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Exploring Barriers In Expertise Seeking: Why Don'T They Ask An Expert?

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EXPLORING BARRIERS IN EXPERTISE SEEKING: WHY DON'T THEY ASK AN EXPERT?

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Abstract

This paper reports findings from a research project that explores reasons why some employees prefer to seek expertise to resolve work-related problems from direct colleagues rather than designated internal experts. Several studies suggest that while an expert generally provides a higher quality solution in a shorter time, workers tend to ask friendly or proximate colleagues to help with knowledge-based problems at work. Prior research provides only fragmented insights into understanding the barriers to asking a designated internal expert for help at work. To address this gap, we asked post-graduate students enrolled in a knowledge management subject at a large Australian university to share their perspectives in an online discussion forum. Content analysis of the collected perspectives enabled identification of twenty-one factors that may limit the seeking of expertise from a designated internal expert. The factors are grouped in four categories: environment, accessibility, communication and personality. In addition one context variable is described, determining the extent to which the barriers are influential in a specific situation. By synthesising the results, we have proposed two models of expertise-seeking barriers. A literature review helps validate the barriers identified by the study. Key theoretical and practical implications are also discussed.

Keywords: Knowledge seeking, expertise seeking, knowledge sharing, knowledge seeking barriers, advice networks

1   INTRODUCTION

In today's knowledge economies many employees depend on knowledge for daily task completion (Gao et al, 2008; Hislop, 2005). Consequently, employees are bound to have new knowledge and skill requirements as they attempt to resolve new problems (Osman & Norshuhada, 2004). Belkin et al. (1982) refer to the state of an employee lacking required knowledge as an "anomalous state of knowledge". In such a state an employee will start to search for knowledge that can fill this gap. Prior studies suggest that employees prefer asking people to share their expertise rather than searching documents or electronic knowledge repositories for knowledge (Swaak et al., 2004). However research on expertise-seeking in organisations does not clarify whether employees seek and find the best expertise available. Indeed, the process of *expertise-seeking* has not been explored in knowledge management (KM) research to the same extent as other organisational knowledge processes and warrants greater research attention.

Expertise-seeking behaviour was described by McDonald and Ackerman (1998) based on a longitudinal case study at a software company. The researchers identified three mechanisms in expertise-seeking behaviour: (1) identification, (2) selection and (3) escalation. Once a software engineer identified a gap in his/her own knowledge to solve a task or deal with a situation he/she identified internal colleagues who might satisfy his/her knowledge needs. Next, the software engineer would select a colleague who could potentially help to solve the problem. The help request could be escalated in some situations. If the identification and selection processes were conducted rationally one would expect that a person seeking expertise would select a domain expert with relevant expertise. However Simon's (1991) theory of 'bounded rationality' suggests that certain constraints may limit worker rationality in the expertise-seeking process. For example, social issues may influence the expertise-seeking process as illustrated by Casciaro and Lobo (2005) whose memorable research suggests that a person would rather consult a 'lovable fool' than a 'competent jerk' for knowledge. In conclusion, a growing body of research on expertise-seeking suggests that employees prefer to ask friendly or proximate colleagues (hereon termed "direct colleagues") for expertise rather than seeking out a recognized domain expert.

We define an "expert" according to Weiss and Shanteau's (2003) definition as someone who has evaluative skills in his or her domain of expertise and can apply an evaluation to a domain topic (Weiss & Shanteau, 2003). According to Weiss and Shanteau, examples of domain expertise include expressing an evaluation as a judgement, projecting from an evaluation to make a prediction, communicating an evaluation to others, and executing an evaluation as a performance (Weiss & Shanteau, 2003).

This paper explores the key barriers that deter or prevent employees from seeking out a recognised internal domain expert who could satisfy their need for expertise. Rather than focusing on one particular aspect of expertise-seeking as in previous research (cf. Borgatti & Cross, 2003; Casciaro & Lobo, 2005; Copeland et al., 2008; Koku, 2006; Yuan et al., 2010; Zenger & Lawrence, 1989), we seek an understanding of the barriers to seeking expertise from internal **designated experts**, and the relationships between these barriers. To achieve this aim we analysed online discussions on this topic between post-graduate students enrolled in a KM subject at a large Australian university ("OzUni"). Grounded theory and open coding techniques were employed to analyse the data. Four categories of barriers to the seeking of internal domain experts were identified. The barriers have been synthesised into static and dynamic models on expertise-seeking depicting the barriers that influence employee identification and selection of a domain expert. The models can be employed in future research to help identify solutions to reduce or eliminate the barriers and to enable more efficient and effective expertise-seeking and knowledge sharing in companies.

The remainder of this paper is structured as follows. Section 2 describes the research method for this research. It is followed by section 3 which discusses the findings from the content analysis resulting in a static model of expertise-seeking. In section 4 a literature review is presented which provides a

backdrop for the findings. In section 5 a dynamic model of expertise-seeking is presented. Finally, a discussion and conclusion are presented in section 6.

2   RESEARCH METHOD AND ANALYSIS

Research method

We selected a Ground Theory approach commonly used in explorative research concerning the explanation of human behaviour (Strauss & Corbin, 1990). We considered the approach relevant as we aimed to explore person-to-person expertise-seeking behaviour of employees. Grounded Theory is described by Martin and Turner (1986) (as cited by Myers, 1997) as "an inductive, theory discovery methodology that allows the researcher to develop a theoretical account of the general features of a topic while simultaneously grounding the account in empirical observations or data." The qualitative data collected by a grounded theory approach can be from different sources such as interviews, online forum discussions, observations and logbooks. From the collected data the researcher attempts to formulate a theory using an inductive process wherein s/he revisits the collected data continuously to check and elaborate the emerging theory. For this process several analysis techniques may be used (Myers, 1997).

When using grounded theory it is important that the researcher has as little pre-research knowledge about the subject as possible to prevent bias during the analysis process. This restriction is set because knowing another researcher's findings about the subject can significantly influence research findings and further, the opportunity for discovering important new insights may be lost. This important aspect of the grounded theory approach was achieved in the research study by a researcher (one of the authors) who lacked prior literature-based knowledge of expertise-seeking theory perform the data analysis in advance of reviewing relevant literature.

Data collection

Data for this research were collected from postgraduate students enrolled in two successive KM classes (years 2008 and 2009) at a large Australian university, "OzUni". The students were asked in week six, as part of subject assessment, to share their ideas on the topic of expertise-seeking in an online discussion forum accessible only to enrolled students via the university's learning management system.

The specific question asked by the instructor (an Associate Professor and experienced KM researcher) was:

"*Research has shown that many employees prefer to ask a friendly colleague for help, even if that person is not an expert in the topic. What are some of the reasons why employees might not seek out experts at work, and might prefer to ask the person in the office next to them instead? Does it matter if the expert is not consulted? Do you believe experts at work are truly experts? Do they explain their area clearly and can other employees understand them?*"

The instructor replied to student responses to the question, often asking follow-up questions to stimulate student thinking and learning. This activity resulted in 110 separate student responses (excluding those of the instructor) authored by 62 student respondents who expressed their perspectives on the question.

Turning to the student demographics, around 25 percent of the students were in the age-range 25 – 45 years and at the time of study were employed in Australian businesses in a range of occupations. These students had work experience including expertise-seeking at work. They did not attend classes at the university and studied the unit in "off-campus" mode with all communications taking place online on the class website. The remaining students were in the age-range 22–28 years and were international students (mainly from Asian countries) studying in Australia. These students were enrolled in the subject in "on-campus" mode where some study was conducted online in addition to attending campus classes. All students were enrolled in Masters Degrees in business specialisations.

As part of subject assessment they were required to contribute to the online discussion threads on a regular basis. Students had prior and current work experience as well as knowledge and experience of expertise-seeking in organisations. They also had an understanding of the expertise-seeking topic gained from six weeks of KM study, suggesting them as legitimate research surrogates for employees seeking knowledge from other employees in the workplace (see Greenberg, 1987).

Data analysis

We analysed 110 text contributions from the online discussion fora using content analysis comprising several stages (Hsieh & Shannon, 2005). The first stage involved extracting usable information from the data by open coding. Open coding is a well-known analytical method for grounded theory where phenomena are named and categorised by careful examination of the data (Glaser, 1998; Strauss & Corbin, 1990). This process is also known as 'labelling': isolating a sentence, conceptualising the theme of this text and assigning it a short meaningful name, i.e. a label or code. Codes which pertain to the same phenomenon are then grouped into concepts (stage two), which can then be re-grouped by comparing them semantically. This process is continued until a small set of categories remains, representative of the semantics of the original text. This set of categories can then be used as a foundation to develop a grounded theory.

One of the authors followed the above-described content analysis process. Each student contribution to the discussions was checked for useful information and coded, resulting in a total of 260 codes. The researcher employed his background in KM to assist in identifying useful codes. After working through three stages of open coding (table 1), five main categories (including twenty-one concepts) emerged as key reasons why employees do not consult internal designated experts but rather consult direct colleagues (table 2). Further details of coding results are available from the first author on request. Table 2 will be explained in the next section which elaborates on the five categories and introduces a model of organisational expertise-seeking barriers (figure 1).

After the model is presented a literature review is provided, which is common practice in grounded theory research (Sandgren et al., 2007). The results of the literature review are considered as another data source and integrated with the model. The literature review is a first step in validating results from grounded theory research which is typically validated by fit, relevance, workability and modifiability (Glaser, 1998; Sandgren et al., 2007).

Stage	Number of codes/concepts/categories[1]
Codes	260 → 146
Concepts	146 → 21
Categories	21 → 5

Table 1.   Codes, concepts and categories: Result of the three open coding stages.

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[1] Which concepts have been mapped to which categories can be reviewed online after acceptance of the paper (as the page limit does not enable us to include them in the appendix).

Environment	Accessibility	Communication	Personality	Context
Company size and culture	- Expert unknown - Expert availability - Expert unwilling to share knowledge - Physical presence	- Complicated answer - Expert ability to transfer knowledge - Expert adaptation to inquirer - Expert knowledge is insufficient - Expert qualifications - Jargon - Practical experience with similar problem - Unable to formulate question	- Loss of face - Mutual frame of reference - Strengthening colleague relationship	- Answer quality - Good starting point - Perceived approachability - Time constraints - Short answer

Table 2.   Categories of organisational expertise-seeking barriers

3   RESULTS: STATIC MODEL OF BARRIERS

This section provides a summary of the results of the above analytical process. The forum discussion yielded five categories as to why employees do not to consult internal designated experts but rather consult direct (non-expert) colleagues: four possible barriers and one context variable, influencing the severity of the barriers in a given situation. All five will be elaborated in this section. In the next section relevant literature will be reviewed to develop a theoretical foundation for the categories

Environment. Two environmental conditions may influence why employees decide whether to ask a direct colleague or a domain expert for knowledge. First, *company size* may form a barrier, as in large companies it may be more difficult to locate an expert. Even with KM systems in place designed to find specific expertise faster - for example, expert locator services - it may still be difficult to consult an expert as large companies are often geographically dispersed. In such situations the daunting task of finding an expert and the lack of personal contact deters employees from consulting an expert. Second, *company hierarchy and culture* influence expert consultation. One student noted (the following text has been edited for readability): "*An organization's culture has an impact. If it is an open culture, then there is a free flow of ideas and information, which actually helps in identifying the expert. [However] in a closed and hierarchy-based organization, since it's generally a top to bottom flow of information, an employee may find it comfortable to ask a friend*".

Summarising the above two concerns, in large companies with a strong formal hierarchy and closed culture (often coinciding with a large company size) it may be more difficult for employees to freely consult experts. Second, in companies with many different locations or with a culture depending strongly on hierarchy, expertise-seeking may be obstructed. We labelled all such barriers *environmental*.

Accessibility. The results suggest that poor access to experts is as an important factor limiting the willingness of employees to search for domain experts. The inaccessibility of experts is due to several reasons. First, an employee may not know the identity of a domain expert for a given topic or field of expertise. Thus the expertise is available somewhere in the company but cannot be found. One student

pointed out that employees sometimes "'*do not know what they do not know' - that is, they are unsure of where to go or who to turn to [in order] to find the knowledge expert that can answer their question.*" Second, accessibility may be limited if the expert is indeed unavailable. Experts are often labelled as domain experts by their managers and are assigned the duties of expertise sharing (that is, acting as a knowledge hub and general point of inquiry) as only a secondary responsibility once their main responsibilities have been fulfilled. Given this work norm, experts are usually busy and often overloaded fulfilling their main work duties. If an expert lacks dedicated time for his/her expertise sharing role, he/she may not be available (and thus accessible) to respond to employee requests for assistance. One respondent put it as follows: "*Although sometimes [an] expert is always busy working, the company should suggest [to the] expert [to] show their enthusiasm by [giving] one or two presentations or meetings*"

The third factor limiting expert accessibility is a lack of physical presence. The physical presence of an expert helps in conveying complex ideas and concepts (e.g. the expert could use gestures and facial expressions to communicate). As a result, employees may prefer asking direct colleagues who are physically present as opposed to a remote expert who must be consulted by phone or internet. As one respondent put it: "*I guess the fundamental reason that workers approach colleagues is very simple; because they can! It is usually the least path of resistance and the easy answer, so most of us take it.*" The physical proximity of an employee enables a quick and convenient answer to a question. The final factor limiting expert accessibility is the phenomenon of knowledge hoarding. An expert may feel that her expertise is an important asset to the company and may fear that when she shares this expertise with other employees, she will be dispensable or lose promotional opportunities. This is also demonstrated by the following quote: "*[...] some experts [that] worry [about] their position in company, maybe they just help you a little or even don't [answer] your question. If you learn much from them, it means that you are their potential enemy in the future. [Therefore]they will hide something.*" Experts may thus ignore employee requests for their expertise. Summarising, limited accessibility may be caused by the expert being unknown, unavailable, physically inaccessible because of distance or inaccessible on purpose. We refer to such barriers as *accessibility barriers*.

Communication. In addition to the previously identified factors there may also be communicative obstacles for an employee to overcome. The first such barrier is expert use of jargon. One respondent indicated that the use of technical language "*might put employees off from asking experts as they [experts] might consider it a waste of their time if they [employees] fail to understand their [experts'] jargon*". When explaining a complex topic it may be difficult for experts to avoid using technical and professional terminology. Jargon is usually an efficient and precise way to communicate complex information with highly specific meaning however it is often not understood by the inquiring employee, whose personality or attitude may prevent him or her from seeking clarification (see "Personality" section). It takes communicative skills from the expert to avoid jargon, assess the inquirer's level of knowledge on the subject and subsequently explain the complex information in a way understood by the inquirer.

A second communicative problem may arise when an employee is unable to formulate the question. This occurs when the employee is unable to explain the problem she is having (one respondent wrote "*Unclear about what they want to ask*") or does not know what the problem is and can only vaguely explain it. In such situations it is difficult for an expert to find out the precise nature of the problem. It is possible that the employee will receive and apply the wrong solution to the problem. This chain of miscommunications may be attributable to differing levels of understanding between the inquirer and the expert. The final barrier in communication indicated is that the expert may lack expertise. The expert's knowledge may be too specific (too narrow or too profound) to provide a feasible solution to a problem. Hence, one expert cannot provide an employee with an all-encompassing answer, and multiple experts should be consulted. With this possibility in mind, employees may choose to consult a direct colleague who may have found a solution to similar problem before. One respondent formulated this as follows: "*Chances of getting more practical knowledge from people who face or had faced similar problems in work.*" Summarising, the use of jargon by an expert, mismatch of

knowledge levels between inquirer and expert and a lack of practical, ready-to-apply knowledge from an expert may form barriers for expertise seeking. We refer to these barriers as *communicative barriers*.

Personality. The final barrier is based on the sociological factors making up the personality of the inquirer and resulting in specific behaviours. It was found that employees may view experts as authoritarian personalities, resulting in (justified or unjustified) fears, prejudices and biases. For example, some students indicated that they feared loss of face when consulting an expert, and were afraid to expose their lack of knowledge when asking about something they think they should have known: "*they [employees] might feel uncomfortable to ask an expert about a topic because they do not want to be looked at as an unintelligent and ignorant person in other colleagues' eyes*". Some students indicated that exposing their lack of knowledge would not only affect their egos but make them look stupid in front of an expert. The abovementioned psychological barriers are all related to human behaviour and individually-based. While they do not fit well within KM research they should not be underestimated as a key reason why some employees do not seek help from an expert. We will refer to any barriers related to fear, prejudice or bias towards an expert as *personality barriers*.

Context variable. The final factor of influence should not so much be viewed as a barrier, but as a variable determining whether any of the above barriers may play a role in a given situation. Many of the respondents indicated that, when determining whether to seek an expert for knowledge or deciding which expert to consult, much depends on the problem context. One student described this dilemma as having to "*balance the requirement for a quick answer with the requirement for a correct answer given the situation faced*". Resolving this concern often involves a trade-off between problem importance (and the corresponding need for answer quality) and time constraints. When dealing with small problems such as seeking a fix for a malfunctioning printer, employees are looking for fast solutions. In addition a correct answer is of little importance as there is no significant risk in applying a wrong solution. In such situations (scarce time, low answer quality) employees are more likely to ask a direct colleague for help. Time constraints are less of an issue when a problem demands a high quality answer. In such a setting employees will try, even in the face of significant barriers, to locate a genuine expert who is likely to provide a superior solution. When both time is limited and the need for a quality answer is high (which is often the case in corporate environments), it is unclear whether an employee will consult an expert or a friendly colleague.

The above barriers to expertise-seeking can be represented graphically in a model (Figure 1). The model depicts the barriers that an employee may (perceive to) experience when seeking knowledge from an expert at any given moment. Notably, not all barriers have to be present as they are dependent largely on the contextual variable, the company and the employee seeking the expertise.
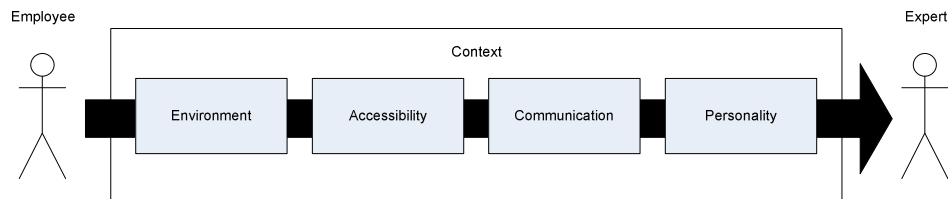

Figure 1.   Static model depicting the barriers faced by an employee seeking expertise.

In the next section we will develop a theoretical foundation to underpin these results by reviewing existing literature on the subject.

4   LITERATURE REVIEW

This section relates the results discussed in the previous section to existing literature on expertise-seeking. A literature review indicated that that many of the barriers suggested by the students in our study have been previously identified and discussed in a range of KM literature. While our study

provides support for existing research exploring why some employees prefer obtaining help from direct colleagues instead of internal designated experts, importantly our study has broken new ground by synthesising previously fragmented research into two tables and two models.

Environment. The results suggest that *company size* and *company culture* affect the probability of an employee seeking help from an expert. The sheer size of a company can lead to people experiencing difficulty in finding an expert. Here proximity plays an important role, as identified in the past. In 1977 Allen presented the "30-meter rule": two knowledge workers whose desks are more than 30 meters apart have a communication frequency of almost zero, suggesting that in a large organisation there is a low chance of meeting colleagues in other offices and hence there is little awareness of their knowledge. Of course Allen's research was conducted before the widespread use of electronic communication (such as e-mail) at work. However, more recent research also found a relationship between proximity and expertise seeking (Borgatti & Cross, 2003).

Concerning organisational culture, De Long and Fahey (2000) and later, many others, found that organisations with norms and practices that discourage open and frank exchanges of knowledge across different levels of hierarchy create an atmosphere that undermines effective knowledge sharing. In such a culture one might find knowledge hoarding by experts as well as employees who are reluctant to ask experts for help.

Accessibility. Accessibility was identified as an important factor limiting employees seeking expertise from internal designated experts. In particular the *inability to find* an expert and consult with her (*availability*) and the expert's *willingness to share knowledge* were identified. Concerning the availability of experts, McDonald and Ackerman (1998) reported in their study that software engineers who search for expertise consider the availability of experts an important criterion for selecting an expert. Here availability is determined as the expert having time to respond to a colleague's query. Hence if a quick solution is required, a busy expert was not consulted by the software engineers. In other research by Cross et al. (2001), expert accessibility is defined as being able to gain timely access to an expert. The ease of access is determined by the closeness of a relationship, physical proximity, organisational design and collaborative technology. The inability to find an expert was also identified in Cross et al's research as the challenge of "knowing who knows what". In many organisations the expertise possessed is unknown and the experts possessing particular expertise are unknown. The lack of such information about experts and their expertise makes it more difficult for employees to gain access to the relevant domain expert. Finally, Yuan et al. (2010) also identified the importance of expert accessibility in expertise-seeking behaviour.

Willingness to share knowledge is also recognised as a threat to knowledge sharing. The work of Webster et al. (2008) suggests that experts hoard knowledge when the organisational culture is secretive and employees wish to protect their expert territory. There is other evidence that experts can be territorial when communicating with novices (Thom-Santelli et al., 2010). Defensive strategies may be used by experts to remind employees of one's expert status in a particular domain (Brown et al., 2005). Overall many researchers have noted that experts can withhold knowledge due to its perceived association with power (c.f. Pfeffer & Hinds, 2002).

Communication. Two of the communicative barriers emerging from this research - *jargon*, *knowledge-level mismatch* and *lack of practical knowledge of the expert* - have been previously identified in KM literature. Experts may use jargon in work communication and, more generally, expert explanations can lack clarity (Eppler, 2007). Understanding each other also depends on the shared work context. Without a similar work context people will experience problems in knowledge sharing as the receiver might not understand the sender and vice versa (Bosua & Scheepers, 2007). This was also found by McDonald and Ackerman (1998) who indicated that an employee should keep a problem and its solution local because then s/he is most likely to find the people that "understand and relate to the context of the problem". Cultural differences can also contribute to misunderstandings between experts and others in a discussion (Ipe, 2003).

The second communicative barrier found by our research - *lack of practical knowledge of the expert* - was discussed by Bradley (1996) who suggested that greater experience does not yield superior expert performance and that experience is not a strong indicator of expertise (Bradley et al., 2006). Rather, experts who exhibit superior performance think holistically and conceptually, suggesting that the cognitive ability to structure experience well is important (Bradley et al., 2006). Our research suggests that there may be plenty of experts in the workplace who are unable to perform well, perhaps for this reason. This area is not well-understood and could provide a fruitful avenue for future research.

Personality. Personal *fears*, *prejudices* or *biases* that can hamper expertise seeking are also discussed in relevant literature. Psychological issues are very well demonstrated by the research of Casciaro and Lobo (2005) who suggest that the choice of the human source should be based on the person with the most experience on the subject. However the researchers note that in practice employees generally favour likeability (i.e. a friendly colleague) over ability (a possibly unfriendly expert). Casciaro and Lobo distinguish between unjustifiable and justifiable reasons for people to avoid unfriendly experts. Unjustifiable reasons may, for example, encompass reluctance to deal with an unpleasant attitude, a small price to pay in exchange for valuable knowledge. Justifiable reasons are unwillingness to share knowledge (see the earlier "Accessibility" section), difficulty asking follow-up questions and revealing vulnerabilities in order to learn. Attitude is also mentioned by McDonald and Ackerman (1998) who provide an example of a poor expert attitude: "[the inquirer] was belittled, treated with contempt, or even made into a joke [by an expert]". Because of the potential for such behaviour from experts it is hardly surprising that people may be reluctant to consult them.

Context variable. Prior literature on expertise-seeking and person-to-person relations is rather scarce regarding the context variable (i.e. answer importance versus time constraints). This might be because it is considered by researchers to be relatively unimportant. If a problem is not considered important or the impact of an incorrect answer is low, an employee may not wish to invest too much effort securing a 'high quality' answer. A basis for such trade-offs can be found in more generic literature such as Transaction Cost Economics (Milgrom & Roberts, 1992) and Bounded Rationality (Simon, 1991). The first theory implies that the cost of securing a high quality answer should be traded off against the benefits of such an answer. The second theory implies that the options, i.e. time and resources, might be limited and therefore a satisficing solution should be sought.

5   KNOWLEDGE SEEKING: A DYNAMIC MODEL

The static model (figure 1) described in the results section is an outcome from analysing the online discussion threads, setting out the different barriers indicated by the respondents. However, the static model can be extended to a dynamic flow diagram as we found that previous experiences influence expertise-seeking behaviour. This influence is supported by the research of Cross and Borgatti (2000) who propose that the intentional search for information in an organisational context is a dynamic process, as the seeker's perception with respect to characteristics of the relationship is updated with every expertise-seeking episode. For example, a positive interaction may reduce access barriers (e.g. psychological cost) and lead to future interactions. Previous experiences with an expert were indicated as an important decision variable by our study's respondents. Integrating the static model into a flow diagram and adding a feedback mechanism makes the model more accurate in real day-to-day business situations. This feedback loop is an instance of learning that takes place at the individual level where the individual updates his/her internal knowledge framework based on immediate prior experience with a particular knowledge source. This type of learning also qualifies as single-loop learning as described by Argyris and Schon (1978). The dynamic model is further elaborated in the next two paragraphs.
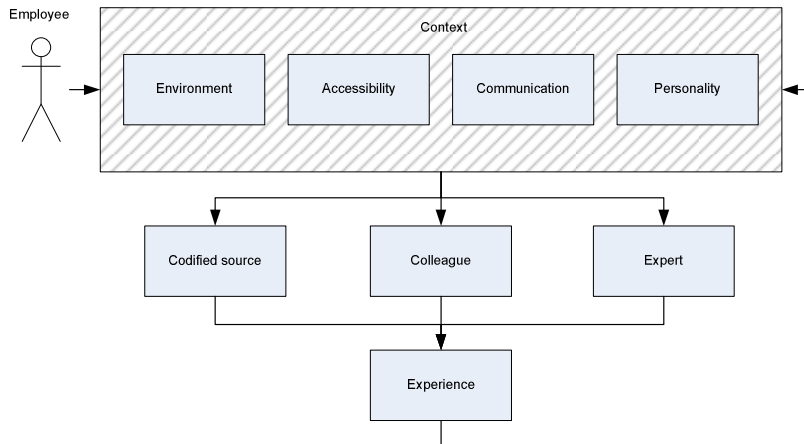
Figure 2.   Dynamic model of expert seeking including feedback mechanism

The dynamic model is presented in figure 2. Let us assume that an employee confronts a problem and needs a knowledge resource to solve it. In such a case the employee will first determine the question context in the same way as has been described for the static model in the results section - i.e. how much effort will be put into finding a 'high quality' knowledge resource. Having determined the question context, the employee chooses the knowledge source based on the environment, personality, accessibility and communication variables described in the static model. So far we have only discussed the option of selecting a recognised domain expert or a direct colleague, i.e. a person. However one could also select a codified source such as an information system containing knowledge on a particular topic. Therefore, the model contains three high level knowledge sources: experts, direct colleagues and codified sources. When a choice is made and the knowledge source has been consulted, this results in an experience with that source. The experience is evaluated considering the different variables that led to the choice and they are adjusted accordingly. For example, if an employee receives a fast and practical answer from a recognised domain expert, this positive experience will increase the likelihood of consulting an expert in future similar contexts. Similarly, if a solution obtained from a direct colleague fails or she poked fun at you during the sharing of that solution, the likelihood of consulting a direct colleague in future in a similar context will decrease.

Solving a particular problem may necessitate an employee passing through the model more than once, thereby creating a problem-solving lifecycle. Respondents indicated, supported by Cross et al. (2001), that codified sources and colleagues were more popular sources of expertise in the early stages of a problem-solving lifecycle as they make a good starting place from whence to continue the search for a solution. As the best solution is most likely tacit knowledge possessed by an expert, an expert is often the endpoint of a problem solving lifecycle.

6   CONCLUSION

The goal of this explorative research was to identify the different reasons explaining why employees favour asking direct colleagues for answers to work-related problems instead of designated internal experts. By exploring and analysing online forum discussions among post-graduate students in KM, a total of 260 explanations were collected. After analysis using the open coding method of grounded theory, a set of 21 concepts emerged, grouped into five categories (four barriers and one context variable), explaining expertise seeking. A literature study has been conducted to find scientific support for the categories. Summarising the results of the literature study, support has been found for each of the five categories, some more strongly than others. For example, the lack of practical experience perceived in experts and the issue of time pressure are not reported in current expertise-seeking literature and deserve further exploration in future research.

The main contribution of this research is not identifying the barriers themselves as this has already been done in previous research, but in integrating previously fragmented research into a *static* and *dynamic* model of *expertise seeking*. The static model provides an overview of the main barriers confronted when seeking expertise: environment, accessibility, communication, personality and context. In the dynamic model the selection of a knowledge source (i.e. codified source, colleague and expert) is also modelled as well as the experience a person obtains from consulting the source. Such an experience will influence his expertise-seeking behaviour in the future with single loop learning taking place. The dynamic model can be considered an extension to the expert-seeking model of McDonald and Ackerman (1998). Our set of barriers helps explain expertise-seeking behaviour in the identification and selection phase and the actual usage of the knowledge source should be added as a third step as it influences future expertise-seeking behaviour.

For practitioners the models can be useful in examining the current climate of expertise-seeking in their organisations. The models help them understand why people will not always search for a recognised domain expert and how they might influence the outcome of the search process by eliminating some of the barriers. However, not all barriers can be eliminated easily, such as an 'incompatibilité des humeurs' (i.e. personality).

One important limitation of the research is the fact that finding support for the model from literature focused mainly on reviewing literature relating to the five major barriers rather than searching for support for the finer-grained twenty-one concepts at the lower level. Another limitation concerns the fact that the coding process has been conducted by only one researcher so that there may be a personal bias towards identifying factors influencing expertise-seeking behaviour, although the outcome of the process has been discussed with the other researchers. A third limitation is that a grounded approach was used in which the literature review was conducted after the analysis. While such an approach has its benefits as was explained earlier, some important barriers and insights reported in the literature may have been present in the data but overlooked due to the researcher's lack of prior knowledge of those concepts. Future research should overcome these limitations and also extend this explorative research by more quantitative research to further support the models presented. Another direction for further research includes further analysis of the context variables, or circumstances, which influence decision-making during the expertise-seeking process. For instance, one of the context variables is time pressure leading employees to seek expertise with a direct colleague when time is critical and expertise must be acquired quickly. The trade-offs made, in this case speed of response versus quality of expertise, would make an interesting subject for future research.

References

Allen, T. J. (1977). *Managing the flow of technology*. Cambridge, MA, MIT Press.

Argyris, C. & Schon, D.A. (1978). *Organizational Learning: A Theory for Action Perspective*.
Reading, MA: Addison-Wesley.

Borgatti, S. & Cross, R. (2003). A relational view of information seeking and learning in social networks. *Management Science, 49*(4), 432-445.

Bosua, R. & Scheepers, R. (2007). Towards a model to explain knowledge sharing in complex organizational environments. *Knowledge Management Research & Practice, 5*(2), pp. 93-109.

Brown, G., Lawrence, T.B. & Robinson, S.L. (2005). Territoriality in Organizations. *Academy of Management Review, 30*(3), pp. 577-594.

Casciaro, T. & Lobo, M. S. (2005). Competent Jerks, Lovable Fools, and the Formation of Social Networks. *Harvard Business Review*, *83*(6), 92-99.

Copeland, M.P., Reynolds, K.J. & Burton, J.B. (2008). Social identity, status characteristics and social networks: Predictors of advice seeking in a manufacturing facility. *Asian Journal of Social Psychology, 11*(1), pp. 75-87.

Cross, R. & Borgatti, S. (2000). The ties that share: Relational characteristics that facilitate knowledge transfer and organizational learning. *Paper presented at the Sunbelt Social Network Analysis Conference*, Vancouver, British Columbia, Canada.

Cross, R., Parker, A., Prusak, L. & Borgatti, S. (2001). Knowing what we know: Supporting knowledge creation and sharing in social networks. *Organizational Dynamics, 30*(2), pp. 100-120.

De Long, D. W. & Fahey, L. (2000). Diagnosing cultural barriers to knowledge management, *Academy of Management Executive, 14*(4), pp. 113-27.

Eppler, M.J. (2007). Knowledge Communication Problems between Experts and Decision Makers: an Overview and Classification. *The Electronic Journal of Knowledge Management, 5*(3), pp. 291-300.

Gao, F. Li, M. & Clarke S. (2008). Knowledge, management, and knowledge management in business operations. *Journal of knowledge management, 2*, pp. 3-17.

Glaser, B.G. (1998). *Doing Grounded Theory: Issues and Discussions*. Sociology Press.

Grant, R. (1996). Toward a knowledge-based view of the firm. *Strategic Management Journal, 17*, pp. 109-122.

Greenberg, J. (1987). The college sophomore as guinea pig: setting the record straight. *Academy of Management Review, 12*(1), pp. 157-9.

Hislop, D. (2005). *Knowledge Management in Organizations: A Critical Introduction*. Oxford University Press, Oxford.

Hsieh, H-F. & Shannon, S.E. (2005). Three Approaches to Qualitative Content Analysis. *Qualitative Health Research, 15*, pp. 1277-1288.

Ipe, M. (2003). Knowledge sharing in organizations: a conceptual framework. *Human Resource Development Review*, *2*(4), 337.

Koku, E.F. (2005). *Who ya gonna call? Individual and structural determinants of advice seeking in scholarly networks*. Ph.D dissertation (NR07851), University of Toronto: Canada.

Martin, P.Y. & Turner, B.A. (1986). Grounded Theory and Organizational Research. *The Journal of Applied Behavioral Science, 22*(2), pp. 141-157.

McDonald, D.W. & Ackerman, M.S. (1998). Just talk to me: a field study of expertise location. In Proceedings of: *1998 ACM Conference on Computer-supported Cooperative Work*, Seattle, WA, USA , November 14 – 18, pp. 314-325.

Milgrom, P. & Roberts, J. (1992). *Economics, Organization and Management*. Prentice-Hall, Englewood Cliffs, NJ.

Myers, M. D. (1997). Qualitative Research in Information Systems. *MIS Quarterly, 21*(2), pp. 241-242.

Osman, G. & Norshuhada, S. (2004). Expert-seeking Activity Framework. *Journal of Advancing Information and Management Studies, 1*(1), pp. 63-73.

Pfeffer, J. & Hinds, P. (2002). Why organizations don't "know what they know": Cognitive and motivational factors affecting the transfer of expertise. In: *Sharing expertise: Beyond knowledge management*, MIT Press, Cambridge, MA, USA.

Sandgren, A., Thulesius, H., Petersson K. & Fridlund, B. (2007). Doing Good Care - a study of palliative home nursing care. *Int. Journal of Qualitative Studies on Health and Well-being*, *2*(4), pp. 227-235.

Simon, H.A. (1991). Bounded rationality and organizational learning. *Organization Science, 2*(1), pp. 125-134.

Strauss, A. & Corbin, J. (1990). *Basics of Qualitative Research*. Sage, Newbury Park, CA.

Swaak, J., de Jong, T. & van Joolingen, W. R. (2004). The effects of discovery learning and expository instruction on the acquisition of definitional and intuitive knowledge. *Journal of Computer Assisted Learning, 20*(4), pp. 225- 234.

Thom-Santelli J., Cosley, D. & Gay, G. (2010). What Do You Know? Experts, Novices and Territoriality in Collaborative Systems. In Proceedings of: *28th ACM Conference on Human Factors in Computing Systems*, April 10–15, Atlanta, GA, USA, pp. 1685-1694.

Webster, J., Brown, G., Zweig, D., Connelly, C., Brodt, S. & Simkin, S., (2008). Beyond knowledge sharing: Withholding knowledge at work. *Research in Personnel and Human Resource Management, 27*, pp. 1-38.

Weiss, D.J. & Shanteau, J. (2003) Empirical Assessment of Expertise, *Human Factors*, *45*, pp. 104-114.

Yuan, Y. C., Carboni, I. & Ehrlich, K. (2010). The impact of awareness and accessibility on expertise retrieval: A multilevel network perspective. *Journal of the American Society for Information Science and Technology, 61*, pp. 700–714.

Zenger, T. R., & Lawrence, B. S. (1989). Organizational demography: The differential effects of age and tenure distributions on technical communication. *Academy of Management Journal, 32*, pp. 353-376.

APPENDIX A: Open coding process

Due to space limits this appendix was removed from the paper. Details of coding results are available from the first author on request.