Effective use of value-added features and services of proprietary databases in an academic context

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Introduction. *Many projects on information retrieval systems have been reported. This paper, however, reports on the use of value-added features and services available from proprietary databases for example, Researcher ID, sharing references with others, case studies and curricular recommendations that can contribute to effective task completion. The question, however, arises: to what extent are academics (faculty, lecturing staff) aware of these, and how are they using these for academic tasks?*

Method. *The paper reports on an exploratory case study at a South African university in 2015 with 37 staff members from all ranks, within the three academic departments teaching on facets of information: Information Science, Informatics and Computer Science. A mixed methods approach was used to collect quantitative data (semi-structured electronic questionnaire) and qualitative data (individual interviews and one focus group interview).*

Analysis. *Descriptive statistics revealed the use of proprietary databases and selected features. A thematic analysis of the qualitative data revealed perceptions, opinions, experiences, barriers and motivators. Wilson's information behaviour model guided the study.*

Results. *What stood out was the use of proprietary databases to complete academic tasks associated with perceptions of what is expected at various academic ranks, the impact of curriculum content, personal preferences and habits, and the value of the study to raise awareness.*

Conclusion. *Considering changes in for example, tasks, disciplinary content and continuing career growth, it is recommended that reciprocal mapping of value-added features and services against academic tasks is used at regular intervals to raise awareness of the value of such features and services.*

Introduction

When making use of information retrieval systems, specifically proprietary databases, individual users often do not know or have limited knowledge about the value-added features and services provided, and how these can support successful academic task completion (Van Oostendorp, Madrid and Melguizo, 2009, p. 67; Hersh, Crabtree, Hickam, Sacherek and Rose, 2000, p. 324). Such tasks include: research, teaching, committee work, personal research and interests, curriculum development, collaboration, updating notes and resources, and increasing knowledge bases (Clarke, Kenny and Loxley, 2015, p. 23). Value added features and services include Researcher ID, affiliation searches, sharing references with others, curricular recommendations and case studies. An extensive number of studies has been reported on information behaviour and information seeking, the use of proprietary databases, the library catalogue and search engines such as Google Scholar (Bøyum and Aabø, 2015, p. 189; Shi and Levy, 2015, p. 717; Bodlaender and Van Kreveld, 2014, p. 1). Concern has been expressed about the inadequate use of databases and preferences for Google Scholar and other web search tools (Wang and Howard, 2012, p. 101; Ford and O'Hara, 2008, p. 46-47).

Academic staff (also referred to as faculty or lecturing staff) influences the attitude and information practices of their students (Pow and Li, 2015, p. 440-441; Kemp and Jones, 2007, p. 53). To a growing extent they are under serious pressure to compete internationally in terms of research output and delivering successful under-graduate and graduate students (Kemp and Jones, 2007, p. 53-54). In academic contexts, the work required to be completed by academic staff especially need to be noted. Understanding academic staff's use of value-added features and services can be valuable in several ways: marketing of the use of proprietary databases to which academic libraries subscribe, support and training in the full exploitation of such databases (e.g. workshops, how-to-guides and –tutorials, and help links), advising on the tailored use of proprietary databases, and extending awareness to students' effective use of proprietary databases.

The exploratory study on which this paper reports was guided by the following problem statement: *How are academics exploiting the features and services offered by databases in their academic task completion?* To find answers, the following sub-questions were considered:

- What functions and value-added features are available in a selection of proprietary databases relevant to disciplines such as Computer Science, Informatics and Information Science?
- What has been reported in the subject literature on academics' use of databases and other information retrieval systems?
- What is the awareness of academics in the Departments of Computer Science, Informatics and Information Science of the selected information retrieval systems' features and services?
- How do academics in the Departments of Computer Science, Informatics and Information Science use the value-added features and services?

This paper reports on findings from an exploratory study conducted at an academic institution in South Africa with an adequate library with 15 databases, 118 full-text electronic journals and 2 400 electronic books specifically considered relevant for the three selected departments – and a much larger collection extending to other disciplines suitable for inter-disciplinary research. The study was conducted with three academic departments teaching various facets of information, namely the Department of Information Science, Department of Informatics and the Department of Computer Science. The paper covers: background on the use of information retrieval systems and specifically proprietary databases, brief review of information behaviour studies involving academic staff, value-added features and services for selected proprietary databases, background on the descriptive exploratory study, findings, the use of Wilson's 1981 information behaviour model and recommendations for reciprocal mapping for future studies.

Although the study was conducted in a specific geographic location, findings should also raise awareness for the need for similar studies with academics in other contexts, other workplaces relying on proprietary databases, and even students.

Clarification of concepts

For this paper three concepts are clarified: information retrieval, proprietary databases and information behaviour.

Information retrieval refers to the process or method whereby an individual in need of information is able to convert his/her need into an actual list of citations to documents stored

in information retrieval systems and databases that are useful to the user (Mooers, 1951, p. 25). Furthermore, it can be referred to as the finding process of the relevant information (Belkin and Croft, 1992, p. 29; Van Rijsbergen, 1979, p. 1; Mooers, 1951, p. 25). More recently Wolfram (2015, p. 5) states that information retrieval includes the processes and the manner in which information is represented, stored, accessed, and presented. Therefore, *information retrieval systems* denote the implementation of these processes (Wolfram, 2015, p. 5), which is how we will interpret information retrieval systems for purposes of this study.

Proprietary databases are defined as the databases that are privately owned and require passwords to access the contents (Ask.com, 2016). The contents within the databases are unavailable to the general public; in order for users to gain access to the content they need to purchase rights from the owners (Ask.com, 2016). They can also gain access through the subscriptions of libraries such as academic libraries. In contrast, some databases are available for free e.g. PUBMed in the medical field and ERIC in the educational field. Examples of services that provide access to proprietary databases such as Library and Information Science Abstracts (LISA) include EBSCOhost and Proquest. Proprietary databases are information retrieval systems since they can be used for information seeking as well as other information-related information activities such as information organisation, information sharing and information monitoring (Shah, Capra and Hansen, 2014, p. 23).

Information seeking behaviour is defined as the conscious effort to acquire information in response to a need or gap in an individual's knowledge (Case, 2012, p. 5). Information seeking begins when an individual has a problem (Kuhlthau, 2004, p. 5). According to Pickard (2013, p. 26), information seeking is the ability to search for appropriate sources, scanning the literature effectively and efficiently to identify and obtain useful information. Chowdhury's (2010, p. 250) definition of information seeking is noted as 'an interactive process that depends on initiatives on the part of the user, feedback from the information system, and the user's decisions about subsequent actions based on this feedback'. For purposes of this paper, we will accept the latter definition.

Brief literature review contextualising the empirical study

For purposes of this paper, and for the planning of the empirical study on which this paper is based, prior studies in several fields were noted: studies to improve information retrieval systems, studies on the use of databases and other information retrieval systems, and studies on information behaviour in academic contexts with specific reference to the information behaviour of academics.

Studies to improve information retrieval systems

Since the early days of computerised information retrieval systems and databases, numerous studies on attempts to improve information retrieval have been reported (Ingwersen and Järvelin, 2005, p. 1; Kowalski, 1997, p. 224; Mizzaro, 2004, p. 1). These include studies on retrieval effectiveness and efficiency (i.e. recall, precision, fall-out, novelty), using context sensitive information for user support, reference to related sources, the usefulness of the system as well as applying the effects of changing system algorithms or comparing algorithms among systems (Cassell and Hiremath, 2013, p. 18-19; Dean-Hall, Clarke, Kamps and Kiseleva, 2015, p. 2; Kowalski, 1997, p. 224; Mizzaro, 2004, p. 1; Ruthven, 2011, p. 5). There were also studies on the improvement of value-added features and services such as RSS news feeds, advanced search options, Boolean retrieval tools and browsing options (Kumar and Rai, 2013, p. 6-7; Blummer, 2009, p. 16).

Reasons to use databases and other information retrieval systems and reports on actual use

Information retrieval systems are valued according to the contents they offer and the reasons for individuals to make use of the systems (Case, 2012, p. 81-87; Dorner and Revell, 2012, p. 263). Typical reasons include: updating personal collections of information, conducting research, preparing and updating lecture contents, increasing knowledge, providing guidance and literature to students especially at postgraduate levels, publishing, gaining awareness of new developments, participating in seminars, conferences and workshops and positioning for promotional purposes (Cooper, Rogers, Bethel, Briscoe and Lowe, 2015, p. 6; Leedy and Ormord, 2014, p. 1; Pickard, 2013, p. 27; Singh, 2001, p. 22; Tahira, 2010, p. 12; Vicente-

López, Campos, Fernández-Luna, Huete, Tagua-Jiménez and Tur-Vigil, 2014, p. 2). Studies have also been reported on the use of current awareness or alerting services, personal information management or reference management systems, intranets and social networks (Fourie, 2011, p. 764; Oinas-Kukkonen, Lyytinen and Yoo, 2010, p. 63). Many studies on information seeking and the use of databases, search engines, repositories and library catalogues have been conducted (De Groote, Shultz and Blecic, 2014, p. 172; Cioloca and Georgescu, 2011, p. 13). These include findings regarding academics as well as students.

Information retrieval systems such as proprietary databases offer numerous features and services that can support the reasons for using databases such as mobile views, online tutorials that can be used when teaching and linking users to social media such as ResearcherGate and YouTube videos (also refer to Table 1 for more examples).

Studies found that academics make use of both print and electronic resources, which are made available through the institutions' libraries (George, Bright, Hurlbert, Linke, St. Clair, and Stein, 2006, p. 20). As for electronic materials, they use library databases, indexes, online journals, online articles, conference proceedings, reference materials, images and other materials such as videos and audio sources (George *et al*., 2006, p. 20). Thus, there is a need for information in different formats, which according to Saracevic, Kantor, Chamis and Trivison (1988, p. 170) has been provided for many years by information retrieval systems such as e-books, e-journals, audio and video formats (Seeber, 2014, p. 5-6; Ellis,1993, p. 471; Belkin and Croft, 1992, p. 33).

Although a number of studies have been reported on the use of information retrieval systems such as databases, online library catalogues and document management systems, the effectiveness and efficiency of information retrieval systems in finding relevant information (Ingwersen, 1992, p. 12; Kowalski, 1997, p. 4; Onwuchekwa and Jegede, 2011, p. 109) and others noted in the preceding sections, few studies report on the actual use of the information found by using information retrieval systems. According to George *et al*. (2006, p. 19), information seeking is more effective in the planning stage where researchers choose an area of focus. They thus develop a search strategy and browse for information on the search topic (George *et al*., 2006, p. 19), which is an important feature that needs to be supported by information retrieval systems.

The use of information varies according to disciplines and study fields (Case, 2012, p. 10; Fisher and Julien, 2009, p. 1; Makri, Blandford and Cox, 2008, p. 613-614; Courtright, 2007, p. 273; George *et al*., 2006, p. 19). The use of online information resources may also vary with regard to the level of studies and disciplines (Miller, 2015, p. 1244; Kim, Sin and Yoo-Lee, 2014, p. 445; Rieger, 2009; Olander, 2007).

Studies on information behaviour in academic contexts with specific reference to the information behaviour of academics

Disciplines such as Library Science, Information Science, Computer Science and Informatics are involved in studying various facets of information such as developing information systems, designing and implementing algorithms, usage of information and the interaction between humans, technology and information (Study Portal, 2015; Bawden and Robinson, 2012, p. 2; Zelle, 2004, p. 4). For example, the phenomenon of information, making information accessible, designing information retrieval systems, designing information lifecycle, organisation of information and assigning metadata to information sources as well as human information behaviour (Study Portal, 2015; Bawden and Robinson, 2012, p. 2; Spink, 2002, p. 47; Zelle, 2004, p. 4). Academic staff from such disciplines should be able to make use of information retrieval systems such as proprietary databases to which the institutional library subscribes. Information behaviour studies have reported disciplinary differences more specifically between disciplines falling between the broad groups of sciences: natural science, social science and the humanities (Miller, 2015, p. 1229; De Andrade and Baptista, 2014, p. 243-244).

With regards to the importance of tasks and roles in contexts, studies conducted by Byström and Hansen (2005), Ingwersen and Järvelin (2005), Vakkari (2003) and Leckie, Pettigrew and Sylvain (1996) show that creating awareness among users about information sources and services is important. They emphasise the importance of the complexity of the tasks and the manner of seeking information, being able to judge what needs to be completed and evaluating whether the information is efficient and adequate (Joo and Choi, 2015, p. 285; He, Wu, Yue, Fu and Vo, 2012, p. 616; Rieger, 2009).

Context can also influence the actual information seeking, for example in terms of using or not using information sources (Case, 2012, p. 135; Meyer, 2009). Many studies on the impact and importance of context – albeit not always with academics are reported (Case, 2012, p. 135, 139-140; Jones, 2007, p. 457; Johnson, 2003, p. 748; Meho and Tibbo, 2002, p. 571). Ellis (1989) developed an information seeking model based on studies in academic contexts. Models that specifically stress the importance and impact of context also include the Wilson models (1981, 1996).

A number of factors influencing information seeking and the use of information retrieval systems has been noted (Chowdhury, 2010, p. 234). Such factors are related to the users' personal characteristics and traits and include: the general educational level of users, awareness of people in a society and the overall context in which they need to operate, awareness of and the ability to access various sources of information, users' working conditions, time allocated to consulting information systems, their hierarchical status as well as their socio-professional position, their personal and professional connections or networks, how stimulating their jobs are, the amount of competition that may exist in their job field, the various products and services provided by the information unit, the manner in which the users formulate their queries, the manner in which they make use of the information obtained, the user-friendliness of the information system and the effectiveness of the marketing policy of the information unit (Case, 2012, p. 58; Chowdhury, 2010, p. 234). These factors are also noted in many other reports on specific studies, which will not be cited here.

The influencing factors noted above also relate to factors portrayed in the information behaviour models of Ingwersen and Järvelin (2005), Wilson (1996), Leckie, Pettigrew and Sylvain (1996), Ingwersen (1992) and Wilson (1981). Such factors can lead to failure to find information, or may be the reason why information needs are deferred or not satisfied. Failure may again cause stress (Case, 2012, p. 39). Acknowledging the spectrum of influencing factors, what is of essence for the design of information retrieval systems is that information needs (which again can be related to roles and tasks such as in academic contexts) very often serve as instigator of information seeking, which might then include the use of information retrieval systems such as databases (Given, 2000, p. 4). The information-seeking behaviour of academics has been found to be repetitive, becoming more refined and organised as they become knowledgeable about the research topic or field of study (Makri, *et al.*, 2008, p. 613; George, *et al.*, 2006, p. 19). Apart from support in recognising information needs,

information retrieval systems should specifically also support information use and personal collection of information and other tasks related to the academic environment (Tahira, 2010, p. 5; Choo, 2006, p. 69; Ellis, 1993, p. 471, 473).

Value-added features and services for selected proprietary databases

Researchers such as Chowdhury (2010), Fourie and Fourie (2014), Fourie and Ball (2012), Lewandowski (2014) and Stubinz and Whighli (2002) have noted some of the features and services that information retrieval systems such as proprietary databases provide including identifying information sources that are relevant to the areas of interest of the users, providing an analysis of the contents of the information sources, ranking the most relevant items before non-relevant items, representing the content of the analysed information sources in order to match users' queries, analysing users' queries and presenting them in a form that will be suitable for matching the database, matching the search statements with the information stored in the databases and retrieving relevant information. Table 1 (not intended as comprehensive) shows features and value-added services that can be used by researchers to find information that will aid them in accomplishing their tasks, research and other daily activities. This table is based on reports in the subject literature on marketing such features and services or commenting on their value, as well as consideration of the databases chosen for the study. The features and services are presented in random order.

Table 1: Selected value-added features and services for proprietary databases

Research design for a descriptive exploratory case study

An exploratory study was conducted in September - October 2015 with academic staff from three departments at a South African university to determine their awareness and use of value-added features and services of proprietary databases. The databases were relevant to the three disciplines selected for participation (computer science, informatics and information science) and were selected from the databases which the institutional library subscribes to and recommends for these disciplines. The features and services covered are shown in Table 1. The study followed a mixed methods approach. Quantitative data were collected by means of a self-administered electronic questionnaire. It covered: the use of databases as information retrieval

systems and the use of the features and additional services offered by the databases. Since it was an exploratory study the focus was, however stronger on qualitative data that was collected by means of twelve individual and one focus group interview with five participants (thus 17 participants in total). Thirty-seven completed questionnaires were analysed. Participants included full professors, extraordinary professors, associate professors, research fellows, extraordinary senior researchers, senior lecturers, lecturers, junior research officers and assistant lecturers. More detail is provided in Table 2.

Overview of the data collection methods	
Research framework	The research framework was based on Wilson's (1981) information behaviour model. Based on the findings from the empirical component an adapted model was designed by Parbhoo (2016) as shown in Figure 1. Overall the Wilson (1981) model and the framework adapted for the study was useful.
Methods	Self-administered, semi-structured electronic questionnaire Focus group interview: 1 with 5 participants; Individual interviews: 17 participants
Software	Electronic questionnaire: Google forms Focus group interviews: Video recording software - Samsung Voice Recorder Individual interviews: Video recording software - Samsung Voice Recorder Transcribing software: Dragon
Ethical clearance	Ethical clearance was requested from the Research Committee of the Department of Information Science (University of Pretoria) (as the degree-granting institution) and from the faculty committee for research ethics, as well as the dean of the faculty of the institution where the research was conducted.
Time frame for data collection	Electronic questionnaire: September to October 2015 Focus group interview: November 2015 Individual interviews: October to November 2015
Follow-up	The initial invitation was sent by the Department of Information Science secretary to the mailing list for the School of Information Technology and to the three heads of departments to disseminate to their staff members.

	Thereafter the researcher sent two more reminder emails to the heads of departments to inform the staff members of the invitation and link to the questionnaire. Once questionnaires had been administered, participants who indicated 'yes' to the interviews or a focus group interview were contacted and appointments were set up.
Rate of response	Electronic questionnaire - 37 participants. Focus group interview - 5 participants; Individual interviews - 12 participants The total of potential participants for the three departments was 37
Number or questions asked	Electronic questionnaire - 10 questions Focus group interviews - 7 questions Individual interviews - 7 questions *(The focus group interview and the individual interviews were guided by the same interview schedule)*
Approximate time taken to answer	Electronic questionnaire - 10 minutes Focus group interviews - 30 minutes Individual interviews - 5 minutes to 1 hour 45 minutes
Consent	Electronic questionnaire - consent was given online, if consent was not given or participants did not want to answer the questionnaire they would be redirected to a 'Thank you' page. For individual interviews and the focus group interviews participants gave written permission for the interviews to be recorded.

Table 2: Overview of the data collection methods and administration of the data collection instruments

Findings: quantitative and qualitative

Descriptive qualitative findings

Apart from profile data on the participants, only selected findings are reported, namely descriptive data on the actual use of databases and web search tools such as Google Scholar, the features and services used, the tasks for which participants use databases, and the motivations and barriers to using value-added features and services as portrayed in the qualitative data. More detail on the findings can be found in Parbhoo (2016).

Descriptive quantitative findings

The quantitative findings are based on the use of databases that the institutional library subscribes to for the selected departments. Table 3 portrays the profile data for participants. Most participants were from the Department of Information Science. Thirty out of 37 participants (81%) made frequent use of Google Scholar, twenty-one out of 36 participants (58%) made frequent use of the library catalogue. Therefore, showing that, many staff members make use of Google Scholar and the library catalogue to find information in order to complete their daily tasks. However, thirteen out of 35 participants (37%) never made use of ERIC and WorldCat local. Thus showing that many of the academics do not make use of popular databases that the library subscribed to.

Databases such as the following were included in the study: ABI/Inform Complete, Academic OneFile, Cambridge Books Online, EI Engineering Village, Gartner Research, InfoTrac, SAGE Knowledge, Scopus, Wiley Online Library and 50+ killer online resources for Computer

Science students. Table 3 only portrays those with significant results. More details in Parbhoo (2016). (See next page for Table 3).

Databases	N =	Never		Seldom		Infrequently		Frequently	
			%		%		%		%
ACM Digital Library	36	8	22.2	6	16.7	5	13.9	17	47.2
Computer and Information Systems Abstracts	35	22	62.9	3	8.6	5	14.3	5	14.3
Emerald	37	8	21.6	5	13.8	12	32.4	12	32.4
ERIC (Ebscohost)	36	9	25	8	22.2	7	19.4	12	33.3
ERIC (Proquest)	35	13	37.1	5	14.3	6	17.1	11	31.4
Google Scholar (not a traditional proprietary database)	37	1	2.7	1	2.7	5	13.5	30	81.1
IEEE Xplore	35	3	8.6	11	31.4	7	20	14	40
ISI Web of Science	36	11	30.6	5	13.9	12	33.3	8	22.2
Library Catalogue	36	3	8.3	6	16.7	6	16.7	21	58.3
Library and Information Science Abstract (LISA)	36	12	33.3	10	27.8	7	19.4	7	19.4
Library, Information Science & Technology Abstracts	36	16	44.4	5	13.9	7	19.4	8	22.2
Library & Information Science Source	35	17	48.6	7	20	4	11.4	7	20
SpringerLink	35	4	11.4	9	25.7	11	31.4	11	31.4
UNICEF	36	25	69.4	10	27.8	0	0	1	2.8
UPSpace	32	11	34.4	11	34.4	5	15.6	5	15.6
WorldCat Local	35	13	37.1	7	20	9	25.7	6	17.1

Table 3: Use ofFig databases to which the institutional library subscribes (only some of the results portrayed)

With all databases, the database service providers incorporate value-added features and services, in order to make searching quicker and precise.

Features and services such as the following were included in the study: Alerting or notification services for example of new publications on topic, new work by an author, RSS news feeds, **adding to 'My Citation Alerts',** adding references to 'your library', 'favorites', 'add to folder', searching for specific document types, searching for specific format types, checking lists of journal titles for databases, checking data and reports, checking for conferences and events, browsing options, topic path, history of searches, checking curricula recommendations,

searching for figures and tables, case studies, thesaurus to look up terms, advanced search interfaces, command search interfaces, subject suggestions by databases related to query, viewing top downloaded articles and top keywords. Table 4 only portrays those with significant results. Table 4 indicates that may of the participants were willing to explore some of the features and services. For example, eleven out of 36 participants (30.5%) were interested in exploring the critical reviews of publications, twelve out of 36 participants (33%) were interested in exploring the sharing references with others. However, there are some features and services that the participants were unaware of. For example, ten out of 36 of participants (28%) were unaware of the creating and maintaining custom journal lists. Twenty-six out of 35 participants (74%) made use of the limiting results to full-reviewed publications, thus showing that some of the popular features and services are used. Those that are not popular or marketed are not often used or participants were not aware of them. More details in Parbhoo (2016).

Special features and services	N=	Not aware of		Used		Not used		Willing to explore		Not willing to explore	
			%		%		%		%		%
Exporting citations to reference management software	37	2	5.4	22	59.5	6	16.2	7	18.9	0	0
Limiting results to full-text publications	35	1	2.9	26	74.3	4	11.4	4	11.4	0	0
Limiting results to peer-reviewed publications	35	4	11.1	16	44.4	7	19.4	9	25	0	0
Finding similar or related publications	35	3	8.6	23	65.7	3	8.6	6	17.1	0	0
Tutorials, help guides and materials on using the database	36	6	16.7	11	30.6	13	36.1	6	16.7	0	0
Critical reviews of publications	36	5	13.9	7	19.4	12	33.3	11	30.6	1	2.8
Sharing references with other	36	4	11.1	2	5.6	17	47.2	12	33.3	1	2.8
Viewing publications with open access	37	4	10.8	24	64.9	2	5.4	7	18.9	0	0
Creating and maintaining custom journal lists	36	10	27.8	5	13.9	12	33.3	8	22.2	1	2.8
ResearcherID profile	36	9	25	6	16.7	10	27.8	10	27.8	1	2.8
Affiliation search	36	9	25	6	16.7	11	30.6	10	27.8	0	0

Table 4: Use of value-added features and services

Staff members from the selected departments state that they use some of the value-added features and services such as tutorials, help guides, case studies, finding similar or related publications in order to complete daily tasks. These tasks included: updating their class notes, resources and knowledge as well as publishing articles for conferences.

Qualitative findings based on thematic analysis

For this study thematic analysis was used. According to Braun and Clarke (2006, p. 6), thematic analysis is a method that is used to identify, analyse and report patterns that may emerge when analysing the data collected. A thematic analysis can be used to identify the data collected that is related to patterns that have emerged from the data as well as through the literature review (Aronson, 1995, p. 3). Thematic analysis allows the researcher to organise and describe the data collected in rich detail and the researcher may interpret various aspects of the topic being investigated (Braun and Clarke, 2006, p. 6).

For this study an audio recorder was used, with signed consent from participants, to capture the data. The interviews were freely transcribed and then thematic analysis was applied according to the questions. The themes of the results are depicted in Table 5. For ease of discussion the themes (a – g) are discussed here as a whole. More details are provided by Parbhoo (2016).

Preferences and reasons for use/non-usage	Interest and opinion	Actual use and future intensions	Other options used
(a) Preferences	(b) Importance	(e) Frequency of use	(h) Preference for Google Scholar
(b) Reasons for using		(f) Chances for future use	
(c) Reasons for non-usage		(g) Suggestions for increasing awareness and use	

Table 5. Preferences and use/non-usage of value-added features and services

Selective examples from participants' feedback are included. *P* refers to the participant of the individual interview and *FP* refers to the participant from the focus group interview.

(a) *Preference for value-added features and services*: Many of the features included in Table 4 featured in the responses. Some participants focused on what they were aware of and used. Some focused on what they were not aware of and/or did not use. Participants referred to the use of ResearcherID profiles, case studies, conferences, browsing, alerting and RSS feeds, searching for figures and tables, topic paths, curricula recommendations, downloading references and searching for affiliations. 'I have added to my library because then it's easier to download all the citations from that, I do share references with my supervisor, so usually I get the abstract and just the title and the references as well. I have a Research gateway ID and Google Scholar profile' (FP5).

(b) *Reasons for using the features*: Some of the participants indicated that they taught the features and services and therefore used them; because a participant teaches students about information retrieval, he/she might feel the need to know what features and services are available and what their capabilities are. One participant indicated that he/she teaches the features and services to students, but was not necessarily using all. Other reasons were that; it makes their searching easier. Making use of the features and services allow the participants to keep up to date with their research for both teaching and personal studies. The trend from the responses was that being introduced to the features and making them more visible on the interface would encourage users to make use of the old and new features and services. 'It's very useful, it essentially helps you find the information you are looking for quicker, saves you time and saves you effort, because when you don't have those features it takes you longer to find relevant information so you get frustrated because you can't find information you are looking for' (P1).

(c) *Reasons for not using the features*: Many reasons for not using the value-added features and services surfaced in the responses. What was conspicuous were features that were not relevant to the academic tasks at the time of the participant's career, for example if he/she was not publishing or not attending conferences, as well as an overall perception that such features and services were not useful. Other reasons for non-usage included lack of awareness, preference for other tools such as Google Scholar or the physical library collection, lack of knowledge or insufficient knowledge of features. Some participants were aware of older features that were

taught during their studies, but not of newer features. ‘I don’t make use of a lot of online sources, I prefer going to the library and checking out physical books’ (P8).

(d) *Importance of the value-added features and services*: Participants differed in their perceptions of the importance of value-added features and services, ranging from important and valuable to of no importance because another search tool considered more important could be used, for example Google Scholar or Wikipedia, or even the physical library collection. ‘It would be useful if you knew how to use them. The library only teaches you how to get online stuff from the website they don’t teach you all this stuff. So if the library was more involved it would help. But I also hate having to log into all the different databases so Google Scholar works’ (FP1).

(e) *Frequency of use*: Participants indicated that they made use of the popular features and services such as the RSS news feeds, advanced searches, reference managers, limiting searches and basic search features such as Boolean operators. ‘I like advance search interface because one page gives you all the different options to narrow down the search’ (P3).

(f) *Acknowledging and learning more about the features and services*: Some databases such as Emerald send emails to their users about the changes being made to the database features, services and interfaces. However, this does not apply to all the databases; therefore, the participants indicated that emails, pop-ups on the home page, hover over on the features and services and clicking on a question mark next to the features and services will be effective when changes are made to the features and services. A how to guide after a one-day training session will also be useful. ‘Yes some of them I would, I think the idea of informal training would work out like organising one for once a year and a how to guide after the training. A hover option would be nice’ (FP2).

(g) *Suggestions for increasing awareness and use.* In order to increase awareness of the value-added features and services, the following options should be considered: alerting services on new features and services, advertising the features and services on the homepage of the databases, sending emails to the users, hover over options to describe the features and services, a ‘how to guide’ and training or refresher courses for the staff. ‘A “hover over” option should be implemented on the special features and services in all the databases, thus providing additional information about what the special feature and service mean’ (FP1).

(h) *Preferred use of Google Scholar*: Many of the participants mentioned that they first used Google Scholar before making use of the databases to which the library subscribes to. 'I primarily make use of Google Scholar then if I find something that may be relevant I go to the library and search pointedly for that article because then I can access the full text if I can't access the full text I try other locations' (P2).

Discussion and recommendations

Findings from the exploratory study revealed that many academic staff members (approximately 32%) have some knowledge about the value-added features and services but were not making full use of them. Some of the staff members were unaware, thus stating that they would like to explore these value-added features and services to help refine and narrow down their searches. Their motivations included: finding relevant documents, saving on search time, avoiding irrelevant information, and finding information meeting more precisely with the daily tasks they need to complete. Such tasks included: preparing for a lecture, teaching (e.g. methods, evaluation, testing), post-graduate supervision, publication and conference presentations, increasing their knowledge base and sharing information with others. What stood out from the findings were the use of proprietary databases to complete academic tasks associated with perceptions of what is expected at the various academic ranks, the impact of curriculum content, personal preferences and habits, and the value of the study to raise awareness.

The 1981 Wilson model outlines the various areas that are covered by what Wilson proposed as information-seeking behaviour and the needs of the individual searching for information (Matsveru, 2014, p. 67; Wilson, 1999, p. 8). Wilson's 1981 model suggests that information-seeking behaviour arises from the consequences of a need that is experienced by an information user (Wilson, 1999, p. 8). The information-seeking behaviour, for example, using a database or other IRSs, can result in satisfying the need by making use of formal or informal information sources and services (Matsveru, 2014, p. 67; Wilson, 1999, p. 8). This may result in failure or success to find information relevant to the information needs, as well as reliable information (Wilson, 1999, p. 8). Researchers such as Byström and Hansen (2005), as well as Vakkari (2003), have noted that information needs and information seeking are often influenced by roles and specifically the tasks for which people are responsible (Meyer, 2009: el). This was also noted in an earlier model proposed by Leckie, Pettigrew and Sylvain (1996) with regard

to the information seeking of professionals (discussed in the next sub-section). The 1981 Wilson model specifically also refers to the exchange of information, the transfer of information and interaction between people and the importance of information needs triggering information seeking. These are all behaviour that can be supported by information retrieval systems.

An adapted version of the Wilson 1981 model is portrayed in Figure 1. It is clear that it still holds value for studies in a variety of contexts, as also confirmed by a recent study by Bawden and Robinson (2015). (See next page for Wilson's 1981 adapted model).

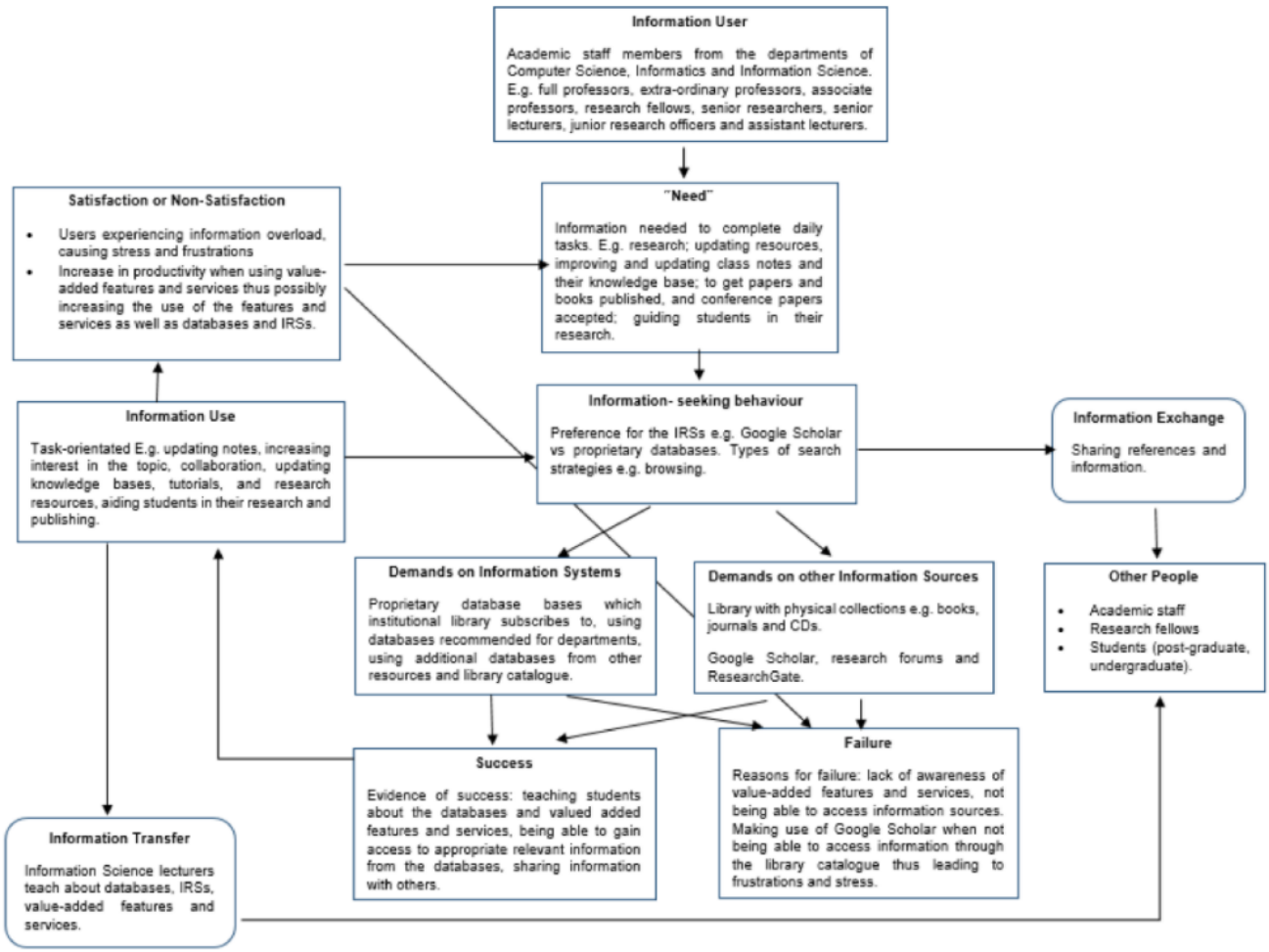

Figure 1: Wilson's (1981) information behaviour model adapted (Parbhoo, 2016, p. 104)

The findings showed the need for very practical recommendations such as designing a tutorial booklet or online how to guideline, or game to showcase the value-added features and services of databases (as examples of information retrieval systems). Participants also mentioned a hover over option, providing them with a short description of the value-added features and

services, a link that is placed in the description bubble to a user manual of the specific feature, refresher courses, and e-mails with descriptions of the new value-added features and services. Staff members can also be introduced to proprietary forums, for example, research groups such as African Academic Research Forum and Information Systems Research Forum.

Taking a more theoretical stance the work of Kuhlthau (1991) on zones of intervention for academic staff to explore the use of value-added features and services offered by proprietary databases and services in relation to academic tasks can be investigated. For the latter further research can also look into fun ways of learning and incentives such as the badge system that might appeal to younger staff.

The findings from the empirical component and the adapted model designed by Van Wyk (2015, p. 38-39) influenced the adapted Wilson's (1981) model as shown in Figure 1. Overall the Wilson (1981) model and the framework adapted for the study was useful. It could, however, be supplemented in terms of academics' information behaviour. For example, the manner in which they recognize their information needs and searching for the information making use of the proprietary databases. Furthermore, the manner in which they make use of the information, for example, updating class notes and resources, publishing articles and conference papers, increasing their knowledge base and providing assistance to students' research. Each individual's thought processes, searching styles and techniques may differ, but each individual has the same reason for searching for information, which is to fill an information gap.

Conclusion

The study proved that academic staff members within the field of Information Science are aware of the value-added features and services provided by the databases to which the library subscribed. However, disciplines such as Computer Science and Informatics should be provided with more information about such features and services. Furthermore, databases service providers need to market their value-added features and services so as to encourage users for the academic environments to make full use of the value-added features and services. Further research can focus on the reciprocal mapping of value-added features and services and typical academic tasks, i.e. to see which task each feature might be useful for. In terms of value for Information Behaviour as field of study this study reconfirmed the value of existing models,

even though they are dated, it reconfirmed the impact of tasks on information behaviour, and it showed the value of a relatively small-scale study for noting deficiencies and issues to address in practice. Most importantly it showed the value of information behaviour studies to as tools to raise awareness, for example of services, practices and opportunities.

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