

REVIEW PAPER

Information Use, User, User Needs and Seeking Behaviour: A Review

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ABSTRACT

The studies on the user, user information behaviour, and seeking have been continuing since last 50 years or more. Ranganathan's five laws brought the phrase 'use' reordering from preservation. The studies on user and user behaviour with varying characteristics has not changed and still going on to study the impact of ICT and use of electronic resources. Several hidden revelations on users' approach to information identified by Voigt, types of readers identified by Ranganathan and the ASK model by Belkin have been expounded to visualise the user categories and attributes of the user, user information behaviour and so on. The aim of this paper is only a perspective review of the literature on information user, with an intrinsic scope for some new research possibilities in this area.

Keywords: Information user; Information needs; Information behaviour; Anomalous state of knowledge

1. INTRODUCTION

The studies on information use, user and user behaviour, information seeking, have been going on since mid-20th Century. The area has still been a subject of current study with ceaseless advances influencing library and information science. This hypothesis is based on the succinct statement made by Connaway¹, *et al.* as; 'the study of user behaviours, also referred to as information behaviour, information seeking behaviour research or user studies is not a new line of inquiry'. Ranganathan² emphasised on studying the user behaviour by a statement made in the context of Fourth Law. It states; 'perhaps the most convenient method of studying the consequences of this law (Fourth Law) will be to follow the reader from the moment he enters the library to the moment he leaves it'. McNinch³ reports the empirical study on users' information needs and gathering and behaviour habits presented by Bernal and others at the first International Conference on Scientific Information organised by the Royal Society held in 1948'. Bernal then presented a preliminary analysis of a pilot questionnaire survey on the use of scientific literature and said 'Librarians will be interested to learn that the analysis of this questionnaire indicated that approximately 80 per cent of all scientific literature is obtained from libraries and that use of reprints and subscription to journals played a minor role. 'It is also worth to note that the Conference was limited to consider the subject only, from the point of view of use and service to the scientific community'. Ranganathan² formulated his five laws, advocating a shift from *preservation to use* and

highlighted the use and user of library and books as early as in 1931. The two studies exemplify the user interaction with the library materials directly on shelves or through the library catalogue or searching scientific literature. The study by Bernal, however, was more concerned with the access to scientific literature and the abstracting indexing services. These studies, in brief, showed a gradual shift and changing focus on the use and users of the libraries and the library resources.

The 1960s saw the advent of online information retrieval systems that changed information access from the physical environment to machine environment. The studies on information retrieval and more extensive studies on users' interaction with the machine for information retrieval opened up for the adoption of information retrieval tools like a structured thesaurus. The new millennium with the ordered impact of information communication technology, as more and more sources of information going digital, the use, user and user information seeking totally shifted library's physical environment to virtual environment. The emergence of World Wide Web transformed the user information seeking to more or less to 'Search Engines' and the phrase 'googling' became common search method on the Web. The questions such as 'does Google is alternative to Library' are now lingering in the minds of the users and library professionals. However, this could be a credulous thinking as Google cannot be an alternative to the library on the other hand studies on user information seeking, gathering and information use, with the web in focus, set a new trend. These inferences imply that the study of use, user and his or her information needs and information seeking and behaviour would always be subject to research by library and information professionals. The paper has attempted to highlight

researches in the core areas of user covering the contemporary developments since the period of Bernal.

Further, Ranganathan⁴ brought forth new modes of approach, by conceiving different types of readers coming to the library seeking information. Melvin Voigt's⁵ three information seeking approaches were the new elucidations on users' information seeking associated with specific types of information sources. Therefore, it would be desirable to deliberate of these concepts and interpret them to reveal the hidden and inherent thoughts surrounding them. The review in this papers is systematically presented so that the successive developments are explicitly visualised and evaluated for the further study.

2. LITERATURE REVIEW

Some contemporary studies on information needs of users, in brief, are presented here as part of this review. Incidentally, a good review of the literature on information needs extensively attempted by Adegboire⁶ has been considered here. Wilson and Walsh⁷ conclude stating; 'scope of information seeking behaviour research is vast and many new concepts and methods are being developed with the help of researches'. In addition, Case⁸ said 'Research in information-seeking behaviour occupies a niche at the intersection of psychology, management, communications, and information science. Further, it is estimated that there are more than 10,000 publications in these and other disciplines related to the basic human quest for knowledge'. Anwer⁹ expressed that 'during the past 30 years or so, a considerable body of literature has been produced dealing with information needs and information-seeking behaviour of both individuals and groups in a variety of contexts. Another comprehensive survey of the research studies conducted in 2003 by Tenopir¹⁰ on the use of electronic resources published by Council on Library and Information Resources, finds that more than 200 recent research publications that focus on the use of electronic library resources are published between 1995 and 2003. Prabha¹¹ examines, it is rather surprising that information overload environment has created 'a sense of inadequacy and anxiety' as 'how users seek information sources and how they choose the content to meet their needs. Yet the library and information science literature has neglected to study how individuals decide what and how much information is enough to meet their needs and goals'. In recent years several metric methods and tools are created to evaluate the user and usage of electronic resources and one such study is reported by Franklin¹² in this context. So there are many questions still remain unanswered as the information environment is changing in many dimensions. It would, therefore, be apt to study some classic theoretical basis, so as to find whether they can be recalled in the new era.

3. MEANING AND DEFINITION OF UNDERLYING CONCEPTS

3.1 Meaning and Definition

Often the concepts and phrases, use, user, information

behaviour, information need, information gathering, information seeking and information search are referred throughout the vast literature published on this subject. But it would be desirable in this context to relook into these phrases and concepts for discerning, inclusive and exclusive meanings and definitions, not just etymologically, but by their inherent meanings of the concepts. The diagrams are given below present the relationship between the phrases, Information behaviour, and information seeking and information search. The missing link 'Information need' is added by the current authors, in the Fig. 1(b) to the Fig. 1(a) the figure that was presented by Wilson⁷.

The present paper has made an addition to include 'Information Need' which is an intermediary between 'information behaviour and information seeking' because 'need' is a behaviour and 'seeking' happens only when there is a 'need' and is followed by searching for information, incidentally when in need.

It was felt desirable to know the meanings and definitions of some of the basic concepts of this area so that a discerning elucidation of the underlying concepts can be rightly understood. These definitions and meanings are taken from WordWeb¹³, an Online Dictionary.

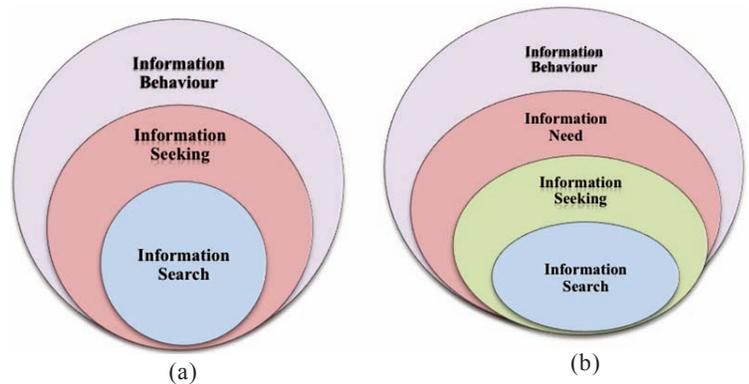


Figure 1. Showing differences in components – see addition of 'Information need'.

3.1.1 Use

The word 'use' is both a Verb and a Noun. The verb implies consumption, put into service or seeking for information. So, this could be the meaning and definition of 'Use' hence the word is largely an inclusive concept, and is more pragmatic.

3.1.2 User

One who makes use of things; the types of user are 'Individual' or 'someone unknown'. The user is at large, his behaviour unknown till he interacts with the system.

3.1.3 Information Need

Activity that releases entropy. Need differs from Want as the former is an intuitive, stimuli and/or urge. Need is not want. There is a good paraphrase, given later.

3.1.4 Information Gathering

Accumulating, collecting, assembling, aggregation. The functions or acts for the present and future use of information. There are types of gathering- seeking, harvesting and mobilising.

3.1.5 Information Seeking

An act of searching for something, an attempt to acquire or gain something. It is further explained that seeking is the psychological feature that arouses an organism to action towards the desired goal, the reason for the action that which gives purpose and direction to behaviour.

3.2 Examining the Underlying Concepts

The difference between ‘use’ and ‘user’ can be discerned with the studies on ‘use’ and ‘user’. Use studies imply, the actual use of materials, whereas user studies have some methodologies which are a prerequisite for an information system design. In the system design, user-friendliness of the system would be a key objective. The system design is conceptual and functional, based on the user response from a methodological study of the user. There is a peculiar situation especially in management control, that ‘The information we have is not what we want, the information we want is not what we need, the information we need is not available’. This gives the distinguishing features of the phrases ‘needs’ and ‘wants’ and this is a normal situation the user expresses when he interacts with the system.

Users’ needs are - information needs- information needs are - usually - unclear and ‘messy’, while a part of them may remain unexpressed and unfulfilled- information needs can be clarified or can be generated during information seeking. The term ‘seeking’ has several synonymous meanings and definitions. And again, according to wordweb¹³ it includes, searching, looking for, attempting, browsing and chancing and functionally is well articulated in the library and its resources and services. It has also been stated by Kuhltau¹⁴ that ‘Seeking’ means a search process, and ‘provides essential knowledge and user centred approach for anyone providing library and information service’. Information seeking implies several concepts, it can be need, behaviour and the need-based in the changing information environment.

According to one’s needs and patterns, information products and services are designed and created. For instance, the ‘Periodical’ is an information channel to cater to the current information needs of the user. Nicholas and Williams¹⁵ have mapped the changing information seeking behaviour in the changing information environment due to the impact of the Internet in particular and the influence of information communication technologies on library resources, services. It was Ranganathan¹⁶, Bradford and others conceived the idea of documentation as a specialised library service to cater to the needs of specialists’ information needs. In fact, Wilson¹⁷ gave a model constituting the concepts of ‘information needs information seeking, information exchange and information use’ as a means of charting the behaviour of an individual faced with the need to find information.

A systematic flow diagram consisting of ‘surveying (exploring), chaining, browsing, differentiating, monitoring, extracting, verifying and ending as the components of information seeking behaviour’ is presented by Ellis and Haugan¹⁸ is presented in Fig. 2. These are changing with changes in the information environment. They discuss on the characteristics of information seeking, which can be interrelated, their

elucidation features refer to both micro and macro behaviour level was depicted in a model as shown below and the model has a strong validation grounded on empirical studies¹⁷.

Several other studies on the behavioural characteristics of the user are also identified and are sequentially presented below, with references.

- The users can be identified as individuals, groups by communities. The individual characteristics can be of age, experience in research, job background and seniority and so on¹⁹.
- Many psychological characteristics and effectiveness of available services and characteristics of user environment are the key behaviours²⁰.
- The other behavioural characteristics also depend on the institutional environment and work activity²¹.
- On the other hand, surveying, the engineers and industrial research workers have a sequence of events such as; surveying, chaining, monitoring, browsing, distinguishing, filtering, extracting and use¹⁸.
- The user can be categorised as internal and external. They include, individual, psychological, sociological, demographic, organisational (work related) and professional²².
- The eight levels of user characteristics; functional, reading, and visual, personality, capacity, satisfaction, interest, and variability have also been identified by some researchers²³.
- Three main characteristics;
 - i) Demographic (Age, gender)
 - ii) Institutional (Designation, status, intuition)
 - iii) Professional (Educational qualifications, Salary, Special current research, languages are known, interdisciplinary-history and political science) have also been identified by yet another researcher²⁴.

In summary, it can be stated that there is still a hazy picture of user information seeking behaviour characteristics. In this context, it is hypothesised user behaviour is still in an anomalous state to understand the user information behavioural characteristics²⁴. In this context, the categories or types of readers identified by Ranganathan⁴ would be suitable to understand the user behaviour. In fact, in each of the categories, the user is in need of information, but his approach to information system (library or library staff) varies and Ranganathan⁴ also provides some solutions to these situations of readers and also how to deal with and he illustrated them with several cases.

4. FACETS OF INFORMATION NEEDS AND USER

As discussed earlier, there are a number of studies on

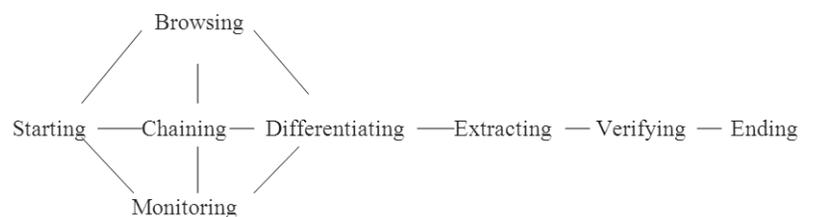


Figure 2. Flow diagram of Ellis and Haugan¹⁸.

information needs and information user. From the review of past classic texts, this study has identified some underlying concepts on the user, user needs and user approach to information enunciated by Ranganathan⁴, Bernal²⁶, Taylor²⁸, Voigt⁵, Belkin²⁵, as the mention of them are not found in any of the previous studies.

4.1 Ranganathan's Perceptions of Use and Reader

The precedence to trace the beginning of use, user behaviour and information needs etc., some important insights on the subject can be recalled. First, the concept of User in Ranganathan's each of the Five Laws of Library Science can be correlated as shown in Table 1.

In the first three laws, the user concept is connoted, the fourth law stresses on the service mean to fulfill the user needs, for example, the user assistance/reference service is one of the means of satisfying user needs. The fifth law connotes the Trinity; the books, the readers, and the staff. The law apropos perceives changes in the user and user needs.

Table 1. Five laws and concepts of use, user information seeking

Laws	Name of the law	Perceived concept
1	Books are for use	Use
2	Every read his/her book (books for all)	User needs (user = reader)
3	Every book its reader	Relevance (book-reader)
4	Save the time of the readers	Service agreement
5	Library is a growing organism	Change is constant

Interestingly the OCLC made a research study of Five Laws of Library Science and conceptualised 'Reordering' the five laws and placed the 'fourth law' as the first law. This research study proposed a rethinking of his five laws and attempted to reorder the five laws centred on the reader or the user as late as in 2015 focusing on digital era¹.

Further, the monograph has also provided new kinds of users of the IT-based information environment. They are; Baby Boomers, Millennials, Digital Natives and Adults, and studied their information seeking behaviour. So, there is a relation between type of users and their information seeking behaviour also¹.

Further, Ranganathan in his Reference Service has identified different types of readers to come to the library. He also probes into the 'psychology' of readers and their analysis, their minds and mental build-up and temperament. Ranganathan has probably come to categorise them by his close observation of readers from the time he enters the library and till he leaves the premises. So, they are derived from both psychological as well as from pragmatic approaches. Based on these psychological traits he identifies the following types of readers coming to the library. Each one of the types characterises the pattern of information content and the user behaviour patterns which can also be experienced in the present information environment⁴.

Six types of readers' with different behaviour patterns;

- Obsession
- Superiority complex (self reader)
- Inferiority complex (meek reader)
- Traumatic complex
- Mere ignorance (complaining reader)

- Thief/fraud

Ranganathan⁴ justifies these behaviours by narrating a number of cases for each of the type of reader and how to understand their needs and also serve their needs. For example, he presents a case of the difficult reader with 'Obsession' contextually an 'Insurance Agent' who was struggling to refer to the library catalogue. The case narrates how the reference librarian comes to his help and connects him with his needs. However, all types of readers can be provided with due attention as Ranganathan⁴ states 'the floor of a library is always believed to be a place of great equality'.

4.2 Bernal's Survey Analysis

Bernal²⁶ made a contribution with a user analysis on the transmission of information. It would be interesting to know from his survey analysis that, he identified information users into following categories, stating that 'I feel it would be worthwhile looking more closely both into the users and uses of scientific and technical information. It is already mentioned above the contribution of Bernal regarding use and user.

The second international conference on Scientific Information was held in 1958 in Washington D.C., under the aegis of National Academy of Sciences, USA²⁷. The conference delineated, from the point of view of the kind of information services required, users can be divided into the following categories, which are strictly functional'. In fact, these categories suggest the information needs based on user's activities and work. It is for the first time a succinct comparison is made to understand the information needs to be based on the user categories and their activities.

- i. Workers in fundamental research
- ii. Workers in applied research or development, including, medical and agricultural research
- iii. Technologists, including engineers, architects, medical practitioners, and agriculturists
- iv. Writers of reports, textbooks, teachers, and students etc.
- v. Scientific and technical journalists
- vi. The interested public
- vii. Historians of science

4.3 Taylor's Levels of Information Needs

Secondly, Taylor²⁸ has explored information needs from the angle of psychology and has identified four levels of information needs;

- i. Visceral needs - which is intuitive rather than from reasoning
- ii. Conscious need – having awareness of need
- iii. Formal need – Conventional, intentional need
- iv. Comprised need – Follow-up need

He further explains that 'the visceral need is an unexpressed need, but it becomes a conscious need when a person creates a mental description of it. A person then formalises the need into a rational statement and may seek an answer to it by using an information system, transforming it into a compromised need.

4.4 Melvin Voigt – Users' Approaches

Interestingly none of the papers so far surveyed by this paper have quoted Melvin Voigt⁵ who as early as in 1961

identified three approaches by which users seek information. The users' approach to information correlated with the category of information sources is presented in the Table 2.

Table 2. The users' approach to information correlated with the category of information sources

Approach to information	Category of information sources
Current approach	Primary information
Everyday approach	Secondary information (reference sources)
Exhaustive approach	Secondary/tertiary information (reference/referral sources)

The modes of approach can be met with the appropriate information source and the users' needs are well articulated with the kind of approach with the right information source. It also empowers the libraries or librarians to identify the sources available outside one's own premise which is termed as Referral service.

4.5 Belkin's ASK Model

Despite all these elucidations on needs and types of needs and approaches, still, there is a state of ambiguity in the expression of the need by the user. It was identified by Belkin²⁵ as 'the Anomalous State of Knowledge' (ASK). He has extended the psychological approach with the inquiry into the reasons for seeking information and has developed the concept of ASK. He hypothesises that information need arises from the recognised anomalous users' state of knowledge concerning some topic or situation and that in general, the user is unable to specify.

The condition 'anomalous state of knowledge' is the discrete mental model of the information system and the user. According to the model, there is an anomalous state of knowledge when the user cannot resolve an information need based only on his or her existing knowledge. ASK reinforces uncertainty.

5. CONCLUSIONS

There are a quite good number of studies on this subject and have been quite probabilistic and did not arrive at any deterministic conclusions. The psychological and behavioural perceptions are more or less dealt by most of the earlier papers. There is a need for more of a pragmatic approach and despite all efforts of library and information professionals, it is very difficult to understand very clearly the user needs and their information seeking behaviour which obviously has been well conceptualised by Belkin as ASK model. So, the authors of this paper felt there is a need to explore some unexplored studies, which were unearthed from the contributions of Ranganathan, Bernal, Voigt, and Belkin especially. Their elucidations on users' information needs and information provisions, the authors for current paper felt, were rather missing from the previous studies and the paper has inventively tried to identify them and their inherent characteristics in fulfilling the needs of the users, which is the primary objective any information system. This is the positive outcome of this study and is open

to further research in those concepts and insights.

REFERENCES

1. Connaway, L.S. & Faniel, I.M. Reordering Ranganathan: shifting user behaviours, shifting priorities. *SRELS J. Info. Manag.*, 2015, **52**(1), 3-23.
2. Ranganathan, S.R. Five Laws of Library Science. Reprint edition. Ess Ess Publications, New Delhi, 2006.
3. McNinch, J. H. The Royal Society Scientific Information Conference, London, June 21-July 2, 1948. *Bulletin Med. Libr. Association*, 1949, **3**(2), 136-141.
4. Ranganathan, S.R. Reference service. Bombay, Asia Publishing House. Part D.1961.
5. Voigt, Melvin. Scientists' approaches to information. American Library Association, Chicago, 1961.
6. Adegboye, Adebayo, Muritla & Salaam, M.O. Information needs and acquisition of school pupils in Abeokuta, Ogun State, Nigeria. *PNLA Quarterly*, 2012, **76**(4), 42-53. <http://www.pnla.org/assets/documents/Quarterly/pnlaq76-4summer2012.pdf> (accessed on 21 September 2017)
7. Wilson, T.D. & Walsh, C. (1996) Information behaviour: an interdisciplinary perspective. A report to the British Library Research and Innovation Centre. London: British Library Research and Innovation Centre. (British Library Research and Innovation Report 10). <http://informationr.net/tdw/publ/infbehav/prelims.html> (Archived by WebCite7reg; at <http://www.webcitation.org/69Akr0dPL> (accessed 20 on September 2017)
8. The case, D.O. Looking for information: A survey of research on information seeking, needs and behaviour. Academic Press, San Diego, CA, 2002. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC153169/> (Accessed on 2 Sept 2017).
9. Anwar, Mumtaz A.; Al-Ansari, Husain & Abdullah, Abdulnaser. Information Seeking Behaviour ofKuwaiti Journalists. *Libri*, 2004, **54**(4), 228-236.
10. Tenopir, Carol. Use and users of electronic library resources: An overview and analysis of recent research studies. Council on Library and Information Resources, Washington, D.C., iv. 2003.
11. Prabha, Chandra; Connaway, Lynn Silipigni; Olszewski, Lawrence & Jenkins, Lillie What is enough: Satisficing information needs. In *Library in the life of the user: Engaging with people where they live and learn*, edited by Lynn Silipigni Connaway, OCLC Research, Dublin, 36. 2015.
12. Franklin, Brinley; Kyrillidou, Martha & Plum, Terry. From usage to user: Library metrics and expectations for the evaluation of digital libraries. In *Evaluation of digital libraries: An insight into useful applications and methods*, edited by Giannis Tsakonas, Christos Papatheodorou, Chandos Publishing. 2009, 17-39.
13. www.wordweb.info (Accessed 20 September 2017).
14. Kuhlthau, Carol Collier. Seeking meaning: A process approach to library and information services. Ed. 2nd. Libraries Unlimited. Introduction. Santa Barbara, 2003.
15. Nicholas, David & Williams, Peter. The changing information environment: The impact of the Internet on

- information seeking behaviour in the media. *In* Information Needs, Seeking and Use in Different Contexts, Sheffield, UK, 1998. Taylor Graham Publishing, London, UK, and Los Angeles, USA, 1999, 451-62.
16. Ranganathan, S.R. Documentation: Genesis and development. Vikas Publishing House, Delhi, 1973.
 17. Wilson, T.D. On user studies and information needs. *J. Document.*, 1981, **37**(1), 3-15.
 18. Ellis, D. & Hagan, M. Modelling the information seeking patterns of engineers and research scientists in industrial environment. *J. Documentation*, 1997, **53**(4), 384-403.
 19. Line, Maurice B. Information requirements to social sciences: Some preliminary considerations. *J. Libr. Info. Sci.*. 1969, **1**(1), 1-19
 20. Slater, M. & Fisher, P. Use of technical libraries. Aslib, London, 1969, 5.
 21. Vickery, B.C. Use of scientific literature. *Library Association Record.*, 1961, **63**(8), 263-269
 22. Sridhar, M.S. Understanding the user – why, what and how. *Libr. Sci. Slant Document.*, 1995, **32**(4), 153-154.
 23. Devarajan, G. Library information users and the use studies. Beacon Books, New Delhi, 1995.
 24. Kanungo, Neena Talwar. Information seeking behaviour of researchers in history and political science in Delhi. Delhi, University of Delhi. 1995, PhD Thesis.
 25. Belkin, N.J.; Oddy, R.N.; & Brooke, H.M. ASK for information retrieval I: Background and theory. *Journal of Documentation*, 1982, **38**, 61-71. Referred in David Ellis, New horizons in information retrieval. Library Association.: London, 52.
 26. Bernal, J.D. Scientific information & its users. *In* ASLIB Proceedings, 1960, **12**, 423-38.
 27. National Academy of Sciences. *In* Proceedings of the International Conference on Scientific Information, Washington, D.C., National Academy of Sciences. 1959, 77-81.
 28. Taylor, R.S. Question-negotiation and information seeking in libraries. *College Res. Libr.*, 1968, **29**(3), 178-194.

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