Information Seeking Behavior and Technology Adoption:

Theories and Trends

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Chapter 6
Wilson's Information-Seeking Behavior Models (1981, 1996, 1999)

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ABSTRACT

This chapter analyzes and compares the goals, key concepts, key features, strengths, and weaknesses of Wilson's information-seeking behavior models. Wilson's models grounded in multi-disciplinary research serve as milestones shaping the information behavior research. The models steered the direction of information behavior research from "system-centric" to "person-centric" inquiries by proposing information-seeking behavior as a new lens in combination with information use to study the dynamic process experienced by users for satisfying information needs. Wilson also introduced "observations to be the "root" method of data collection. The ability of Wilson's models to continue serving as frameworks for developing and testing new combinations of information behavior constructs and theories illustrate the rigor, relevance, and utility of the models in rapidly changing landscape of information environments. As researchers from diverse disciplines employ Wilson's models as a basis for solving the problems of information behavior experienced by well-defined groups from different parts of the world, the models are likely to evolve in the future.

INTRODUCTION

Human information behavior, also known as information behavior, can be defined as "the totality of human behavior in relation to sources and channels of information, including both active and passive information-seeking, and information use" (Wilson, 2000, p.49). Information behavior includes active searching of information through face-to-face communication and passive reception of information where information is received by the person without any intention to act on it. Information behavior is an umbrella term that covers human and technological factors and their interaction related to seeking, searching, storing, retrieving, processing, and using information. Information-seeking behavior with information searching as its subset is a major part of information behavior.

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Hence, it is a common practice to use the terms – "information behavior" and "information-seeking behavior" – interchangeably. Therefore, any model on information-seeking behavior should be seen as a part of information behavior (Wilson, 1996).

Research contributions from science, technology, and social sciences dating back as late as 1940s, have enriched the field of information behavior and helped it evolve significantly. In 1948 for the first time, public presentations on the information behavior of scientists and technologies were delivered at the Royal Society Scientific Information Conference (The Royal Society, 1948). In the early phase (1948 to 1965) of information behavior research, a number of *document-centric* studies explored the ability of documents including answer providing tools to satisfy information needs of library patrons. With the increasing use of tools and technologies for storing and retrieving documents in libraries, the information behavior research experienced the emergence of *system-centric* approach where manual and computer-based document management systems were of prime interest to library and information science (LIS) researchers.

Since the 1980s, information behavior research experienced a gradual shift from the *system-centric* to the *person-centric* approach which focused primarily on *information needs*. Wilson (1994) quotes several reviews to show that the beginning of a move towards more person-centered studies in information behavior was attributed to his 1981 article, together with independent work by Belkin and Dervin. The significance of information environment and information context, which included information-seeker's characteristics and their role and features of the external environment, emerged with the development of person-centric research approach.

Why Study Wilson's Work?

Over a period of 30 years, Wilson's original concept of information behavior (1981) evolved into the revised model of information (1996) and the revised general model of information behavior (1999), keeping up with the theoretical developments in the information science and allied fields focusing on the person-centric research. Wilson's information behavior models serve as milestones in the "person-centric" research on information behavior.

Key contributions made by Wilson's models in advancing information behavior research warrant for the need to study their evolution. For instance, until 1981 "information need" construct alone dominated the information behavior research. Wilson's (1981) original concept suggested that due to our inability to observe "information need," an internal state of mind, it was not helpful to rely heavily on information needs to study one's information behavior. Instead a new approach – information-seeking behavior – was necessary to observe the user behavior. As researchers across the world commenced employing various versions of Wilson's models to analyze information behavior of users in diver contexts, it became clear that studying information needs is not enough – it is the context of information needs that plays a central role in shaping overall information behavior of the users. Another prime contribution of his models is to illustrate the utility of "information use" which had received a little attention until then. While developing these models his goal was to link interdisciplinary theories in action rather than proposing a standalone theoretical framework. As a result, all of his models are conceptual models for information behavior research. They are based on observations. Wilson introduced "observations to be the "root" method of data collection, dividing it into direct and indirect variants and further subdividing it into more familiar types, such as ethnographic observations, survey questionnaires, and interviews" (Case, 2006, p. 312).

The following section elaborates the evolution in Wilson's models by synthesizing them and pointing out the key differences in them. The next section illustrates the significance of

context of information needs for the information behavior of users in developing nations, one of the contributions made by the Wilson's models in diversifying the information behavior research. The concluding section highlights the overall contribution of Wilson's models in advancing the information behavior research.

EVOLUTION IN WILSON'S INFORMATION BEHAVIOR MODELS

Original Concept: Three Models – 1981

Wilson proposed his original concept of information behavior in the form of three models, representing a way of thinking about the field of person-centric studies.

The most cited model from his original concept focuses on the origin of information needs and barriers to seeking information (Wilson, 2005). The model states that the interplay between (a) personal primary needs (e.g., physiological needs, affective needs, and cognitive needs), (b) person's social role (e.g., work-related responsibilities and performance expectations from the individual), and (c) external environmental factors (e.g., work environment, socio-cultural environment, politico-economic environment, and physical environment) makes the person realize about their information needs. As a result, the person attempts to seek information by overcoming personal, interpersonal, and environmental barriers.

The second model states that any need perceived by the person prompts them to seek information. The model identifies basic needs in the form of physiological, cognitive and affective needs. Importantly, the needs and barriers to pursue the needs arise in the same context which may be a combination of personal characteristics, person's role at work or in life, and the environments (political, economic, technological, etc.). Person may demand information from formal or informal information sources, services, and systems (e.g., libraries, online databases, community centers, etc.) to satisfy information needs. In case of a successful attempt, the person uses information to satisfy their information need fully or partially. Reiteration of the search process is possible (Wilson, 1981). The model also depicts that the person may involve others for exchanging and using information, which indicate the element of reciprocity, a characteristic feature of human interactions (Wilson, 2006).

The third model suggests a three-fold view of information seeking. The context of the seeker, i.e., overall life of the person, the system employed (e.g., computer or machine-based system used directly or with the help of a mediator), and the information resources (e.g., print or digital) form the three components of the model. Technology represents any set of devices, tools, or mechanism that aids information-seeking behavior. The model underlines the dynamic nature of information seeking and presents it as an ongoing process.

The three models filled in a significant research gap in the information science literature. They became of quick interest for scholars in information systems, consumer behavior, health sciences, and other fields. However, they were not generalizable enough for various user groups to capture their contextual factors that affect information behavior. Hence, Wilson proposed the revised model of information behavior in 1996, which integrated studies from decision-making, psychology, innovation, health communication, and consumer research. General systems theory and phenomenology influenced the construction of the revised model (Wilson, 2005).

Revised Model – 1996

The revised model provides a more general framework by integrating contemporary models on the information behavior research. The model draws

attention to the interrelated theories on information behavior in the LIS and other disciplines (Wilson, 2005).

The model is based upon two key prepositions. The first is that information needs are a secondary type of needs that arise out of a set of primary needs in everyday life; the second preposition focuses on various personal and external barriers encountered by users during information search and acquisition (Beverley et al., 2007).

The revised model (see figure 1) identifies three constructs: context of information needs, information-seeking, and information processing and use; and two moderating variables: activating mechanism and intervening variables. Activating mechanisms and intervening variables serve as moderating variables that represent effects of various external conditions on the information behavior of individuals.

Context of Information Needs

Wilson defines need as a subjective experience that occurs only in the mind of a person in need (Wilson, 1997). Various ways in which one discovers or realizes information needs can be classified based on the motives behind them. The model recognizes the following motives: (a) unlearned motives, which cover curiosity and sensory stimulation; (b) social motives which cover the desire for affiliation, approval or status, or aggression; (c) economic motives which address financial gains, savings, and other monetary enhancements; (d) physiological motives such as hunger, health-related motives, and thirst; (e) affective needs such as escapism, emotional release, companionship, social utility, reality exploration, and value reinforcement; and (f) cognitive needs which include the desire to learn new information, the psycho-

Figure 1. Wilson's Revised Information Behavior Model (Wilson 1996, p. 569)
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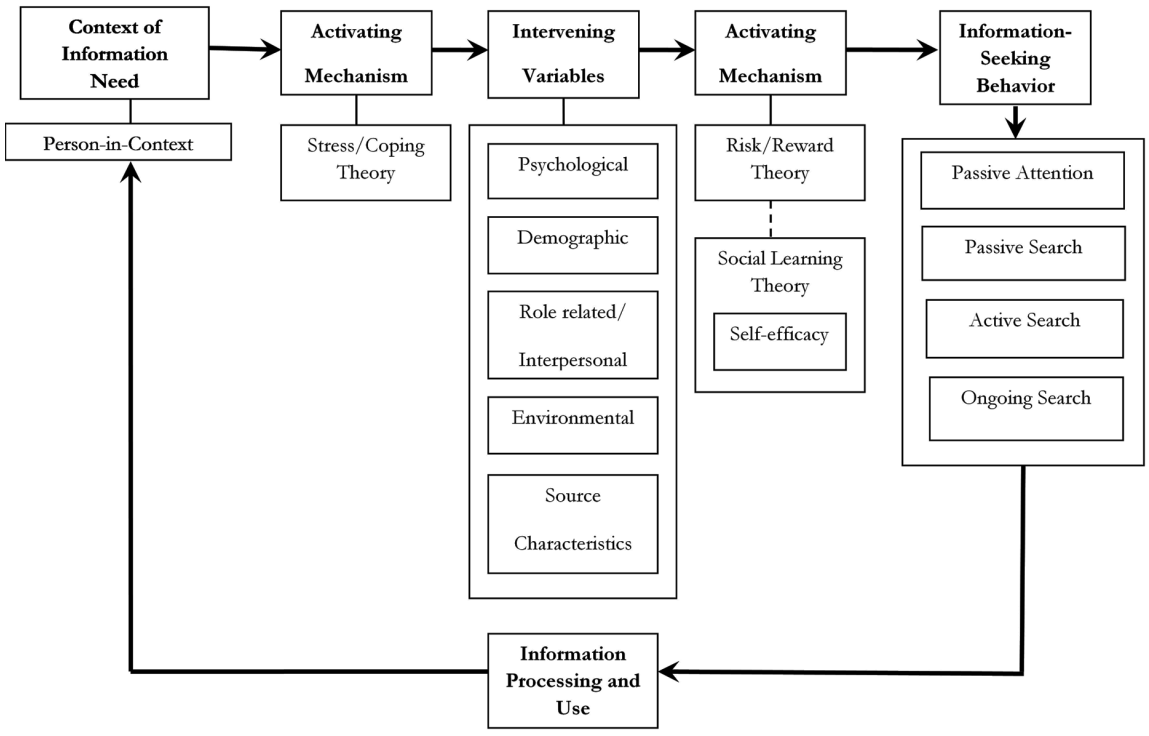

logical state resulting from perception, the pursuit of reasoning for existing form of knowledge, and the attempt to confirm values and beliefs held by users. Different types of user needs are considered a part of the context in which information-related needs are realized and pursued.

Activating Mechanisms

Since information need is a subjective experience, its consequences also vary by individuals. Every information need may not prompt every individual to seek information. So what triggers information-seeking behavior? Lack of information often creates uncertainty, a cognitive state of mind, which leads to anxiety and stress. When individuals cross person-specific threshold level of stress caused by information needs, they tend to seeking information.

The stress/coping theory (Folkman, 1984) defines stress as: "A relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and as endangering his or her well-being" (Folkman 1984, p. 840). People may cope with their stress by emotionally or focusing on solving the problems that cause stress. The stress/coping theory takes into account people's orientations towards threats and turning away their attention from those threats. It refers coping as cognitive and behavioral effects to master, reduce, or tolerate the internal and external demands that are created by stressful situations (Folkman & Lazarus, 1985). Therefore the revised model positions stress/coping theory as the activating mechanism for the whole process of seeking information.

Various factors including sources of information, available choices, and types of search efforts may encourage or discourage individuals to continue seeking information. Such factors create positive or negative incentives for the information seeker. The revised model introduces risk/reward theory (Murray, 1991; Settle & Alreck, 1989) to explain the influence of incentives on information-seeking behavior. Risk-taking attitudes of individuals affect the process of seeking information and developing information sharing and awareness in a group-setting (Sonnenwald & Pierce, 2000). Individuals often exchange information with others depending upon sources' political, social, and economic contexts, which, in turn, create risks or rewards for the individuals to seek information. Finally, depending on their prior experience, individuals may prefer certain sources of information over others.

The factors that incentivize information-seeking behavior may not be necessarily always external; they could be pertinent to individual characteristics as well. For instance, in spite of favorable external conditions, some individuals may not feel confident about achieving their target of seeking information. Lack of self-efficacy may refrain them from pursuing information needs. Self-efficacy also known as a sense of personal mastery can be explained as: "An efficacy expectation is the conviction that one can successfully execute the behavior required to produce the outcomes. Outcome and efficacy expectations are differentiated, because individuals can believe that a particular course of action will produce certain outcome, but if they entertain serious doubts about whether they can perform the necessary activities such information does not influence their behavior" (Bandura, 1977, p. 193). Self-efficacy is the central construct in the social cognitive theory which covers a conviction possessed by someone, that they would successfully execute the behavior to produce desirable outcomes. Hence, the revised model introduces social learning theory to measure the level of self-efficacy and its effect on information-seeking behavior.

Information-Seeking Behavior

Wilson (2000) defines information-seeking behavior as: "The purposive seeking for information as a consequence of a need to satisfy some goal. In the course of seeking, the individual may inter-

act with manual information systems (such as a newspaper or a library), or with computer-based systems (such as the World Wide Web)" (p. 49). For a long time, *active information-seeking* was implicitly considered as information-seeking behavior. Eventually, the term *acquisition* (Aacker et al., 1997) was introduced to stratify information-seeking behavior into active and passive – attention and search components.

The revised model segments the process of information-seeking into active and passive modes, with the active mode consisting of active searching and ongoing searching and the passive mode consisting of passive attention and passive searching. When an individual actively seeks out information, it is called an active search, and this establishes a basic framework of knowledge, ideas, beliefs, or values. Typically, active search involves specific information as an output of the search that was initiated by individuals or organizations. The revised model introduced "active search" mode of information seeking by deriving ideas from Ellis' (1989) behavioral characteristics of information seeking. The ongoing search builds upon the active search with an occasional continuing search to update or expand one's established basic framework of knowledge, ideas, beliefs, or values. The frequency of updating original base of information may vary from a few minutes to more than a few years. Varying user needs – a function of time – shape information collected as a part of ongoing search (Wilson, 2000). In contrast, passive searching signifies those occasions when one type of search (or other behavior) results in the acquisition of information that happens to be relevant to the individual. Passive search typically leads to gaining unintended type(s) of information. Listening to the radio or watching television programs could lead to passive attention during which information acquisition may take place without intentional seeking. Erdelez's (1997) "information encountering" inspired Wilson to introduce passive attention in the revised model. Passive attention involves user's exposure to information from radio or television, or the reception of messages on cell phones. Thus, passive attention does not cover any sort of intentional information-seeking.

Intervening Variables

Barriers to pursuing information needs are termed as "intervening variables" that suggest their supportive and interruptive role in the process of seeking information. For instance, the format of information (electronic, print, verbal, etc.) may constitute a barrier or a help, or both, since the format might play a key role in resource selection (Al-Suqri, 2007). The revised model proposes six categories of intervening variables, namely, psychological, demographics, role-related or interpersonal, source characteristics, environmental, and economic, which are explained below.

Our beliefs and value systems often times reflect in our actions, including our information-seeking behavior. Any attempt to prove or disprove those beliefs and values act as *psychological* intervening variables for the information-seeking behavior. For instance, many conflicting ideas may confuse naïve users, affecting their overall information behavior.

Age, gender, and other relevant factors constitute *demographic* intervening variables which possibly affect information seeking, searching, and possibly, the overall behavior of users (Wilson, 1997). Employment status, socioeconomic status, ethnic origin, marital status, and co-habitation are common demographic factors that affect information behavior. For instance, a research study suggests that the amount of health-related information used by users appears inversely proportional to the age groups of a population (Beverley et al., 2007). In general, women are more active in searching and receiving information compared to men, which confirms women's role as care givers. A study in a consumer research reveals that women with children care more about information of nutrition and ingredients on specific products than women without children. Concerns with children are

key motivating factors for information-seeking, searching, and their overall information behavior (Wilson, 1997).

One's role in the society and their relationship with others influence several aspects of their information behavior. For instance, some researchers prove the high degree of correlation between the socio-economic status of users and their need for inter-personal communication to seek information (Dervin and Greebberg, 1972). Such studies advise marginalized people to look forward to interpersonal communications and non-establishment channels for seeking substantial portion of information through local news. In contrast, a study titled *impoverished life-world of outsiders* suggests that users seek information from outside the community rather than from inter-personal communications inside a group (Chatman, 1996). This conclusion was based upon a key finding that information of the most critical kind such as employment was not being asked or shared among community members. Although there is no consensus on the correlation between the need of inter-personal communication and the degree of socio-economic status of disadvantaged populations, *interpersonal relations* affect information behavior.

Characteristics of *sources of information* affect the process of selecting information from a particular source. For instance, individuals are often choosy when it comes to selecting information from a set of facts available from different sources. From a surrounding environment full of messages, an individual selects the pieces of information or messages that fit the majority of their needs and interests (Schramm, 1973). People may receive or seek information from formal and informal channels of information including conversations with colleagues and friends (Spink et al., 2002). Information is often bombarded by more than one source of information. For instance, family, schools, friends, broadcasting media such as television, newspapers, and radio, and a variety of technologies such as cell phones, Internet, and computers act as the most common sources of information. However, certain sources of information may have pre-requisites to qualify for receiving information. For example, to be able to read news from newspapers, literacy is one of the major pre-requirements; this is not the case for hearing news from friends or families. Sometimes selection of information sources also depend upon the available resources. For instance, results of a research study involving electronic reserve auctions suggest that the significance of information and information sources heavily depends upon strict time constraints and the overall information intensive nature of the electronic auction process (Losch & Lambert, 2007).

Immediate *social milieu*, i.e., environment influences people's choice of processing information and acting on it. For disadvantaged populations, the process of understanding information needs is grounded in social environments which define information from users' perspectives (Chatman, 1996). Sometimes individuals receive information in bits and pieces from various sources and communication channels. Surrounding environment often encourage or discourage them for selecting or rejecting received sources of information (Schramm, 1973).

The revised model takes into account the *direct cost* of products or services and the value of time as economic factors. Direct cost can be further categorized into the cost of searching information, the cost of retrieving information, and the cost associated with shopping done for just enjoyment and entertainment. A consumer research study indicates that gains associated with search results diminish significantly due to similar alternatives; this circumstance reduces search efforts. This observation is also supported by the fact that the value of time for information search associated with people with high income is usually greater than that of people with low income (Stigler, 1961).

Information Processing and Use

Gathering and acquiring information do not necessarily guarantee the use of information. For instance, an illiterate user might not be able to make use of information broadcast through a newspaper. The "information processing and use" construct explains the information behavior of users after they get hold of information from various sources through different information-searching mechanisms. Wilson defines the construct in terms of human barriers and technical barriers. When beliefs, perceptions, and knowledge of others act as barriers to information processing and usage, they form human barriers for the information-seeker. Technical terminology, lack of technical support, and other technology-related problems create technical barriers for information users.

Information gathered from various sources does not necessarily guarantee its incorporation with the users' frame of knowledge, beliefs, or values. Also, information available in different formats does not necessarily lead to changes in the user's state of knowledge, behavior, values, or beliefs (Wilson, 1997). There are many factors related to economic and personal abilities, namely, (a) direct economic cost to process information and value in terms of time, (b) cognitive abilities and knowledge required to process information by the user, and (c) basic literacy and reading abilities, which decide the possibility and rate at which information can be processed and applied (Hultgren & Limberg, 2003; Wilson, 1999b).

Information sources and forms of information have an intimate relation with the process of applying received or gathered information through a variety of information-searching methods. For instance, high level use of newspapers and dense networking in a community give individuals a leverage to make use of information more productively (Dervin & Greebberg, 1972). Sources of information leave different impacts on different users; for example, information derived from radio-broadcasted news has varied degrees of influence different than the news derived from television or mobile. The need for information-seeking in combination with a context in which information is searched, shape the entire process of information usage. For instance, a research study in the Swedish context examining information-seeking, use, and learning in the school context found that students' ability to use information, the nature of school assignments, the quality of access tools, and their experiences and knowledge significantly influence their learning outcomes (Hultgren & Limberg, 2003). Learning outcomes emerge as end-products of processing information.

In the private sector markets, data smog makes it harder for consumers to make decisions about a particular product or a service since consumers could hardly encode anything specific in their memories (Varian, 1998). Data smog refers to a combination of data which makes a very little sense for making decisions based upon that data. This situation is similar to information overload. Information overload is a scenario in which users are bombarded with a variety of information presented in different forms (Varian, 1998). Information intermediaries prove to be very effective, and hence, are in-demand, especially, in the context of information overload. Information intermediaries, a human or a non-human party designed to assist users in information processing, are often used in markets to assist potential consumers processing and applying those different pieces of information for desired tasks (Lee & Cho, 2005). A research study of financial markets indicates that various factors increase the dependency on information intermediaries by a majority of potential consumers who are bombarded by loads of information (Waldfogel & Chen, 2003). A low-level of perceived expertise in the financial management area, a large amount of total financial assets, and a high opportunity cost of time exponentially enhances the perceived value of information intermediaries (Lee & Cho, 2005). The introduction of information intermediaries in markets completely changes the dynamic of information search and overall

information behavior demonstrated by information users. In the Internet environment, the information intermediary emerged as a tool for information gathering as well as information sorting, affecting the overall information processing, use, and information relevant decision-making (Caillaud & Jullien, 2001; Waldfogel & Chen, 2003).

Revised General Model of Information Behavior – 1999

In 1999, Wilson proposed a problem-solving model as a way of integrating the research in the field of information behavior. The model considers information seeking, searching and use to be associated with the following stages of a goal directed problem-solving process: problem recognition, problem definition, problem resolution, and solution statement (Wilson, 2000). According to the model, information-seeking behavior can be seen as goal-determined behavior (Wilson, 2005) where a particular type of information helps to solve a set of problems. Thus the latest model is compatible with its previous versions once the user overcomes barriers to seeking information.

While seeking, searching, and using information for solving a problem, a user can interact with problem information, domain information, or problem solving information. Problem information can be described as the structure, properties and requirements of the problem at hand. User can access it in the problem environment or document. Facts, concepts, laws and theories form domain information. The methods of problem treatment, i.e., how a particular problem should be formulated and solved, are covered by problem-solving information, which is critical for solving the problem and mostly available only from experts.

Sometimes people may not think of information as separate from the information-intensive task or a problem at hand. For instance, while making sense out of participants' behavior and exploring the social elements of their information behavior in the context of an annual work-planning of a public agency, a study found that employees' inability to separate task from information needed to complete the task deviated their attention from basic issues, problems, and sense-making of tasks and situations (Solomon, 1997). In particular, this observation holds true in the organizational settings that depend upon technological systems (for example – information systems) to gather, store, and process information. Hence, to maintain the quality of information and its appropriate applications for specific issues and problems, it is necessary to ground and align the design and implementation of information systems in the organizational goals and vision (Solomon, 1997). This caution highlights the utility of Wilson's revised general model of information behavior, especially to avoid problems associated with information management, design, and implementation of information systems.

Table 1 lists key differences in the three models.

Key Strength of Wilson's Models

Wilson's models exist within a "universe of knowledge" where the information seeker or the intermediary might exhibit human behavior portrayed by constructs and theories integrated in the information behavior models. As a result, there is always a scope for introducing new constructs and new theories from multiple disciplines, and testing the newly proposed models with user groups in different contexts. For instance, Al-Suqri (2011) developed an integrated model of social science information-seeking behavior by blending Wilson's (1996) revised model of information behavior with other established models, to study the information-seeking among social science faculty in an Omanian university and promote future development in LIS in the Middle East. Potnis (2010) applied constructs from Wilson's models to study the role of information behavior in shaping socio-economic opportunities for female mobile phone owners earning less than a dollar a day in rural India. The ability of Wilson's models

Table 1. Differences in Wilson's information behavior models

#	Original Concept: Three Models (1981)	Revised Model (1996)	Revised General Model (1999)
Goal	To define key concepts by proposing the basis for a theory of the motivations for information seeking Behavior	To expand the original concept through an analysis of the literature in fields other than information science	To propose a problem-solving model as a way of integrating the research in the field of information behavior
Key Concepts Covered	Information, User studies, Information needs, and Consequences	Stress-coping theory, Risk-reward theory, Self-efficacy, Context, Information-seeking behavior, and Information processing and use	Problem-oriented information seeking, searching, and use Goal-oriented information-seeking behavior
Other Features	Recognition of information need was believed to be enough for the user to seek information Recognition and introduction of information providers and informal information systems in the process of using information Emphasizing the role of "information exchange" which indicates that information flow is always a two-way process Non-linear representation of information provider and receiver Discussion of "information in context" concept Demonstrates interdisciplinary approach by studying user behavior from sociology and psychology Proposal for studying information behavior for "well-defined groups"	Stress caused by the information need recognized by the user was believed to prompt the user to seek information Barriers to seeking information are represented by "intervening variables" Information-seeking behavior is made an explicit part of the model Reference made to the "user's life," a philosophical concept with phenomenological approach useful for understanding information behavior More pronounced social dimension of information, and the value of the investigative methods of the social science	Inclusion of problem-related contextual features for information seeking, personal, and psychological factors Depicts explicit relationship between information needs and seeking Acquiring information is not always an end in itself
Strengths	They identify gaps in the information science research Relative simplicity of the three conceptualizations built a consensus understanding for information behavior among information science researchers and practitioners They continue serving as a reference framework with the same validity as that of at the time of inception	It is a richer source of hypotheses and furthers research than the original concept The model can be easily related to other information-seeking behavior theories (e.g., theories proposed by Ellis and Kuhlthau), which strengthens the claims made by the model The model draws attention to the totality of information behavior and shows how a specific piece of research contributes to an understanding of the whole phenomenon	Most clear and much needed depiction of the inter-relationship between information behavior, information seeking and information retrieval It provides a framework to explain goal-oriented information-seeking behavior
Weaknesses	The original concept does not suggest any causal relationship among information behavior concepts It does not assume barriers to seeking information have any effect on the user motivation for seeking information It does not provide sufficient attention to contextual factors It does not provide any direct or explicit hypotheses to be tested	It does not integrate original concept with the related concepts from all the fields It cannot explain everything to do with information behavior	It is limited to defining and solving problems

to continue serving as frameworks for developing and testing new combinations of information behavior constructs and theories with a wide range of user groups from different parts of the world illustrate the rigor, relevance, and utility of the models in rapidly changing landscape of information environments.

Key Weakness of Wilson's Models

The models primarily focus on the general processes of information seeking, and not on the context of the information search or the types of information available. As a result the generic models may not fully explain the information behavior of various actors in different contexts seeking a variety of information (Al-Suqri, 2007). For instance, Wilson (1999a) acknowledges that his original concept (1981) paid insufficient attention to contextual factors: "The limitation of this kind of model, however, is that it does little more than provide a map of the area and draw attention to gaps in research: it provides no suggestion of causative factors in information [behavior] and, consequently, it does not directly suggest hypotheses to be tested" (Wilson, 1999a, p. 251).

CONTEXT OF INFORMATION NEEDS AND DEVELOPING NATIONS

The significance of context of information needs in shaping user information behavior became quite evident with the maturity of person-centric research approach bolstered by Wilson's work. In fact, the context of information needs often seems to be the most influential construct shaping the entire process of information behavior (Potnis, 2010; Reddy & Jansen, 2008; Sonnenwald & Pierce, 2000). To underline the significance of context for information behavior research, Kuhulthau (1999, p. 10) states "to neglect context is to ignore the basic motivations and impetus that drives the user in the information-seeking process." Moreover, conferences like *Information Seeking in Context* provide a visible platform for researchers and practitioners all over the world to make contributions that enrich our understanding of information behavior in distinct contexts. Research studies applying Wilson's models to study information behavior in the context of disadvantaged populations and various professional from developing nations promote the diversity in information behavior research. This section illustrates the significance of context of information needs for the information behavior of users in developing nations.

Interplay between Context and Information Needs in Developing Nations

Context is a very multifaceted concept which can be defined in multiple ways in the field of information behavior (Pettigrew, 1999). Several personal, professional, and social aspects of individual's life define and affect the context of information needs. Context of information needs construct reviews the context in which information needs are realized and its impacts on information users. Since need is a subjective experience it is not directly accessible to an observer (Wilson, 1997) except in situations like (need of food) hunger. Subjective judgment of someone else's need is a cognitive representation of a future goal that is desired (Burnkrant, 1976). However, information need is sometimes difficult to specify, even by the user (Belkin et al., 1982). In any event, different needs experienced by human beings can be broadly categorized into the primary needs – food, clothing, and shelter, and the secondary needs – health, education, and monetary support.

Context influences the nature of information needs and the nature of information perceived to be satisfying to the users. For instance, studies show that information needs of users practicing the same profession do not necessarily coincide. Instead, the objectives and goals of the process that gives rise

to the information needs significantly influence the information needs of users. For instance, an information needs study of the artisan fishing community in Uganda reveals that information needs of those fishermen were heavily clustered around their work related practices and information that promote their jobs. These information needs were rooted in contexts formed by climatic conditions for fishing, illiteracy affecting entrepreneurial capabilities, general fishing habits, cost of equipment used for fishing, and poor management facilities for storing fish (Ikojo-Odonogo & Ocholla, 2003). However, the results from a similar research study conducted for information needs of fishermen in Niger Delta region in Africa were quite different. The most essential information need concerned the ways in which loans and credit could be obtained for the expansion of fishing operations (Dekur, 1996). Despite being from the similar regions in Africa with the same profession – such as fishing – fishermen had different information needs. This difference illustrates the significance of context in which information needs arise.

There are varieties of information needs highly correlated with the contexts presented in various research studies. After studying the information needs of rural women in Botswana, Africa, Mooko (2005) found that health, agriculture, employment, family violence, and basic familial needs were the key information needs of rural women in Botswana. Their information needs were grounded in the context of families. Some of the secondary information needs were information on government-aided funding, welfare subsidies and policies, and training. Artisan farmers were another marginalized African population studied. A five-layered schema of information needs developed for artisan farmers includes socio-economic conditions, socio-institutional and macro-economic factors, production technology and economic efficiency status, cost structure and profitability state, and the marketing system respectively (Panayotu, 1985).

Information needs of an individual determine whether the process of searching for information needs to be carried out individually or in a group (Reddy & Jansen, 2008). If information needs are associated with communities, then internal changes and features associated with community greatly shape the information needs identified, associated, and satisfied, using limited resources available to the communities. Changes internal to the communities in South Africa and the nature of those communities are reflected in importance, magnitude, and priorities of information needs of those communities (Kaniki, 1995). A focus group study examined the information needs of 164 low-income, primarily African-American residents in a community; the study confirmed that information needs such as community services and activities information, crime and safety information, and general reference tools were grounded in the context in which they lived, whereas the information needs such as resources for children, healthcare information, employment information, and education information were based upon their personal and family lives (Bishop et al., 1999).

For marginalized populations in developing nations, information needs can heavily influence not only their way of life but also their existence. While exploring the intimate connection between information needs with the existence of local communities in South Africa, Kaniki (1995) states "information needs manifest themselves in the form of tasks of users or potential users … the information needs of people were basically related to personal existence, survival and development… all these problems, even if solved, were not ultimate goals in themselves. Solving these problems seemed to provide 'avenues' for attaining a better life or livelihood, that is, overcoming unemployment or finding means of earning an income" (p.5).

A feedback mechanism is observed in terms of contexts and information needs. For instance, the context shapes information behavior which, in

turn, reinforces features of the context. Features associated with information contexts vary according to user needs, types of users, and types of processes implemented in satisfying information needs. In an ethnographic study of the information behavior of community clinic attendees, four types of contextual factors such as physical environment, clinic activities, the nurses' situation, and the seniors' situation were identified as controlling variables shaping their information behavior (Pettigrew, 1999). The context of information needs may be formed due to the physical disabilities as well. At the end of a study of a visually impaired population seeking health information, researchers found that a visually-impaired person's independence, their acceptance of their own visual impairment status, their interactions with health service providers, support from friends and families influenced their information needs *and* their overall information behavior (Beverley et al., 2007).

Context specific insights can be applied in deriving knowledge about information flow among various users in those contexts. In turn, the same information flow could potentially influence the composition of the contexts. Interactions among various contextual factors responsible for information behavior form a common information ground which is useful to understand information flow in community settings (Pettigrew, 1999). Sonnenwald and Pierce (2000) discovered that bi-directional information flow among individuals in dynamic contexts helps to build team-spirit and to improve team performance. Thus, the continuous flow of information builds a dense social network through which interwoven situational awareness can be established.

CONCLUSION

Wilson's models are based upon the formal body of scholarly research, and explore different aspects of information behavior informed by allied research areas including, but not limited to, decision-making, innovation, consumer behavior research, marketing, psychology, health communication research, and information systems design (Wilson, 1994). Wilson has contributed significantly to the information behavior research by introducing a new approach – information-seeking behavior – in combination with information use. His original concept (1981) of information behavior was instrumental in strengthening person-centric studies in information behavior research. His conceptual models are rooted in field observations. Hence, his data-driven conceptual models propelled person-centered user studies in information behavior over the last 30 years.

Wilson's models exist within a "universe of knowledge" where the information seeker or the intermediary might exhibit human behavior portrayed by constructs and theories integrated in the information behavior models. As a result, there is always a scope for introducing new constructs and new theories from multiple disciplines, and testing the newly proposed models with user groups in different contexts. The ability of Wilson's models to continue serving as frameworks for developing and testing new combinations of information behavior constructs and theories with a wide range of user groups from different parts of the world illustrate the rigor, relevance, and utility of the models in rapidly changing landscape of information environments.

Multi-disciplinary foundation of his models inspires practitioners and researchers to test and apply his models in the areas outside of LIS. The information behavior studies inform practitioners including human-computer interaction experts for developing ICT user interfaces customized for well-defined groups of users. For instance, Jan Chipchase, Nokia's human behavior expert, studies the primary and secondary needs including information needs of potential mobile users for developing mobile interfaces that fit into the user lifestyle (Corbett, 2008). Thus information behavior models and theories shaped by Wilson's models have valuable practical applications to

serve a wide range of user populations worldwide, especially for incorporating context-specific information needs with product development.

Wilson's models are general and hospitable to theories capable of explaining information behavior, information-seeking behavior, and information searching. His models provide a basis for several hypotheses useful in advancing the information behavior research. As more researchers from diverse disciplines use Wilson's models as a basis for solving the problems of information behavior, the models are likely to evolve and address problems even in Web 2.0 era. For instance, user-generated content in the form of "big data" has tremendous latent potential to create knowledge, and hence, value for society, governments, and businesses. Obviously the need to understand users, their information needs, and their ways of satisfying information needs is more than ever of practical significance in the age of social media and mobile technologies. The theoretical tradition of information behavior enriched by Wilson's models could guide researchers and practitioners to identify and interpret patterns hidden in the big data for helping the users to meet their information needs.

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KEY TERMS AND DEFINITIONS

Context of Information Needs: A multifaceted concept affecting the realization, interpretation, and pursuit of information needs. Personal, social, environmental, economic, and several other dimensions of one's life form the context for information needs.

Data: Raw facts which may or may not make sense.

Information: Contextualized data or processed data.

Information Behavior: "The totality of human behavior in relation to sources and channels of information, including both active and passive information-seeking, and information use" (Wilson, 2000, p. 49).

Information Need: Internal state of mind resulted after experiencing primary needs such as affective needs, physiological needs, hunger, etc.

Information Use: One's ability to process and apply information to achieve a set of objectives. Access to information does not necessarily mean the use of information (Potnis, 2010). Several personal factors like skills, literacy, etc. and external factors like resources, social norms, etc. play a significant role in influencing one's ability to process and apply information.

Information-Searching Behavior: "The 'micro-level' of behavior employed by the searcher in interacting with information systems of all kinds. It consists of all the interactions with the system, whether at the level of human computer interaction (for example, use of the mouse and clicks on links) or at the intellectual level (for example, adopting a Boolean search strategy or determining the criteria for deciding which of two books selected from adjacent places on a library shelf is most useful), which will also involve mental acts, such as judging the relevance of data or information retrieved" (Wilson 2000, p.49). It is also known as information retrieval.

Information-Seeking Behavior: "The purposive seeking for information as a consequence of a need to satisfy some goal. In the course of seeking, the individual may interact with manual information systems (such as a newspaper or a library), or with computer-based systems (such as the World Wide Web)" (Wilson, 2000, p. 49).