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Informal knowledge flows in open innovation: both a blessing and a curse?

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Abstract: Nowadays, many companies apply open innovation strategies and use different kinds of knowledge. Given this observation, the present study concentrates on an in-depth analysis of the importance of informal relations and knowledge transfer in open innovation processes. After a short review of the literature, we introduce action research, KMDL and online survey as our qualitative and quantitative research methods. Our work-in-progress paper includes qualitative results from the applied research project 'Open Innovation in Life Sciences'. The preliminary findings contribute to the current literature with new aspects of informal knowledge flows. On the basis of our results we show that informal knowledge exchange with external actors but also internally carries an immense potential which firms have so far not tapped sufficiently. Given the complexity and multifaceted nature of informal knowledge we conclude that appropriate communication and knowledge management strategies need to be developed in the next step.

Keywords: Open innovation, Knowledge Modeling and Description Language (KMDL), informal knowledge, SME, life sciences.

1 Introduction

At the end of the last century the closed innovation paradigm era came to an end due to various factors [1,2]. Chesbrough responded with the term 'Open innovation', which represents an eclectic approach regarding the opening up of innovation processes. In this context, constructing successful relations with external actors turns out to be both a promising opportunity and a big challenge for companies, SMEs in particular [3]. Although the underlying external and internal informal relations play a decisive role in such open innovation processes, especially during the generation and development of ideas, these aspects have not yet been adequately investigated.

The aim of the paper, therefore, is to evaluate the importance of informal relations and knowledge transfer in open innovation processes. This study is an integral part of the applied research project 'Open Innovation in Life Sciences' at the University of Potsdam together with three German SMEs in the pharmaceutical industry.

The procedure of this paper is as follows: first, we present a brief depiction of the theoretical background and past research. Second, the methodological approach including the research questions and research setting is characterized. Third, preliminary findings are described and their implications are discussed. We conclude with a summary and a brief outlook.

2 Informal Knowledge Flows and Past Research

The importance of informal communication and knowledge flows in (open) innovation processes with external partners, customers, suppliers has been recognised in several studies [4]. By 'informal communication' we refer to communication, (...) which remains when rules and hierarchies, as ways of coordinating activities, are eliminated. More positively, informal communication is communication that is spontaneous, interactive and rich." [13]. However, we focus on the transfer of knowledge as one aspect of the communication process. Conway stresses that "informal mechanisms were often employed to transfer ideas and information (...) during the idea generation" and highlights the importance of informal boundary-spanning relationships [5]. Even competitors are appreciated as knowledge sources despite the imminent knowledge drain [6]. Consequently, to establish ties with other experts in similar topics, e.g. interpersonal contacts through networks, means a competitive edge for a company: reduction of expenses, access to information and to new knowledge, the possibility of gaining tacit knowledge through experiences [7]. Besides, also within the company, the importance of informal relations should not be underestimated though they can rarely be formalized and the exchanged knowledge is mostly of tacit nature [8]. The obtained tacit knowledge remains almost exclusively with the individual key persons [8, 9, 10]. Hence, to establish an appropriate communication environment turns out to be an important factor for knowledge sharing and organizational learning [11]. In particular, relationships between experts and decision makers are important due to communication and idea development barriers which can threaten knowledge transfer [9, 10]. Furthermore, there is still a need to examine how a company's internal capacities can be used in order to explore external knowledge [7]. To be successful, informal communication has to fulfil both a social and a production-oriented function [12, 13]. While the production-oriented function aims at the organizational activities and process improvement, the social function focuses on the satisfaction of emotional sentiments.

However, both functions have inherent risks for the communication partners; e.g., firms have to find the right balance between 'enough' and 'too much' information and knowledge drain. Consequently, partners who do not have 'something to return' could be discriminated during the knowledge exchange process [6].

The literature review has shown that informal communication and knowledge transfer are very important research fields for different disciplines. Nevertheless, academic research

on this subject is scarce. Hence, our study attempts to close the research gap regarding the role of informal knowledge flows in open innovation.

3 Methodological approach

The focus of the underlying applied research project and of our study is to develop an open innovation concept for pharmaceutical SMEs in general, however taking into account the specific challenges and aspects of informal knowledge flows. Since most of our qualitative research results are based upon in-depth interviews, workshops and meetings with our project partners, we are confident that our study does not only address theoretical research questions but also practical problems.

In the following, we present the research gaps in detail, the research questions as well as the design of our study.

Research gaps and research question

Considering the results of the literature review and the preliminary empirical findings, this paper addresses the following questions: What role do informal knowledge transfer and communication play in the process of open idea generation and development? What are the experiences of SMEs concerning the formalization of implicit knowledge of key persons?

Research design

The research started with an extensive literature review, followed by the use of different research methods. In the following, we will briefly present the reasons for the choice of these methods in the course of our study.

Action research, including in-depth interviews and workshops

Given the project structure and aims, the research work is designed as an action research study. The exploratory character of the empirical investigation on the one hand and the shared interest of researchers and practitioners on the other hand make action research well-suited to the collaborative research approach.

“Action research simultaneously assists in practical problem-solving and expands scientific knowledge, as well as enhances the competencies of the respective actors, being performed collaboratively in an immediate situation using data feedback in a cyclical process aiming at an increased understanding of a given social situation, primarily applicable for the understanding of change processes in social systems and undertaken within a mutually acceptable ethical framework.” [14]

The close collaboration between the research team and the partner organizations provides us with the opportunity to verify the findings gained from the literature review and the theoretical analysis by comparing them with the real situation and challenges in organizational practice. The project started with specifying the relevant open innovation

strategies and processes while the various opportunities and risks were elaborated during the subsequent phases of the project. Having identified informal knowledge flows as one of the challenges and opportunities, we focused our study on this research topic.

Knowledge Modeling and Description Language (KMDL®)

The first means of the analysis of the current situation in the project partners' organizations includes the modelling of the innovation process flows with KMDL® - a method for analyzing knowledge activities in business processes which primarily addressed the need for an adequate method of knowledge-intensive business process modelling. One example is the modelling of innovation processes, taking into account explicit and tacit knowledge. Its development, promoted by the University of Potsdam, Germany, has led to a well-proven process model and the corresponding mechanism for analysing process potentials [15]. KMDL facilitates two interrelating views: the process view and the activity view. The process view aims to describe the logical sequence of the innovation process in every partner organization from the perspective of the process steps in order to show which task should be completed before the next task begins and which alternatives exist. The activity view provides a more detailed description and analysis of the knowledge conversion in selected knowledge-intensive process tasks [15]. Due to the fact that the focus of our research is the open innovation paradigm, special attention was paid to the interactions with external actors and the interface between the organization and its environment. Having this in mind, we identified process steps for closer investigation, e.g. steps including knowledge activities aiming at idea creation and idea development as well as internal and external knowledge transfer. The models of the process and activity views result from a close collaboration between the researchers and the partnering companies. These models establish the basis for a target-actual-comparison and the development of managerial implications regarding an appropriate open innovation concept.

Online survey

The next step in our empirical investigation is an online survey. The questions in this survey are based on the findings gained from the literature review and from the qualitative research results with the partnering companies. The survey findings serve as a quantitative validation of these results and provide further practical evidence to answer the research questions. So far, we have collected the quantitative information focused on informal communication by carrying out a short online survey. A second broader online survey is scheduled for 2010.

4 Presentation and discussion of preliminary results

In this section, preliminary results of our research are presented in greater detail.

Preliminary results regarding the KMDL-Modelling

Based on in-depth interview results, we first modelled the current innovation process in each partner company on the process level. Afterwards we identified three important types of activities, which we decided to describe and analyze in more detail in the activity view. These activities are related to the open innovation concept and can be described as follows:

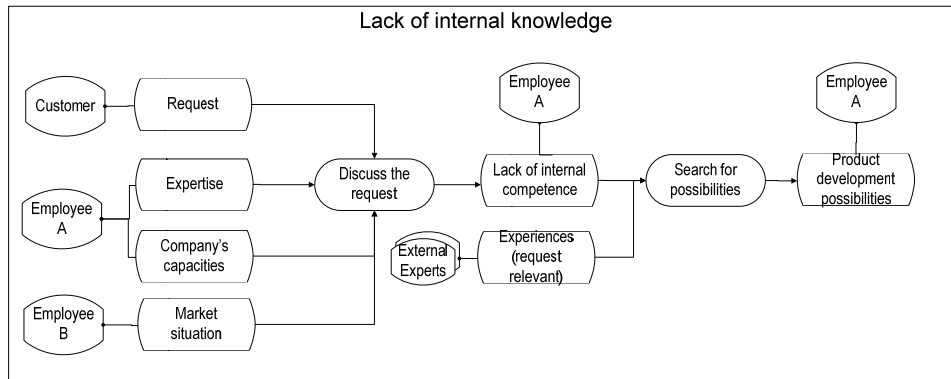
- Decision making processes
- Handling of non-realized ideas
- Collaboration with external actors

Due to the fact that our empirical investigation is mainly exploratory, this selection was made in collaboration with the partner companies by illustrating their current situation and needs.

One goal of the project is to improve the knowledge management process in the companies. Modelling with the KMDL activity view allows us to represent and analyze not only the information flows but also the knowledge flows. Hence, we had the opportunity to identify specific situations in the innovation process, where the CEOs or employees communicate with external actors on formal, informal or semi-formal basis. Figure 1 displays a small extract of informal communication processes in one of the partner companies (see figure 1). The example underlines the importance of external knowledge in context with idea generation activities triggered by customer request. Due to lack of internal expertise, the company – represented by Employee A – has two possibilities: to decide against the project or to look for other knowledge resources, e.g. (in the modelled case) by contacting well-known external experts. The model shows that the collaboration and the discussion of the ideas have not been articulated into explicit concepts (lack of externalization) – all the gained knowledge remains tacit. The Employee A may probably implement the new knowledge in order to develop the product for the customer and may be able to use the gained knowledge in a similar situation. However, we observed that this knowledge remains in the personal and not in the organizational memory. After the analysis of this situation some recommendations for process improvement can be generated, e.g.:

- Documentation of all collaboration details and contact partners
- Implementation of knowledge management instruments, such as story telling, in order to share the gained knowledge with other employees or teams
- Teamwork at every step – in this case the recommendation to involve Employee B in the communication with the external experts in order to allow this employee to share directly the process experiences and contacts.

Figure 1 KMDL Modelling Example



Source: Own considerations

Due to the restricted resources in SMEs as well as the specific features of informal communication such as spontaneity of the context, lack of planning, and the interaction of psychological and social factors, our challenge is to develop a tailored method to handle the informal knowledge flows in SMEs. Having modelled many different processes and situations in the companies, we identified not only the important role of informal relationships but we also observed that to some extent all project partners have already implemented rules in order to structure the informal communication and knowledge transfer.

Three important findings of the qualitative investigations will be relevant for our future research:

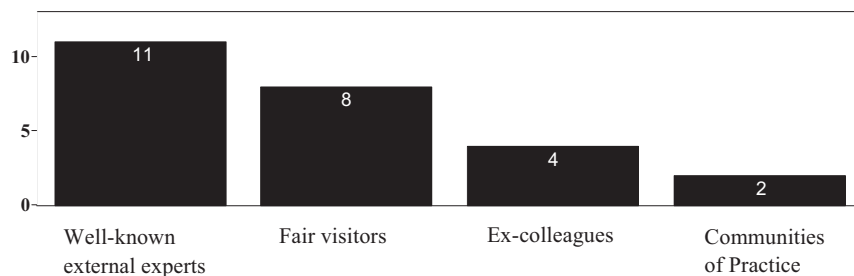
- Informal communication is important and it is crucial to shape an adequate environment for this communication, e.g. attending conferences and exhibitions with the objective to exchange information with other experts.
- Furthermore the process of informal knowledge transfer can only be successful if the partners have similar cognitive patterns. Thus, the companies have to invest in the individual and organizational learning and further education opportunities.
- During the process of idea generation and development, employees must be motivated and stimulated to search for, to notice, and to share new ideas in an informal or formal way.

Preliminary results of the online survey

To complement the qualitative research results regarding this topic, we also conducted a short online-based survey with the aim to broaden the view on challenges and problems of SMEs in different industries. The survey started in October 2009, and although the number of responses is still very small (13 answers), there are some specifics to be pointed out. In order to answer the research questions, we decided to present a short overview of the question group 'Contact to external partners'.

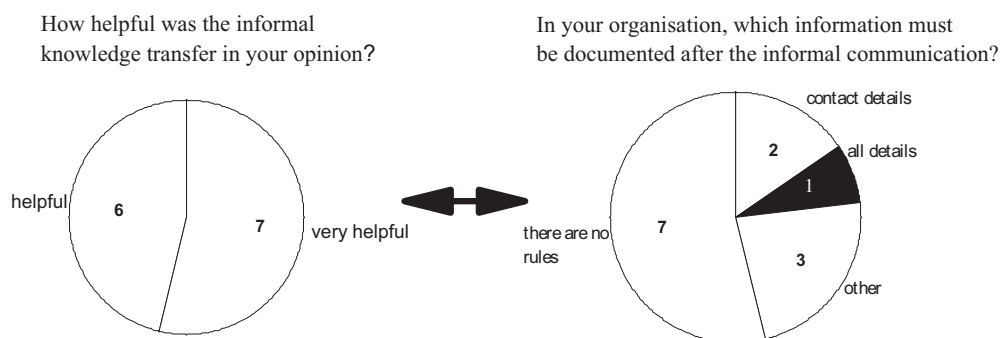
All respondents stated to contact informal external partners in order to exchange knowledge and information (see figure 2) and they evaluated the advantage from this exchange as 'helpful' or 'very helpful' (see figure 3). But in spite of this fact we noticed that only two companies have formal structures to foster external communication: Both of them invite external business partners to idea-generation meetings on a regular basis. One company even does a briefing of external partners about new ideas and products, asking for feedback. Surprisingly, just one of the companies pursues a strategy of targeted communication at fairs (including contact to competitors). Furthermore, just one firm has implemented formal rules regarding the documentation of the gained information. In seven companies there are no rules at all.

Figure 2 Who belongs to your external communication partners?



Source: Own considerations

Figure 3 Dissonance: Importance of informal knowledge transfer and lack of externalisation structure



Source: Own considerations

5 Conclusions and outlook

Nowadays, SMEs' innovation processes are increasingly dependent on external sources. But in order to be able to efficiently integrate the potential of external knowledge, companies first need to structure their internal ties and processes [7]. In the majority of cases the basis for informal knowledge transfer seems to be socially motivated. Hence, organizations need to establish rules and structures which facilitate different ways of internal collaboration and allow the knowledge transfer from a personal towards a collective knowledge basis. Important in this context are the two roles of informal communication: the social one and the production-oriented one. A well-balanced communication structure should meet the needs of both of them.

In this paper we focused on the informal knowledge transfer with external actors. However, in our research it turned out to be crucial consider also the informal relationships between employees within the company. Regarding the research questions we were able to show that (informal) knowledge exchange with external actors has an immense potential which is so far not adequately organized and fully tapped by the investigated companies. These areas of interest are and will be the subject of further research in the applied research project 'Open Innovation in Life Sciences' in order to set the framework for a holistic open innovation management concept. Apart from this managerial relevance, the results of our study contribute to the literature on open innovation and informal knowledge flows.

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