Information seeking behaviour: A conceptual framework

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The concepts defining information, information needs, information seeking and information use have undergone significant evolution since they were first introduced. A number of information seeking and retrieval studies seem to focus on these concepts, albeit in different ways. It is widely understood that concepts form the basis for describing and explaining phenomena and processes in a field of study. Within the field of Information Science, many of the concepts used need to be understood in terms of research context, as a variety of meanings can be attached to most concepts. The article specifically aims to review major studies (e.g. Wilson 1981, 1996; Krikelas 1983; Ellis 1989; Kuhlthau 1991) and information searching and retrieval (Ingwersen 1996; Choo, Detlor and Turnbull 1999, 2000) that focus on these concepts for greater clarity and an understanding of their relationship and application in LIS research. This in turn may be of interest to researchers and students within this field. The article concludes that context should be the foundation for any research within this field, with the observation that many of the models discussed describe general information seeking behavior, without catering for variations.

Keywords: Information Seeking; Conceptual Framework

1 Background

The field of Information Seeking behaviour in Information Science can broadly be defined as that which is concerned with determining user's information needs, searching behaviour and subsequent use of information (Julien, 1995:1). Disciplines concerned with understanding how people seek and make use of information, the channels they use to get information, and the factors that inhibit or encourage information use include: the study of personality in psychology, consumer behaviour, innovation research, health communication studies, organisational decision-making, and information requirements in information system design (Wilson, 1997:551). Thus, there exists a strong recognition amongst information scientists of the interconnectivity of disciplines involved in research on all aspects of information.

One could claim that the roots of information 'finding and gathering' are as old as the human race. What is new, is perhaps the fact that information seeking is researched under the relatively young domain of Information Science. During the 1940s -1970s, focus was placed on the evaluation of information collections, concentrating on information services and systems and how to make them more relevant to their users (Meho & Tibbo, 2003). By the early 1970s – 1980s this position changed, as attention shifted: from looking at physical information systems as sources of information, to information seeking both as concept and process. Research conducted during this period attempted to depict the characteristics of users as a sociological group, which *inter alia* explains the steps people take to satisfy their information requirements (Itoga 1992). The studies focused on discovering useful information about the research habits of individuals or groups such as geologists, engineers, etc., in order to design appropriate information systems and services for the defined groups (Belkin, Oddy & Brooks, 1982a, 1982b; Ellis, 1989, 1993; Marchionini, 1995). Since the 1980s, researchers realized that deciphering questions concerning information requirements could not only be done from a systems point of view, but also from an individual's perspective. Evidence of this shift is mapped in the works of Taylor

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(1968), Kuhlthau (1991), Belkin & Vickery (1985), Borgman (1984), Wilson (1981, 1997, 1999) and Ingwersen (1992, 1996).

The aim of this paper is two-fold. First, it interrogates and analyses the concepts defining information needs, information seeking and information use. Subsequently, it aims to filter out and provide an overview of the most generally used conceptual models in the field of Information Seeking and Retrieval (IS&R). We feel that several of the proposed and commonly used models in the field may be confusing, and therefore that they must be contextualised in order to enable researchers' greater ease when identifying appropriate models for their studies. This paper attempts to interrogate the aforementioned concepts and thus provide clarity, allowing informed decisions on their selection through an intensive and extensive literature review.

2 Conceptual framework

Busha and Harter (1980:13) define theory as 'assumptions, definitions, and propositions which explain a group of observed facts or phenomena in a field or discipline'. According to Ikoja-Odongo (2002a:86) concepts refer to major phenomena studied, eventually forming the foundation of the conceptual framework of the subject under investigation. They may also be viewed as mental images expressed as subjective thoughts around things encountered in daily life. As it is not possible to communicate these thoughts directly, words, symbols, and phrases of language are used to represent these mental images, providing an arena for communication. In daily communication, a system of general and often vague agreements about the use of terms often results in misunderstandings. Depending on the context within which many concepts used within the field of Information Science are used, they can assume different meanings, hence the need for clarification (Davis 2000). By conceptualising terms, an individual specifies precisely what is meant by a specific term (Maxfield and Babbie 1998).

Concepts most commonly used during research on information seeking behaviour are: information, information needs, information seeking, information seeking processes, and information use.

2.1 Information

The term information is defined, understood and interpreted differently across a vast array of disciplines (Losee 1997:1). It is stated that the term as concept originated from the Greek words *typos, idea and morphé,* evolving into the Latin word *informatio*. In its modern context the word 'information' generally means *to instruct, to furnish with knowledge* (Capurro, 1992:2). The Oxford English Dictionary describes it as *knowledge communicated concerning some particular fact, subject or event* (1989:944). Other definitions view information as *a property of matter, any message, document, or information resource; any publicly available symbolic material; or any data* (Smith, 1991:85), or as *ideas, facts, imaginative works of the mind and data of value, potentially useful for decision making, question answering, etc.* (Kaniki, 2001:191).

The interchangeable use of the concepts data, information and knowledge add to the confusion. Data can be described as measurements and representations of the world around us. In and of itself data is meaningless, but by assigning meaning to relationships and patterns that occur over a period of time, data becomes information (*What is knowledge? What is information?* 2000). Westbrook (1993) supports the notion that data, through a process of change, becomes organised, thus becoming information, whilst Miller (2002:3) argues that information as such is static and lifeless, existing in forms such as magazines, television, Compact Disc-Read Only Memory's (CD-ROMs), letters, and the like. Only when human beings assign meaning and interpretation to information does it become knowledge, which Miller (2002:4) describes as: *what we know*. Analysing information transforms it into knowledge, which may result in some form of action (Westbrook 1993). Knowledge is an ever-changing entity, shifting as new understandings of the relations between different aspects of reality emerge (Nitecki 1985). Sveiby in Miller (2002:4) distinguishes between information and knowledge as follows

Table 1 Information and knowledge

Information	Knowledge
Static	Dynamic
Independent of the individual	Dependent on individuals
Explicit	Tacit
Digital	Analogue
Easy to duplicate	Must be re-created
Easy to broadcast	Face-to-face mainly
No intrinsic meaning	Meaning has to be personally assigned

Miller, F.J. 2002. I = 0 (Information has no intrinsic meaning). Information Research, 8(1).

According to Ingwersen (1992:27) the action required upon gaining knowledge leads to the cognition of a state of uncertainty in the receiver, or as Belkin, Oddy and Brooks (1982) put it, 'an anomalous state of knowledge'. As the individual finds himself/herself in a position where s/he is unable to solve the state of uncertainty through his or her own mental efforts, a process of communication, e.g. the interrogation of a formal or informal information retrieval system, is required. Through this process, information can be seen as the content of the message conveyed, assimilated by the receiver of the message. By conveying and assimilating messages an individual may be spurred into action, may make a decision, or change their state of knowledge (Van Lill 2000:46).

McCreadie and Rice (1999:46) provide a very concise overview of the current concepts defining information. According to them, there are currently four major assumptions about information:

- *Information as commodity/resource*. Information is seen as a physical commodity to be *produced, purchased, replicated, distributed, manipulated, passed along, controlled, traded and sold* (1999:46). Buckland (1991) advocates that 'information-as-thing' is always situational, i.e., the information value of any given piece of information may differ from situation to situation. An underlying assumption of this concept is that when a message is sent from a sender to a receiver, the receiver is expected to understand the message and attach the correct meaning/interpretation to the message.
- *Information as data in the environment*. This concept views information as including readily available data from an individual's environment. This data may be communicated both intentionally and unintentionally for human processing, and is gained from objects, artifacts, sounds, smells, visual and tactile phenomena, events or natural phenomena.
- *Information as a representation of knowledge*. Information is viewed as *a representation of, or pointer to, knowledge* (McCreadie & Rice 1999:48). The printed document, i.e. books, journals, citations, etc., is assumed to be the primary representative of knowledge. Recent technological advances in electronic media have provided previously alternative options as primary representatives.
- *Information as a part of the communication process*. Meanings are seen to be inherently in people rather than in words or data. Factors such as timing and other social and personal factors influence the processing and interpretation of information. When interpreting and evaluating information, the context, be it geographical, social, educational or professional, would influence the understanding of the message (Madden 2000). Allen (in Davis 2000:56) describes information as *the process by which an informant's cognitive structures are encoded and transmitted to an information seeker who perceives the coded messages, interprets them and learns from them.*

2.2 Information needs

An information need is a requirement that drives people into information seeking. An information need evolves from an awareness of something missing, which necessitates the seeking of information that might contribute to understanding and meaning (Kuhlthau, 1993). Belkin, Oddy & Brooks (1982) see information as a method used to solve problems. A problem is regarded as an inadequate state of knowledge, better known as an Anomalous State of Knowledge (ASK). Information seeking is used to resolve the 'inadequacy' which can manifest itself as a gap, shortage, uncertainty or incoherence.

Citing MacKay, Taylor (1968:181) describes an individual with an information need as having *a certain incompleteness in his picture of the world – an inadequacy in what we might call his 'state of readiness' to interact purposefully with the world around him.* This 'inadequacy' led Taylor to discern four levels of information needs:

- *The visceral need* is an existing need one that either on a conscious or unconscious level is still unexpressed. It can manifest itself in the form of 'unease', which could potentially develop into action as more information becomes available.
- *The conscious need* is an expressed need, albeit expressed rather vaguely, ambiguously and indecisively. By communicating the need, it is hoped that clarity can be achieved.
- *The formalised need* is formally stated as a rational statement.
- *The compromised need* represents the question as eventually posed to an information system.

Devadason and Lingam (1997) distinguish between expressed, unexpressed and dormant information needs. Dormant needs are described as needs of which a user is still unaware, potentially activated by an information service provider. However, unconscious needs do not necessarily (or eventually) lead to action (Krikelas 1983). Smith (1991) classifies information needs as being either general or specific: general information refers to current information on topics of interest, while specific information involves finding solutions, and problem solving. Information should, however, not be seen as a need in itself, but rather as a construct or tool used to satisfy primary human needs (Van Lill, 2000; Fine, 1984).

Satisfying information needs is a dynamic process during which absorbed knowledge may lead to renewed information needs (Kuhlthau, 1991; Kebede, 2000). Cognisance should be taken of the fact that information can be differently interpreted and different meanings assigned to it by each individual, depending on their specific requirements. In this respect Kebede (2000) refers to content and non-content aspects of information. Content aspects of information are

related to facts, data, claims, concepts or conceptual structures enabling problem solving. The content is interpreted within the context of the individual information seeker's problem(s) or question(s), which may differ from person to person. Non-content refers to the carrier of information. The need for an appropriate carrier is an additional user requirement that needs to be met. Within a work environment, for example, a number of factors will influence information needs, be they content or non-content oriented. Factors such as the type of work, whether the work is on a basic or applied level, and the specific field of discipline within which the work falls, all influence information needs, both on content and non-content levels (Lin and Garvey 1972).

2.3 Information seeking

Information seeking is a complex process consisting of social, communicative and interactive behaviour (Fourie, 2004:70). Wilson in Case (2002) sees it as the purposive search for information in order to satisfy certain goals, while Johnson (1997) defines it as the purposive acquisition of information from selected information carriers. Case (2002) describes it as a conscious effort to acquire information in response to a need or gap in one's knowledge.

Kuhlthau (1991) conceives information seeking as a user's constructive effort to derive meaning from information in order to extend their state of knowledge on a particular issue or topic. This activity incorporates a series of encounters with information within a space of time, rather than a single reference incident. Finding information is therefore an engagement an individual gets involved in to try and rectify uncertainty in the process of moving through space and time.

Searching for information is therefore experientially not a straightforward act. It is a process and form of problem solving that goes through problem recognition, problem articulation, source selection, query formulation, search execution, examination of results, extraction of required information, and reflection (Marchionini, 1995). Information seekers can either take responsibility for their own processes, or work through or with an intermediary. Once relevant information is located, the information seeker studies, copies and integrates it with what is already available, thus enabling problem solving (Fourie, 2004). Should the problem remain unresolved, the process may be iterated. This is, however, subject to the internal restrictions of the individual, either the enthusiasm to proceed with looking for further information or ending the process.

Information seeking is seen as a process with which humans engage to purposefully change their state of knowledge. This process is said to be internally active as information seekers direct attention, accept and adapt to stimuli, reflect on progress, and evaluate the efficacy of continuing (Marchionini & Komlodi, 1998:97). It is thus a process in which knowledge states are changed through inputs, purposive outputs, and feedback. In order to proceed with information seeking, the process requires an information seeker to apply their personal knowledge and skills. Marchionini (1992) describes it as a *memory scan or personal infrastructure*. These infrastructures or skills are: general cognitive abilities, knowledge skills in relation to the problem/task domain, knowledge and skills in general, knowledge and skills specific to the system, and knowledge and skills regarding information seeking.

The seeking process can be active or passive, purposeful or unintentional. It is thus a strictly human process that requires adaptive and reflective control over the afferent and efferent actions of the information seeker. Progress during the information seeking episode is thus a product of information seeker attributes, information environment attributes, and the communication channel through which it flows (Marchionini & Komlodi, 1998).

2.4 Information seeking behaviour

Studies in information-seeking behaviour stem from concerns surrounding how people use information in their work environments. Information seeking behaviour arises as a consequence of a need perceived by the information user, who in order to satisfy it, makes demands upon formal or informal information sources or services, resulting in either success or failure (Wilson 1999:251). Krikelas (1983) observed over two decades ago that an information need is perceived within the context of an individual's environment. The individual recognises an inadequacy in his/her knowledge that needs to be resolved in order to deal with a problem. The effort to satisfy the perceived need results in information seeking behaviour. Wilson (2000) adds that in the process of seeking, a variety of information systems, be they manual or computer-based, may be interrogated.

Wilson (1999) broadly conceptualises information seeking behaviour as activities a person may engage in when identifying his or her own needs for information, searching for such information in any way, and using or transferring the information.

Fourie (2004:85) states that what Itoga (1992:338) explains as *steps an individual takes to satisfy information needs*, Wilson (1999) calls *activities a person may engage* and Fairer-Wessels (1990) describes as *the way people search*, are *different manifestations of information seeking behaviour*, namely physical, cognitive and affective behaviour. To support her views, she refers to the cognitive behaviour research output of persons such as Ford (2004), Ford *et al.* (2002), Palmquist

& Kim (2000), Pennanen & Vakkari and Kim & Allen (2002); work on physical behaviour works by Ozmutlu *et al.* (2004) and Spink *et al.* (2001, 2002c, 2004), and works on affective behaviour by Kuhlthau (1991, 1993, 1994, 1999a).

Information seeking behaviour is not the monopoly of Information Science (Wilson 1997). Many disciplines actively contribute to the knowledge of how humans seek and use information, which channels are preferred in the process, as well as which factors hamper, or contribute towards, information utilisation. Despite the interdisciplinary nature of the field, Wilson (1997) claims that a general model can be constructed supporting the needs of all respective disciplines.

2.4.1 Information seeking behaviour models

Järvelin and Wilson (2003:2) posit that *all research has an underlying model of the phenomena it investigates, be it tacitly assumed or explicit*. They see models as being broader than scientific theories as they provide the basis for the preconditions of theory formulation, providing the conceptual and methodological tools for formulating hypotheses and theories. A conceptual model is thus seen as an instrument that provides a working strategy – *a scheme containing general major concepts and their interrelationships* (Järvelin and Wilson 2003:4).

Kousoyiannus in Aina (2004:14) describes a model as *a simplified representation, including the main features of the real situation it presents*. Models therefore serve two purposes: that of analysing and that of predicting.

Wilson (1999) points out that research on information behaviour originated in 1941, and since then has proliferated. However, researchers did not build on prior research, thus not assisting in the development of a body of theory and related empirical findings that would have enabled further research.

In recent years a considerable number of information seeking models have been developed with the aim of improving information access to users (Aina 2004). However, Wilson (1999:250) notes that *rarely do such models advance to the stage of specifying relationships among theoretical propositions: rather they are at a pre-theoretical stage, but may suggest relationships that might be fruitful to explore or test*. Despite this criticism, several models proposed are well regarded and now used in further studies of user information needs. These are the models discussed in the following sections. Included are those developed by Wilson (1981 and 1996), Krikelas (1983), Kuhlthau (1991), Ellis (1989), Ingwersen (1996), and Choo, Detlor and Turnbull (1999). Most of these models seem to focus on the process of active information seeking (McKenzie 2002), the benefits derived from acquiring data during the information seeking process, and practical issues, for example stages, mechanisms, processes, channels, sources and barriers involved when searching for information (Case *et al.*, 2005).

2.4.1.1 Wilson's model (1981)

Wilson's model has its origins in 1981. The main aim of this attempt was not so much 'model building', but mainly describing interrelationships between concepts (Wilson 1981). This model identified 12 components involved in the information seeking process (Aina 2004).

Wilson determined that the satisfaction of an information need is proposed to be the driving force behind the action taken by a user. In order to satisfy a perceived information need, demands are made upon either formal or informal sources/services resulting in failure or success. Success leads to the utilisation of the information, which results in fully or partially fulfilling the perceived need. Should this not be the case, the search process is repeated.

He also identified circumstantial elements playing a role in information-seeking behaviour, i.e. the situational context in which the need arises, the barriers preventing or enhancing a search, and information-seeking itself.

2.4.1.2 Krikelas (1983)

Krikelas (1983) suggests that a user perceives a need within the context of his/her environment. The individual recognises an inadequacy in his/her knowledge which requires resolution in order to deal with a problem, thus leading the user on a search for information through various information sources. These could be human sources, information systems or any other information resources. The process may result in either success or failure; in the latter's case the process can be repeated (Hayden n.d.).

According to Krikelas (1983) information can be seen as any stimulus that reduces uncertainty. An information need is defined as the recognition of the existence of this uncertainty in the personal or work-related life of the individual. Krikelas further divides information seeking into short term immediate requirements, & long term deferred needs. The effort to satisfy a perceived need results in information-seeking behaviour.

However, according to Krikelas (1983), unconscious needs do not necessarily lead to eventual action.

2.4.1.3 Ellis (1989)

Ellis describes the different information seeking behaviours in terms of 'features', as opposed to stages. By declining the 'staging' label, he implies that the behaviours do not necessarily occur in sequence; instead, the unique circumstances of

the information seeking activities of the information seeker at that specific point in time influence the pattern followed (Ellis 1989).

The features identified include:

- Starting: the means employed to start the search for information
- Chaining: following footnotes and citations in known material or 'forward' chaining from known items through citation indexes
- Browsing: semi-directed or semi-structured searching
- Differentiating: using known differences in information sources as a way of filtering the amount of information obtained
- Monitoring: keeping up-to-date or current awareness searching
- Extracting: selectively identifying relevant material in an information source
- Verifying: checking the accuracy of information
- Ending: tying up loose ends through a final search (Järvelin & Wilson 2003).

Despite the fact that Ellis does not subcribe to a sequenced set of stages, Wilson (1999) shows that a certain pattern is indeed imbedded in the process, for example that 'starting' and 'ending' indicate the beginning and end of an information search, while 'verifying' should be a penultimate step. The other steps could, however, be followed in any sequence that suits the information search.

In their critique of Ellis's model, Järvelin & Wilson (2003) point out that though it describes information seeking behaviour, it does not explain it in terms of possible external cause factors.

2.4.1.4 Kuhlthau (1991, 1993)

In contrast with Ellis, Kuhlthau ascribes definite stages to the information seeking process of an individual. She identified six stages, i.e. Initiation, Selection, Exploration, Formulation, Collection, and Search closure/Presentation, that are followed in sequence (Kuhlthau,1991). Rather than just mechanically searching for information, this model incorporates the affective (feelings), the cognitive (thoughts) and the physical (actions and strategies) (Hayden n.d.).

Kuhlthau's model postulates that the search process is an active process, engaging the cognitive processes of the information seeker. Triggered by feelings of uncertainty, the need for an information search manifests itself. The feelings of uncertainty probably increase during the exploration stage, when general, as opposed to specific, information on a topic is gathered. However, Kuhlthau's empirical studies reveal that this is likely to decrease during the next stage, i.e. the formulation stage, when a focused perspective on the topic, based on the information retrieved, is formulated (Hayden n.d.; Kuhlthau 1996). Wilson (1999) describes this information seeking process as *'a process of gradual refinement of the problem area, with information searching of one kind or another going on while refinement takes place'*. Hayden (n.d.), however, points out that this model does not cater for the manipulation of information, i.e the analysis, digestion, organisation, synthesis and evaluation of the retrieved information.

2.4.1.5 Ingwersen (1996)

Ingwersen's (1996) model emphasises the role of the cognitive process in the information seeking process. Additionally it incorporates Information Retrieval (IR) systems as possible information collection strategies. This suggests that an information seeking model should include a system pointing the searcher to possible information objects that could be of interest (Järvelin and Wilson 2003). As with most other information seeking models, the concern of this model lies with the active search for information.

Ingwersen identifies three elements playing a role in the information retrieval process: Cognitive space, Information objects and the Information Retrieval setting. With each element he implies that the searcher's actions are influenced by implicit or explicit models related to their specific field of interest.

The searching actions are therefore guided by an implicit work task, information need, problem solving, or task oriented models which can be explicated (Ingwersen 1996).

The strength of this model lies in the fact that it *integrates ideas relating to information behaviour and information needs with issues of IR systems design* (Järvelin & Wilson 2003:8). Järvelin & Wilson identified a potential weakness, in that other than information retrieval, other information behaviour is not analysed.

2.4.1.6 Wilson (1996)

Wilson's later development concentrates on describing general information behaviour, as opposed to only information seeking behaviour (Wilson 1997). This model specifically borrowed from other disciplines such as psychology, decision making, innovation and health communication and consumer research (Case *et al.,* 2005), Using specific theories, Wilson explains how needs prompt people's information seeking behaviour, source preference, and why some pursue a goal more successfully than others.

This model also seeks to explain the role played by various activating mechanisms or motivators influencing the 'what', 'how' and extent of a search. He identifies variables such as psychological, demographic, and social/environmental factors, and the characteristics of information sources in determining information seeking behaviour that affect motivation.

The model also expanded on different types of information seeking behaviour, including 'passive' methods of seeking information, i.e. 'passive search', where unintentional searching leads to the acquisition of relevant information, and 'passive attention' where no intentional information seeking takes place, but information is still unconsciously acquired through listening to the radio or watching television (Mckenzie 2002; Mostert 2004).

2.1.4.7 Choo, Detlor & Turnbull (1999, 2000)

Choo *et al.* (1999, 2000) developed a two-dimensional model by combining Ellis's features of information seeking, Wilson's (1996) four modes of information seeking, and literature surrounding environmental scanning (Choo and Auster in McKenzie (2002)). The result is a flexible model of information seeking allowing for the description of systematic changes in the searching mode as an individual moves through the process (McKenzie 2002).

Choo *et al.* (1999, 2000) identify four modes used specifically in organisations which can be used to explain the searching and acquisition process. Closely related to actions in the search processes identified by Wilson (1997), the modes consist of undirected viewing, conditioned viewing, informal search and formal search. With undirected viewing the user is exposed to information with no need in mind. This is mainly an exploration exercise that can involve a wide range of information sources which may or may not be of relevance. According to Turnbull (n.d) this form of information retrieval and acquisition is based on previous experience and acquisition.

Conditioned viewing entails viewing information on selected topics. This is still not an active search, functioning mainly as a browsing action that notices the sources' importance to the topic of interest (Turnbull n.d).

Informal searching entails actively searching for information to broaden and deepen knowledge on a specific topic. This is an unstructured effort used to determine whether or not action is needed by an organisation (Choo, Detlor and Turnbull, 2000).

Finally, formal searching is a planned, structured and deliberate action used to obtain needed information on a topic or issue.

Aguilar in Turnbull (n.d) points out that in a real world situation, information retrieval cannot always be done using the formal mode, as required resources might not always be available or accessible. Therefore, by using all four modes interchangeably, the individual can keep him/herself informed.

In McKenzie's (2002) critique of this model, she points out that, in real life, searching on the Web does not necessarily follow the proposed model's systematic processes.

3 Application of an information seeking model in research: 2 Case studies.

3.1 Study 1: Information seeking behaviour patterns of parliamentarians in South Africa.

The purpose of the study was to investigate the information needs and retrieval patterns of parliamentarians, both on national and provincial level, with specific reference to the use of information intermediaries. The study focused on all (760) the parliamentarians, although response was received from 167 (23%), and sought to establish which information sources, services and systems are used, which source format preferences exist, the extent of e-source utilisation for information retrieval and dissemination, and what the role of information intermediaries is in the information seeking process. The group under study, and the objectives, suggested a theoretical framework that would describe general information seeking behaviour such as the user-in-context, factors necessitating information seeking, the actual search process, the role and influence of specific variables and the use of retrieved information. Wilsons's 1996 model proved to be the most applicable to the majority of the objectives.

3.1.1. Application of Wilson's general behaviour model to the study

User-in-context – information needs and the use thereof

Contextual settings, within which an information need arises, form an integral part of the design and development of applicable information service delivery models. Context provides a setting and perceived outcome on which information systems can base their services.

Access to, and utilisation of, information forms an integral part of the daily activities of parliamentarians, with 90% of all the respondents indicating very frequent information seeking activities. Alemna and Skouby (2000) warn that without information, the elected officials may make costly and at times dangerous decisions, having an impact on the nation as a whole.

During parliamentary sessions the parliamentarian has to participate fully in debates, interpellations, Bill preparation, making of speeches, attending committee and other meetings, communicating with constituents, and performing administrative obligations. The study showed that while information is needed for all the above activities, specific activities such as debate participation (82%), individual expansion of knowledge (77%), assistance with speech preparation (78%) and the background research of issues being discussed, were the main reasons for seeking information. All of these require an informed mind, making it imperative for the parliamentarian to actively seek out information through an applicable information channel or source. Failing to do so could result in failed participation, which in turn could lead to failure during re-election (Mostert 2004:169, Mostert 2005; Mostert and Ocholla 2005)

Information is a major contributor towards legislative processes. Determining parliamentarians' information needs within the context of their work environment is thus an important step in the information cycle. Building on existing knowledge, new insights are gained that may be used to perform optimally in the decision making process confronting the parliamentarian on a daily basis. The information needs reflected parliamentary contexts with the greatest need for information, i.e. topics on politics (74%), governance (56%), regional and/provincial matters (48%) and local government (45%). Other needs identified were closely related to their position within the parliamentary hierarchy (Mostert 2004:182; Mostert 2005; Mostert and Ocholla 2005).

Factors activating information seeking

Getting access to timely and accurate information and analysis on a variety of topics can create stress, especially due to the extremely busy and varied programme of parliamentarians. Stress is induced by a perceived lack of information sources or systems to assist during a critical period, by a shortage in skills needed to seek and filter information effectively, especially when using computers (Mostert, 2004:180; Mostert, 2005; Mostert and Ocholla, 2005).

Effective risk management decreases the risk of failure. As failure potentially has a huge impact on the social, financial, personal, and performance aspects of a parliamentarian's life, risks need to be identified and managed. Risk-taking is part of the work environment within which parliamentarians operate, many of which can be avoided by timeously accessing and utilising information. Louden and Della Britta (1993) advocate that information acquisition can reduce existing or perceived risk. Rewards for proving your ability to participate effectively, by either re-election or attaining a more elevated position within the parliamentary hierarchy, can be a powerful activating mechanism for the continuous search for and utility of information, be it purposefully or unintentionally.

Role of intervening variables

Barriers can present themselves in a variety of forms, whether psychological, physical, or emotional. Even the physical characteristics of an information source can be perceived as a barrier. The identification of possible barriers confronting South African parliamentarians may contribute towards finding solutions in terms of the levels of information service delivery and agreeable information formats. Personal characteristics, social and educational backgrounds, and exposure to information-seeking, can all be determinants of success or failure. As barriers can prevent a message from reaching the receiver, they can impact on the receiver's response. The study determined that South African parliamentarians come from varying social, cultural and educational backgrounds. Culturally, all the different races, i.e. Blacks, Whites, Indians and Coloureds, are represented. (Note: race and culture are not the same thing) Gender levels indicated a representation of 71% males and 29% females. Educational backgrounds range from Gr. 8 (2%) to individuals with tertiary qualifications (83%). Educational institutions attended ranged from the most highly accredited educational institutions to rural schools with the most rudimentary equipment and under–trained teaching staff. Socially, people from all walks of life and professions are represented. Information sources and services most used indicated very strong preferences for more familiar options. The printed medium was most preferred, with newspapers (80%), books (65%) and governmental publications (60%) enjoying significant popularity. Amongst electronic resources, the Internet (50%) and e-journals (44%) were most commonly used. Barriers identified prohibiting utilisation of some information sources included lack of information seeking skills, lack of computer skills, time constraints and unfamiliarity with a given source (Mostert, 2004; Mostert, 2005; Mostert and Ocholla, 2005).

Information seeking behaviour

Information seeking does not always imply a purposeful activity, but can also take place unintentionally. Information messages are communicated to society in every possible way, ranging from logos on every conceivable item, billboards, fliers, electronic messages, print, word-of-mouth, to satellite transmissions of events occurring worldwide. Information may therefore be internalised unintentionally, and retrieved when needed. Though the environment of the parliamentarian advocates active, intentional participation whilst searching for information, this process may include

interrogating the mind for passively received data. It was found that most searches (70%) were conducted by the parliamentarians themselves. Strong preference was also displayed for the use of intermediaries such as personal assistants (52%) and parliamentary librarians (33%) (Mostert, 2004:171; Mostert, 2005; Mostert and Ocholla, 2005).

3.2 Study 2: Informaton needs and information seeking patterns of informal traders in Uganda

The study aimed to determine the information needs and uses of the informal sector in Uganda, and covered different types of trade within the sector. The demographic, business and cultural characteristics of the sector had to be established in order to identify the information needs and uses of sector entrepreneurs. The study also explored the manner in which entrepreneurs seek information and the sources they use to access information. Factors that affect access to information as well as shortcomings in the information systems and services of Uganda were identified.

3.2.1 Application of Wilson's general behaviour model to the study

User-in-context – information needs and use

In the study of information needs of 602 informal entrepreneurs, it was established that access to, and use of, information formed part of the entrepreneur's daily life. The information needs were found to be contextual. Entrepreneurs typically needed information on subjects that enabled them to solve entrepreneurial issues in their work places. The study established that training and skills development, markets and marketing techniques, including prices and pricing techniques, sources of raw materials, finance, tools and equipment, business management skills, new areas of investment, product quality improvement and record keeping, were key areas for which information was necessary. Entrepreneurs needed information at three different stages: before engaging in an enterprise or business (such as what business to do); discovering sources of funds and raw materials; during the life of the business both at production and management levels, and at the end, or distribution, or product marketing stage. The need for information was found to be uneven. Certain jobs and tasks required information at an early stage; others required constant information, while still others needed more information at the end than at the beginning. Methods of seeking information were largely informal and personal, that is: word of mouth, friends, relatives and workmates. This is because informal entrepreneurs are, in general, persons with low education (71% had attained secondary or less education, while 15.3% had attained tertiary education) and the enterprises were at micro level, employing mostly one to three persons per business unit, and therefore numerous in every locality. Entrepreneurs made very little use of formal information systems, services and sources such as libraries, reference services or product literature in books, manuals, etc. However, radio as a source of information found ubiquitous use among the entrepreneurs (Ikoja-Odongo, 2002a:202; Ikoja-Odongo, 2002b; Ikoja-Odongo and Ocholla, 2004)

Information was found to be a major contributor towards informal sector activities. Of the sample (602 respondents countrywide), 92 percent agreed that information was valuable to them because it facilitated their jobs and work tasks, helped them make rational decisions and take appropriate actions, and increased their capacity to see things clearly and become more focused. As a result of using the right information, the study collated entrepreneurs' experiences and found that businesses improved or expanded, became easier to coordinate, the sustenance of business also became easier; information led to the opening of new markets and improvement of skills. Their sources of information were also largely informal and personal. Word of mouth (89%), recourse to personal experience (73%), friends, relatives and workmates (63%), were key sources. The use of institutions such as public libraries rated low at 3%. Reasons remain low education, few public libraries and others previously cited (Ikoja-Odongo, 2002:232; Ikoja-Odongo, 2002b; Ikoja-Odongo and Ocholla, 2004)

As already stated in 3.1.1, getting access to timely and accurate information can create difficulties for anyone, including informal entrepreneurs. The study identified barriers to information access and use, of which the main ones are: the inability to get the right information on time or not all (47%), no specific place to get information (46%), the amount of time taken to get the required information (46%), ignorance of information facilities (44%), getting information that is at times unreliable (41.5%), individuals being in the habit of concealing information (41.3%) (Ikoja-Odongo, 2002a:256; Ikoja-Odongo, 2002b; Ikoja-Odongo and Ocholla, 2004).

Factors activating information seeking

A number of factors were found to prompt entrepreneurs into searching for information. Major factors were the fear and effect of lack of information to support decision-making or problem solving and benefits accruing as a result of using information. Collated experiences revealed that lack of information impacted negatively on entrepreneurs' performance; that is, entrepreneurs experienced difficulty in securing the right tools and inputs, viz. spares they bought were in most cases more expensive than they would have been had they known other places where similar products were sold, and

they sometimes unknowingly bought fake inputs from the market. Entrepreneurs also experienced failures in getting supplies or inputs on time, and more money was being spent on cheap inputs. In sales, there was less competition, difficulty in marketing, slow progress, late production, poor publicity, poor knowledge of pricing, poor public relations or customer care, loss of customers and loss of customer confidence, poor and unwanted services, low sales and profits, poor quality products, increased overheads, and business stagnation. In the last instance, shared experience included the complete collapse of business, or no progress at all, or an increase in business related accidents resulting from following incorrect procedures (Ikoja-Odongo, 2002a; Ikoja-Odongo, 2002b; Ikoja-Odongo and Ocholla, 2004).

Role of intervening variables

In any information-seeking episode, there are variables that positively or negatively influence information seeking. In the informal sector, a number of intervening variables were found to play a role. Low literacy levels, cultural norms that value the oral tradition of information transfer, failure of the existing exotic information systems to meet the information requirements of entrepreneurs due to the unsuitability of information materials, inadequate communication services in the country, high cost of accessing foreign information, poverty, prior experience, state of one's interest, information availability, requirements of the problem at hand, costly information materials, insufficient information infrastructure, lack of reading culture, lack of time to search for information, information illiteracy, or ignorance about the important role of information, low rates of absorption and adoption of information, negative attitudes and apathy to information triggered by inferiority complexes, age, sex, social status and lifestyle, and the multiplicity of local languages. Uganda has 59 such languages, but most useful information sources are in English. Generally, one can classify these variables into two categories, namely internal (personal) and external or environmental variables. Different authors have written about this, including Gaziano (1997:245); Sligo & Jameson (2000); Dalton (1989:31-2), specifically regarding business communities; Mchombu (2000:60-62), relating to business women in Botswana; Wilson (1997:552) whose revised model discusses sets of barriers to information seeking; Palmer (1991:255); Fairer Wessels (1990:362)

Information seeking behaviour

Information seeking behaviour stems from the recognition that one's state of knowledge is less than adequate to manage a problem or issue. Considering this behaviour from the viewpoint of informal sector entrepreneurs, it was determined that there are numerous gaps in entrepreneurs' knowledge that prevent them from dealing effectively with problems they face in their work situations. These gaps are indicators of their Anomalous State of Knowledge. In order to resolve this deficiency, it was established that entrepreneurs applied several methods to access information. Overwhelmingly, the majority of these methods were informal. Eighty four percent used oral means to seek information, 59.3 percent identified conversing with others as a means to access information, 58 percent relied on contacting people who knew, and 55.1 percent trusted their own experience. Others (49.3%) sought help from friends, relatives, workmates and customers, and visiting was rated at 32.7 percent. Formal methods such as reading or visiting a library, seeking help from extension agents, and asking educated people were rated lowest (Ikoja-Odongo, 2002:243). The conclusion on multiple information seeking methods concurs with a study by Xie (2000:841).

4 Discussion

Many concepts used within the field of Information Science are open to a variety of interpretations. Conducting research in this field thus requires a clear understanding and formulation of what each specific term means in the context of a research topic. The majority of literature produced in the field of information seeking thus expounds the fact that context is an important indicator for understanding both the related concepts and the research environment. Understanding concepts and their relationship with each other can provide new research topics and hypotheses to test.

Models can be presented theoretically or conceptually, with their main aim being that of providing *a framework for thinking about a problem, and may evolve into a statement of the relationships among theoretical propositions* (Wilson 1999:250). Using a model, specific research questions can be tested and researched. Since all available information seeking behaviour models do not set out to test the same phenomena, researchers in this field need to acquaint themselves with what each model set out to describe/test. In choosing an applicable model, researchers need to determine whether the model will present the information required accurately, reliably and systematically, and whether it can explain or predict the desired phenomena. It should especially be able to validate representations and findings (Wilson 1999).

Certainly, each model has its own strengths and weaknesses. Literature, as produced by both model developers and scholars in the field, provides ample proof of these features. However, Fourie (2004) points out that these models complement each other, as opposed to contradicting or replacing each other.

Both the models by Wilson (1981 and 1996) and Krikelas (1983) seek to describe information seeking behaviour on a macro level, i.e. to describe the whole process involved in the information seeking process. Ellis's model falls between micro and macro analysis, while that of Kuhlthau has a phenomenological rather than a cognitive approach (Wilson 1999). Wilson's 1996 model includes both phenomenological and phenomenographic work (Olsson 2005). Ingwersen (1996) and Choo, Detlor and Turnbull (1999, 2000) on the other hand, concentrate on the micro level, thus describing only parts of the process. Ingwersen, for example, concentrates only on the information retrieval process, while Choo, Detlor and Turnbull emphasise different modes of searching used to acquire and access information.

A major complaint leveled against most information seeking models is that they are not always based on empirical tests, thus acting more as theoretical models than as ones that can be practically applied (Järvelin and Wilson 2003). However, the models by Kuhlthau, Ellis and Wilson (1996), are based on empirical tests, while the 1981 model of Wilson has the ability to supply a set of testable hypotheses on information behaviour. Unfortunately, the hypotheses are only implicit, not explicit (Wilson 1999). Saracevic in Wilson (1999), laments that the model proposed by Ingwersen (1996) is not conducive to tests or application for the evaluation of Information Retrieval Systems. However, Borland and Ingwersen in Wilson (1999) have since claimed to have proved that the model can test interactive Information Retrieval Systems.

Fourie (2004) mentions that very few models are explicitly based on web information seeking behaviour. The model proposed by Choo *et al.* (1999; 2000) is one of the few currently existing. This model used Ellis's work as a basis for the description of the information search process on the web. Subsequent studies have proved the usefulness of Ellis's information seeking behaviour components, as the majority of them are now supported by capabilities available in web browsers (Meho and Tibbo, 2003). According to Loeber and Cristea (n.d) Ellis's makes ample provision for the *browsing, assessing* and *acting* stages during a web search. Missing from this model, however, is the ability to establish which tasks are to be fulfilled. Despite the above, Fourie (2004) points out that all the models discussed in this paper are contributing towards the understanding of how the web is searched for information.

Line in Meho and Tibbo (2003) suggests that, with the advent of the Internet, it is now imperative that new studies in the field of information requirements be carried out. Alternatively existing models should be revisited for updates. A recent study based on Ellis's model, while alluding to the model, also identified four new features that should be included, i.e. accessing, networking, verifying and information management (Meho and Tibbo, 2003). Choo *et al.* (2000:15), in empirically testing their proposed model, concluded that *a behavioural framework that relates motivations (the strategies and reasons for viewing and searching) and moves (the tactics used to find and use information) may be helpful in analyzing Web-based information seeking*. Kuhlthau's model provides *a rough framework for discussing what occurs in the search for information and the transformation of that information into knowledge* (Kingrey 2002). This model mostly aims to describe individual seeking behaviour. A study conducted by Hyldegaard's (2004), based on Kuhlthau's model, explored the differences between intra-group member seeking behaviour and that displayed by individuals, concluding that dissimilarities exist between the two, indicating the necessity for further exploring the model's applications in a group searching environment. Extensive research by Kuhlthau led to her proposal that the stages of the ISP, the uncertainty principle, constructed to *provide for library and information services to accommodate uncertainty and lack of constructs in the early stages of ISP* (Kuhlthau 1999b:4), as well as develop the concept of a zone of intervention. This forms a conceptual framework for understanding the construction process of information seeking from the user's perspective (Kuhlthau, 2005).

In criticising models based on cognitive processes, for example Ingwersen's (1996), Olsson (2005) acknowledges that it has both strengths and weaknesses. The failure to consider important features in the relationship between people and information is seen as a weakness that needs to be addressed. Possible improvements to the theory include new research strategies and theoretical frameworks that focus on the social processes and relationships underpinning user information behaviour.

Julien and Michels (2000) posit that most of the current information behaviour models concentrate on success upon finding deliberately sought information. All the models discussed in this paper, except those of Krikelas (1983) and Wilson (1996), assume that information is actively sought, thus neglecting indirect retrieval activities. Krikelas expands on *less direct information gathering* while Wilson (1996) refers to *passive attention and passive search* (McKenzie 2002:19). Mackenzie (2002) criticises the inability of most models to incorporate incidental forms of information behaviour. Julien and Michels (2000) point out that there is still paucity in conceptually describing factors such as: drawing upon experiences of others, gaining of insight by the searcher into ill-defined issues, and the affective factors providing comforting mediation during the information seeking experience.

5 Conclusion

A common denominator of these models is their effort to describe information seeking processes and behaviour in general terms. As such, most general Information seeking behaviour models seem to take cognisance of the fact that a user in need of information may use a variety of information sources, services, systems, or even contact individuals in an effort to solve a problem. However, reference is seldom made to the use of a third person, such as a librarian, secretary or personal assistant for problem solving (see Mostert and Ocholla, 2005). This oversight indicates a disregard for variations and context in information seeking.

In order for models to be theoretically valid and practically applicable, they need to move away from studying the elitist information of users making information decisions in their workplace, and begin doing significant research into people's daily information behaviour (Julien and Michels, 2000). This is how it gets easier to understand that information seeking is a complex process of actions and interactions which people engage in when seeking information. Like its companion expression 'information need', its utility is more in its denotive than its connotive power. Context, be it geographical, social, educational or professional is influential in information seeking behaviour. Fair understanding and follow up of those different contexts lead to a wider perspective of the domain and this is something essential in a young but dynamic field such as Information Science.

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