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IMPACT DIMENSIONS OF IDEATION WORKSHOPS ON THE INNOVATION CAPABILITY OF SMES

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ABSTRACT

Aiming at innovation leadership, large companies increasingly invest in ideation spaces for conducting ideation workshops allowing them to reduce their innovation lead time. On the contrary, small and medium-sized enterprises (SMEs) cannot afford to do the same due to limited resources. An alternative for SMEs is the use of an external ideation space with professional coaching for a few days. Our guiding research question is: in what dimensions have such onetime ideation workshops an impact on the innovation capability of SMEs? To answer this question, we (1) conducted ideation workshops which acted as impulses on the SMEs, and (2) conducted semi-structured follow-up interviews with key workshop participants. We found that the main impact dimensions are: Product Ideas, Product Development Process, Organization, as well as People & Culture. The dimensions are divided into more concrete sub-dimensions which enable innovation leadership-pursuing practitioners to take a well-grounded decision whether a workshop participation would be beneficial for their company.

Keywords*: Design thinking, ideation workshop, SME, impact, innovation capability.*

1. INTRODUCTION

Due to the continuously shortening of product life cycles and the globally rising pressure to innovate, the innovation capability of companies gets more and more important. Aiming at innovation leadership with very short lead times of new products, large companies increasingly invest into ideation spaces or creativity departments for ideating and developing new products by means of conducting ideation workshops. On the contrary, small and medium-sized enterprises (SMEs) cannot afford to do the same due to limited resources. One option for SMEs to support ideating new concepts for products and services in ideation workshops, is the use of an external ideation space (Moultrie et al 2007) for a few days, complemented by coaching (Heck et al 2014). So far, there has been no detailed investigation of the impact of such company-external ideation workshops. However, feedback from the participants – CEOs and staff from several companies – after such ideation workshops indicate a multi-facetted impact on the company, especially on its innovation capability (Heck et al 2015a).

This paper aims at elucidating the impact dimensions of ideation workshops on the innovation capability of SMEs. Our guiding research question is: *in what dimensions have such onetime ideation workshops an impact on the innovation capability of SMEs*? With these dimensions at hand, practitioners, i.e. CEOs and leaders in (innovation) management, are able to take a well-grounded decision whether a workshop participation would be beneficial for their company. Furthermore, the dimensions could guide the change management process after the workshops within the companies.

The reminder of the paper is structured as follows. Section 2 reviews the literature on innovation capability, performance measurement and impact measurement. Section 3 describes the research design, while the results in section 4 are described in the impact dimensions *product ideas, product development process, organization, people & culture*. Section 5 discusses the findings regarding the body of literature. Section 6 presents some concluding thoughts.

2. THEORETICAL & EMPIRICAL BACKGROUND

In order to frame the discussion about the impact dimensions of ideation workshops on the innovation capability of SMEs, this section focusses on the influence of innovation capability on the innovation performance of companies, which in turn might have an impact on their organizational performance. Thus, we review recent publications covering the intersection of innovation (capability), performance (measurement), and impact (measurement).

2.1 INNOVATION CAPABILITY

Regarding innovation capabilities, Laforet and Tann (2006) for instance describe the innovative characteristics of small manufacturing firms, focusing on the inter-relationship of the three business elements of (1) product, (2) process, and (3) ways of working. They identified market anticipation, customer focus, commitment of CEO, processes and new ways of working as drivers for innovativeness. Furthermore, innovation was part of the business strategy and goal-oriented, even though it was rather about developing new ways of working than new product innovations. As main constraints, they identified customer dependency, skills and knowledge acquisition, as well as a poor learning and networking attitude. Islam et al (2009) focus specifically on the interplay of team learning, top management support, and new product development (NPD) success. They find that knowledge acquisition and information interpretation are significantly related with NPD success, and that top management support moderates the relationship between team learning and NPD success.

2.2 PERFORMANCE MEASUREMENT

Regarding performance, Hudson et al (2001) elaborate on the theory and practice in SME performance measurement systems, and find a discontinuity between both of them. They conclude that the strategic performance measurement development process for SMEs requires to be "resource effective and produce notable short term, as well as long term benefits, to help maintain the momentum and enthusiasm of the development team." Alegre et al (2006) developed a measurement scale for product innovation performance in terms of the two complementary dimensions of efficacy and efficiency. They state, however, that further research is needed to link their measurement scale with organizational performance or other organizational phenomena. While Chen and Mohamed (2008) describe the contribution of knowledge management activities to organizational business performance, they can show that knowledge utilization is the strongest contributor to general business performance. Healy et al (2014) focus more on the perception of product advantage, new product development and organizational performance. Their results suggest that large companies consider quality and costs of products as advantage driver and concentrate on market measures, whereas SMEs are more concerned with satisfying customer needs and focus on customer acceptance measures. Regarding organizational performance measures, larger firms concentrate on market share, whereas SMEs focus on growth. Profitability is important in both cases.

2.3 IMPACT MEASUREMENT

Regarding the impact, Calisir et al (2013) worked on the impacts of learning orientation on product innovation performance, and found that open-mindedness is the sole predictor of product innovation efficacy and efficiency. They find further that a shared vision and commitment to learning have no significant impact on product innovation performance. Martinsuo et al (2013) evaluate the organizational impact of product development projects and find that pre-project value perceptions explain post-project value perceptions at a significant level, depending on the value dimension, i.e. financial, technology and market value. Roach (2011) elucidates the impact of product management on SME performance, and found that product management behavior fully mediates the market orientation–firm performance relationship. Furthermore, the channel analysis/support as well as market/technical integration shall account for this effect. Cao et al (2011) investigated the impact of front end innovation in new product development in Japanese manufacturing companies. They found that the more market and technical uncertainties are reduced during the front end, the higher is the effectiveness of NPD projects. Moreover, the more new projects are planned prior to start, the more both uncertainties are reduced. Finally, for industry goods firms it is easier to plan and has a greater impact on market uncertainty reduction, compared to the consumer goods firms.

3. RESEARCH DESIGN

In order to address the guiding research question, we conducted in a first step ideation workshops which acted as impulses on the SMEs, and conducted secondly semi-structured interviews with the sponsors after the workshops.

3.1 DATA SOURCES & SAMPLE

The ideation workshops comprised three phases: First at identifying the right question by putting the user's needs at centre stage, second at identifying promising solutions to these needs by an iterative learning process, and third at getting things done by preparing the next steps for implementing these solutions within the company. We observe the participants during this process, and collect data about their interim results such as product ideas and prototypes. As it is difficult to compare different product development processes (PDPs) and especially their fuzzy front end at different sites, we co-located all PDP-beginnings at one central site by conducting the ideation workshops in the ideation space (called "Mobiliar Forum Thun", MFT) at Thun castle. More details about the workshop progresses can be found in Heck et al (2015b).
The semi-structured interviews with key workshop participants were conducted at the companies' sites and dealt with the impact of the ideation workshops onto the companies, especially on their innovation capability (see Table 1).

3.2 DATA COLLECTION

Two to eight months after the workshops, we visited the companies and interviewed the key workshop participants. Each interview was preceded by establishing informed consent, with all participants permitting audio recordings to be made (with one exception where only handwritten notes could be analysed). Each interview was conducted using a semi-structured protocol, covering the topics of the company's prior product development activities, a recapitulation on the specific ideation workshop, and the impact this workshop had on the company.

Industry	Workshop topic	Duration WS / interview	Interviewee position	ID
Manuf.	Individualising chimneys	2days / 60min	CEO	A1
Manuf.	Re-thinking office lightning	2.5days / 43min	CEO	B1
		10min	Head of R&D	B2
Manuf.	How can our machines reduce long change over times and incorrect handling?	2.5days / 25min	Head of pre-development	C1
Insurance	Mobile excitement 5.0	2.5days / 32min	Head of marketing	D1
Energy	What else is energy?	2.5days / 52min	Inno. manager	E1
Manuf.	What does our new [machine name] look like?	2.5days / 41min	CEO	F1
Manuf.	Mirrored bathroom cabinet 2	2.5days / 68min	CEO	G1

Table 1. Information about the companies, the ideation workshops, and the interviewees

3.3 DATA ANALYSIS

All audio recordings were transcribed verbatim and augmented with handwritten notes made during the interviews. The transcripts comprise more than 30 000 words and were analyzed by two independent coders. During the analysis, emphasis was placed on identifying themes for their relevance to the concept of impact dimensions rather than their occurrence within the interview transcripts (e.g. changes in daily business). The categorization of the impact dimensions was intended to represent the statements of the interviewees rather than to satisfy the requirements of classification theory. Although the analysis was conducted on the verbatim transcripts with e.g. broken sentences, the translated quotations provided here are edited for ease of comprehension. Any other additional editorial substitutions or additions are enclosed in square brackets.

4. RESULTS

Our analysis resulted in the following main impact dimensions of ideation workshops: (1) Product Ideas, (2) Product Development Process, (3) Organization, as well as (4) People & Culture. Each dimension is further divided into sub-dimensions illustrated by quotes from the interviewees'. These quotes refer solely to the ideation workshop's impact within the companies.

4.1 PRODUCT IDEAS

In all ideation workshops, the participants developed several product ideas and concepts. These ideas and concepts got – to some extent – developed further, even though not all of these concepts will be introduced to the market. Besides such concrete PDP activities, the management decided to occupy some ideas to foster a certain company image. And a product concept can also become a dictum within the company.

> *We will develop two of the four product ideas/concepts further – A1*
>
> *"The [concept] fascinates all of us, and we decided to have such a [concept] at the industrial fair… to occupy this idea… that helps establishing our image" – B1*
>
> *"For those who participated in the workshop, [idea label] became a dictum. Frequently, in discussions, they say ' that is exactly [idea label]'" – D1*

4.2 PRODUCT DEVELOPMENT PROCESS

4.2.1 KEY PERFORMANCE INDICATORS

The measurement of product development performance is rather limited at the SMEs that we analysed. Those companies that develop according the 'Stage Gate' PDP logic typically track the dates of passing the gates. In our sample, however, this only applies to the manufacturing companies as only those firms use formal stage-gate models, which they adjusted to company-specific characteristics. Although continuous tracking of KPIs is lacking, they evaluate their performance based on individual and qualitative measures and feel that they are now developing products faster and with less problems.

> *"Numbers we have… products developed during the last three years… percentage on sales, we can calculate the lead time [from the first to the last Gate] of each single product… but it depends on the complexity of the product" – B1*

> *"Due to the relatively long development cycles, we can currently not quantify [whether the PDP is faster], but I am convinced that we got faster" – G1*

4.2.2 PROTOTYPING & TESTING

Especially the second phase of the ideation workshops is dedicated to prototyping and testing. The participants have about one day to utilize several materials for their various prototypes and to test them against the beforehand investigated personas' needs and pain points in interactive feedback sessions. This – in the workshops as valuable perceived – experience gets adapted in the corporate context, especially the PDP, but diffuses also in other departments, e.g. into manufacturing for a reconfiguration of production facilities.

> *"When we have a project meeting or a discussion, then someone, I mean, then I quickly grasp cardboard and scissors… and then we have a look. Some time ago, I did more sketches, but today I do more very fast and simple models" – G1*

> *"We have the functions – that were unknown or we didn't trust in – isolated, and test them individually" – F1*

4.2.3 ITERATIONS & DECISION TAKING

During the ideation workshop, the participants go through several (up to 15) so-called "iterations", comprising of a working phase (e.g. prototyping) and a presentation-feedback-discussion phase (including the prototype testing). After each iteration, the participants are encouraged to base their decision for the next steps on the received feedback. This iterative process gets adapted within the engineering design departments, wherein the prototype testing provides a valuable basis for decision-making.

> *"The project manager provokes these loops, i.e. he trains 4 people in this rhythm. And they learn it. Eventually these guys are in the core teams of other projects, and if their characters are dominant, they will introduce the rhythm there as well" – B2*

> *"I see the behaviour of some guys [the participants], that is more dynamic… and that has in either case an influence on the lead time of these projects. A positive influence. It might be difficult to measure it, I mean, if you are a week faster in reference to a two-months Stage… but what I highly appreciate is thanks to these small cycles, we can see, that there is a technical progress in the projects" – B2*

> *"And I believe that it got also more cost efficient, because we do less mistakes… we have a much better feeling [for the process], and also for decisions… Last Monday we had a meeting with a design agency… and I were much more confident to provide feedback 'no, that doesn't work, or that is cool' as we did prototypes during the workshop. Thus, I developed a better feeling for the problem" – G1*

"The development room is the place where you meet. Where you can study the object, not some pictures of it… or if it is a small thing [i.e. prototype], you can bring it along with you so that the people can watch and touch it" – F1

4.2.4 IDEATION WORKSHOPS

One company "copied and pasted" the whole ideation workshop format and integrated it in their development process. They are now conducting independent ideation workshops for new products.

"We had a one-and-a-half day [ideation] workshop… and our agents from Italy were really enthusiastic about it… that has been a new world to them" – G1

"I believe the central point is that you don't have a meeting where all people think about something, but that you form several groups who work on something – whether they build prototypes or discuss in small teams doesn't matter – one inspires one another and shares ideas mutually, and then you consciously go apart [again], that is the point of matter" – G1

4.2.5 CUSTOMER & USER ORIENTATION

The first phase of the ideation workshop is dedicated to the analysis of potential user needs and pain points. This user (and customer) orientation is generally perceived as valuable for the effectiveness of product development, but might also lead to a more efficient (i.e. faster) PDP as the product requirements become clearer and less extensive. Moreover, 'having the user in mind' may also diffuse in various corporate functions.

"That is great to hear, isn't it? He [i.e. the customer] thinks it was really efficient, that it has been worth it to come to Switzerland and to participate in a workshop with [us], because now I know exactly what to do" – G1

"The big difference is that they develop a product for one customer. Then it is clear, you need… and can deliver. If it is a mass-produced product, you think about… ten criteria, and these array of criteria prolongs the PDP tremendously" – B1

"We came from a world where you digitalize paper in terms of printed forms. Goal [of the workshop] was to turn this thinking... And I believe we did a good job… with the personas we created, we could put us into their [personas] situation… And what I really like is, to change their thinking fundamentally, that also people in the engineering department etc think from the customers perspective" – D1

4.3 ORGANIZATION

4.3.1 INTERNAL STRUCTURE (HIERARCHICAL)

As the interdisciplinary work during the ideation workshop is generally perceived as a positive pre-condition for the workshop outcome, some companies have started to put more resources into their innovation activities, such as hiring new staff or founding an interdisciplinary innovation team which meets every week on Monday morning, to work across business units on new products and business services.

"We founded an innovation club… and we meet us every week for half a day. That is Monday morning [so] you have the weekend beforehand, that you are [mentally] not too much in your daily business… and so we allow us these half days for new innovations. …A truly interdisciplinary team. …and we took care that from all [business] units at least one person joins the team" – E1

"[We] will get a new employee at the beginning of May, and that is really his job… I mean innovations in the [company]-team" – E1

4.3.2 External Structure (Supply Chain & Partners)

Besides the effects on the internal structure of a company, ideation workshops also effect its external structure, the environment of the company. The interviews revealed a stronger collaboration within the firm's holding structure, within their supply chains with both suppliers and customers, and with other external partners such as universities or other companies for specific topics.

> *"And then, second topic [topic name], as it is engineering related, we identified in collaboration with [holding] a few possible partners and interviewed them" – C1*

> *"It worked well with the supplier… as Mister [name] came to us – I told him beforehand and explained it to him – when we conduct a workshop, that is not a normal structured meeting… he came at 10am, and we had started already at 8am. Thus, we were already working. He saw several teams at work, observed it and were interested and excited. And [he] got a broader understanding of it" – G1*

> *"What we would like to try is, to do that increasingly with our customers. Yesterday, I got a request for a project proposal of the biggest French [industry] manufacturer… I want to collaborate with them, but we have also certain requirements – that we, with the PMs [product managers] of this brand, want to conduct a joint workshop. With them together define personas, that we know exactly what the target customers are, and also to work with prototypes… and involve them at a very early stage, so that we develop the product line together. …the decision makers, at these design oriented companies, in the PM are mostly designers… and if they have a partner… who speaks their language, picks up their ideas, and if we have a good collaboration, than it could be a great added value" – G1*

> *"We developed this idea further and initiated a bachelor thesis…He is currently working on it. Took up a few ideas which were born [during the ideation workshop]…and will implement one of the solutions next week. …Spontaneously I would say, the workshop encouraged us to collaborate even more with students and interns, in the style of 'just try it'" – C1*

> *"That is a high-tech disease. You think, you are in high-tech, we are the specialists and the best whosesoever in this area. …and to broaden the perspective, there we have learned, the teams [from the new product] are now able to ask for external support. They got design experts…and also experts for vibration simulation" – F1*

4.3.3 Physical Structure (Space)

In the feedback directly after the ideation workshops, participants regularly mention that the ideation space would have facilitated their creativity. Thus, some companies try to facilitate the creativity of their employees by means of creativity stimulating work places, e.g. special rooms, complementary to their traditional office work places.

> *"[The room] will be used as a workshop room. And there are people who use it for working quite frequently… In the beginning, it has not been used that much, but now the people begin to use it more and more… especially the ones who participated in the ideation workshop" – E1*

> *„It's an old house… with a beautiful old cockle stove… even with our international clients – they might like such an old Swiss building… and then we have to decide how to furnish and set up the rooms, that we can manly prototype there" – G1*

4.3.4 Freedom

Generally, the interviewees recognize the importance for allowing oneself room for being creative and innovative. This freedom might have several characteristics, such as a spatio-temporal freedom from the daily business which might, in turn, lead to a mental freedom for being open minded.

"It is a self-organising team, if they have an idea what they want to change – and all agree about that – than we do so. And they had the idea… during the morning they were so productive, and in the afternoon their productivity decreased. Thus, we do only half a day, are more productive, and we see more often [every week rather than bi-weekly]. It's better this way" – E1

"I think they have one big advantage. That is like a firm in a firm… where 17 or 18 people, they have also a prototype manufacturing etc and they do everything within this small team. The others are integrated within the big organization…" – B1

"A lot of people (who have operative responsibilities) always think about 'what is feasible?' And if they are not in their role, in another situation, they can let go and get another perspective… on the greenfield" – D1

4.4 PEOPLE & CULTURE

4.4.1 TEAMS

As the ideation workshops are staffed interdisciplinary, the participants can experience an interdisciplinary working style throughout the workshop. More importantly, the management is able to observe the fruitful collaboration of people who do usually not work together. After the workshop, the participants carry their experiences into different parts of the company. In the long run, this can facilitates more reliable working results, increases the performance of project teams, improves the collaboration in general, and might lead to a better corporate performance.

"There is no 100% certainty about how the customer will behave in reality, but we get a plausible assessment, and the more interdisciplinary team assessments you have, the more reliable the assessment gets" – D1

"A lot of the people who participated in the workshop… are now in the core team… and they took it to[their] heart. They work also really good together" – F1

"But maybe it is a bit exaggerated to expect that you can change the culture within six months. I think that will take a bit longer" – F1

4.4.2 SKILLS

A rising skill-level could established by the workshop participants via presentations about their experiences to their colleagues in a direct manner, or indirectly via a close collaboration of participants and non-participants. Moreover, in case that the workshop indicated a lacking of skills in some functions such as project management, these skills could be gained individually.

"[How did staff, that didn't participate in the workshop, learn or absorb the working style from the participants?] Via the workshops… we did a comprehensive presentation to show all key departments what we did. Second, we conducted own workshops in which people participated who did not participate at MFT. It is simply good to have enough people from MFT at these [internal] workshops… who know how it's works. It has a certain matter of course for them" – G1

"We have the goal to train [Name] from the PM in her moderation skills… that hasn't happened yet, but I think it will be well-established there" – G1

4.4.3 MINDSET

Also the mindset of the staff can be affected in two ways by an ideation workshop. Either the participants directly change their mindset during or after the workshop, or the management recognizes advantages of the exemplified mindset during the workshop, and subsequently encourages their staff to adjust to specific ways of thinking or habits.

"One of our goals was this 'energizing', and we managed to do so well" – F1

"To just [3D-] print some parts and to give the whole thing a chance, there we got somehow more courageously" – C1

"These intercultural and cultural aspects have to be facilitated. By encouraging your staff to 'just try it' and by practicing it again and again. I would do it again, at any time. I would like to come again [for another ideation workshop]" – F1

"The people are talking about it - if someone keeps something in mind - and they rhapsodize, or talk about it in the breaks etc… I hear again and again some inputs from the workshop and think that is really really important for us" – B1

4.4.4 FEEDBACK & COMMUNICATION

During the ideation workshops, we encouraged the participants to applied several feedback-roles for considering certain aspects during their feedback provision. These distinctive feedback-roles as well as the more generally iterative idea sharing gets – more or less easily – adapted by the companies.

"What we should actually do is a much faster, more intense, exchange of ideas… we should do that in the morning, and in the afternoon" – F1

"The structured feedback is relatively demanding in a group with people who didn't experienced it before. It is much easier [intern] as the most people did experience it… but with customers or suppliers it is much more complicated" – G1

5. DISCUSSION

The results show an impact of the ideation workshops on the innovation capability (cf. section 2.1) of SMEs in the dimensions of product ideas, product development process, organization, as well as people & culture. These findings are similar to the drivers of innovativeness described by Laforet and Tann (2006). Furthermore, our results indicate an impact on the innovation capability regarding the findings by Islam et al (2009). First, as the workshop facilitated team learning (among the participants), and second, as the top management (e.g. CEO) supports the development of innovative products, expressed in sponsoring of (and participating in) the ideation workshop himself.

Regarding the performance measurement (cf. section 2.2), our findings go along with Hudson et al (2001), who found that SMEs typically have only a scarce (and poor) implementation of KPI tracking systems, i.e. performance measurement systems. While Healy et al (2014) found that SMEs are concerned with satisfying customer needs, our findings indicate that we can actually strengthen the SMEs ability to focus on its customer and user needs with the ideation workshops.

Regarding the impact measurement (cf. section 2.3), the findings by Calisir et al (2013) cast the ideation workshop concept in an ambivalent light; on the one hand, the participants are explicitly encouraged to work open-mindedly on their new product ideas (in phase one and two), and on the other hand, working towards a shared vision (in phase three) shall – according to Calisir et al (2013) – have no significant impact on the product innovation performance. When the products currently under development are on the market, we might be able to refer back to this point.

6. CONCLUSION

The main contribution of this paper are the dimensions of the ideation workshop impact on the innovation capability of SMEs, namely *product ideas, product development process, organization,* and *people & culture*. Assessing their current performance along

these dimensions helps innovation leadership-pursuing practitioners to take a well-grounded decision whether a workshop participation would be beneficial for their firm. Moreover, the dimensions may be used as guideline for the change management process after a participation. Additionally, the results contribute to the recent literature regarding SMEs innovation capability, performance measurement, and impact measurement.
As the chosen data source and the applied sample size allows so far only a qualitative analysis of the workshop impact, these results will nonetheless support the development of a survey for a quantitative analysis of the workshops' impact on SMEs. Moreover, the results will contribute to forthcoming ideation workshops and their continuous improvement. Finally, and in a broader scope, this research will foster the collaboration between academia and industry, especially the SMEs in Switzerland.

ACKNOWLEDGEMENTS

We would like to thank DieMobiliar cooperative for funding this research and all interviewees for sharing their valuable insights and experiences.

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