INTERVENTIONS TO SOLVE PROBLEMS IN NETWORKED INNOVATION TEAMS IN A COMPETITIVE ENVIRONMENT

ABSTRACT

In order to develop today's competitive products, services and systems, people from different organisations collaborate in teams. This is a well-known phenomenon to the IMP culture and group. The knowledge and expertise from the different organisations is needed in such a networked innovation effort. In their inter-organisational collaboration the team members have to deal with, for example, the different organisational ways of working, different organisational goals and different organisational hierarchies. Different studies reveal that these organisational differences cause problem situations in networked innovation projects. This study takes a design perspective on this phenomenon, meaning that we look at the process of networked innovation projects and use participatory research methods to find interventions to solve the problem situations. The outcome of our study is a set of nine interventions, to be used by innovation professionals to deal with the problem situations.

Keywords: networked innovation, problem situations, inter-organisational problems, interventions

INTRODUCTION

Innovative solutions are more and more created in innovation networks. Increasing complexity of demand in the marketplace force supplying networks to cooperate in the creation of new competitive products, services and systems. In their seminal work, Hakanson and Snehota (1995) already reported on the opportunities and barriers of business networks. Especially when the competitive environment of today's marketplaces is added, the pressure on innovation networks increases, causing frictions and problems in the process. For instance if products, technologies and services are integrated in a single innovative offering, the customer and the suppliers start to develop interactively in a network. The skills in that network direct the development process. Interventions in the network help to bridge the challenges the participants in the network face (Johnsen and Ford, 2007). Over the last decades, networked innovation teams have become more and more multi-disciplinary (e.g., Sonnenwald, 1996; Chiu, 2002; Kleinsmann, Valkenburg and Buijs, 2007; Valkenburg 2000) and multi-organisational (e.g., Charnley, Lemon and Evans, 2011; Blizzard and Klotz, 2012), which also increased complexity, with the same effect on frictions and mishaps in the process.

In this paper, 'networked innovation' is defined as 'the activity of actors from different organisations working together, on a reasonably equal footing, in order to innovate' (Bergema, 2016). The participants all have the different knowledge and expertise that is needed in the joint innovation effort. During the innovation project, the participants share and integrate their knowledge and expertise to create novel and desirable offerings.

In practice, professionals are motivated to work in networked innovation teams and they develop their operational, networking dynamic capabilities while performing their tasks (Salehi et all,

2018). On the other hand, the knowledge on bridging problems in the networked teams is not widely spread. Maurer and Valkenburg (2014) show that innovation project teams have problems to run a smooth project. In the increased complexity of networked innovation projects, especially in a competitive environment, there is a lack of ways to support participants to overcome the problems in networked innovation (Maurer and Valkenburg, 2014; Van der Duin, Kleinsmann and Valkenburg, 2014a). Mapping out the different stakeholders and their needs (Ouden, E. den, 2011) or better defining the scope of the project (Blizzard and Klotz, 2012) are known examples to prevent problems to build up. These example solutions do not provide professionals with interventions when problem situations occur during the joint innovation project. Another limitation of existing recommendations is that these are often either too abstract or too specific for people to be used in their daily practice.

The aim of our study is to provide professionals in networked innovation teams with interventions to effectively deal with problem situations that occur during the innovation project.

This paper reports on the outcome of our research. In the next section, we report on the research design, followed by the results of the study (problem situations, activities and interventions). We conclude the paper with conclusions and discussion on further research.

RESEARCH DESIGN

Following the above described aim of this study, we formulated the following research questions for our study:
- What problem situations do professionals experience in networked innovation teams?
- What activities are proposed to deal with the problem situations in networked innovation?
- Is there a coherent set of interventions that can be used in solving problem situations?

To answer these research questions, we first set up a literature review to find problem situations. The review is basically done in the design literature, which is further discussed in the implication for future research section. This review was completed through a case study (Sara Lee – Philips), resulting in fifteen problem situations.
Next, we set up an experiment, inspired by the verbal protocol analysis technique of Ericsson and Simon (1993). In this experiment the participants were provided with problem situations in a fictive case and asked what they would do in these situations. In this technique, participants use earlier experiences in 'solving the task' (Someren, Barnard and Sandberg, 1994). Next to that, we asked the participants to 'think aloud' and verbalise their thoughts. This provided us with extra information on the activities the participants would perform in the given problem situations.
The data of the experiment was analysed in two cycles of coding in Nvivo9, each comprising of two steps. Through structural coding (Saldana, 2009) the transcripts (of the simulations) were first chunked for the different problem situations. This led to a set of activities per problem situation. These activities are further described in the activities section.
Second, we used descriptive coding (Saldana, 2009) to label all activities with a description of the specific activity. In this second cycle of coding, the descriptive codes were reorganised and reanalysed (through pattern coding) to develop the meta-code or themes (Saldaña, 2009, p.150, Miles and Huberman, 1994, p.69). We call these meta-codes or themes 'interventions', answering the third research question.

PROBLEM SITUATIONS

From the literature review we found problem situations that derive from differences in professional and organisational backgrounds of the members in networked innovation teams. These differences comprise different goals (Kalay, 2001; Van der Duin, Kleinsmann and Valkenburg, 2014a), different roles and responsibilities (Van der Duin, Kleinsmann and Valkenburg, 2014a, 2014b), different expectations (Sonnenwald, 1996; Maurer and Valkenburg, 2014) and different specialised work languages (Sonnenwald, 1996).

In the design literature, Feast (2012) described that the different ways of working of the participating organisations, the different organisational goals and the different organisational hierarchies affect the collaboration in networked innovation teams. The problem situations caused by different strategic goals and the problems caused by different organisational hierarchies were put forward by Charnley et al. (2011) and Chiu (2002). Furthermore, Kleinsmann, Valkenburg and Buijs (2007) reported that the absence of resources at the beginning and at the end of the project create problem situations. Finally, McDonough (2000) found the empowerment of professionals by their own organisations as a problem situation.

To elaborate on the problem situations from literature, we set up an explorative, empirical case study (Bergema, 2016). The case study consists of retrospective interviews with innovation managers from Philips and Sara Lee. They were involved in the development of the Senseo, a portioned coffee making system. The introduction of the system had a huge impact in the coffee markets in the Netherlands, Belgium and France. This study brought to light additional problems in networked innovation that were not reported in the literature before.

We coded all the problems and after analysis we concluded with the following 15 problem situations:

1. Different ways of working of the parent organisations
   The way of working represents how organisations develop products or services.
2. Different routines of the parent organisations
   The routines relate to aspects like lead time and the steps to take.
3. Different strategic goals of the parent organisations.
   The strategic goals are usually not the same as the joint goals for the project.
4. The involvement of a competing partner organisation
   Competition in the team reduces the willingness to share knowledge
5. Incompatible existing positioning within the parent organisation's portfolio
   The newly developed product or service might deviate from the existing positioning in the portfolios
6. Low commitment from the partner organisation
   This reduces the willingness to invest in time, money and/or resources
7. Low importance of the project for the partner organisation
   This reduces the willingness to support the project
8. 'Sunk-cost fallacy'
   This makes partners to continue, although rational arguments would convince them not to
9. Disapproval of the partner at lower levels in the parent organisation
   The disapproval leads to waste of energy, passion and power
10. Missing guidance from the top level

Missing guidance can result in the 'Alice in Wonderland' effect
11. Incompatible empowerment to the project
    This delays decision-making in the project
12. A lack of resources from the parent organisation
    Causing delays and frustrations in the project team
13. Organisational hierarchies have to be passed to get agreement
    Crossing the traditional hierarchy is often considered non-acceptable behaviour
14. Reduced freedom got from the parent organisations
    Organisation's own processes and interest might not coincide with the project's goals
15. Short distance to the board of directors
    This leads to tighter control and therefore less freedom for the team.

THE ACTIVITIES

For the experiment, we developed a fictive case with the fifteen problem situations in it. In this fictive case, the characters Kenneth and Karen work for an outdoor fitness equipment developer and manufacturer. They want to add an online user community to their service provision. They do not have the expertise to build such a community. They meet Arthur, who is working for a health insurance provider with around forty health centres. At these health centres people receive coaching and keep track of their fitness in an online user community. They all see an opportunity for collaboration as Kenneth and Karin want to build an online user community and Arthur sees a possibility for outdoor centres. During their collaboration, they experience problem situations. An example of such a situation is that of different strategic goals of the parent organisations. All above described problem situations were written on a problem situation card.

While participation in the experiment the respondent was provided with a card. The participant was asked to read the problem situation aloud and after reading they were asked the following set of questions:
• Imagine you are Kenneth, what activities do you deploy in this situation?
• What do you want to achieve with each activity?
• Why do you select this activity?
• What wouldn't you do in this situation?

The participants were asked to think aloud while answering the questions. After they had answered the questions, the interviewer summarised their answers to give them some time to rethink their answers and add information if they wanted to. To ensure consistency, the questions were always asked in the same manner.

We interviewed 31 innovation managers that were purposefully sampled (Patton, 2002, p.230). They were selected based on their experience in networked innovation, working in their organisation at the interface with partner organisations. They had between five and 25 years of experience. They had a project leader role and worked at a middle management level. The participants worked at a variety of branches and organisations (e.g., Philips, Schiphol, DSM, Unilever, ASML, ID&T). The participants were found in various ways: through the professional network of the authors, social media, research events and through further snowball sampling (Patton, 2002, p.237). The interviews lasted between 77-144 minutes and were recorded and transcribed for further analysis.

The participants provided activities for each of the fifteen problem situations. As described in the

research design, we used structural coding (Saldana, 2009) to create a set of activities per problem situation.

If we take the problem situation of the different strategic goals of the organisations (as an example), the participants provided a total of 31 reactions, summarised in the next 9 activities (with their distribution):

1. Search for the commonalities (9/31).
2. List the interests of both partners (8/31).
3. Further develop the project definition (6/31).
4. Reorganise the collaboration (3/31).
5. Consider whether the differences could affect the project (1/31).
6. Delve into the partner organisation (1/31).
7. Explore the user needs (1/31).
8. Make the project more interesting for the partner (1/31).
9. Run both interests in parallel (1/31).

For each of the fifteen problem situations we created a set of activities, which led to a total of 128 activities, together forming the answer to Research Question 2.

Please note that this list of activities is not produced in this paper, due to restrictions of the number of pages. It will be available during the IMP 2019 conference.

INTERVENTIONS

As described in the research design, we used a second round of coding to group all of the 128 activities into categories, called interventions in our research. We looked at all the 128 activities mentioned throughout the whole experiment. All activities that were mentioned in at least two situations (but mostly more) were used to find the categories of activities. The analysis resulted in nine categories. They form the interventions to solve inter-organisational problems during networked innovation in a competitive environment, thus answering research question 3. Each of the interventions is described below.

Intervention 1: *Delve into the partner organisation*
   Members of the team try to understand how the partner organisation (their strategies and structure) works. They search for the overlap and differences and explore how these can be used or overcome in the joint project.
Intervention 2: *Put pressure on the collaboration partner*
   Team members do not accept the situation and put the collaboration with the partner under pressure to test their commitment.
Intervention 3: *Adjust the project to all demands*
   The team adjust the project, whether content- or process-wise, to meet the demands of the partner(s), for example commitment, interests or way of working.
Intervention 4: *Continue below the radar*
   The project team decides to continue below the radar, continuing with the project without informing their internal organisation or superiors. Without permission, they continue or make decisions to keep progress in the project.
Intervention 5: *Make counterpart co-owner of the problem*
   This intervention consists of activities in which the team mebers inform their counterpart. They

ask their counterpart for help or provide their counterpart with help.

Intervention 6: *Invest in the personal relationship with the counterpart*

Team members decide to invest in the personal relationship with the counterpart. They go for a coffee or dinner and talk about their personal life.

Intervention 7: *Involve the internal organisation*

In this intervention, the problems are discussed internally or escalated to a higher level in the own organisation asking the internal organisation to decide on a proper solution.

Intervention 8: *Involve external people or organisations in the project*

The team involves other (external) people or organisations to help them deal with the situation. This can be a design agency or customers (as examples).

Intervention 9: *Determine whether the problem is actually a problem*

The members of the team evaluate whether the given situation is actually a problem, analyse what the problem is, and evaluate different possible solutions.

CONCLUSION

Networked innovation teams face problems whilst working on the innovation. There is a lack of understanding of how to overcome these problems (Maurer and Valkenburg, 2014), there is a lack of methods, tools, and techniques (Maurer and Valkenburg, 2014; Van der Duin, Kleinsmann and Valkenburg, 2014a) and the existing methods not always help them (Maurer and Valkenburg, 2014). In addition, the methods are not meant to deal with the problems as they arise or are too abstract to be used in daily practice. IMP researchers (as examples, Hakanson and Snehota (1995), Johnsen and Ford (2007) and Salehi et all (2018)) describe how networked innovation teams can perform, they, to a lesser extend, describe how problems can be dealt with.

Based on these insights, we aimed to create interventions that innovation professionals can use to deal with problem situations in networked innovation teams. We designed a study where we started to look for problem situations in networked innovation teams through literature and a case study. We found fifteen situations. These situations were used in an experiment in which networked innovation professionals came up with activities they use to overcome the situations. Through two cycles of coding these activities were categorised in nine interventions. In the first cycle 128 activities were found (related to the problem situations). In the second round we created nine meta terms, called interventions in our research.

The interventions can be used by networked innovation professionals to deal with problem situations they experience whilst working in their teams. With the interventions we contribute to fil the gap in the literature on problem solving in networked innovation teams. For practice we provided a concrete and practical set of nine interventions that help professionals to deal with the problems in their networked innovation teams.

DISCUSSION ON FURTHER RESEARCH

The design research community is not the only community that studies collaboration in teams and specifically for this paper, overcoming problems in teams. Other communities (e.g., human resource management, strategic business alliances, and behavioural sciences) also make suggestions for activities to prevent problems to occur or solve them as they are occurring. Some examples (although abstract) are:

- Vangen and Huxham (2003) recommend people to start with modest, low risk initiatives to

slowly build trust and agreement in teams.
- Huxham and Vangen (2000) suggest people to organise workshops and seminars to provide skills and information to communicate their interests with others in the team.
- Bell, Kaats and Opheij (2013), recommend to search for common interests and negotiate the contrary interests.
- Douma, Bilderbeek, Idenburg and Looise (2000) explain that it is crucial to balance the different interests.

Further research into these and other scientific fields is needed to see commonalities or differences and thus build a more generalisable conclusion on problem solution in teams. In reverse, our design based research can add to these other (scientific) fields.

Lastly, we reflect on the research design. In our simulation experiment the situations were clearly defined and presented to the participants in the research. In real-life, the situations may be less explicit and more intertwined with other challenges. Next to that, we are not sure whether the situation the participants had in mind while reading the situations where defined similar to the problem situations as found in the literature and Senseo case. This should be further researched before generalisable conclusions can be drawn.

At the same time, the simulation experiments seemed a helpful method to gain access to the sensitive and often confidential networked innovation projects, and in this way gain an understanding of people's activities in the problem situations. With this method people could talk about their activities and their experiences without revealing the content of their sensitive projects. Obviously, further research can strengthen the value of the interventions to solve problems in networked innovation teams.

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