SOLVING THE BOTTLENECKS: THE CRAFTSMANSHIP OF COLLABORATIVE RESEARCH

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ABSTRACT

Within the field of innovation and design research there is limited empirical research on how collaborative research are conducted in practice, and the challenges it brings for the researchers' in such kind of projects. Collaborative research approaches imply that new (or different) tasks are introduced in the process of conducting the research, compared to more traditional research approaches. However, these new tasks are more or less implicit in the sense that they rarely are addressed in the research methodology literature. When conducting collaborative research projects these associated tasks become critical, in the sense that they turn into bottlenecks in a research process if not performed properly, which as a consequence may constrain the possibilities to conduct more conventional research tasks throughout a research project. The craftsmanship of collaborative research in innovation and design research – in addition to more conventional tasks of the researcher – means having the competence to deal with these new and critical tasks, and thus, avoid turning them into various bottlenecks during planning and conducting collaborative research.

INTRODUCTION

In the landscape of Nordic research there is a strong tradition of utilizing different kind of collaborative research approaches. A common ground for such approaches is that research is performed in close collaboration between researchers and stakeholders external to the academic context (cf. action research (Coghlan & Brannick 2014), interactive research (Aagaard Nielsen & Svensson, 2006), co-production research (Sannö et al. 2016)).

On the contrary to what can be labelled as more traditional research approaches, where external relations are merely used by the researcher as a mean to get access to an adequate set of empirical data, the collaborative research approaches value the relations with stakeholders outside the academia as key resources embedded in different types of research activities. Consequently, regardless which approach to collaborative research, research conducted in collaboration with stakeholders external to the academic context have a major impact on the ways in which research need to be planned and conducted. That is, it is reasonable to state that a new set of tasks are introduced that needs to be conducted when doing collaborative research, and a consequence of this is that new competences are required to perform such research successfully (Arieli et al. 2009, Snoeren et al. 2012).

Collaborative research has been the object of many studies within different research domains, and in terms of competences, Mumford (2001) show that having social skills is very important as such skills enables the researcher to 'getting in' and 'staying in' in the organization (Mumford 2001). Further, Guertler et al. (2017) have gathered a number of challenges when doing action research:

- Requires purposeful processing and presentation for each community (Eikeland, 2006; Levin, 2012)
- Requires experience and knowledge about individual needs of each community

- Work with clients requires social competences to build and maintain trustful relationship (Snoeren et al., 2012)
- Requires expertise in selecting suitable clients for the research project and assign them to appropriate roles (Arieli et al., 2009)
- Need to analyse stakeholder networks, interests and power (Mumford, 2001)

However, within the field of innovation management there is still limited empirical research on how collaborative research are conducted in practice (Guertler et al. 2017), and the challenges it brings for the participating stakeholders in general, and the researchers' in such kind of projects in particular.

To be able to describe collaborative research from a competence perspective, it is necessary to identify which kind of tasks that needs to be conducted, and the context tasks are embedded in (Sandberg 2000). Based on this, competence is an interplay between how tasks are interpreted, and the acquired knowledge and skills that the researcher has to perform a specific task. Following this, a key issue is to identify the new and critical tasks in collaborative research and to reflect upon where and how researchers train and develop adequate skills for the performance of these new tasks.

The following research questions are addressed in this paper:

RQ1: What critical factors and tasks can be identified when planning and conducting collaborative research?

RQ2: To what extent and in what ways do conducting collaborative research require a different set of tasks and competencies compared to research projects without intentional collaboration?

METHODS

To address the research questions a survey study has been conducted. The survey included a battery of 14 questions, both closed and open-ended questions. In this paper however, it is mainly the responses from the open-ended questions that have been used, and include the following two questions:

Q1: 'What do you experience as the major challenges when it concerns planning and conducting research project in collaboration with stakeholders outside academia?'

Q2: '*Based on your own experiences, what are the primary criteria's to successfully plan and conduct a research project in collaboration with stakeholders outside academia?*'

The sample selection of respondents for the survey, include senior researchers and PhD students working at a University of applied sciences in Sweden, and more specific at a research department within the area of innovation and design. All respondents have experience from collaborative research, especially working close with partners in the manufacturing industry. What makes the University in general interesting for this specific study, is that it since a number of years as a strategic initiative are promoting a collaborative research approach called 'co-production'. In total 27 (N=71) responded the questionnaire, 17 senior researchers and 10 PhD students. In the Findings below, all respondents are referred to as 'researchers'.

ANALYZING THE EMPIRICAL MATERIAL

The analysis of the open-ended responses from Q1 and Q2 was conducted in two steps. As a first step a content analysis was conducted, clustering the responses into different categories. Four categories of major challenges, and three categories of success criteria was identified. In the *Findings,* quotations from the responses of the open-ended questions are used, marked with quotation-marks.

In order to put the findings into the context of individual competence, the identified categories were, as a second step, translated into critical tasks, which can be associated with each challenge or success criteria. This translation into critical tasks was conducted by deducting what kind of tasks that most likely would solve the identified challenges, or would contribute to the success criteria's. Thus, by identifying critical tasks it is supposed to give a direction in what areas competence need to be developed.

FINDINGS

In this section, the findings derived from the survey are presented. The findings are divided into three sub-sections, and the first two sections introduce the outcomes of a content analysis based on the responses from the two open-ended questions, Q1 and Q2. In the third sub-section the identified categories have been translated into critical tasks which are associated with each category.

FOUR CATEGORIES OF MAJOR CHALLENGES

Judging from the responses made in the open-ended questions, planning and conducting collaborative research entails a range of major challenges to the researchers. Below, four categories of major challenges have been identified, which are recurring in the responses: *Time consuming*, *Fulfilling the stakeholders needs*, *Maintaining a balance between academic and practical needs*, and, *Maintaining continuity in the research project*. Below, each of the four categories are presented and further elaborated.

TIME CONSUMING

Based on the responses, a critical challenge when being engaged in collaborative research is related to different aspects of time. Except from the fact that companies face a challenge to allocate time, which is especially critical for small companies with limited resources, collaborative research is being described as being "time consuming".

From the researchers' perspective one such aspect that consumes time is the "Coordination of research activities", as well as it "Takes time to understand each other's needs". Thus, having the ambition to be engaged in the external stakeholders needs "takes a lot of time", but it also takes time "to get the access to companies/stakeholders".

FULFILLING THE STAKEHOLDERS NEEDS

A second recurring theme is the experienced challenge of fulfilling the stakeholders needs. Based on the basic assumption of finding a common ground for the research project, a challenge is described to be "Reaching the company expectations, keep companies engaged during the research process", and, "To make the outcomes relevant for the companies to maintain the trust".

This urge to reach companies expectations can in turn be related to the challenge of actually "Understand the industrial need/problem".

BALANCE BETWEEN ACADEMIC AND PRACTICAL NEEDS

A third major challenge addressed by the respondents is that of maintaining a balance between the academic and the practical needs. This entails the challenge of "Identifying a question or problem which both academia and industrial stakeholders finds relevant", and, "Contributing to academic excellence while at the same time solve practical problems."

To deal with the challenge of maintaining a balance, one of the respondents, argue that it "Would be beneficial if the companies contribute more with research questions", thus, being more engaged in the research process. However, if you don't share the idea of what it means to do collaborative research, that is, have a "Shared understanding about co-production", and "Create shared expectations on research and its outcomes, commitments and responsibilities", then the balance become even harder to maintain.

MAINTAINING CONTINUITY IN THE RESEARCH PROJECT

Conducting a research project with a duration of two to three years, and an additional year before the project has been granted funding, causes challenges of maintaining a continuity in research projects. On the one hand, "People at the companies leaving their employment or position", and on the other hand the "Effect of changing priorities in companies on the research and the research process".

Thus, it is also stated to be a challenge "to keep together throughout the entire project, and maintain a mutual interest. It is easy to plan, but difficult to maintain during the three years of project execution."

THREE CATEGORIES OF SUCCESS CRITERIA

In the second open-ended question, the respondents described a number of success criteria´s for planning and conducting collaborative research, and some of the criteria´s are the inversion of the challenges presented above. Below, three categories of success criteria´s have been identified: *Strong relations*, and, *Mutual understanding between stakeholders*, *Industry relevant research projects.*

STRONG RELATIONS

Developing strong relations is one of the most recurring success criteria´s, and, two lines can be discerned in the responses. The first line concern characteristics of the researcher as well as structures in the academic environment, and, the second line concern processes and activities which creates or maintain the strong relations.

In the responses one respondent state that researchers need to have "Good human knowledge, ability to listen and empathically…, knowledge in how to negotiate and build relations, and according to another response, the researcher need to "Be open, positive, curious, prestigeless, equal". But, it is also emphasized that there need to be "Strong support from form the faculty", and, "Stability in the organization".

Secondly, "strong relations" are also about "Get to know each other's", and to create "Trust in the early phases of the project, and create win-win situations". This can be achieved through "Close dialogue with the industrial partners", and it then becomes important "Avoiding academic jargons in interacting with companies, understanding the company language".

MUTUAL UNDERSTANDING BETWEEN STAKEHOLDERS

The second theme of success criteria's concern mutual understanding between stakeholders, which also is close related to strong relations. To be successful in collaborative research an "Openness and respect for both worlds" is stated as a key, and, "Understanding for different stakeholders' motif and interests, and, each stakeholders' role in the project". "A shared view of the problem to be solved", and to achieve such mutual understanding "Early involvement of company participants in the research application. Finding the right participants (preferably more than one)."

INDUSTRY RELEVANT RESEARCH PROJECTS

Finally, the third success criteria, is about having research projects that are industry relevant, which can be achieved by developing "Research projects based on the company needs – the intentions of the projects", and "based on a need for development in the company".

One response state that it is important "that the company actually has an interest and see the benefits by being part of the project", that is, the company cannot be part of the project due to kindness. Therefore, there need to be "Activities in the projects to assure the needs of the industrial partners", and "together with the participating partners discuss the expected industrial outcomes, and then work hard to accomplish these."

"Delivering consistent low-hanging fruits to companies (not only academic results)"

CRITICAL TASKS OF COLLABORATIVE RESEARCH

Based on the respondents' statements representing 'success criteria´s' and 'major challenges', these have then been translated into a seven critical tasks and activities associated with each category.

CRITICAL TASKS ASSOCIATED WITH MAJOR CHALLENGES

1) The research activities which may deal with the challenges of collaborative research as being time consuming, to a great deal is about tasks related to different aspects of *project planning and management*.

2) Finding suitable ways to *deliver results and outcomes* to the industrial partners to fulfill the stakeholders needs.

3) A third task for researchers is to *be grounded in dual contexts*, and participate in both academic and industrial settings, actively work on creating a balance between the two contexts.

4) The fourth task relates to the task of *project management*, and how to manage changes and deviations from the project plan to maintain a continuity throughout the research project.

CRITICAL TASKS ASSOCIATED WITH SUCCESS CRITERIA´S

5) Another critical task is to *nurture the social relations* with industrial partners to create longstanding bonds and trust.

6) Next to nurturing strong relations, an additional task is to *create space for dialogue* to develop an understanding for different stakeholders needs, and to enable a shared understanding of the research problem.

7) However, even though the researcher is successful in creating a conducive environment for dialogue and identifies industry relevant topics, a consecutive task for the researcher is then to *translate the industrial needs* into relevant research problems.

DISCUSSION

Evidently, collaborative research approaches imply that new (or different) tasks are introduced in the process of conducting the research, compared to more traditional research approaches. However, these new tasks are more or less implicit in the sense that they rarely are addressed in the research methodology literature, which makes it a challenge when it comes to how to support a development of appropriate knowledge and competences to conduct these tasks.

When conducting collaborative research projects these associated tasks become critical, in the sense that they turn into bottlenecks in a research process if not performed properly, which as a consequence may constrain the possibilities to conduct more conventional research tasks throughout a research project. For example, the quality of an entire collaborative research project is at risk if not the researchers manage to identify research problems which the project partners mutually find relevant, or, if the researcher has an inability to facilitate processes which take multiple stakeholders interests into consideration and enable co-creation of knowledge.

Several scholars have emphasized social skills as a key to create trust between participating stakeholders in collaborative research. Using the words of Mumford (2001), social skills becomes the key to 'getting in' and 'staying in' in the organizations. However, a conclusion drawn in this paper is that trust in relations is only one of many necessary but not sufficient tasks to ensure good quality in collaborative research. In the findings, a number of critical tasks are identified, e.g. being able to identify and maintain a mutual research interest throughout a project, although, this needs to be done without losing sight of the academic horizon, and thus maintain the balance between the academic and industrial needs.

Following this, the craftsmanship of collaborative research in innovation and design research – in addition to more conventional tasks of the researcher – means having the competence to deal with these new and critical tasks, and thus, avoid turning them into various bottlenecks during planning and conducting collaborative research (Figure 1).

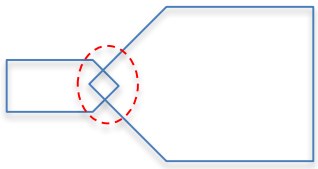

Figure 1. Solving the bottlenecks. Critical tasks of collaborative research.

CONCLUSIONS

In future research, it would be valuable to also include the industrial partners view of critical factors and tasks associated with the planning and execution of collaborative research. A hypothesis is that the gap between the researchers and the industrial partners level of competence within the area of research is yet another potential bottleneck, as it effects the conditions to mutually identify problems and co-create knowledge. If so is the case, it may explain why collaborative research grow strong within certain research domains – where the knowledge gap between researchers and practitioners is narrow, while other domains – where the knowledge gap is wider – struggle harder to establish a collaborative research practice.

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