

# Enhancing facilitation of strategic decision making by co-creation

Maarten Marks

Eindhoven University of Technology

Eindhoven, The Netherlands

m.c.f.marks@student.tue.nl

## ABSTRACT

Innovation methodologies is an area that has been under considerable interest over the past years. Companies are making constantly decisions about their innovation activities. For their current product portfolio as well as their future activities. As a designer, there are opportunities to support innovation with design thinking methodologies. In this research, facilitating co-creation to enhance strategic decision-making has been explored. To do so, the *Decision Making Dashboard* has been designed as a research prototype. Another opportunity which has been explored, is the use of the six perspectives model (Gardien, Deckers, Christiaansen, 2014) as an assessment tool. To research this, a user test and expert review were conducted. Experts perceived the use of a visualization as appealing to reflect upon, and participants indicated that the tool creates a good and clear overview. The researcher showed the potential of strengthening the innovation process by facilitating decision making by co-creation.

## Author Keywords

Strategic decision making; Strategy; Design Thinking; Strategic Design.

## INTRODUCTION

The interest in innovation research is growing since 1990. Nowadays the term innovation can refer to the process, output or the activities involved in creating an innovative output (Cruickshank, 2010). There are all kinds of definitions for innovation. Schumpeter (1934) argues that novelty only can be seen as an innovation, if it succeeds in creating economic value too. Another definition is from Tidd et al. (2005): “process of turning opportunities into new ideas and of putting these into widely used practice”. Companies often see innovation as creativity and “come up with great ideas”. They create new solutions for ideation methods, involve users in the ideation or use a crowd-sourcing platform (O’Connor and Ayers, 2005). However only focusing on idea and concept generation is not enough, it is argued that idea generation needs more attention in the innovation process. (O’Connor and Ayers, 2005; Govindarajan and Trimble, 2010). O’Connor and Ayers (2005) propose a different description of innovation process in which process steps are described as “competences”. By doing this, they claim that the

innovation chain is less linear, activities can overlap and needed competence can be divided over different individuals or teams.

However, finding and maintaining the balance of current needs and future opportunities is a challenge for companies (Tushman and O’Reilly, 1996; Saul, 2006). To get a better perspective on future opportunities, building scenario’s is used as inspiration for business strategy (Börjeson et al. 2006). Deckers, Shahhazi, Gardien, van Aken and Christiaansen (2018) propose the Business Value Proposition (BVP). A process which facilitates design thinking and methodologies on a business level. Design thinking, an iterative hypothesis-driven process, proved its impact on the innovation process as well as the value proposition creation on portfolio level (Verganti, 2009; Gardien, Deckers, Christiaansen, 2014). Design thinking tools can support the development of organizational cultures as well (Elsbach & Stigliani, 2018). It’s interesting to see the potential of design thinking in new areas and how it corresponds to innovation.

Making a decision about your next steps in your innovation process, can be complex. But it’s important, because making a mistake at the wrong time can lead your company into problems. In the BVP process, decision making is not yet defined. In this paper, the researcher hypothesizes that the facilitation of decision making can be enhanced by a co-creation workshop. In this work, innovation will be considered as a process instead of a result. The focus is on the activities in the process instead of the outcomes of the process.

The paper is divided into the following subsections: First, all relevant theories are described. Second, the research prototype and method are presented. It’s described how this research was conducted. Thirdly, the results are presented to show participant’s responses. Lastly, the results are analyzed and used to describe whether the hypotheses have been approved or disapproved.

## RELATED WORK

### Innovation strategies in New Product Development

Mascitelli (2000) shows that scholars have tried to manage the term “innovation” in sets of adjectives, incremental vs. radical, continuous vs. discontinuous, sustaining vs disruptive, in which the first adjective refers to a small improvement of an already existing product or market. The second one refers to a higher degree of novelty. Norman and Verganti (2014) would describe this as “*doing better what we already do*” and “*doing what we did not do before*”. Gardien (2015) defines innovation as follows: “*Innovation is the creation of new meaningful and relevant solutions that enable value exchange, based on a break from the existing understanding of people, technology and business, establishing new domains.*”

Common characteristics of an innovation culture are high autonomy, tolerance of mistakes, risk-taking, low bureaucracy and learning orientation (Miron et al., 2004). In the past centuries, more and more innovation strategies were introduced on the market: Ten Types of Innovation (Keeley & Pikkell, 2013), Design Driven Innovation (Verganti, 2009), Blue Ocean Strategy (Kim & Mauborgne, 2004). Remarkably innovation has a poor success rate, despite of the all these literary models and frameworks. Apparently, literature does not give companies sufficient guidance for enhance their innovation processes. (Gardien, 2015)

Innovation and New Product Development (NPD) processes contain a lot of different steps and activities before a company is able to enter the market with their products and become successful. For each company this NPD process is different. Some companies define and follow a strict development process, while others don't. As a matter of fact, companies follow different processes for each type of development project they execute (Ulrich and Eppinger, 2016). Generally, there is hardly room for learning and experimenting in these complex development processes (Engvall, 2003). In these complex processes, conditions can be uncertain. For uncertain conditions, an “experimental model” can be a well suited fit. This allows improvisation, flexibility and accelerates learning through iterations (Eisenhardt and Tabrizi, 1995). From practice can be conclude that only 4% of what gets into a NPD funnel leaves the funnel (Nussbaum, Berner & Brady, 2005). The remaining 96% vanishes in the funnel or comes out as a different outcome, for instance ideas who end up supporting other businesses or gaining new company knowledge (Gardien, 2015).

### Risk management

Successful new product development is essential to sustain competitive over time. But NPD is intrinsically

connected with taking and managing risks (Kwak and LaPlace, 2005). Doering and Parayre (2000), divided risk management in three kinds of risks which can be associated with NPD: technological, marketing and organizational risk. This is focused in the early stage of the development. An iterative and rigorous process is crucial for identifying and managing emerging technologies. Mistakes that are made in an early stage, can have tremendous effects further on in a later stage. If there is no iterative process, mistakes will not be recognized until much time and energy has already been invested in them.

Previous studies have highlighted that risk management is important for improving success in new product development processes. Mu, Peng & MacLachlan (2009) show that a risk management strategy which consists of the three categories technological, organizational and marketing risks, improve NPD performance individually as well as interactively. For companies it's highly important to continuously reflect on the impact of risk management on their product development activities. Adapting processes to their individual needs and experiences (Oehmen, Olechowski, Robert, and Ben-Daya, 2014).

### Design Thinking

The concept of Design Thinking is introduced by Tim Brown (2008) in the early 2000s, based on experience of managers from the product design firm IDEO. In his work, he describes Design Thinking as a multidisciplinary human-centered innovation approach, which is inspired by how designers think and work (Brown, 2009).

Design Thinking in business can be described as “*a hypothesis-driven process that is problem, as well as solution, focused. It relies on abduction and experimentation involving multiple alternative solutions that actively mediate a variety of tensions between possibilities and constraints, and is best suited to decision contexts in which uncertainty and ambiguity are high. Iteration, based on learning through experimentation, is seen as a central task.*” (Liedtka, 2014, pp. 3)

A theme that returns in design thinking literature is co-creation, or as it was called before research of nowadays: participatory design (Stappers & Sanders, 2008). In co-creation is the user been seen as a partner in the design development process, designers and non-designers are working together. The designer provides tools for ideation and expression to gain insights together (Stappers & Sanders, 2008; Sleeswijk & Stappers, 2005).

In the near future, designers will become more important in co-creating tangible new landscapes, products and/or services (Stappers et al. 2008). That's why Stappers & Sanders have described four future roles for designers in co-creation.

- The designer’s skills are relevant at larger levels of scope and complexity.
- Designers will develop tools for non-designers to express themselves and be creative.
- Designers provide expert knowledge, unlike other stakeholders have.
- Practices remain important, even as new (design) practices emerge.

De Jaeger and Di Paolo (2007) define sense-making as human activities which try to sustain its identity in a dynamic environment. During social interactions between one or more individuals, like co-creation sessions, sense-making becomes a participatory process. In more recent research, participatory sense-making was defined as: understand each other, understand the context together and act, breath and live together (De Jaeger, 2016). During co-creation sessions, participants are constantly coupling their actions upon their perception. What can be defined as *sensorimotor coupling*.

### Business Value Proposition

Gardien et al. (2015) introduced an iterative framework (figure 1) of positioning business domains, creating value and creating the right conditions for enabling. This model proposes that positioning, creating and enabling are parallel process but due to their iterative nature they feed each other with knowledge. For positioning business domains and enabling the right conditions, The Business Value Proposition (Deckers et al. 2018) has been designed by Philips Design. Philips experienced that designed visions on the future were suitable for a debate and inspiration. But translating them into value propositions and business opportunities can be challenging (Gardien, 2015). This BVP is based on ideas of co-creation (Sanders et al. 2008) and design thinking (Dorst, 2010). Design thinking methodologies are very strong in creating new and unique value propositions, that’s why these methodologies are potentially capable of creating visions which can frame strategy. The BVP process has been designed not only to define the strategy, but also a practice in which the business can learn and evolve. To build value propositions who excel the current (product) portfolio, designers need to understand the business domain well. To do so, designers need to learn from and collaborate with other functions within the company (Deckers et al. 2018).



Figure 1 - The Position, Create and Enable framework

Inspired by Tom Kelley’s Venn diagram, Gardien (2015) proposed a model of innovation for understanding the business domain based on six perspectives: Technology, business, human values, experience context, society & culture, and company (figure 2). Kelley’s Venn diagram is sufficient to describe design in an organization but is limited for innovation. The Venn diagram consists of technology (feasibility), business (viability), and people (desirability). For the six perspectives model, the people perspective of the Venn diagram was split in three perspectives: society & culture, experience context, and human values.

The society & culture perspective seeks to understand how issues evolve in our user’s societal and cultural environment, are driving behavior. The experience context explores how value propositions are tangibly understood and experienced in the broader context of their use. The human values perspective gets to the core of the users and customers personal needs and wishes. The last perspective which has been added is the company perspective. This perspective covers the company’s mission and vision. Understanding your company’s heritage and capabilities.

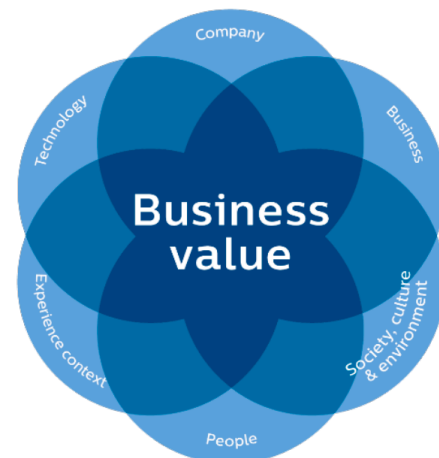


Figure 2 - The six perspectives model

In the BVP process, the six perspectives model is used early on in the process to distilling key trends and developments affecting the business domain. This model helps participants to look at the domain more holistically, consider a wider variety of influencers, understanding tension between perspectives, putting customers and their needs in a broader perspective (Deckers et al. 2018).

Another important part of the BVP is the three horizons model which was introduced in the Alchemy of Growth (Baghai, Coley, & White, 2000). A model in which business opportunities get managed across three time

horizons. First horizon is maintaining core businesses, second building new ones and the third one is about seeing opportunities for future businesses. For the BVP these three horizons are parallel tracks instead of successive, linear occasions (Decker et al. 2018). There is no linear or top-down order in which projects take place in the business domain (figure 3). Preferably there will be a high pace of interaction between projects, stakeholders, and individual activities. By connecting different projects in different horizons, knowledge got distributed equally, and projects inform each other. (Gardien et al. 2014)

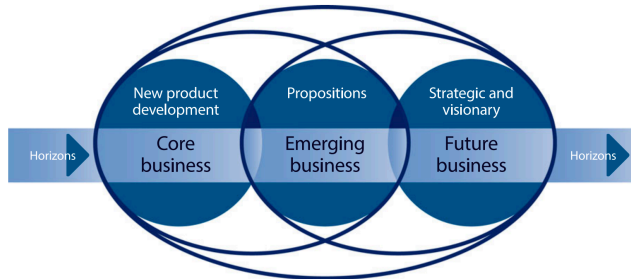


Figure 3 - Three Horizons model

### Decision making

Strategic decisions are fundamental for company's livelihood and survival. These decisions often effect a large proportion of the company's resources (Elbanna, 2006). Each company has its own decision-making environment. Many of them don't have suitable solutions, some of them even ignore formalization of decision-making processes (Highsmith, 2009). But in contradiction, research has shown that formalization can have negative effects by reducing opportunities for creativity, especially in scenarios with radical innovations (Sethi & Iqbal, 2008; Mirow, 2010; Bonner, Ruekert & Walker, 2002).

Strategic decision-making is difficult to define in terms of performance, because of its relationship with other decisions within a company. Decisions are highly involved with uncertainty and can influence future decisions (Wilson, 2003). There is rarely a better solution in those decisions (Wilson, 2003; Chang, 2017). Chang (2017) claims that hard choices are not hard because of our lack of knowledge or the incomparability of alternatives. They alternative for those hard choices are on a par; they can be compared in some way, but one is not in definition better than the other, and nor they are equally good. Two or more options can only be compared if there is a common unit by which they can be measured. In many radical innovation scenarios this is not the case (Sethi et al. 2008; Mirow, 2010).

People are striving for control over the environment by making choices. Having the possibility to choose, enhances individual's perception of control. This desire for perception of control is something which is biologically motivated (Leotti, Iyengar, & Ochsner, 2010). Leotti et al. (2010) claims that the value of specific choices depends on the cognitive resources of those who are making the decision, influenced by the individual's experience and sociocultural environment.

### Concept selection

Concept development is described as the early phase of product development. During this phase, diverging steps were followed by converging steps. The diverging steps create new alternative concepts. In the following converging step, the best concepts were evaluated and selected to explore further.

Salonen & Perttula (2005) carried out a survey to see if the industry uses concept selection methods, who are presented in literature over the years. The results revealed that the use of concept selection methods is relatively low. Less one out of four uses methods who are included in the study. But those who did use methods for their concept selection, were more satisfied. Instead, the most common approach for concept selection is a concept review meeting.

From their study they could give four characteristics of concept selection which make the decision-making process critical and more difficult:

- Uncertainty about the concept as well as the criteria.
- Preferences differ among those who participate in the decision-making process.
- Choosing the most promising concept for further development, early in a design process.
- Uncertainty about the impact of the selected concept for further development.

### DESIGN

In this study, *the decision making dashboard* (figure 4) co-creation tool was designed as a research prototype. With the use of this tool, the researcher proposes to enhance facilitation of decision making on business strategy by co-creation workshops. The tool can be used by a designer who facilitates a co-creation workshop. The intention of the tool is to visualize the impact potential for innovation activities. Innovation activities will be assessed relative to each other, without specifically comparing activity characteristics. This visualization creates transparency to new product development risks

(Oehmen et al. 2014) and gives those who have to make a decision the opportunity to reflect upon the outcome. With the first iteration, a user test and an expert review were conducted. After analyzing, a second iteration could be designed with improvements for further research.

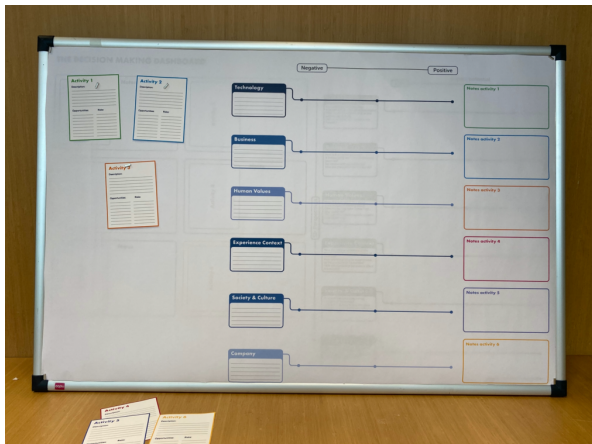


Figure 4 - The research prototype: Decision making dashboard

### Iteration 1

This tool is designed to use in a later stage of an innovation process. Proposing at the end of a Business Value Proposition process. Previous to this tool, a set of potential innovation activities, 2 to 10, are determined. For example, 2 to 10 new (product-) concepts for a business domain. The tool will be used in a co-creation workshop to assess the activities on six perspectives and relative to each other. These perspectives are retrieved from the Six Perspectives model Philips designed (Gardien et al. 2014).

The co-creation workshop consists of four steps. First, between two and ten potential innovation activities will be defined on the activity cards (figure 5). Second, assessing each activity one by one on six perspectives. On each perspective a magnetic token will be placed on the linear scale (figure 6). This linear scale represents the impact potential for this activity, seen from that perspective. The color of the token is matching the color of the belonging activity card. After assessing an activity, the belonging activity card can be placed in the matching activity box on the dashboard. In the “Notes”-section, the participants can make additional notes and/or a general conclusion for the activity.



Figure 5 – Activity card

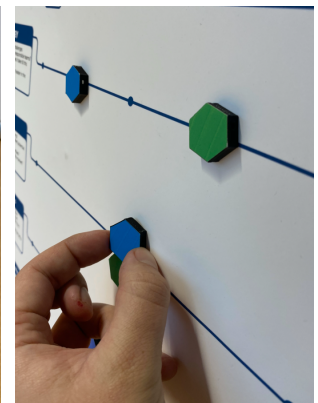


Figure 6 – Assessing one by one

Third, after all the activities have been assessed on the different perspectives, a summarizing visualization of the impact potential emerges on the dashboard. For each activity, a vertical line shows the activity’s impact potential. For each perspective, a summary is shown on the linear line. An example of this visualization can be seen in figure 7.

Lastly, with this visualization, the participants will have a discussion about the innovation potential and reflect upon it. From this could be concluded which activities are worthy to pursue and/or which don't.

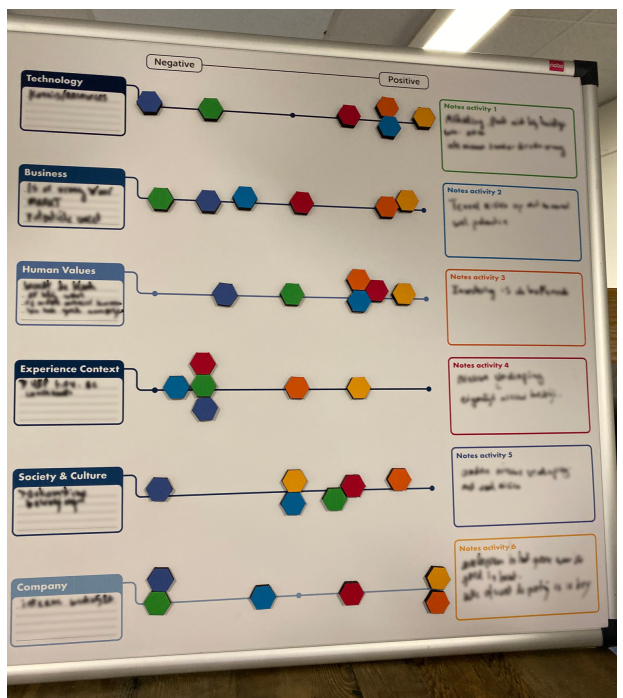


Figure 7 - Filled in Decision Making Dashboard

## Iteration 2

After analyzing the results from the first tests, *the decision making dashboard* was improved (figure 8) on a few elements that were crucial for enhancing the facilitation during the workshop:

- Horizontal ranking scale changed to *low/high impact potential*.
- The six perspectives have all the same color.
- Six perspectives are predefined by a few trigger questions. This makes the six perspectives clearer for the participants.
- The notes section moved from the right side to the left side. To be placed together with the *activity cards*.

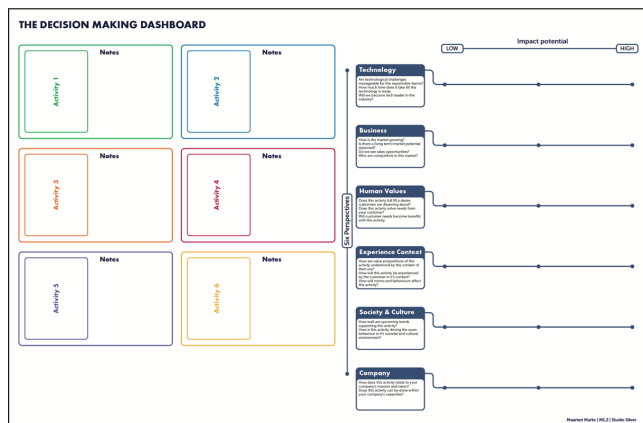


Figure 8 - Iteration 2 of the Decision Making Dashboard

## RESEARCH SETUP

### Iteration 1

For this research, both an empirical research as well as an expert review was conducted (Rosenzweig, 2015). By conducting both methods design issues, from both professionals as users, were identified early on.

#### Empirical research

In this user test, *The decision making dashboard* acted as an experimental component (Matthews & Wensveen, 2015) in order to test its functionality in a workshop. In this co-creation workshop, the users were asked to discuss elaborately about the decisions they had to make. In this way, the *Thinking Aloud Protocol* (Rosenzweig, 2015) was implemented, to see if and how people used the research prototype during the workshop.

To measure the participants emotion during and after the workshop, a questionnaire was held afterwards. Before the workshop, the participants filled in another questionnaire. For both questionnaires (appendix A&B), measuring participants emotion was based on previous research (Yoon, Pohlmeyer, & Desmet, 2015; Fokkinga, Ozkaramanli, Desmet, Fischer, & Sauter, z.d.).

Results of both questionnaires were compared and analyzed. Furthermore, the workshop was video recorded for analyzing.

#### Procedure

For this co-creation workshop, *The Decision Making Dashboard* was used.

The researcher facilitated the workshop. The company who participated in this user test, is exploring new business opportunities for a while now and they had already defined six potential innovation activities. For the first phase the researcher asked the participants (P1 & P2) to summarize the six potential innovation activities on the activity cards, that they could all agree upon them. For the second phase the researcher guided the participants to define the right definition for each of the six perspectives for their company. Next, the participants scored how negative/positive each activity was for their company, looking from each perspective.

#### Expert review

For validating the implemented theory about the six perspectives model, an expert review was held (P3). For this expert review the researcher conducted a semi structured interview. The questions can be found in appendix C

## Iteration 2

For researching the second iteration, two expert reviews were conducted (P4 & P5). For these interviews, a second semi structured interview was made (appendix D). The two experts who were interviewed, are experts in the field of co-creation for business strategy.

## Analysis

#### User test

The first questionnaire consists of 5 questions. The first 4 are multiple choice questions about their emotion when they do decision related activities. The last one is an open question about their goal for this workshop.

The second questionnaire consists of 8 questions in total. Half of the question consists of the same multiple choice answers as in the previous questionnaire. 2 questions will be answered on a 7 point likert scale with 1 equals *strongly disagree* and 7 equals *strongly agree* and 2 open questions.

The answers of the multiple-choice questions from the first questionnaire are compared with multiple choice answers from the second one. With this comparison the researcher hopes to find out what impact the usage of this tool has on the participant's emotional state when making decisions.

### Expert reviews.

All the expert reviews are transcribed for analyzation. Afterwards, a color coding labeling is done to compare answers from the different experts. For the researcher it's most important to see if the expert is willing to use this tool and for which purpose.

## RESULTS

The results from the questionnaire before the workshop show that participants feel *hope*, *doubt* and *anticipation* most, when they have to make decisions. To some extent, they feel *relief* and *satisfaction* too. Especially when the decision has been made, they feel relieved.

The participants experienced the workshop highly positive and felt confident about the outcome, this can also be seen in the results from questions 3 and 5 from the questionnaire after the workshop. Interesting was that participants mentioned that the outcome was not very surprising. Before the workshop they could more or less give this outcome on the forehand, but the way to this outcome was highly appreciated.

*"It creates a good and clear overview that brings the decisive moment for innovation closer by. In our case, the rough outline of the result was not very surprising (best-worst), but the relation to each other and the details 1-to-6 gave new insights. It being not very surprising is perhaps a good thing since it confirms our initial thoughts and therefore gives us confidence to proceed with the best ones."* – P1

*"The six perspectives gave me the feeling that every aspect of the company is touched and taken into account. It felt complete."* – P1

*"This tool gives us the opportunity to assess cases independent from each other, despite they do not distinguish much from each other."* – P2

The researcher observed the following insights from the labeled expert reviews. The Six Perspectives are designed for exploring new opportunities and areas, but this tool shows the potential to use the Six perspectives in another stage of the process too. Ranking concepts/activities relatively on each other on a linear axis. All three of the experts have their doubt about how to call this axis, it should be clearer about what to measure. But this doesn't influence the emerging visualization. The emerging visualization as an outcome from the workshop has been perceived as appealing and helpful to make a decision on.

*"I like the idea of using the six perspectives as a final check. Because if you use them early on in a process for*

*exploration, why won't you use them to reflect on your output at the end?"* – P5

*"Everything is influenced by change. Everything what happens in the market influences the business value proposition. With this tool we evaluate and reflect on the progress every now and then."* – P4

## LIMITATIONS

Some limitations of this research need to be mentioned concerning validity and reliability.

The tool was only tested in-context once, due to limited time and companies who wouldn't share their innovation activities for the purpose of this research.

There was no data about the emotions of participants during innovation processes to compare the received data with. Above all, the participants emotions data does not say anything about the quality of the process itself. Only about how the experienced the process.

Moreover, results from the experts can be limited because they are working within the same company.

### Next steps

To assess the activity more in depth, the researcher proposes to add two more axis for every perspective. The additional axis who are suggest are *time* and *probability of occurrence*. By adding two axis, activities can be assed more in depth. This can help the participants to make more grounded decisions.

Another next step is to test the *decision making dashboard* at more companies and perhaps in different contexts.

## CONCLUSION

In this research the potential of enhancing facilitation of strategic decision making by co-creation was investigated. In a co-creation workshop, the designed research prototype was tested and reviewed afterwards by experts in the field.

The findings of this research show the likeliness of enhancing facilitation of decision making with the *Decision Making Dashboard*. Participants feel *confidant* and *satisfied* about the outcome of the co-creation workshop. The facilitation with this tool, helped them to confirm their thoughts.

Two out of three experts said to value the *Decision Making Dashboard*, not only as part of the Business Value Proposition but also parallel to innovation methods.

The researcher proposes that this tool can be part of a (strategic-) designer's toolset, potentially appropriate for different moments in innovation processes for business strategy. The tool gives the opportunity for a designer as well as managers to visualize relation between different activities to reflect upon them.

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