THE EFFECTS OF COMMUNITIES OF PRACTICE ON THE SUCCESS OF AN EXPERT RECOMMENDING SERVICE

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Abstract

This article presents an explorative study of the impact of Communities of Practice (CoPs) on the success of a certain category of Knowledge Management Systems, hereafter called Expert Recommender Information Systems. They regroup Information Systems that identify and display individuals who have been qualified by the system as experts, and who are in a position to help users solve problems involving a business process breakdown. Rather than focusing on the Expert Recommending Information System itself, the author concentrates on the service it delivers, the Expert Recommending Service (ERS). Using multiple case study research, five different organizations were investigated, essentially in order to identify how CoPs influence the success of their ERS.

Keywords: IS success, Communities of Practice, Expert Recommending Services, Experts.

1 INTRODUCTION

In a research area where Communities of Practice (CoPs), Information Systems (IS) and Knowledge Management (KM) are inclined to overlap, this study focuses on the specific type of Knowledge Management Systems that identify and display individuals who are considered to be owners of specialized knowledge that is otherwise difficult to access (Alavi & Leidner, 2001). In line with previous research (Yimam-Seid & Kobsa, 2000), the author calls this type of IS: Expert Recommender Systems. Nowadays, ERS are an increasingly important component of any IS and can be found embedded in the functionalities of human resource or knowledge management systems.

Several forces at both organizational and inter-organizational level are compelling firms to rely heavily on "nomadic" and distributed workforces that are loosely tied to the organization. To mention but a few, globalization, high personnel turnover, the number and geographical distribution of employees, make it more and more difficult to ascertain - in a timely fashion - where the expertise required for a given task can be sourced.

In this research, the author studies the Expert Recommender Information System as a service. Instead of focusing on the computer-based system itself, the author concentrates on the service it delivers, the Expert Recommending Service (ERS). This focus is deemed appropriate when the knowledge expected from the expert is only partially formulated or expressed. The specific need will only be completely formulated upon interaction (Allison, Cerri, Ritrovato, & Gaeta, 2005; Jonquet & Cerri, 2005; Spohrer & Riecken, 2006). To this effect, and looking from a service perspective, the scope of this research study also encompasses information systems whose ERS is delivered without any computer-based support, i.e. by a specific department or by members of the CoP themselves.

The main objective of this article is hence to identify the different dimensions of ERS success and examine the effects CoPs have on that success. The author thus endeavours to cast new light on the levers that would improve the success of ERS. More generally, this study also contributes to the understanding of the role of certain social factors in the success of IS supporting KM.

The article will begin by presenting the theoretical foundations of the three key concepts: ERS, IS success and CoP. It will then proceed to describe the research model, which observes the three concepts in operation, and outline the research method. The data collected from the five case studies will then be analyzed, and the results presented. The evidence emerging from this empirical study will finally be discussed in an aim to finalize validation of the research model.

2 THEORETICAL FOUNDATIONS

Since the study focuses on three concepts, namely (1) the ERS, (2) IS success, (3) the CoP, the paragraph below presents the theoretical foundations of each.

2.1 ERS

Among the wide range of Knowledge Management Systems, ERS address knowledge transfer between individuals. Its specificity lies in its capacity to improve individual awareness by displaying the knowledge domains of other individuals (Yimam-Seid & Kobsa, 2000).

Although the awareness barriers to knowledge transfer and the dimensions of this awareness have already been studied (Baumann & Bonner, 2004; Borgatti & Cross, 2003), the links between that awareness, Knowledge Management Systems and CoPs remain to be explored. In fact, being aware of the individuals who could be a source of specialized knowledge, i.e. knowing what other members of the community know, is tantamount to seeking out a specific individual when specialized knowledge is needed. The ERS can heighten awareness of this knowledge by identifying and displaying a small

subset of hand-picked individuals, who, to a certain extent, are reputed to have the specialized knowledge needed by the potential recipient (Yimam-Seid & Kobsa, 2000).

Finally, this research will cover varying degrees of formalization in ERS (Martinez, 2004): informal ERS, formal ERS, paper-based ERS, and computer-based ERS, since previous research has shown that both informal and formal IS can supply ERS (Lesser & Strock, 2004; O'Dell & Grayson, 1998).

2.2 Communities of Practice

Within this study and in accordance with the literature reviewed by Cox (Cox, 2004), the term "Community of Practice" is used in the following sense: a group of individuals that share a common practice, work, or interest as common knowledge, for the integration and transfer of specialized knowledge among the group's members.

Different mechanisms are proposed in the literature for the integration and transfer of knowledge (J. S. Brown & Duguid, 1991; Grant, 1996; Levitt & March, 1988; Nonaka, 1994; J. D. Thompson, 1967; Van de Ven, Delbecq, & Koenig, 1976). Among them, CoPs seem especially effective in more dynamic, complex and uncertain contexts (Boland & Tenkasi, 1995; Grant, 1996; Hasan & Gould, 2001). Knowledge redundancy, which is necessary for the integration and transfer of specialized knowledge, is based on this common practice, work or interest of the members (J. S. Brown & Duguid, 1991).

CoPs seem to impact Knowledge Management in several ways and, as proposed by Wenger (E. C. Wenger, Mc Dermott, & Snyder, 2002), they can be exploited to fulfill organizational aims. It therefore seems logical to observe that certain organizations support CoPs by providing resources and infrastructures, e.g. ERS, in an effort to circumvent obstacles to knowledge transfer and knowledge integration (Lesser & Strock, 2004; O'Dell & Grayson, 1998; E. C. Wenger, Mc Dermott, & Snyder, 2002).

2.3 IS Success

The topic of ERS success belongs to a much broader issue relating to the success of Information Systems as a whole. IS success is widely debated in the IS academic community (Briggs, De Vreede, Nunamaker, & Sprague, 2003; Rai, Lang, & Welker, 2002) and is conventionally described as the degree to which the stakeholders benefit from IS (W.H. DeLone & McLean, 1992).

The methods for measuring IS success differ depending on the various stakeholders involved in the IS, which implies that the stakeholders' perspectives must also be defined and considered when measuring IS success (Briggs, De Vreede, Nunamaker, & Sprague, 2003). In this study, we refer to stakeholders as being the members of the same Community of Practice who have access to an ERS: it is from their perspective that the success of the ERS will be assessed.

In addition and depending on the perspective, the notion of success can involve several dimensions. So these different dimensions have to be taken into account in order to present a multi-dimensional vision of success (Briggs, De Vreede, Nunamaker, & Sprague, 2003).

3 RESEARCH MODEL

Leveraging the theoretical foundations presented above, the author has developed a research model which hypothesizes that the characteristics of CoPs influence the Success of ERS (Figure 1).

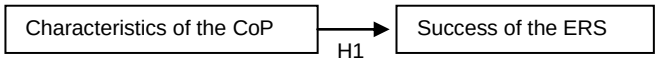

Figure 1 The research model

These two variables will be described in the paragraphs below.

3.1 Characteristics of Community of Practice

The characterization of Community of Practice is based on an extensive literature review (Agresti, 2003; Andriessen, 2005; Botkin, 1999; John Seely Brown & Duguid, 2001; Collison, 1999; Ferran-Urdaneta, 1999; Koeglreiter, Smith, & Torlina, 2006; Maier, 2002; Ruuska & Vartiainen, 2003; Stein, 2005; Storck & Hill, 2000; E.C. Wenger & Snyder, 2000). The characteristics listed in the literature have been homogenized and synthesized resulting in a 13-dimension construct reported hereafter.

1. Lifetime: the time of existence of the CoPs.
2. Size: the number of individuals participating in the CoP.
3. Composition: the proportion of common knowledge among members.
4. Fragmentation: the superposition or intersection with other CoPs.
5. Geographical dispersion: the geographical localization of the members.
6. Mode of interaction: the communication means used for interaction.
7. Degree of interconnection: the proportion of one-to-one, many-to-many interactions.
8. Frequency of interaction: the number of interactions throughout time
9. Anonymity: the degree of visibility of the identity of the other members.
10. Openness: the restriction for joining or leaving the CoP.
11. Purpose: the individual and collective objectives of the CoPs.
12. Cohesion: the feeling of members about the existence of the CoP and their sense of membership.
13. Degree of governance: the extent to which the CoP is influenced by an external organization.

3.2 Success of the ERS

The IS research community has developed different theories and models on IS success. In this study different theories and models of IS success (F. Davis, Bagozzi, & Warshaw, 1989; W.H. DeLone & McLean, 1992; Seddon, 1997) and KMS success (Bots & de Bruiin, 2002; Lindsey, 2002; Massey, Montoya-Weiss, & O'Driscoll, 2002) were reviewed in order to select the most appropriate to describe the success of ERS.

The model had to apply to volitional computer-based, paper-based ERS and informal ERS. Therefore it has to be applicable to: (1) volitional contexts; (2) computer-based, paper-based, and informal IS; (3) IS services. This analysis pointed toward the DeLone and McLean's IS Success Model, developed in 1992 and refined in 2003 (W.H. DeLone & McLean, 1992; William H. DeLone & McLean, 2003) as the most suitable model, since it satisfies the three upper-mentioned constraints. The model was applied to volitional IS contexts (Rai, Lang, & Welker, 2002), and to IS departments, in charge of delivering information by means of computer-based, formal paper-based and informal IS (Jennex, 2005; Pitt, Watson, & Kavan, 1995). Finally, Service Quality has been included in the model (William H. DeLone & McLean, 2003; Jennex, 2005; Pitt, Watson, & Kavan, 1995), as a multidimensional variable concerning the reliability, responsiveness, assurance and empathy (Jiang, Klein, & Carr, 2002), making the model also applicable to IS services (Figure 2).

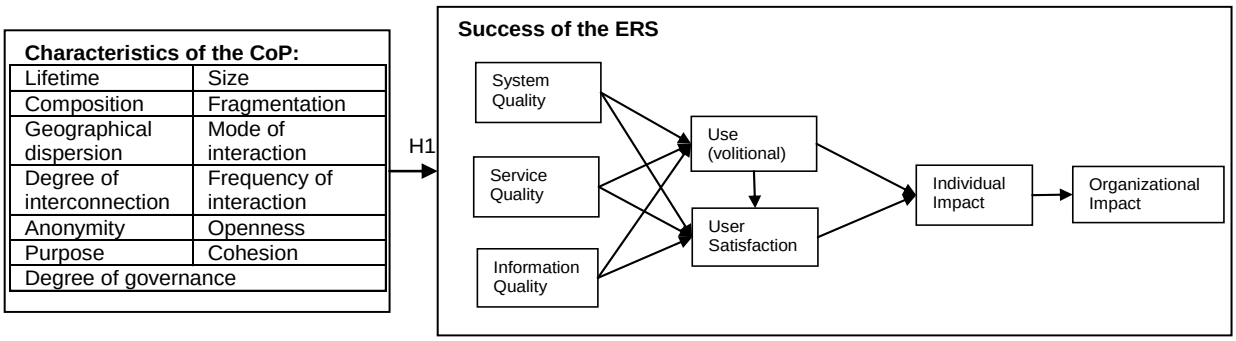

Figure 2 The detailed research model based on DeLone and McLean model of IS success (W.H. DeLone & McLean, 1992; William H. DeLone & McLean, 2003)

4 RESEARCH METHOD

4.1 Approach

Little research in IS discipline has been conducted on the implications of social networks with regard to social network technologies within organizations, and even less can be found on the specific effects of CoP on KM technologies. This state of affairs prompted the author to conduct an explorative qualitative study on the characteristics of ERS and CoPs, as well as the various dimensions of ERS success and their interrelationships.

Among the types of qualitative research methods accepted in IS, the case study research method was chosen, using selection criteria proposed by Wood (Wood, Daly, Miller, & Roper, 1999), essentially due to its potential for theory generation (Myers, 2004) and its suitability for contemporary phenomenon, within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident (Yin, 2002). Moreover, multiple case design was applied in accordance with Yin's discussion on theoretical sampling (Yin, 2002) and using Eisenhardt's discussion on theoretical saturation as guidance for case sample size (Eisenhardt, 1989).

In this research, the unit of analysis (Yin, 2002) of the case study was the organization, with its ERS and its CoP. The cases were analyzed by collecting primary and secondary data. Primary data sources were interviews, direct observation and informal discussions. Secondary data sources were mainly the output documents of the organizational IS.

In collaboration with an internal referee in each organization, potential interviewees were identified and contacted in view of conducting semi-structured interviews (Emory, 1980; Kerlinger, 1964).

The beforehand drafted interview guide listed the main themes to discuss with each interviewee and at the beginning of each interview an introduction on its reason and its object has been performed, in order to reduce the researcher effects, which biases the data collection (Darke, Shanks, & Broadbent, 1998; Miles & Huberman, 1994).

The main aims of these interviews were to obtain a maximum level of heterogeneity between the interviewees and to explore the convergence of information resulting from the different sources (Yin, 1994). In each organization, a sample of different members of the CoP, who were potential users of the ERS, were interviewed. Officers of both the ERS and the organization were interviewed in order to improve the heterogeneity of the sample, which totalized 35 interviewees. The semi-structured interviews explored the role of the interviewee within the organization, the characteristics of the social networks, and more specifically of the CoP, and the success, benefits and limitations of ERS.

The qualitative data produced by the interviews was recorded and integrally transcribed, following conventions proposed by Silverman (Silverman, 1997). These transcripts, the field notes on the direct observations and the collected secondary data were archived in a repository.

Each transcript was then analyzed and cross-matched with accounts of other interviews in order to use the content of one interview as a source of questions for the next (Miles & Huberman, 1994). For the data analysis and interpretation, the author assumed that interview data gives access to facts about the world (Silverman, 1993 pages 90-91) and chose the thematic content analysis method (Berelson, 1952) to understand transcripts. This method requires the definition of a set of themes and sub-themes of analysis and the transcript sentences are referred to one or more defined themes. The premise of content analysis is that the spoken repetition of some units of analysis (such as words, phrases, sentences or paragraphs) highlights the centers of interest and the opinions of the speakers. The author defined the analysis units as sentences, parts of sentences or groups of sentences and then grouped them together based on their relation to CoP and ERS success. During the course of the interviews, the list of themes and sub-themes was refined and modified to include emerging elements, as described in the Results section. As soon as the analysis revealed the saturation and repetition of the same themes, interviews ceased to be scheduled (Silverman, 1997).

The coding system followed a descriptive codification approach, and the codes of the second level further specified first level codes. The two first level codes comprised the two main themes, the characteristics of the CoPs and the success of the ERS. The 13 characteristics of CoPs resulting from the literature review constituted the second level codes for the CoP main theme. The 7 dimensions of IS success proposed by DeLone and McLean in their IS success model, were the second level codes for the ERS success main theme.

A computer-aided qualitative data analysis system was needed to support codification and analysis. Based on some personal tests and on the review of Lewins (Lewins & Christina, 2005), ResearchWare© HyperRESEARCH™ was chosen because of its user-friendliness and its flexibility in building reports.

The repetition of the same questions in the interviews, the formal data collection tools and methods and the repetition of the same themes all contributed in substantiating the validity, reliability and assessment of generalizability of the findings.

4.2 Cases

The empirical research was conducted in various different contexts following specifications for multiple-case studies proposed by Yin (Yin, 2002). This research aimed to explore ERS, CoPs and their relationships with the Success of ERS, in contrasting situations. Hence, five heterogeneous cases (respectively identified herafter as NSS, MM, FST, BESR, and ESCC) with contrasting characteristics were deliberately selected.

Name	***Business***	***Global revenue***	***Personnel***
NSS	Italian subsidiary of a multinational corporation that provides Information Technology services and solutions worldwide.	$5800 million in 2005	Corporation: 37.000, worldwide. Subsidiary: 550, distributed in three locations
MM	Consortium in the making, composed of three business schools located in the same French town with their respective research centers in Management	Not relevant	110 PhD students, and 100 PhDs, distributed among the three business schools
FST	Italian subsidiary of a multinational corporation that	€1400	Corporation: 10.000,

	provides pneumatic products, solutions, and services worldwide	million in 2005	worldwide. Subsidiary: 180, distributed in five locations
BESR	Research department of a multinational corporation that develops, produces and sells small household appliances	€2600 million in 2005	Corporation; 14.000, worldwide. Department: 150 researchers, distributed in different sites
ESCC	Hotline and technical assistance department of a multinational corporation which operates in the electricity industry	€12000 million in 2005	Corporation: 90.000, worldwide Department: 100, distributed in ten different sites

Table 1 The organizations of the 5 cases

5 RESULTS

The proposed research model (Figure 2) was explored by cross-analyzing data collected from the five cases. The main results are presented in this article and focus on the description of the CoPs and their relationship with ERS success. A comparison of the cases highlights distinctions between the characteristics of the CoPs and their relationships to ERS success.

5.1.1 Characteristics of the CoPs

The comparison of the CoPs highlighted their heterogeneousness with regard to the 13 reviewed characteristics. The main commonality among the five CoPs resides in their partial overlap with the formal structure of the five hosting organizations. Several characteristics of the CoPs are influenced by this overlap. In particular, the composition of the sub-communities of the five principal CoPs mirrors the composition of the formal groups defined by the management of the five organizations. Being members of the same formal unit seems to be the main variable that determines membership to a sub-community. Nevertheless, being assigned to a job is not the only way to get involved in a CoP. During their working activities, the employees gradually and spontaneously develop new links that circumvent formal structures.

However, the development of these spontaneous links is not always supported by the management and is not always successful. In MM, the directors and deans promote, through several public initiatives and communications, the creation and formalization of the CoP, but the autonomy of its members is so vast that the characteristics of the CoP are consequently determined autonomously by its members. Also, both NSS and BESR, by facilitating information sharing and knowledge transfer through meetings and presentations, successfully support the creation of CoPs and sub-communities that overlap the organizational structure and strengthen relationships between colleagues, in an effort to obtain a more efficient and effective organization. In FST, the sub-communities are formed around the professional activities of the employees, similar to NSS' sub-communities but, in this case, the organization does not provide incentives for their creation, because they are considered to be a risk factor for organizational effectiveness, in so far as personal conflicts could endanger an otherwise smooth business process. Finally, in ESCC, the sub-communities naturally emerge in each site and there are no organizational initiatives supporting the development of inter-site relationships.

The heterogeneous characteristics of the five organizations, the partial overlapping of the CoPs with formal structures and the degree of governance of the hosting organizations have a direct impact on all the other characteristics of the CoPs. However, they are not analytically described here since they do not appear to exert a direct influence over ERS success, with the exception of Anonymity, which is reported hereafter.

5.1.2 The relationship between CoP characteristics and ERS success

Across the five cases and among the 13 characteristics of the CoP, a grounded relationship between the CoP and the success of the ERS seems to exist through Anonymity. In particular, the component of the Anonymity variable named *Knowledge of the Others* by Pinsonneault and Heppel (Pinsonneault & Heppel, 1997-8) emerged as the most important CoP property influencing ERS success. It measures the degree to which people know each other. In the ERS context, Knowledge of the Others is specifically related to the knowledge of the others' knowledge domains. This means that this variable measures the degree of awareness of the knowledge domains of other members of the CoP.

The relation between the Knowledge of the Others and the success of the ERS is not well established in the literature. Wilson (Wilson, 1995), Hertzum and Pejtersen (Hertzum & Pejtersen, 2000) suggest that people searching for knowledge commonly explore their personal contacts, prior to using formal sources. These personal contacts are determined by the trust they feel toward others and by the knowledge held by others (Koeglreiter, Smith, & Torlina, 2006). Markus (Markus, 2001) affirms that some differences exist in the selection of the experts due to the different characteristics of the individuals and Knowledge of the Others could be one of those characteristics.

In NSS, FST, ESCC, BESR and MM, Knowledge of the Others is the CoP's characteristic that influences the ERS success the most, as clearly and explicitly expressed by several interviewees.

"I ask for expert recommendation to the colleagues who I acknowledge, I am confident with and I know that I can easily get it from them."

"It is necessary, to ask for experts or information, the presence of an informal organization…a network of informal knowledge of the others"

"The ERS is demanded and provided as individuals have knowledge of the others"

"I know all the colleagues who are in charge of the other businesses… and therefore I ask them to find the available experts I am looking for among their subordinates …The team's spirit, between us, is strong, therefore as soon as I need an expert I ask my colleagues."

On the opposite, individuals who do not have knowledge of the others have a sense of being constrained on the use of the ERS, dissatisfaction and a lack of appreciation of this service:

"I feel uncomfortable to ask for expert recommendation to anyone I do not personally know."

"If we do not know the people, the ERS does not work"

"I know the colleagues here, so I ask them for expert recommendation. On the opposite I do not know my colleagues in the other sites, and as consequence I do not ask them for help."

"I think that affinity, knowledge and familiarity are the points that influence my search for experts. It's easier for me to ask someone I know than to ask a PhD student I don't know."

"These tools help us, but, at the end, the difference is made by the knowledge relationship and the credibility you build day by day with the colleagues".

Across the five cases, this influence has been repeatedly observed with a similar pattern. Some members, of each organization, declared to be aware of the knowledge domains of the others, while fellow members affirmed to largely ignore the knowledge domains of their colleagues. The members who seemed more aware appeared to be those who positively evaluated and used the ERS. The members with less awareness emerged as individuals who considered the ERS useless.

In particular, the aspects of ERS success that seemed to be directly affected by the Knowledge of the Others were the decision to use ERS, the appreciation of the quality of ERS and the satisfaction provided by the ERS used.

Beyond Knowledge of the Others, the presence of a well-established CoP stimulates demand for ERS provision, but all the other characteristics of the CoP seemed to have far less impact on ERS success and this result emerged with regularity in the five cases. It is therefore inferred that the relationship between CoP characteristics and ERS success, can be circumscribed by the relationship between Knowledge of the Others and ERS success.

6 DISCUSSION

These results prompt discussion on the success of ERS and on the effects of CoPs on ERS success; discussion which, in turn, contributes to a broader exploration of the effects of social networks on social network technologies.

Knowledge of the Others appears to be the predominant characteristic of the CoP influencing ERS success. *Service Quality*, *Use* and *User Satisfaction* are dimensions of ERS success that are particularly influenced by Knowledge of the Others. The CoPs, characterized by different levels of Knowledge of the Others, influence the way the ERS is requested and provided, and, definitively, impact the success of the ERS. The study shows that the first members, whom the knowledge seeker asks, are those that the seeker acknowledges. The people with whom the members share their offices and with whom the members have a longstanding relationship are the main providers of the ERS. From another point of view, this outcome highlights the presence of a barrier to asking for the provision of an ERS, and more generally, to asking for help from members about whom the seeker has little or no knowledge.

Secondly, users show different appreciations of the informal and the computer-based ERS, but they use both of them sometimes complementarily and sometimes together. This proves the correctness of the approach used in this study, where the ERS success was evaluated irrespective of its implementation and regardless of whether the ERS was provided by other individuals or by a software application.These results show the importance of the social components for the success of the ERS. The existence of an informal ERS, in addition to the computer-based one, revealed the complementarity of technical and social factors on ERS success.

Moreover, the informal ERS and the computer-based ERS superpose each other. We did not find any strong evidence of a substitution process whereby the informal ERS benefits the computer-based ERS. The two solutions seem to coexist in a manner that recalls the “millefeuille” theory (ISAAC, KALIKA, & BOUKEF, 2007), observed for communication technologies in organizational contexts. This theory states the non-substitution between electronic communication and face to face communication, hence their superposition. The same was found to apply to ERS: the computer-based ERS does not substitute the informal ERS, hence the two are regularly used at the same time for the same objectives, by the same individuals.

Implications for practitioners

The observation concerning the informal ERS points towards some guidelines for the success of a computer-based ERS. The development of a computer-based ERS, reproducing the individual process of expert recommending, should increase the level of service, consistently with the results of the studies on product recommendations (Aksoy, Bloom, Lurie, & Cooil, 2006). It should also resolve some of the criticized aspects of the computer-based ERS, as highlighted by their users, such as: poor functionalities, low quality interfaces and scarce usability. The accessibility of the computer-based ERS could be extended to all the members, thus allowing them to choose the type of ERS they want to use and to prove to all the employees the usefulness of their data entry on their knowledge domains.

The study of the impact of CoPs offers further levers for ERS success. The results reaffirm the importance of social factors on ERS success, given the emergence of the variable Knowledge of the Others as the main aspect of the CoP’s influence on ERS success. Therefore, an extensive analysis of the characteristics of the CoP’s access to the ERS and a precise evaluation of the degree of awareness

about the knowledge domains of the others have to be accomplished prior to any intervention on the CoP.

The influence of CoPs on ERS success motivates interventions by organizations on the hosted CoP and particularly on the variable Knowledge of the Others. The improvement of Knowledge of the Others can be achieved in very different ways. For example, FST regularly pushes information about employees and their knowledge domains. Facilitating meetings and internal mobility of the employees are other practices used to enhance the Knowledge of the Others.

In general, as the characteristics of the CoP are strictly interwoven with one another, the modification of any characteristic of the CoP will have an impact on Knowledge of the Others. For example, changes in the organizational structure or in office locations could impact on the geographical dispersion of the CoP, and consequently, on the possibilities of meeting and of being acknowledged for certain knowledge domains by colleagues.

On one hand, there is a wide sample of instruments to improve Knowledge of the Others; on the other, the organization must be very careful not to over-disrupt the CoP and run the risk of it disappearing or losing its beneficial effects.

In conclusion, the CoP emerges as a fundamental social factor that must be taken into consideration to ensure the success of ERS, and we hypothesize a similar relationship in other social network technologies.

Implication for research

Firstly, the author has concluded that Service Quality is the dimension of ERS success that concisely represents all the characteristics of the ERS due to: the co-existence of informal and formal ERS and the consideration of the users as referent stakeholders. The same conclusion is supported by the large overlap between the perception of the interviewed users regarding Service Quality, System Quality and Information Quality: the end users evaluate the characteristics of the ERS quality predominantly by its service quality.

Second, among all possible "Organizational Impacts" (Mirani & Lederer, 1998), the ERS seems to have the main organizational impact on information access. By means of the ERS, the organization benefits from enhanced access to information about experts, and subsequently, improved access to information furnished by experts. So the general-purpose variable Organizational Impact can be fruitfully reformulated as Information Access Benefit.

Thirdly, when the user is considered as the referred stakeholder, the general definition of "Individual Impact" proposed by DeLone and McLean (W.H. DeLone & McLean, 1992) recalls the meaning of Perceived Usefulness proposed by Davis (F. D. Davis, 1989). So the general-purpose variable "Individual Impact" can be fruitfully reformulated as Perceived Usefulness for the user.

All these results lead to a refinement of the research model. This refined model is an adaptation and extension of the DeLone and McLean model (W.H. DeLone & McLean, 1992; William H. DeLone & McLean, 2003). The adaptation makes it consistent with the specific context of its application. The extension takes into account the influence of the CoP on ERS success, and the influence of the ERS on ERS success (Figure 3).

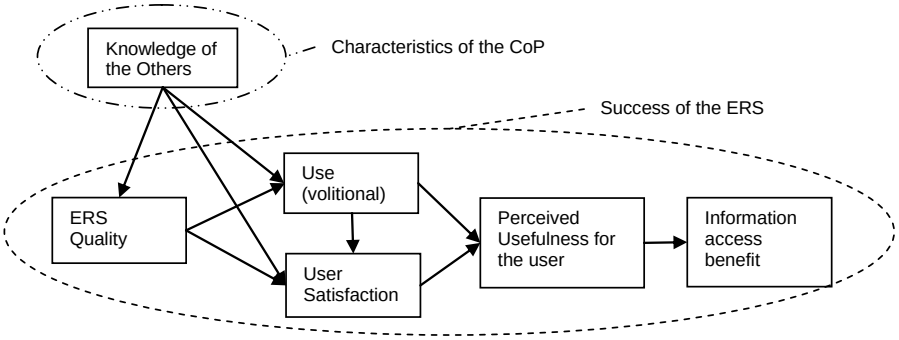

Figure 3 The success of the ERS and the impact of CoPs on ERS success based on the DeLone and McLean model of IS success (W.H. DeLone & McLean, 1992; William H. DeLone & McLean, 2003)

By referring to this refined research model, it is possible to highlight the variables influencing the success of the ERS and the importance of the social factor, namely the CoP, on the success of ERS.

CoP emerged as an important factor affecting the ERS success, but this research focused only on one specific characteristic of the CoP, i.e. the Knowledge of the Others. This focalization choice has been determined as Knowledge of the Others has emerged as the most influencing characteristics among the 13 initially explored. Nevertheless, the author is conscious that the success of the ERS is not exclusively determined by Knowledge of the Others. Other factors, and not exclusively social ones, impact on the ERS success. Nevertheless they have been excluded to keep the focus on the main identified one. Further research may be directed to study such factors, in order to achieve a more complete understanding of ERS success and its determinants.

7 CONCLUSIONS

First of all, this research highlights the heterogeneousness of CoPs with regard to the characteristics identified in the literature (Andriessen, 2005; Maier, 2002) and as proposed by several authors (Andriessen, 2005; M. Thompson, 2005). Moreover, this study also underlines the differences that exist among the ERS implemented in different organizations, as reported also by Adomavicius (Adomavicius & Tuzhilin, 2005), and Resnik (Resnick & Varian, 1997) for the recommender information systems they studied.

The central point of investigation has nevertheless been the exploration and emergence of the effects of CoPs on the Success of ERS. Seddon (Seddon, 1997) had already highlighted that the observations, personal experiences and reports of the consequences of IS use have an impact on IS success. If these observations, personal experiences and reports take place within a CoP, then the characteristics of this CoP can directly impact the success of the ERS. Moreover, the qualitative data shows that knowing other people, or specifically others' knowledge domains, is a crucial element that influences ERS success and a similar link between Knowledge of the Other and IS success has been measured by Pinsonneault (Pinsonneault & Heppel, 1997-8).

The complementary existence of computer-based and informal ERS, and the influence of CoP on ERS success largely illustrate the implication of social factors on IS success. So, organizations wishing to improve their ERS success should consider their CoPs accordingly. Moreover, the author suggests that similar attention should be paid to other Information Systems supporting Knowledge Management, as put forward by Wenger (E. C. Wenger, Mc Dermott, & Snyder, 2002).

Finally, in the five organizations, we initially perceived "the set of individual memory systems in combination with the communication that takes place between individuals", i.e. the transactive memory systems (Wegner, 1986), and their modifications caused by the introduction of the computer-

based ERS. A deeper analysis of the transactive memory system could bring a further understanding of the success of ERS.

The exploration of the transactive memory system and a statistical validation of the qualitative results are the two main research perspectives that would contribute to a further exploration of the effects of CoPs on ERS success and to the broader theme of the effects of social networks on social network technologies.

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