. It is also preferred due to the dictionary functions that allow controlling categorization of words –e.g. knowledge-organization, which is tricky to control in a pilot study with SPSS. At the same time, the software couldn’t control singular/plural issue and word stem issue – e.g. incorporating counts of search and searching, but, an interesting discovery on differences between singular and plural was noted and will be discussed in this paper.

4 Findings

Titles and abstracts from 138 articles were analyzed regarding its frequency. The terms occurring most frequently were visualized with seven clusters that are identified based on Jaccard’s coefficient.

Among the identified seven clusters, four meaningful categories remain after getting rid of three clusters which have only two terms.

- Cluster1: access, analysis, information, user, system and systems, and knowledge,
- Cluster2: approach, subject, results, search, users
- Cluster3: classification, library, and online
- Cluster4: retrieval, searching, thesauri, and thesaurus

The analysis of hierarchical clustering on titles and abstracts indicates some interesting patterns associated with the singular and plural of user. As our focus of this paper is on user study, another analysis was added to reveal 1) relations between *user* and other terms, and 2) differences between *user* and *users* in terms of co-occurred term frequency. Thus, two proximity plots were formed to examine distances of each term to the targeted terms: user and users. The plots identified some different patterns in the relations of user/users and other terms, which will be discussed in next section.

5 User and system

5.1 User and Users

In analysis of terms in titles, user and users appear within same cluster that has access and analysis. The second analysis of terms in title and abstract, however, user seems associated more with system/systems and users seems associated more with subject, search, and results. When it comes to using information systems, we may consider a ‘user’ a human agent who uses the systems. In that sense, a ‘user’ can only exist in relation to a certain kind of systems. Whereas, searching subject usually not only involve an individual user’s perception on the subject but also requires reasonable consensus among a

group of users. Thus, this different appearance of user and users reports not the difference between singular and plural but individual and collective views of user studies. Badwan (2006) and Horland (1997) also pointed out the tendency to study the individual user in information seeking and retrieval; they emphasized the necessity for studying the information needs of a group of users, information seeking, and retrieval with a collective view (Bawden, 2006; Horland, 1997).

5.2 User-oriented and system-oriented

Looking at terms frequency distributions of entire texts including titles and abstracts, most of the terms indicate a system-oriented view rather than a user-oriented view. Below is a list of terms (excluding too general terms) – information, knowledge, user, and users.

- SEARCH
- SYSTEM
- SUBJECT
- THESAURUS
- INDEXING
- WEB
- PROCESS
- LIBRARY
- ANALYSIS
- CLASSIFICATION
- COGNITIVE
- KNOWLEDGE_ORGANIZATION
- SYSTEMS
- DESIGN
- ACCESS
- RETRIEVAL
- ONLINE
- RESULTS

Among these 18 terms, there is no user-oriented term except for cognitive and analysis. Most of terms are about information system the users would look for due to their information needs. Neither term relative information needs, nor contexts of users were shown. Hjørland (1997) concentrated on unidentifiable boundaries of user studies, pointing out many user studies in reality don't focus on the user's real information problems, but utilization of the information system.

6 Desired direction

Wilson (1981) shed light on a call for a more holistic view of information needs and users. It includes in-depth studies of well-defined groups, which reiterate the literature reviewed in this paper– claiming that understanding of context and pursuing domain knowledge is necessary for better communications of user with information system. In other words, user studies need more domain analytic approach to user's information needs and problems; not how to utilize the information system by the user. System-oriented studies are somewhat necessary, since our purpose of user studies is to improve information system to meet user needs. Also, user-oriented studies based on an individual user's cognitive process in information seeking, with basic understanding of the human mind, will help establish foundational information behavior models. The first system-oriented approaches have been conducted actively in IO from traditional library classification to online catalog environment as discussed earlier. The second user-oriented approaches also have been conducted dynamically in information retrieval (IR) or information seeking behavior; many cognitive theoretic approaches have been introduced in IR. To promote in depth study of well-defined groups as Wilson suggested, we may need to think of what domain knowledge is and how they can contribute to understanding of users. Smiraglia's definition of domain would help us how to take domain-oriented approaches to user studies in KO:

“A domain is a group with an ontological base that reveals an underlying teleology, a set of common hypotheses, epistemological consensus on methodological approaches, and social semantics” (Smiraglia, 2012 pp. 113)”

7 Conclusion

According to Tennis (2003), there are two axes of domain analysis— area of modulation (extension) and the degree of specialization (intension). Given, that the analysis of terms by frequency in this paper revealed what is covered in the domain, it can be said that extension of domain was figured through the analyses. Also, the discussions of the revealed clusters of terms stated focus of the domain – its parts of intension. However, the other main component of intension, intersection – where the domain is positioned against other domains hasn't been clearly discovered in this paper. Thus, the future study can be carried out for intersection of user studies in IO and other domains such as information retrieval, human computer interaction, and behavior studies. Overall, this study figured the current state of user studies in IO through the analysis of terms in ISIO proceedings and discussed domain-specific, system-specific, and user-specific studies which are necessary for holistic views of user in information system. In addition to main themes of user studies, this study also validated methodological approaches – content analysis with terms - for further research. **Reference**

Bawden, D. (2006). Users, user studies and human information behaviour: A three-decade perspective on Tom Wilson's "On user studies and information needs." *Journal of Documentation*, 62(6), 671–679.

Hjørland, B. (1997). *Information seeking and subject representation*. Greenwood Press.

Hjørland, B. (2013). User-based and Cognitive Approaches to Knowledge Organization: A Theoretical Analysis of the Research Literature. *Knowledge Organization*, 40(1), 11–27.

Nahl, D. (1996). The user-centered revolution: 1970-1995. *Encyclopedia of Microcomputers*, 19, 143–99.

Smiraglia, R. P. (2012). Epistemology of domain analysis. *Cultural Frames of Knowledge*, 111–124.

Tennis, Joseph T. "Two Axes of Domains for Domain Analysis." *Knowledge organization* 30.3/4 (2003): 191-5. Print.

Wilson, Thomas Daniel. (1997). Information behaviour: an interdisciplinary perspective. *Information Processing & Management*, 33(4), 551–572.

Wilson, Tom D. (1981). On user studies and information needs. *Journal of Documentation*, 37(1), 3–15.