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RESEARCH PERSPECTIVES ON CREATIVE INTERSECTIONS

Increasing Knowledge Seeking Initiation based on Theories of Human Behaviour

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This paper presents a model to understand the factors influencing the initiation of knowledge seeking by designers. The initiation of the knowledge seeking process is usually let to the will of designers, who most of the times do not come to the idea of looking into knowledge repositories or who decide not to do it. Understanding their motivations, practical actions to increase knowledge reuse can be derived. The model is based on theories of human behaviour and it considers factors from three main influent areas: social, technological and psychological. The paper discusses the implications of the model for the preparation of the phases of the Knowledge Reuse Cycle.

keywords: knowledge seeking; knowledge reuse; theories of human behaviour

Introduction

In the current dynamic economy, knowledge is considered a key resource, which organizations require in order to sustain strategic advantage in an increasingly competitive world (Davenport & Prusak, 1998). That is the reason why knowledge management has received much attention in practice and research. Effective leveraging of knowledge resources ensures that the right knowledge is available to the right people at the right time during product design, improving the quality of decision making and avoiding the tendency of organizations to repeat the same mistakes.

Knowledge reuse is the process by which individuals use knowledge generated by other individuals within their companies in order to be more effective and productive in their work (Alavi & Leidner, 1999). Although design companies are reasonably good acquiring knowledge, the application of the codified knowledge stored in companies' repositories in

form of documents is complex, and just having a repository does not guarantee its reuse (Kankanhalli, Tan & Wei, 2001).

Previous studies in this field concentrate their efforts on how to acquire and document knowledge, forgetting the relevance of the moment of reusing, which is the last step to complete the cycle and give meaning to the whole process (Schacht & Maedche, 2016). The decision of using the content of a knowledge repository is usually let to designers, who most of the times do not come to the idea of using it or do not have the adequate support to do it efficiently. Therefore, the process of knowledge seeking is not initiated and knowledge repositories are scarcely used, which implies a poor utilization of the company's resources.

Adopting a Design Thinking approach and thus focusing on the knowledge user and his/her requirements, knowledge reuse could be better supported. The goal of this paper is to gain understanding on designers' motivations to initiate the action of knowledge seeking. In order to do that, we reviewed the main theories of human behaviour and based on them, we propose a model to understand the factors influencing knowledge seeking initiation. The implications of the model for the preparation of the phases of the Knowledge Reuse Cycle are discussed.

The paper is structured as follows. As initial situation, the concepts of knowledge management and reuse are defined, the design thinking perspective on knowledge management is discussed and the Worker-Centred-Model is presented. Then, the objectives of the paper and the research approach are introduced. Subsequently, the reviewed theories of human behaviour are described. Based on those, we propose a model of factors influencing knowledge seeking initiation. Then, we discuss the significance of the model for the Knowledge Reuse Cycle. The paper finishes with the conclusions and further work.

Initial situation

Knowledge Management, Reuse and Seeking

The discipline of Knowledge Management (KM) has the goal of "improving organizational capabilities through better use of the organization's individual and collective knowledge resources" (Probst, Raub, S. & Romhardt, 1999). Probst et al. define the eight as the main activities of KM: establishing the knowledge goals, knowledge identification, knowledge acquisition, knowledge development, knowledge distribution, knowledge usage, knowledge protection and knowledge evaluation.

Knowledge management can address two different types of knowledge. On one side, it allows to manage the codified knowledge which is contained in files and documents (codification approach). On the other side, it can support to manage the oral transfer of knowledge between persons in an organization (personalization approach). An organization can implement only one or both of the KM approaches combined.

The term knowledge reuse receives two interpretations in literature. It can be considered as one of the activities of KM, referring to the moment in which individuals perform reuse, or it can be considered as the complete process which is necessary to end up reusing. Markus (2001) depicts this paradox presenting the Knowledge Reuse Cycle of Figure 1, which consists of four stages, in which one of the stages is called reusing: 1) capturing or

documenting knowledge; 2) packaging knowledge; 3) distributing or disseminating knowledge (providing people access to it); and 4) reusing knowledge.

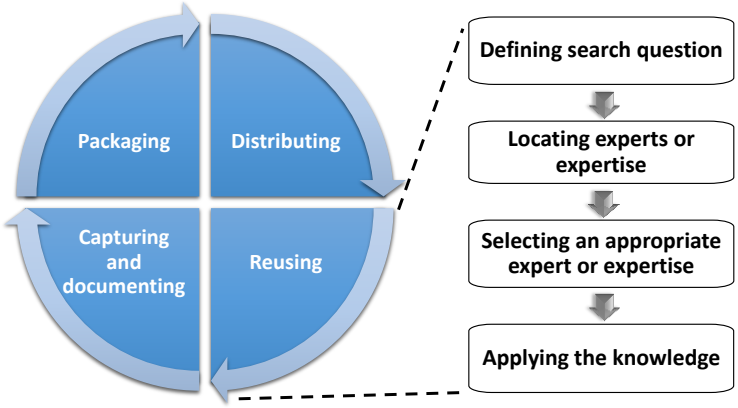

Figure 1 The Knowledge Reuse Cycle and the steps of the reusing phase. Source: Markus (2001).

Knowledge seeking is the activity in which a designer during his work proceeds to search for knowledge in the organization. The designer can search for documented knowledge in the electronic repositories or for a contact person. The knowledge seeking embraces the steps "locating experts or expertise" and "selecting an appropriate expert or expertise" of the stage reusing of the Knowledge Reuse Cycle presented in Figure 1. Without knowledge seeking, knowledge application cannot take place.

Design Thinking: another View of Knowledge Management

The Design Thinking (DT) approach proposes the wide application of a design perspective as a potential source of sustainable competitive advantage (Martin 2010). Designers are used to solve open complex problems and still find the way to solve them. The key of DT is the understanding of the user and his/her requirements.

The successful implementation of knowledge management in industry is still a goal to achieve. Even if the KM structures and processes have been implement in the company, this does not assure that they will be used (Schacht & Maedche, 2016). The final decision on reusing knowledge depends of designers.

Adopting a DT approach to face the problem of KM implementation in organizations may help to understand better the reason for this phenomena and it will be possible to find solutions for it. The key is on understanding the designers' motivations for knowledge seeking and understanding what can be done in the preparation of the stages of the Knowledge Reuse Cycle in order to motivate designers to seek for knowledge, which will lead to knowledge application.

The Worker-Centred-Model

Following the idea of placing the knowledge user in the centre, the Worker-Centred-Model (WCM) was developed. The WCM is a unified model, in which the knowledge worker is the centre of the knowledge processes (Carro Saavedra, Fernandez Miguel & Lindemann, 2015). Under the term knowledge worker we understand an employee, whose main capital is its knowledge.

As it is shown in Figure 2, the model considers the three processes of knowledge transfer, integration and creation, and application, and presents the factors that affect each

process (Fernandez Miguel, Carro Saavedra & Lindemann, 2016). Whereas knowledge transfer is influenced by factors related to the company's infrastructure, knowledge creation and integration is influenced by factors related to the knowledge itself and knowledge application is influenced by psycho-social factors.

In particular, the psycho-social factors are directly related to human behaviour. It is the category covering the most number of them and where several aspects remain open for discussion. Twelve factors are identified, which are: perceived risk, perceived benefit, knowledge as power, commitment, trust, workload, personal relationships, culture, personality, social skills, mind openness and past experiences. Those factors influence knowledge application by influencing the user's engagement and motivation to initiate the search for knowledge in the organization.

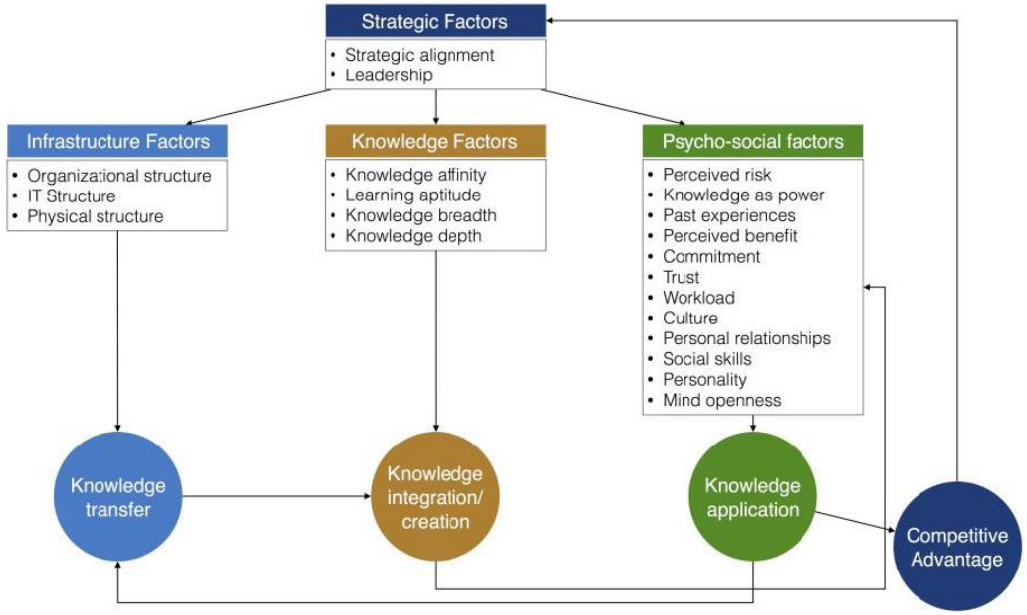

Figure 2 Overview of the worker-centred model. Source: Fernandez Miguel, Carro Saavedra and Lindemann (2016).

The WCM does not depict the relations between factors despite they are highly interrelated. It is unknown which factors influence in the first place creating a chain effect and which factors are a dependent of others. The identification of the initial influencing factors is a necessary step in order to derive practical actions for the company to modify them according to the interests for knowledge reuse.

Objectives and research approach

The aim of this research is to understand the designers' motivations behind initiating the action of seeking for knowledge in company's repositories and, based on the gained understanding, derive practical actions to increase knowledge seeking initiation. Three objectives are derived:

- Develop a model to understand the factors influencing the initiation of the search for documented knowledge. The model should depict the relations between factors.
- Determine which influencing factors are related to which stages of the Knowledge Reuse Cycle.
- Determine guidelines for the planning of the stages of the Knowledge Reuse Cycle in order to promote the knowledge seeking initiation.

Our research approach is to review well-established theories of human behaviour in order to collect the factors influencing individuals' behaviour, considering the behaviour in this case, the initiation of the knowledge seeking process. The research procedure is structured in four phases, presented in Figure 3.

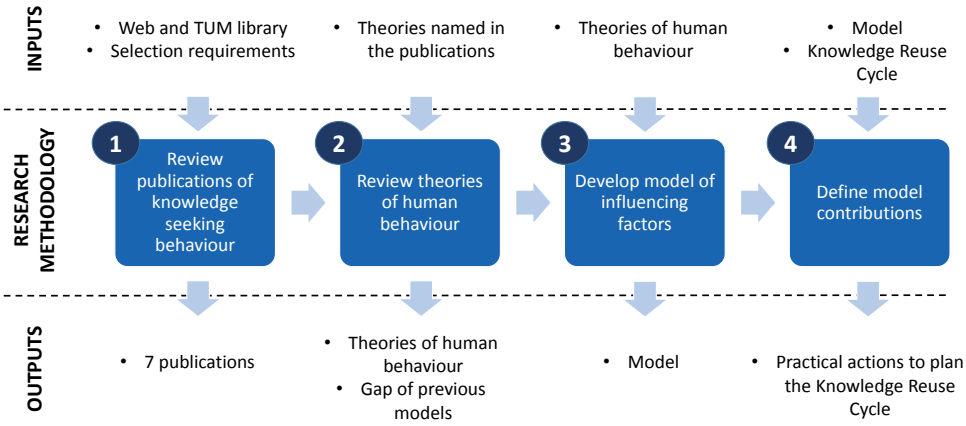

Figure 3 Research methodology.

First (step 1), we searched for publications in Google Scholar and University Library between 2000 and 2016 that contained the combination of words "knowledge reuse" and "knowledge seeking behaviour". The next step was to identify the most relevant ones as the core of this study, taking into account the following requirements:

1. Studies in the knowledge management field.
2. Studies which factors are related to human behaviour.
3. Studies that consider knowledge seeking behaviour.
4. Studies addressing explicit knowledge stored in knowledge management systems.
5. Studies that validated their results.

Seven publications fulfilled all the requirements and they were therefore selected.

The selected publications presented models to describe knowledge seeking behaviour based on several theories of human behaviour. We reviewed those theories in step 2 and we concluded that none of the models presented in the publications considered a combination of the theories.

Therefore, in step 3, we developed a model based on the combination of the reviewed theories and finally (step 4) we define the contributions of the new model to plan the Knowledge Reuse Cycle.

Theories of human behaviour

The ten theories found can be classified in three categories. While all of them aim to represent influences on human behaviour, there are some differences among the three groups. The first group addresses the emotional and motivational characteristics of individuals, the second group is related to technology usage, and the last group places the individual as an element of a system. The theories and their classification are shown in Figure 4.

Figure 4 Overview of theories of human behaviour.

Psychological theories

These theories involve the study of human behaviour based on the hypothesis that humans are rational, so they try to predict their behaviour related to his attitude and beliefs, as the behaviour of individuals is influenced by its intention.

The theory of planned behaviour was developed in order to make some improvements to the theory of reasoned action -which only took into account the factors attitude toward behaviour and subjective norm- adding the factor perceived behavioural control. This explains that the specific behaviour of individuals is determined by their intention to perform the behaviour, and this intention is at the same time influenced by these three factors, as shown in Figure 5.

- Attitude toward behaviour is “the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behaviour in question” (Ajzen, 1991, p. 188).
- Subjective norm is “the perceived social pressure to perform or not to perform the behavior” (Ajzen, 1991, p. 188).
- Perceived behavioural control is “the perceived ease or difficulty of performing the behavior and it is assumed to reflect past experience as well as anticipated impediments and obstacles” (Ajzen, 1991, p. 188).

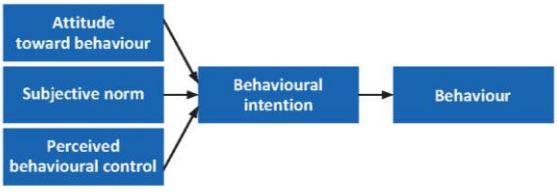

Figure 5 Theory of planned behaviour. Source: Ajzen (1985).

The continuation of the theory of planned behaviour is the decomposed theory of planned behaviour. This theory divides the three antecedents of behavioural intention into a set of beliefs. The factors underlying human attitude toward behaviour are compatibility, perceived ease of use and perceived usefulness. The influence of the subjective norm is decomposed into superior and peer influence. While perceived behavioural control is divided into perceived personal ability, such as self-efficacy, and external source constrains and facilitators, such as technology and resource facilitating conditions.

In the expectancy theory the author introduces three variables -expectancy, instrumentality and valence- to explain why individuals choose one behavioural option over others since the motivation of the individual behaviour is determined by the desirability of the outcome. Expectancy is the belief that one's effort will result in the achievement of a desired outcome; instrumentality is the belief that one will get something for achieving the outcome; and valence refers to the value the individual places upon the expected outcome.

Techno-psychological theories

This category attempts to address the factors underlying human attitude toward technology usage, modelling how users come to accept and use a technology system.

The technology acceptance model adapts the theory of planned behaviour to explain the attitude toward information technology usage, which is the effect of the combination of two factors, as shown in Figure 6.

- Perceived ease of use is "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 320).
- Perceived usefulness is "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320).

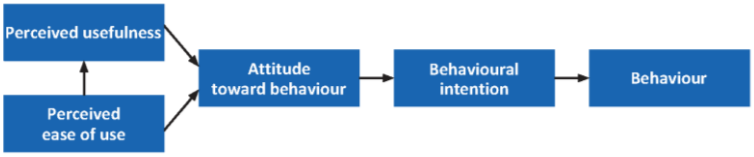

Figure 6 Technology acceptance model. Source: Davis (1989).

The technology acceptance model has been continuously studied and expanded. As a result, the technology acceptance models 2 and 3 have also been proposed. They focus on expanding the number of determinants that affect perceived usefulness and perceived ease of use. In the technology acceptance model 2 perceived usefulness is influenced by subjective norm, image, job relevance, output quality and result demonstrability; while experience and voluntariness act as modifiers of behavioural intention. In the technology acceptance model 3 perceived ease of use is influenced by anchor variables as computer self-efficacy, perceptions of external control, computer anxiety and computer playfulness, and adjustment variables, for example, perceived enjoyment and objective usability.

The unified theory of acceptance and use of technology is a technology acceptance model that combines four core determinants of usage and intention -performance expectancy, effort expectancy and social influence are direct determinants of the intention, while

facilitating conditions is a direct determinant of usage behaviour- alongside with four moderators -gender, age, experience and voluntariness of use.

Social theories

They explain actions and organizational behaviour taking into account the individual within a society, and explore social relationships as an important factor in understanding how the individual behaves. In societies, the individual contributes out of free will to an organization or to another individual as a gesture of goodwill, either expecting that this contribution will be reciprocated in the future, or to fulfil a profit resulted from a past exchange.

The social exchange theory was introduced to explain social change and stability as a process of negotiated exchanges between different parts where the combination of rewards and costs drives individual decisions. Costs are the elements that have negative effect and can come in many forms such as time, money or effort. Rewards are the elements that have a positive effect and can be sense of acceptance, support or social recognition.

The social capital theory considers seven dimensions of social capital, which are: group characteristics, generalized norms, togetherness, everyday sociability, neighbourhood connections, volunteerism and trust. All these dimensions can be manifested in various combinations and they shape the interaction amongst the members of a group, organization or community. These social networks and the set of sources within it have a high influence in the individual's social behaviour, and this influence provides benefits that work to the advantage of the individual.

Individual factors influencing knowledge seeking initiation

This section presents a model as a basis for understanding and structuring the influencing factors collected from the literature review. Also to comprehend which are the factors that in the first instance affect human behaviour and that can be influenced, applying the appropriate methods, to modify the behaviour of the individuals.

The publications selected in step 1 of our research procedure do not address all possible factors related to human behaviour at the same time. As it can be observed in Table 1, none of the publications is based on theories from the three identified categories at the same time.

Table 1 Theories used in the selected publications.

Publication	**Theories used**	**Category**
Kankanhalli, Tan and Wei (2005)	Technology Acceptance Model Theory of Planned Behaviour	Techno-psychological Psychological
Sharma and Bock (2005)	Decomposed Theory of Planned Behaviour	Psychological
Watson and Hewett (2006)	Expectancy Theory	Psychological
Bock, Kankanhalli and Sharma (2006)	Social Capital Theory Social Exchange Theory	Social Social

	Decomposed Theory of Planned Behaviour	Psychological
Desouza, Awazu and Wan (2006)	-	
He and Wei (2009)	Theory of Reasoned Action Theory of Planned Behaviour Unified Theory of Acceptance and Use of Technology	Psychological Psychological Techno-psychological
Tsai, Zhu, Ho and Wu (2010)	Technology Acceptance Model 3 Social Capital Theory	Techno-psychological Social

We propose the development of a model that combines factors from three identified influencing areas: social, technological and psychological. For the development of the model, we reviewed the influencing factors presented in the models of the seven literature papers and we proceeded as follows:

1. Identify duplicated factors with the same denomination and consider them only once.
2. Group similar factors taking into consideration their definitions (e.g. "organizational support" and "resource availability" were grouped under "facilitating conditions").
3. Eliminate factors which influence has not been validated in the original source (e.g. "knowledge growth"). If the factor influence was validated in one source, but not in others, the factor is also considered.

Thus, we came up with 16 influencing factors. The factors and their sources, as well as the validation of their influences in the reviewed literature are presented in Figure 7.

Looking at the rows, it can be observed that the most complete models are proposed by Sharma and Bock (2005) and Tsai, Zhu, Ho and Wu (2010), since they are the ones that include a larger number of factors. Furthermore, most of their hypotheses are fulfilled, and that is why these papers are the ones that provide a larger number of relevant factors to develop our model.

Looking at the columns, the factors that most authors take into account are facilitating conditions, perceived ease of use and perceived usefulness. While facilitating conditions and perceived usefulness are always shown in all the papers as relevant, perceived ease of use does not fulfil the hypotheses in half of the papers. It is consistent with the results of the technology acceptance model study, where it is showed that perceived usefulness was the principal driver of intention while perceived ease of use proved less influential (Davis, 1989).

Habit only appears as a factor in one of the papers. But it is indirectly mentioned in several of them and will be treated as one of the most relevant factors influencing knowledge reuse. The lack of consideration of this term as a factor can be due to the fact that it does not appear in any of the theories on which are based the papers to extract their factors, since habit is not considered as behaviour but an automatic response. As it is argued by He and Wei (2009); "The more usage is performed out of habit, the less intentional behaviour is involved".

		INFLUENCING FACTORS															
✓ Influence validated in empirical study ✗ Influence discarded in empirical study		Attitude Toward Behavior	Collaborative Norms	Facilitating Conditions	Habit	Perceived Behavioral Control	Perceived Ease of Use	Perceived Enjoyment	Perceived Information Asymmetry	Perceived Output Quality	Perceived Relative Advantage	Perceived Relative Risk	Perceived Usefulness	Self-Efficacy	Social Relationship	Subjective Norm	Trust
SELECTED PUBLICATIONS	Kankanhalli, Tan & Wei (2005)		✗	✓			✗			✓	✓						
	Sharma & Bock (2005)	✓	✓	✓		✓	✗		✓				✓	✓			✓
	Watson & Hewett (2006)			✓			✓						✓	✗			✗
	Bock, Kankanhalli & Sharma (2006)		✓	✓			✗						✓	✓			
	Desouza, Awazu & Wan (2006)						✓				✓	✓					✗
	He & Wei (2009)			✓	✓		✓				✗		✓		✓		
	Tsai, Zhu, Ho & Wu (2010)	✓		✓			✓	✓		✗			✓			✓	✓

Figure 7 Influencing factors considered in the selected publications.

Just like with the theories, we assigned the psychological, techno-psychological and social categories to the factors. All factors were allocated in one of these categories, except of the habit, which was considered as not belonging to any of them. As it is shown in Figure 8, the three categories indirectly affect the behaviour through the intention, except of the habit, which affects directly the behaviour, which is also a direct function of intention.

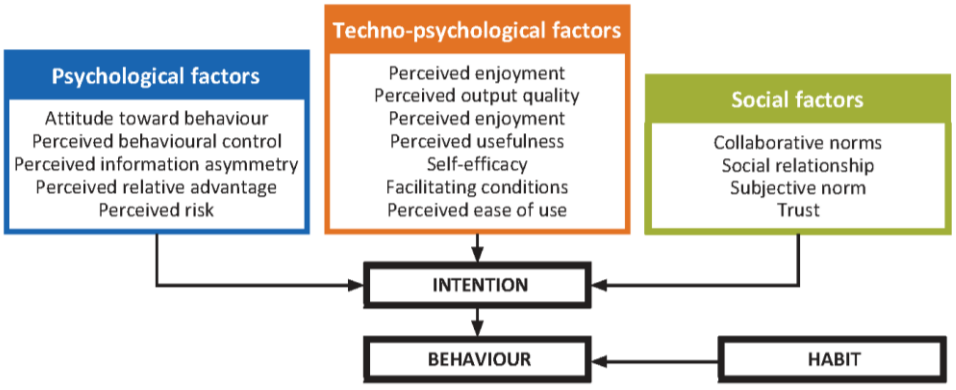

Figure 8 Classification of factors into categories.

The theory of planned behaviour and the technology acceptance model are the core model of their correspondent categories. Therefore, we used these models as reference to allocate the influencing factors. Figure 9 shows the proposed model to represent individual factors influencing the initiation of knowledge seeking.

In our case, the behaviour is the initiation of knowledge seeking, i.e. the process of searching in the electronic knowledge repositories (EKR) of the company.

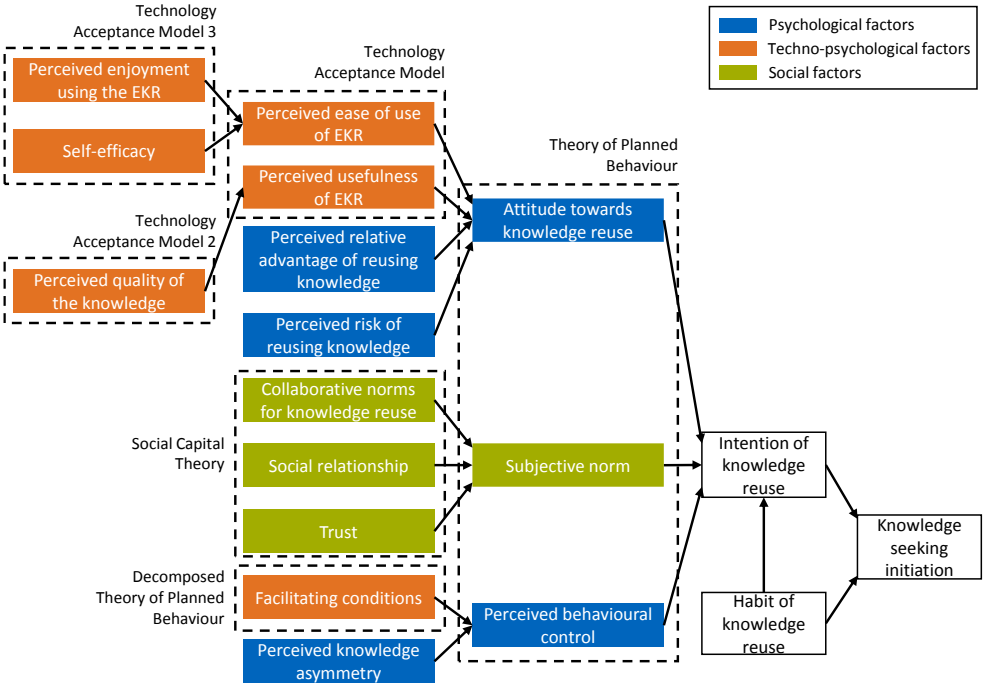

Figure 9 Model of individual factors influencing the initiation of knowledge seeking.

Based on the theory of planned behaviour, all the factors -except habit- are related to the intention through the attitude toward behaviour (attitude towards knowledge reuse), subjective norm and perceived behavioural control, so the combined effect of these three factors determine the individual intention to initiate knowledge seeking.

The model also adopts the factors of perceived ease of use and perceived usefulness from the technology acceptance model. In this particular case they are described as perceived ease of use of EKR and perceived usefulness of the EKR. They are considered determinants of the **attitude towards knowledge reuse** together with perceived relative advantage of reusing knowledge and perceived risk of reusing knowledge.

- **Perceived relative advantage of reusing knowledge** is "the gain one receives from accepting a new idea or innovation over what was previously conducted" (Desouza, Awazu & Wan, 2006, p. 39).
- **Perceived risk of reusing knowledge** is the feeling of uncertainty regarding possible negative consequences of using knowledge management systems (own definition based on Featherman & Pavlou, 2003).

At the same time, perceived output quality is included in the model as an antecedent of **perceived usefulness of EKR**, and perceived enjoyment and self-efficacy as predecessors of **perceived ease of use of EKR**.

- **Perceived quality of the knowledge** is the quality of the knowledge delivered by the system (own definition based on Tsai, Zhu, Ho & Wu, 2010). "Key dimensions of perceived output quality are the relevance, reliability, and timeliness of knowledge embedded in the output" (Kankanhalli, Tan & Wei, 2005, p. 1158). The quality can refer to the knowledge itself and how good it is documented, or it

can refer to the ability of the system to provide the right knowledge for the user's situation.

- **Perceived enjoyment using the EKR** is "the extent to which the activity of using a specific system is perceived to be enjoyable in its own right, aside from any performance consequences resulting from system use" (Venkatesh, 2000, p. 351).
- **Self-efficacy** is one's belief about his or her ability to perform a specific task using a computer (own definition based on Compeau & Higgins, 1995).

If designers perceive that they will be able to easily obtain useful knowledge that can enable them to accomplish their task more effectively, they are likely to be motivated to reuse knowledge from the system.

Subjective norm is influenced only by social factors presented in the Social Capital Theory. In this category are included collaborative norms, social relationship and trust.

- **Collaborative norms** is the degree of consensus in the social system, when the actions of people are influenced by the unified beliefs of the community to which they belong (own definition based on Kankanhalli, Tan & Wei, 2005).
- **Social relationship** is "an individual's perception of other knowledge management system's users with whom the person has social interactions" (He & Wei, 2009, p. 829).
- **Trust** is the extent to which a person believes in the good intent, competence and reliability of others (own definition based on Tsai, Zhu, Ho & Wu, 2010).

The actions of an individual are influenced by the unified beliefs of the members in the company. If people around are used to reusing knowledge and there is a culture in the organization that promotes it, the employee will see knowledge reuse as a regular practice and will be more likely to do the same and reuse knowledge.

Perceived behavioural control is determined by the factors of facilitating conditions and perceived knowledge asymmetry.

- **Facilitating conditions** "reflects the availability of resources needed to engage in a behaviour" (Taylor & Todd, 2005, p. 150). "Required resources that are likely to facilitate technology usage include time, availability of technology, training, and management support" (Bock, Kankanhalli & Sharma, 2006, p. 361).
- **Perceived knowledge asymmetry** is "an individual's belief regarding their lack of information about the knowledge sought from the EKR" (Sharma & Bock, 2005, p. 10).

Both in the theory of planned behaviour and in the technology acceptance model, **intention** is defined as the only immediate antecedent of **behaviour**. But in this model, also habit is included in the model and presented as another determinant of behaviour. Therefore, behaviour is, according with this model, partly a function of the behavioural intention and partly of the frequency of past behaviour.

- **Habit** is "a recurrent, often unconscious pattern of behaviour that is acquired through frequent repetition" (The American Heritage Dictionary of the English Language, 2011, p. 787).

Discussion: significance of the new model for the Knowledge Reuse Cycle

The identification of the facilitators and inhibitors from an individual's perspective is a key to understand the requirements for improved methods of knowledge management that support more extensive and efficient knowledge reuse. The proposed model provides an overview of which factors related to human behaviour should be taken into account in order to increase the initiation of the knowledge seeking, which will lead in the increase of the knowledge reuse.

The model has not been empirically validated, but we defend its validity, since it is based on a synthesis of empirically validated models. Furthermore, we do not attempt to have developed the ultimate model, but we see the model as a practical tool which shows a wide number of factors and which can be used as a base for the individual analysis of different individuals in different companies, which will be influenced by different factors of the model.

The presented influencing factors can be associated to the stages of the Knowledge Reuse Cycle. Taking into account the factors considered in the new model, guidelines to prepare the stages of the cycle can be derived.

As preparation the stage "Packaging", the factor perceived ease of use of EKR is of high relevance. It can be guaranteed structuring the knowledge base in a comprehensible and organized form. Furthermore, the system should be stable, robust and available whenever it is needed, so that all the employees trust in the system and its reliability.

For the stage "Capturing and documenting", it is important to take into account the factors perceived ease of use of EKR and perceived usefulness of EKR. Perceived ease of use of EKR can be enhanced by encouraging the employees to contribute to the process of filling the knowledge base with their own knowledge. This way, they will feel more satisfied and confident, which is positively related to perceived enjoyment of using the EKR, and also more comfortable using the system, which is positively related to self-efficacy. Perceived usefulness of EKR can also be intensified by ensuring that the output from the knowledge repository has a certain quality degree (increasing the factor perceived quality of the knowledge), trying to avoid the possible high quantity of outdated knowledge and by exercising strict quality controls. To assure the right update of the knowledge base by the employees it is also necessary to include the factor habit. To promote this, it is relevant to provide enough slack time and to avoid time pressure. To achieve this goal a measure that can be carried out is to integrate the update of the knowledge base in regular work practices, in a way that the time required to contribute with knowledge to the system can be built into daily work schedules.

The stage of "Reusing" is highly affected by facilitating conditions, that can be fostered through correctly and clearly defining the design situations. The number of design situations and types of knowledge in each reuse situation should be adequately dimensioned in order not to complicate and expand the time spent on the process. They also must be adapted to all the employees in the company to capture the particular circumstances of each one. Furthermore, perceived ease of use of EKR should be increased, making the system easy to access, because employees will use them if they perceive that they will be able to easily obtain useful knowledge from them. In addition, if employees believe that the output from the knowledge base is of high quality, in terms of relevancy, reliability and time, they will be willing to reuse knowledge from the system and it will affect perceived usefulness positively. The goal is to increase the perceived relative advantage of reusing knowledge and to reduce the perceived risks. Possible

perceived risks should be individually analysed and the means for overcoming such perceived risks for employees should be implemented.

In order to support the stage “Distributing” the social factors can be intensified by fostering the social ties between the employees within the organization; it will induce them to trust more not only their co-workers, but also the quality of the knowledge stored in the system reducing the perceived information asymmetry. Also the habit is here important because if employees are used to reuse knowledge, other co-workers unfamiliar with the usage of the knowledge base will be positively influenced in this practice and the likelihood of them using the system will increment. Facilitating conditions could be enhanced by management support, training and time availability, in order to inform employees about how to use efficiently the knowledge base, to provide the sufficient time to access and retrieve information and the benefits of reusing the knowledge stored.

Conclusion and further work

The main reason for individuals to be the centre of attention of knowledge management initiatives is that knowledge is not only originated by them, but also used by them. However, the factors influencing the designers’ decision towards the reuse of documented knowledge have not been extensively analysed.

The proposed model gives a clear overview of which factors related to individuals should be taken into account to increase the initiation of knowledge seeking during product design. Above all, it identifies the habit as the main factor influencing knowledge seeking behaviour. Secondly, it reveals the importance of the psychological and techno-psychological factors, highlighting the relevance of perceived ease of use, perceived usefulness and facilitating conditions, composed by management support, time availability and training. While social factors of collaborative norms, social relationship and trust appear as factors less relevant. By paying more attention to these factors in the design of the knowledge management systems in organizations, they will be able to obtain more benefits from knowledge reuse, a process that is becoming more important for firms in the growing number of companies related to engineering design.

Some limitations of the presented work, which derive in suggestions for further work, should be discussed. Firstly, the theories used to construct the model consider the individual’s behaviour as rationally intended. Factors other than those prescribed by these theories may also affect human decisions to use knowledge management systems. Although habit has already been included in our model in order to fulfil this concept, it is not the only factor, but there are more characteristics that contemplate this irrationality and inherent component. These characteristics could be examined in future research and also included in the model considering that being negligible does not mean being non-existent. Secondly, for the success of knowledge transfer via knowledge management systems it is needed a combination of creating knowledge in the system and using the knowledge from the system to reuse it. In the study proposed by Watson and Hewett (2006), it is argued that knowledge contribution and knowledge reuse are two very different types of behaviour, and thus they should be studied separately. In this thesis we have focused only on the intention of reusing, not including knowledge contribution or the reuse itself. In order to obtain an integrated view of knowledge sharing through

knowledge management systems, knowledge contribution and the process of reusing should also be studied.

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