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**Information Users X Interactive Users:
Different Subjects Challenging Different
Information Professionals**

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Information Users X Interactive Users: Different Subjects Challenging Different Information Professionals

Eliane Cristina de Freitas Rocha

Abstract

In spite of the developments of the HIB (Human Information Behaviour) field, the effective approach of actual users by information professionals is not well-known. This paper intends to conceptualize who information users are, distinguishing them from digital interactive product users (interactive users), from the viewpoint of librarians and systems analysts who took part in an empirical research of a doctoral dissertation. In general, both professionals consider users pragmatic people who urge to do something directly related or not to information (information use can have a knowledge, act or fun orientation), they tend to look at users through a system-oriented approach (which means to see users purely as numbers in order to check system failure or success rates), and tend to have difficulties in really understand who users are and what their needs or behaviour are, especially in digital environments. Librarians usually see users as information users involved in active search behaviour, while systems analysts tend to see users as users of digital interactive tools designed to improve performance (efficiency and efficacy) of human tasks (ranging from digital information systems to improve workforce productivity, to entertainment applications ubiquitously available). This essential difference from the perspective of both professionals – from information users to users of interactive products (interactive users) – is also reflected in their working methodologies and mindsets: a) librarians approach users as those who are interested in knowledge, culture or data keeping, that is, people to be taken care of (even if the non-users or potential users do not receive so much attention from them); b) system analysts have an instrumental view of users: they are seen as informants to improve the design of products that will captivate them, and they do not exactly see them as *producers*.

Keywords: Information users, librarians, professional practices, software users, systems analysts

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Introduction

In the current scenario of changes in the formats of knowledge registers, from analogical to digital, challenges related to the mediation carried out by librarians come to light as well as new professionals arise especially devoted to information systems (Information technology – IT professionals) (Rocha, 2013). Are information users in the practice of IT analysts and library professionals the same people? Is there any overlap between the professional practices of librarians and IT analysts related to their users?

In order to answer these questions, this paper presents theoretical reflections on HIB (Human Information Behaviour) associated to final results of a doctoral dissertation, presented by the author (Rocha, 2013), about how librarians and IT analysts deal with users. However, the empirical data of the dissertation – semi-structured interviews with 16 IT professionals and 17 librarians in different types of enterprises – is not the focus of the analysis, only the analytical perspectives originated by it.

The answers to the questions addressed in this article are provided by briefly establishing relations between librarians and IT analysts and their users (next section); by conceptually discussing who their users are (section “Differentiating Users in the Field of Information Technology and Librarianship”) and what kind of work they carry on related to them (section “Professionals’ Work and its Users”). Finally, the last section presents closing remarks about who the information users are, according to IT professionals and librarians.

Librarians and IT Analysts and their Relationship with Users

There are two categories of information users addressed by two categories of professionals: 1) information users as seen by Librarianship and Information Science fields, and librarians; 2) the users of interactive digital products (regarded here as interactive users) as seen by the field of Information Systems born of Computer Science and its counterparts.

Librarians are in charge of mediating the relationship between their users and knowledge registers under their responsibility (Ortega and Gasset, 2006). According to Almeida Junior (2010), mediation has two dimensions: one explicit related to guiding users, especially in reference services; and another one implicit, related to treating knowledge registers normally done by technical processing in libraries. Generally, it is observed in explicit mediation: a) public and school librarians are engaged in explicit mediation actions related to cultural actions (as reader promotion), while in special libraries such actions do not receive as much attention as selective dissemination, for instance; b) in university and school libraries, digital and information literacy have great significance (helping users to locate proper information sources, to use digital devices, to deal with bibliographic standards and to formulate academic essays).

Different professional profiles among IT analysts that deal with users depending on how tasks are organized in the information technology sector, were noted. The most direct processes of work related to users are requirements analysis, installation, training and operating systems in a software development life cycle (Nascimento, 2003), users and task analysis (part of the contextual investigation), and design evaluation in a usability engineering life cycle (Rocha, 2013). There are different roles related to the users of information systems and interactive products: some are related to implicit mediation processes – they elaborate projects of interactive products according to users' needs – and others related to explicit mediation processes – they help users operate and use systems and products. In a few words, explicit mediation processes are performed by IT analysts acting as application support analysts (and also as business systems analysts) that are in charge of facilitating the use of systems as well as suggesting changes in them for development and systems analyst teams. The tasks of identifying the users' needs to design software and digital products – implicit mediation tasks – are basically split into two different professional profiles: a) interaction designers or UX (User Experience) designers are responsible for designing users' interactions with varied interactive products (ranging from interfaces of computer desktop applications to human interactions with smart devices or environments applying ubiquitous computing) and they can work with information architects (who are responsible for navigating, labelling, searching and organizing schemes of digital environments); b) systems analysts and software engineers are in charge of software products (from their conception to their development and management) that may have specialized profiles according to the employer size and structure, such as business systems analysts who are responsible for conceptual design.

In addition to IT professionals, there are other mediation roles concerning software users such as technical writing (implicit mediation), external consulting (as business consulting) and marketing professionals in charge of client relationship and, secondarily, for prospecting users' needs and for proposing new functionalities and products (Rocha, 2013).

Differentiating Users in the Field of Information Technology and Librarianship

The users of digital interactive products – including daily products as smart trainers containing information embedded – are not the same as the users of a book. First of all, the ones who use a book are readers, that is, people who interact with a work open to their interpretation (even if they have a naive or deep reading). The book itself can have a digital format – e-book, hypertext – and the subjects who interact with it are in touch with knowledge in different genres – novels, manuals, etc. Books might be shaped in an open format, continuously built by the users' community (in the format of collective writing as in on-line encyclopaedias, for instance). The openness of reading and writing collectively has provided readers with the role of *producers* – users are

simultaneously readers and producers of knowledge registers (Ziller and Moura, 2010).

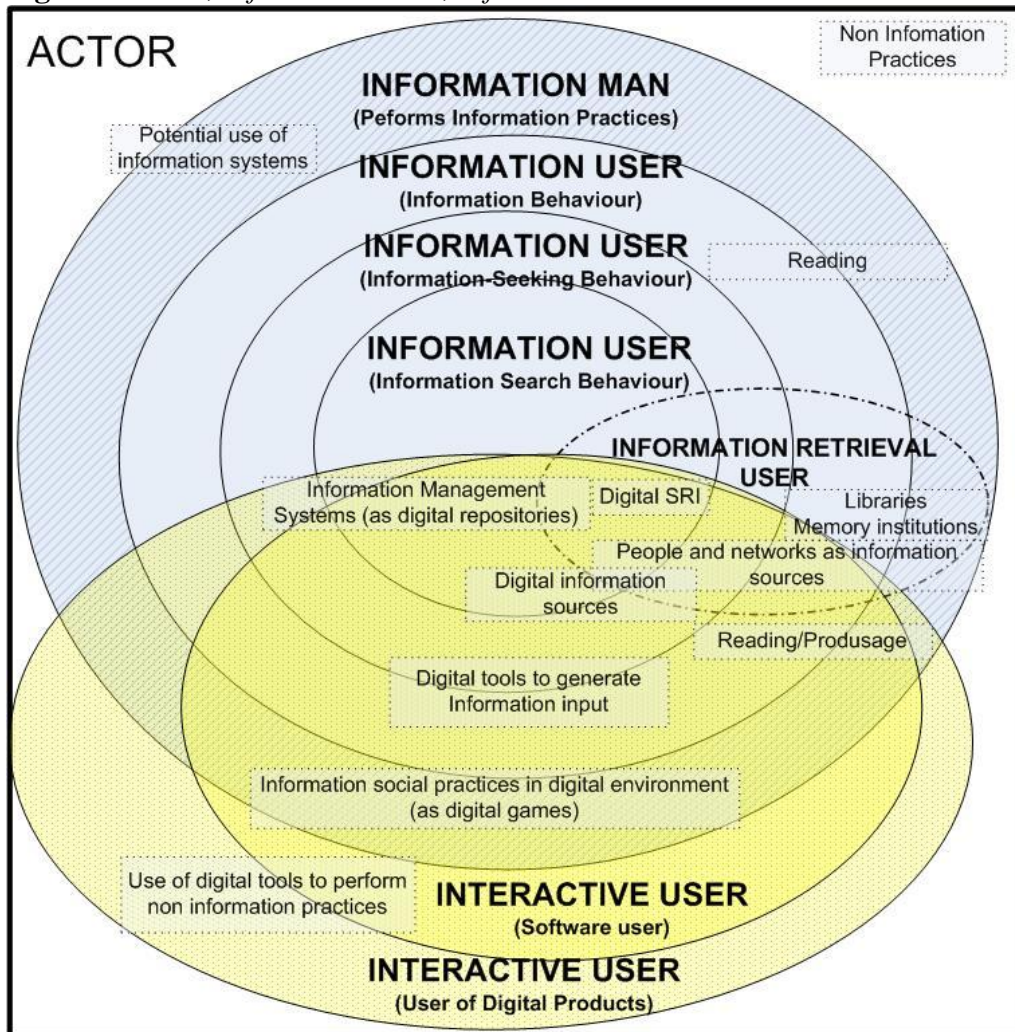
In this context, the mediation carried out by librarians is challenged. Knowledge registers can be built collectively and dynamically without formal mediation processes run by information professionals (as in folksonomy, for instance). In the new media, subjects are turned into users (Manovich, 2001) – subjects are essentially the users of technical resources. The materiality of a book is not determinant of making people good readers, but the absence of technical resource knowledge (as the format of e-books) may hamper many operations of reading/writing/producing knowledge registers in digital format. Some explicit mediation activities to help reading may be due to difficulties in device use (Rocha, 2013). How is it possible to put the readers of a book and the users of an electronic device (as an electronic alarm clock, for instance) on the same level?

This comparison may sound bizarre, but it is frequently noted that information users, later associated to the ones playing the role of readers (that recover and use knowledge registers), are equated with those using technical devices. The definition of the word “user” has different meanings in librarianship and information technology fields. The first and most important distinction which is necessary to be drawn is who the information users, software users (the users of digital information systems), information retrieval systems users (IR users), and the users of interactive products (interactive users) are. These categories of users can be seen in Figure 1, with the respective intersections.

Information users are seen as those who express information behaviour that encompass “activities [that] a person may engage in when identifying his/her own needs for information, searching for such information in any way, and using or transferring that information” (Wilson, 1999, p. 249). Such users may present information seeking behaviour in a passive (passive attention, passive search) or active form (active search, ongoing search) besides carrying on activities related to extracting information from information systems (information search behaviour) as proposed by Wilson’s nested model of information behaviour (Wilson, 1999). This model is presented in fig.1 in the elliptical forms of “Information user – Information Behaviour”, “Information user – Information Seeking Behaviour” and “Information user – Information Search Behaviour”. Users are predominantly seen in a subjective perspective – they are the ones who have psychological, affective and cognitive necessities – as subjects who raise a question to be resolved related to their role in different social contexts (Wilson, 1999) such as workplaces, educational establishments and the settings of everyday life (as studied, for instance, in ELIS – Everyday Life Seeking – field). Some of these questions highlight knowledge search such as knowledge-related information necessities pointed by Le Coadic (2004), especially found in educational contexts, or Savolainen's situation of action and dialogue (2012), while others are related to simple or complex task performance (Savolainen, 2012; Le Coadic, 2004) in which information need is subsidiary to task completion (action-related information needs pointed by Le Coadic, 2004). Here it is not possible to clearly view users as readers.

Information users may interact with diversified information sources either analogically or digitally (people, digital retrieval systems, for instance) in active information seeking processes. Software users are the ones who use different application software suites for personal purposes (as electronic sheets, image editors, etc.) or for business purposes (as Enterprise Resource Planning Systems, for instance) including Information Retrieval (IR) Systems and Document Management Systems (DMS). As they use digital IR systems, users exhibit information search behaviour and might be *producers* (use and produce information registers such as in digital repositories).

Figure 1. Actor, Information Man, Information User and Interactive User



Note: Elliptical forms represent users (interactive user, information user, information man) with their respective intersections, while rectangular forms present either activities performed by users or information sources.

The use of digital information systems differs from the use of IR systems for its dynamics of treating storage data: for users, the digital system is a means of accessing or generating the necessary information through data processing. The task accomplished by users may: a) demand active seeking of an item available in the digital system as an informational input to be recovered (as it is

data retrieval from static items in IR systems); b) demand an information input generated or processed by the system (as in some business applications that address action-oriented information needs – for instance: the use of any statistical software to predict something; or when using applications to feed knowledge-oriented information needs, as the use of a simulation software) for which users' behaviour does not only involve information-seeking behaviour but also data generation (interactive use for data processing); c) not focus on information seeking or data generation for solving problems (as in entertainment systems) but it may include informational activities related to passive attention processes. In all these tasks, software users are information receivers of communication processes (Robson and Robinson, 2013) initiated by IT professionals.

Another way of addressing information users is to take the social constructionist approach which sees them as social subjects immersed in a community of practice (Savolainen, 2007). Information users are those who accomplish information practices (instead of just exhibiting information behaviour) seen as social practices that include dealing with information in different dimensions – searching, retrieving, receiving, using, transferring, indexing, etc. – as well as using many tools that allow knowledge communication and dissemination. Information users who accomplish information practices are represented by an external elliptical form in Figure 1 (Information Man – an epistemic category that refers to users as knowing subjects and cultural experts, claimed by Talja, 1997) and are not seen only as the ones who deal with information to solve a problem or question – they carry on social practices that are informational (as talking to their peers, for instance). Environments in which information practices occur are related to social contexts with their own configurations (actors and rules) that shape information exchanges (information grounds) (Coutright, 2007).

On the other hand, the users of digital interactive product are those who deal with any digital product or anything that has embedded digital technology to accomplish daily activities. The behaviour of digital interactive product users and software users is not always related to active information seeking and cannot be framed in information behaviour models (involved in active or passive information seeking). They are users of digital tools of daily use (here regarded as interactive users) to resolve problems of knowledge or acting orientation (that is related to subsidiary information to complete tasks) in Le Coadic's (2004) terms, or fun orientation, or simply to accomplish information practices that have information technology as support.

At first, the use of interactive products in daily activities (as digital games, GPS, smart devices) can be seen as subjects' information practice expressions or as social practices that incorporate information flow among subjects themselves and with technical devices. As users interact with these products, their focus is on the use of the tool itself to accomplish a task that incorporates, or not information seeking either in an active or passive form. For instance: a) the users of the application Tinder focus on finding sexual-affective partners (which is an example of social practice) and, for this reason, they will involve a process of active seeking on the interface tool (process of active seeking); b)

the users of a smart house (a case of application of ubiquitous computing, which, for instance, automatically identifies the mood of its dweller by biometric retina reading and turns on the lights and play a tune according to it) do not carry on information practices as active searching, active scanning, non-directed monitoring or by proxy (associated to daily information practices by McKenzie, 2003). In other words, there is a range of digital interactive products that receive informational input from their users who are taken as objects of the action product. In an extreme case, such objectification brings to light the discussion of whether the use of digital devices is always informational or not (if one considers that information practices require awareness) and if the digital application tools are not oriented to practices that are not social (this is represented by the external box of fig. 1 – actor, an ordinary man immersed in general daily practices). The users of digital interactive products are neither necessarily information users (who have information behaviour related to active or passive information seeking) nor information men (who accomplish social practices that depend on people's information awareness).

In addition to these categories of users presented above (information men, information users, software users and the users of digital products), it is also necessary to consider the existence of potential users of IR systems, digital systems or interactive products: they are the ones who can use these systems/products (target public) but do not do so for many reasons as the inadequacy of their *habitus* to such use. They differ from non-users, the ones who are not part of the target public of products as it is the case of illiterates in special libraries, for instance.

Professionals' Work and its Users

Librarians' Work and their Users

Rocha (2013) noted that, in the librarians' work, users are seen as information users that carry on information seeking to solve problems of knowledge-oriented necessities (how to write an academic paper, to store and retrieve a document). When these users use IR systems (in library collection, in digital libraries, in institutional repositories, in document management system), they are also IR digital users and express information search behaviour as they can also produce documents (as in DMS systems or in digital institutional repositories, or in learning objects repositories). Such mainstream view – users as those who search for information to know something – is related to the traditional orientation of user studies (system-oriented approach) as pointed by Talja (1997): users are rational people in the pursuit of information to resolve their problems that require librarians' mediation related to information seeking and demand librarians' knowledge related to the content and format of what is searched. Librarians' mediation role in this case is related to facilitating the access to information, managing collections well and promoting information and digital literacy that frequently require cultural actions (as reader promotion strategies). Users are seen as the ones whose attention has to be addressed, as

those who are in a hurry and interested in retrieving and storing information registers, but not always prepared in accomplishing such operations (they may not know how to read well and/or may not know the format of the information sources).

Users observed in the librarians' speech can be seen as the ones who are in search of informational input to resolve a question in libraries, IR systems or in information systems (digital or not), or in sources such as the mass media and people. Questioning about non-users or users of non-expressed needs is unassertive among librarians (Rocha, 2013).

Rocha (2013) found that user information behaviour is not an object of the librarians' awareness. Neither the awareness of the information man is noted—the subject immersed in information social practices. Daily impressions are worthy in order to know the users. According to librarians' impressions, users are seen as hasty, impatient and pragmatic as they need to accomplish tasks related to information retrieval and knowledge creation. Users are also seen in the role of readers, as those who have to be instructed and educated.

In relation to digital systems, the librarians of digital repositories do not have a precise idea of who users are, especially because they are not physically in the library. In such an environment, it is also a challenge to deal with *producers*, as it was observed in the case of difficulties in helping producers of learning digital objects in digital repositories and in improving the findability of such environments (Rocha, 2013).

IT Analysts' Work and their Users

From an IT analysts' point of view, users are mainly doers of work processes or daily activities which involve information flow. According to Rocha (2013), in the IT analysts' speech, there is a distinction between productivity tools/applications (as Enterprise Resource Planning Systems, worksheets, etc.) made for workers and social applications/systems directed to the broad market (as games, entertainment systems), made for general public (consumers). This distinction in the nature of systems draws an analogy to the specificities of studying information behaviour at workplace and in everyday life in the field of HIB (McKenzie, 2003; Courtright, 2007; Savolainen, 2012).

IT analysts need to map information flow, define data models and their manipulations to develop interactive products to any users' profiles and systems. They build a portrait of the real world and conceive a dynamic system that processes input data to generate outcomes.

For the IT analysts who are not interaction designers (as systems analysts, support analysts, software engineers), users are problem generators, the ones who demand services and know the work domain for what it is necessary to be taken into account. Systems requirements accomplished with users' participation – as carried on by business analysts and systems analysts as well as by some librarians in IR systems – involves research on users' information needs. In this case, qualitative techniques are applied such as interviews and document analysis related to the systems domain (Rocha, 2013). Users can be seen in their information behaviour as the ones who are in search of informational input either in IR systems (information search behaviour) or in

digital systems as well as the ones who display information seeking behaviour (in an active or passive form).

Software users (who may be involved in active seeking) require from IT analysts, in their role of support analysts or business analysts, not exactly the knowledge related to information sources (as in reference services in a library), but the knowledge related to how users' tasks have to be accomplished and their restrictions (processing and rules of data transformation, business rules). The explicit mediation of IT analysts is not restricted to static data retrieval. It cannot be affirmed that they stimulate information or digital literacy in their technical dimension. From their viewpoint, in general, many problems related to the use of the system are due to failures in projecting such systems and are not related to the users' abilities (Rocha, 2013).

On the other hand, the conception of interactive products requires multidisciplinary teams that are composed of interaction designers who are not in charge of choosing data modelling for systems (Rocha, 2013). The project of these products is related to actions/tasks run by users in their daily practices that may have or not information as subsidiary to be accomplished. The users of these products are frequently seen as those with social necessities to be explored by the market, for instance: what are the most attractive features of mobile phones (as the selfie stick)? It is possible to design a selfie stick by observing social behaviour and not by analysing the informational input itself related to mobile phones and their use or their meta-data. They are users of a product that performs tasks whose focus is not related to obtaining information to fill in a knowledge gap. Users' behaviour in digital environments may be qualified or quantified through testing such as the ones which use metric analysis (page view analysis on websites, for instance). The users of interactive products are not necessarily users that display information behaviour although they can and should be seen as information men.

In order to create digital interactive products, interaction designers and UX designers adopt empirical techniques to understand users' knowledge in their daily tasks, business knowledge (commercial purposes) and technology constraints (Rocha, 2013). Qualitative techniques are generally used – rapid ethnography, workplace observation, semi-structured interview and focus groups (associated to participatory design, an emerging subject in HIB field, Greifeneder, 2014). The research has a prospective purpose as its main interest is to know the users' viewpoint on the functionalities or products to be created. IT analysts' work aims to know social practices so that they can provide solutions (in a prototype) which will be tested by users (usability tests) and/or by work teams (usability inspections) to be commercially produced.

Although users participate in prospecting ideas and prototype evaluation, and they are also informants in the creation of system design and solutions, their effective participation in the process of interactive product co-creation was not noted (Rocha, 2013). The efficiency and efficacy of products and systems are regarded as quality criteria to the conception of such products: users are pragmatic people who want to accomplish daily tasks in a practical way regardless of whether they are users of interactive products (as ubiquitous environments) or users of productive tools. They are also seen from a

utilitarian perspective: they are seen as a variable taken into account to the success of a product or system; however, they are not seen as autonomous or knowledge producers.

Intersections in IT Analysts' and Librarians' Professional Practices

Enterprise Information Systems especially devoted to the recovery and storage of information registers and documents – digital document repositories, institutional repositories, learning object repositories, scientific journal editing – is shared by librarians and IT analysts: the former is in charge of the use and content management, whereas the latter is in charge of technical aspects related to installation, for instance (Rocha, 2013). In other words, IT analysts do not see users as the ones who produce and retrieve knowledge registers (as information users), but as users of technical resources when librarians' and IT analysts' activities are intersected in managing the use of IR systems and their counterparts. Librarians in this context are clients of IT teams and may act as business analysts – specifying information flow at workplaces and pointing to IT teams how the environment has to be configured.

In the construction of information digital systems, Rocha (2013) observed the participation of some librarians in requirements analysis of document system management. Librarians use techniques also applied by systems analysts and business analysts (not exactly related to usability life cycle) – interviews, collection and analysis of documents related to the domain of the system, contextual investigation (similar to master-apprentice technique, task investigation performed among key users) – and similar purposes, as mapping information flow in work environments. In this case, users seen by both professionals are the ones who express information behaviour and who need informational input to be available in the IR systems or in digital systems (involved in active or passive seeking) or as the ones who interact with the system to generate data to work (interactive use to data processing).

The processes of interactive product design (interaction design, interface design) involve little (or no) contact of librarians' work with IT analysts' work although usability is an academic subject of intersection in both areas. The contact among requirements analysis, interaction design and the work of information organization would be established by the discipline *Information Architecture*.

In relation to the similarities of these professionals' perceptions related to users, both IT analysts and librarians regard them as abstract entities about whom little is known, especially when they assume the role of the consumers. As they do not appeal much to information behaviour theories, both professionals use the common sense and empirical data to support their professional practices related to users, in general (Rocha, 2013).

However, it is not always possible to serve users' interests since technical budget and management requirements can conflict with users' necessities, a feature observed among librarians and IT analysts (Rocha, 2013).

Closing Remarks

Librarians deal with users who are in search of knowledge while IT analysts deal with workers and consumers of interactive products. In general, the purpose of their mediation is different – librarians assist users with the search of knowledge (readers, workers in search of informational input) while IT analysts design digital interactive tools in order to help people accomplish daily activities more efficiently (workers, consumers), and eventually they may also assist users in using such tools.

Both professionals' widely held view of users is system-oriented. From the IT analysts' perspective, it is necessary to know users to captivate them. It is essential that their social practices are known so as to shed light on the informational flow (informational practices) to build products to subjects who are also regarded as objects to marketing actions. From the librarians' perspective, it is important to understand users in their social practices in order to get to know the value of information in their culture and, thus, prevent information men from being subsumed by interactive product consumers.

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