



The Need of an Innovation Agent: Requirements and Competencies of the Human Dimension in Innovation Management

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Abstract. The aim of this research is to introduce new competencies at the interface between corporate strategy and managing innovation in the automotive industry as strategic perspectives shift from a one-dimensional thinking in technology to a two-dimensional thinking in systems and business designs. Therefore, it is necessary to understand the trends in business designs and the way to get there. This requires an innovation agent with the competencies to translate the findings into suitable actions. We extend the principles of the SPI manifesto in the context of a learning organization, dynamic models, and focus.

The question of how to strategically evaluate innovation projects of an automotive tier 1 supplier is addressed by the analysis of qualitative interviews in a single case organization. For this purpose, the model of the Innovation Landscape Map is used, which represents the initial situation of the innovation projects of a company on its technical competencies and the business model. This internal view is then extended by an external perspective of megatrends and external interviewees to counteract purely corporate thinking and provide a more holistic view.

The results show gaps between the desired allocation and the actual allocation, as well as internal and external views. Finally, in a self-reflection it is determined which possible competencies are necessary for an innovation agent in the implementation of a new tool in innovation management.

Keywords: Innovation · Strategy · Applied research · Innovation agent

1 Introduction

The need to rethink innovation is essential for the survival of organizations. They create competitive advantages, increase productivity, stimulate consumption and are therefore a prerequisite for growth, sustainability and profitability [1–4]. Ultimately, they make a significant contribution to securing the future of a company. However, innovating is easier said than done. We explore the human dimension in the management and leadership of

innovation. In fact, there is only a very small number of successful innovation projects compared to those that fail. Therefore, innovations involve a high level of risk [5]. A common problem among companies is the alignment of innovation with strategy [6]. We build on the SPI manifesto [7] in supporting the values people, business, and change, in particular, creating a learning organization, the use of dynamic models, and focus.

In theory, there is a number of tools that can help companies with this problem. In our research we suggest the innovation landscape model by Pisano [6]. The first step is to determine the initial situation to get to a successful innovation strategy that fits the overall corporate strategy. The model is crossed by two axes, of which the vertical axis describes the degree of novelty of the business models of the innovation projects and the horizontal axis shows the degree of novelty of the technical competencies required for the projects. It allows you to consider and compare the possibilities and ask questions about how much value can be generated and captured through different combinations of innovation projects [8]. In this context, only the perspective of the Tier 1 company is considered.

External views can help to identify new technologies and innovation paths in the first place. But this has to be done early on because new products and services need to fit in their times and it takes a lot of time to get from an idea to a finished innovation at all. Since product innovations take an average of two to five years from idea generation to market launch and are then expected to be sold for around five to ten years, it is particularly important to take these future developments into account when innovating so they happen in the right context [9, 10]. However, there is no method to predict the future [11]. The reason is the VUCA world (volatility, uncertainty, complexity; ambiguity), which has been gaining more and more importance in recent years as it affects every industry. These environmental conditions don't make the process of getting to a reliable strategy an easy task, as internal resources and processes need to adapt as quickly as possible to rapidly changing circumstances. Infusing the strategy process with the external view of foresight strengthens the strategic thinking and leads to a flexible strategy that helps mastering these challenges and taking advantages of opportunities [12]. In the context of future mobility, the views of IT and connectivity companies also play an important role and contribute to a better understanding of the overall picture.

In practice, the applicability of a model from research is particularly important [13]. Therefore, the practicality of the innovation landscape map is of primary importance. We extend the model with the human factor, what requires an interdisciplinary and interconnected approach [14].

This leads to the following research question:

1. How to strategically evaluate innovation projects of an automotive tier 1 supplier?
2. What are the pre-requisites for managing and leading change, i.e. the innovation agent?

2 Methodology

Our research follows a single case, qualitative approach since it aims at a description of the subject matter. This approach allows detailed investigation of a few units by using

interviews with semi-structured interview guidelines and an interpretative analysis of the data. The empirical data basis has the advantage that the data set can be tailored precisely to the research interest. The Innovation Landscape Map serves as reference model in order to answer the research question. In order to be able to classify the projects on the y-axis of business models, the Business Model Canvas [15] was used as a theoretical basis, for the technological competence x-axis a subjective measure based on knowledge available in the organization was used.

A purely quantitative, deductive approach is not feasible because of the limitation of historical data. We need to inductively find new ways to lead innovation projects as the uncertainty in the mobility industry requires a new understanding of innovation.

The sample contains 19 innovation projects in connection with products from different segments of the company in different project stages of which two were excluded after the interview because they did not fit into the sample. It was a project where part of the production is replaced to save costs and a classic construction project. The allocation of the projects took place through interviews with project participants, most of whom came from pre-development and had no business management background. This circumstance was taken into account in the preparation of the interview guidelines. The questions were first asked in a project-specific manner without mentioning the theoretical models. After that the Innovation Landscape Map was explained, and the projects located on the basis of the statements made previously. In order to obtain a relative view of the whole allocation and to validate the allocation, the projects were then evaluated by the innovation management.

In addition to the 19 innovation project leaders six internal representatives of the functions market intelligence, innovation management, key account and group development, as well as four external experts from the areas of research, consulting and customers of the company were interviewed to validate findings, using semi-structured interviews following the methodology mentioned above. The reason for both internal and external participants is to avoid a one-sided perspective exclusively from the company's point of view. The interviews focused on the desired allocation of the projects in the Innovation Landscape Map, as well as the subjectively perceived relevance of the individual quadrants for the company. In addition, respondents were asked to rate the actual allocation in the map and to mention opportunities and risks because of it. The statements were then analysed, and the perspectives contrasted to reveal possible gaps.

3 Findings

Based on our research, differences between the project allocation by the project team members and the innovation manager, the internal and external evaluation of the allocation as well as the actual and the desired allocations were identified. On top, the research also dealt with the megatrends of the industry. In the following sub-chapters observations about projects distribution on the Innovation Landscape is displayed.

3.1 Difference Between the Project Allocation by the Project Team Members and the Innovation Managers

In the interviews, the project participants were able to provide mainly very detailed information on the technical implementation of the respective projects, while the innovation managers had a more overarching view on the projects. Comparing the two allocations, approximately 50% of the projects were moved to a different quadrant of the Innovation Landscape Map by the innovation managers. The reason for this seems to be primarily the innovation managers' view of the "big picture" and that they could see the projects in relation to each other. The project participants, on the other hand, had no knowledge about which other projects were included in the thesis. In most cases, they also have little contact with other projects in their daily work, so they have a hard time assessing their own project. In addition, some of the project participants stated that they knew little about business models, so it seemed especially difficult for them to classify it within the y-axis (Fig. 1).

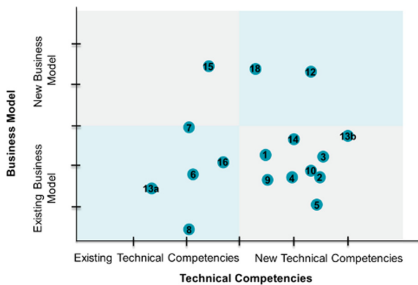


Fig. 1. Allocation by project participants

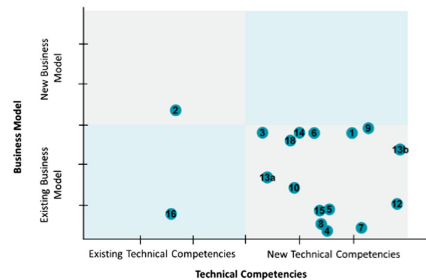


Fig. 2. Allocation by innovation managers

In the further course, only the classification by the innovation managers (Fig. 2) will be discussed, as this illustration of the projects presents a more reliable picture due to the relative consideration.

3.2 Difference Between Internal and External Evaluation of the Processed Map

Internally the low number of projects in the upper quadrants is viewed critically, as there is a fear of missing out on important opportunities. The reason for the predominantly low distribution of projects in the Innovation Landscape Map is that the company is very customer-driven and has so far only produced hardware. However, this could become obsolete in the future, which is why the upper quadrants seem to be becoming more important. Therefore, the company needs to think about software, since new business models are more likely to be possible with it and the upper quadrants would offer a lot of opportunities.

Externally the one-sided allocation was also criticized. Here, too, the respondents saw a high risk of missing important opportunities by being weakly positioned in the area of new business models. It was expected that the company would have more projects in the quadrant of routine innovations. This led three of the test subjects to ask whether

there was something wrong with the basis and the existing competencies that they were focusing so much on new technical competencies. One interviewee assumed that the high number of projects in the radical quadrant is the result of a classic innovation funnel. A lot is tried out, but usually only a small part of innovation projects is successful. The problem is that other technical competencies may be in demand and there are too few projects in the routine quadrant that could compensate for this. In general, the external experts were not surprised to see such a split. However, they critically questioned how clearly new and old technical competencies could be distinguished. In addition, it has to be taken into account that projects that used new business models or technical competencies years ago are now routine innovations. But the fact that the graphic does not show any projects in the area of architectural innovations is not particularly surprising, since projects can be planned least in this quadrant. It is necessary to experiment with new ideas here. However, fundamentally new ideas, such as those required in this quadrant, are not always accepted by an organization. Hence, the need for an innovation agent is necessary to understand and react on this.

3.3 Difference Between Actual Allocation and Desired Allocations

In principle, you can imagine that this representation, with a few more projects in the routine quadrant, could be transferred to the overall picture of all projects. This would correspond approximately to the following percentage distribution: 6% disruptive, 88% radical and 6% routine innovations. As mentioned before, this one-sided distribution is seen as a risk and a broader distribution is desired. Even though the four desired allocations were relatively different, a clear tendency for the lower two quadrants can still be seen.

From a pre-developer's point of view, 20% routine, 60% radical, <10% disruptive, >10% architectural innovations would be preferred.

From a management perspective, however, there is a presumed desire to invest 95% in routine, approx. 3% in radical, <1% in disruptive, >1% in architectural innovations, since most revenue is generated by projects in the routine quadrant.

Innovation management mentioned the values of 40% routine, 40% radical, 20% disruptive and 0% architectural innovations.

A similar view is taken of the Market Intelligence department. Here, a value of 49% was named for routine innovations. Radical and disruptive innovations then appeared to be equally important, with 21% each. With 9% for architectural innovations, this allocation should also avoid taking too high a risk, which is associated with this quadrant.

4 Reflection

During the process, it was also noted that some of the interviewees struggled with the model. It therefore seems important to include the human factor in such a project and to deal with the competencies that the innovation agent needs as the person carrying out the tasks. In the different stages of the process of transferring a model into practice different competencies are needed. Referring to Riel et al., the competencies can be divided into four building blocks [14].

Emotional competence is important to interpret the behaviour and statements of the interviewees and to be able to react appropriately. Educational competencies describe the knowledge about concepts, principles, structures, strategies, methods and tools that the innovation agent can use in the innovation journey. This building block plays a particularly important role in preparation. But they also help in the subsequent stages of the process, for example in interpretation of the findings. Empirical competencies help to improve the entire journey through growing experience, especially when the process is carried out several times. Use cases where it has been applied successfully or failed are also helpful. The fourth competence is experimentation, which allows trying new approaches in the individual innovation journey and improve it.

Together with the three phases of the implementation process, these four building blocks result in the following matrix (Fig. 3).

	Preparation	Execution	Evaluation
Emotional		X	X
Educational	X	X	X
Empirical	X		X
Experimentation		X	

Fig. 3. Needed competencies of an innovation agent

For successful implementation, it is not sufficient to be good in only one part of the areas. These four building blocks are prerequisites for the innovation agent to find his way in new, complex and dynamic situations of the innovation endeavour in a self-organized way and to be able to act appropriately. When selecting an innovation agent, therefore, care should be taken to ensure that he or she has all these necessary competencies.

5 Conclusion and Further Research

The Innovation Landscape Map provides a good overview to address research question 1: How to strategically evaluate innovation projects of an automotive tier 1 supplier. It illustrates the required technical competencies of the innovations and how the business model is applied. With the addition of external perspectives, you get a more comprehensive picture that encourages you not only to think outside the box, but also to think in different boxes. This in turn helps to drive innovation forward. Especially important in this process are not only the tools and methods but also the competencies of the innovation agent, addressing research question 2. These crucial competencies should therefore be examined in more detail in further research. In this context the Business Model Canvas introduced by Osterwalder [15] might present a path for further elaboration.

The lessons learned from our research include, among others, a joint understanding of innovation, the acceptance of the Innovation Landscape as a tool to display current and future projects, to reflect on the generic findings, and to identify what actions need to be taken. And only then the role and the importance of an innovation agent shifts to the top of the agenda.

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