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Published in:

Proceedings of The Boundary-Crossing Conference on Co-Design in Innovation

Publication date:

2013

Document Version

Publisher's PDF, also known as Version of record

[Link to publication from Aalborg University](#)

Citation for published version (APA):

Mabogunje, A., Hansen, P. H. K., & Berg, P. (2013). Exploring Innovation – A Language Approach. In R. Smeds, & O. Irrman (Eds.), Proceedings of The Boundary-Crossing Conference on Co-Design in Innovation: The Boundary-Crossing Conference on Co-Design in Innovation (pp. 39-50). Aalto University Publication Series Science & Technology.

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Exploring Innovation – A Language Approach

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ABSTRACT

Innovation Management is a complex task that requires improved methods to support the exploration of multiple innovation dimensions. We suggest firms to adopt a language inspired approach in order to improve existing methods. The language approach is supported by a graphical innovation profile that maps the innovation features and choices. The paper demonstrates the applications and perspectives of this approach with reference to a qualitative case study.

KEYWORDS

Innovation Management, Innovation Management Models, Innovation Viewpoints

INTRODUCTION

An important aspect of managing innovation is the ability to assess, review, and challenge a number of relevant parameters and viewpoints associated with the competitiveness of the product or service. Several empirical studies emphasize that successful innovation is more likely to happen when multiple innovation viewpoints are applied and are specifically impacting the final solution (Sawhney et al., 2006). The ability to apply multiple viewpoints can be referred to as one of the most important Innovation Management functionality parameters, and the result can be measured as an essential part of the innovation capability of the organization (Francis & Bessant, 2005). In essence, this multiple viewpoint ability is a transdisciplinary competence that requires methods to support communication and synthesis across traditional organizational borders.

INNOVATION MANAGEMENT

The term innovation can in the simplest form be defined as "the successful exploitation of new ideas" (Francis & Bessant, 2005). In this meaning innovation becomes a core process for any firm or organization in order to survive or prosper. Being a core process requires that it can be managed and organized as a systematic activity (Drucker, 1994).

The important question is: How can we be supported in assessing, reviewing, and challenging the relevant competitive features of the current state of a given product or service?

This requires support from an innovation management model or framework. Every organization has to choose its own model or framework and make it an integral part of their overall management system. There are basically two approaches, 1) To develop a company specific model that fits the particular requirements within the relevant industry, or, 2) To choose a generic model that can be adapted according to the particular requirements within the relevant industry. The second option has several advantages. By choosing a generic innovation model it is easier to benchmark with other industries and firms; and due to the broader external documentation of the model it is easier to communicate internally within the firm.

Innovation models with multiple innovation viewpoints

There are several generic innovation models available.

The Doblin Group studied a large number of innovation examples throughout the world. They identified ten main types of innovation and published their *Ten Types of Innovation* model in 1998. In 2011 the model was updated to reflect the experienced changes since launch of the original model (Doblin, 2013). The new model has ten types of innovation as well.

Sawhney, Wolcott and Arroniz identified 12 different ways for firms to innovate (Sawhney et al., 2006).

Francis and Bessant identified four ways of targeting innovation – the so-called 4P model (Francis & Bessant, 2005). The model has been refined frequently by updates in various articles and Innovation Management books (Tidd & Bessant, 2009).

The three models have a lot of similarities. However, the most important shared conclusion is that innovation is not a matter of product innovation in an isolated way. Their research document that isolated product innovation is not likely to be successful compared to an innovation effort that involves several viewpoints of innovation.

The three models also share two important challenges when the models are to be operationalized and integrated into a firm's management system.

Most importantly, all the illustrative cases that demonstrate the application of the innovation models are retrospective. This is naturally seen from a communication perspective and do serve efficiently in illustrating the comprehensive nature of the multi viewpoint models. However, any new application of the models will face a complex problem of how to use the models. The retrospective application of the models does always present a logically cause-effect relationship which is generally only known in hindsight. In a forward developing process the cause-effect relationships are generally blurred and ambiguous in nature.

The second challenge relates to the time dimension. In the multiple viewpoint models, as described above, the given innovation profile is represented as synchronous measures of the various innovation viewpoints. This is rarely the truth. Most often the innovation profile will develop over time in asynchronous steps.

The challenges will be illustrated and discussed based on the 4P model by Francis and Bessant (2005) in the next section.

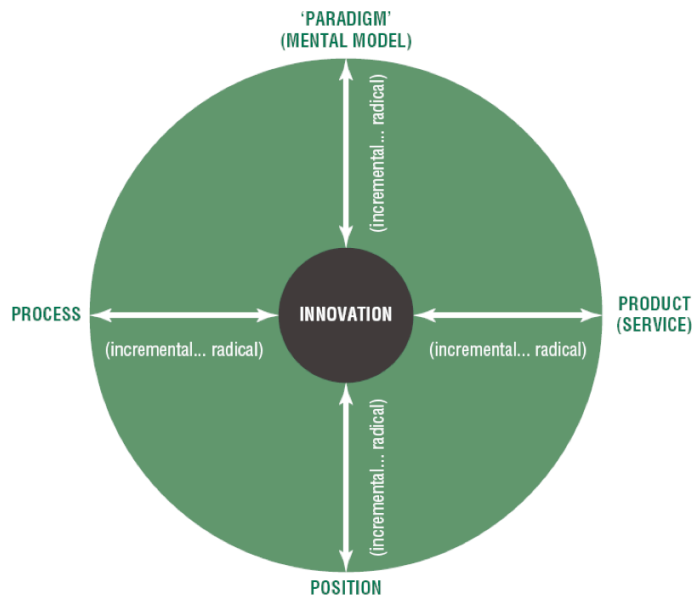
The 4P Innovation Model

The 4P model is named after the four innovation viewpoints that are represented in the model: Product, Process, Paradigm, and Position (Francis & Bessant, 2005). According to the 4P model innovation can be targeted in four main ways:

1. Product – innovation to introduce or improve *products*
2. Processes – innovation to introduce or improve processes
3. Position – innovation to define or re-define the *positioning* of the firm or products
4. Paradigm – innovation to define or re-define the dominant *paradigm* of the firm or the industry

Francis and Bessant (2005) discuss the four innovation viewpoints and conclude that they are not tight categories and that they have fuzzy boundaries. Nor are they alternatives: firms can pursue all four at the same time.

Tidd and Bessant (2009) present an updated version of the 4P model and illustrate it as shown in picture 1. In this model four independent axes represent the innovation viewpoints and each axis indicate an incremental innovation effort near the center versus a radical innovation effort far from the center.



Picture 1 The 4P Innovation Model (Tidd & Bessant, 2009)

In their original application Francis and Bessant (2005) proposed to use the model as a classification of innovation ideas. The ideas have been produced through a separate process. This usage of the 4P model is quite similar to the proposed usage of the models by Doblin (2013) and Sawhney et al. (2006).

It is obvious that the models in this usage can support a management discussion about as well the potential configuration as the chosen configuration of a comprehensive innovation effort. The 4P model can support management in: 1) enlarging the choice of alternatives, 2) creating focus at critical areas, and, 3) identifying critical interdependencies between the various innovation efforts.

However, all this requires that the innovation ideas have been created in advance. Furthermore, it would be beneficial if the management discussions and the generation of innovative ideas could be supported systematically.

Such an extension does require additional supporting tools combined with various interpretations of the innovation model.

The authors have for the past 20 years been engaged in consulting and teaching innovation at Executive MBA level. More than 300 applications of the various innovation models have been applied to as many firms and institutions. The reflections in the next part of the paper are based on the experiences gained from active participation in these applications. Each firm has had their individual challenges and therefore there have not been a unified research setup. Our studies have been explorative, and, therefore, the following discussion is also explorative in nature.

INNOVATION AND LANGUAGE

The simple definition of innovation: "the successful exploitation of new ideas", as described above, requires that the applicants are able to define the degree and the character of newness. Per definition this is unknown and has to be explored.

As the innovation dimensions are very different in nature it will also likely involve a number of cross-organizational viewpoints and often viewpoints from outside the organization. The cross-organizational and the inter-organizational perspectives require communication skills and methods.

The combination of 1) cross-organizational involvement, 2) exploration of the unknown, and 3) communication, sets challenging requirements. We have chosen to interpret these requirements as a request for the availability of a set of different languages that will facilitate the exploration of the relevant innovation viewpoints. Our drive for choosing a language approach is that it emphasizes communication and that it builds on the assumption that a language needs to be trained and further on refined in order to suit its purpose. If not trained and refined a language will develop into stereotypes that are not able to capture the fine nuances of a relevant subject.

Innovation as a questioning approach

It is generally challenging to questioning into the unknown. The dimensions of the 4P model do, however, support in such a process. Examples of relevant questions to the four dimensions are:

- Product Innovation
 - What are the key technologies?
 - How mature are these technologies?
 - What is the key offering provided by the product?
- Process Innovation
 - What is the manufacturing/operational setup?
 - What is the logistic setup?
 - What is the competitive strength of these?
- Paradigm Innovation
 - What is the current assumption of a given product category?
 - How do people expect to benefit from the offering?
 - What are the current business models?
- Position Innovation
 - Can the products vary according to different customers?
 - Can the products be supplemented with complimentary products?
 - What are the known and unknown market spaces?

The questions have been extracted and generalized from the more than 300 empirical applications that forms the basis for this study.

By the questioning process it is revealed if there is an immediate answer. If there is an immediate answer it also indicates that there is a language that supports the further research of the question. Furthermore, this indicates in general that the specific innovation effort is more likely to be incremental than radical.

If there is no immediate answer it indicates an innovation challenge and a need to find an approach to start the research. Choosing an approach is similar to defining elements of a language to support the research.

In the following the questioning approach will be illustrated by extracts from one empirical case.

Case – LEGO Board Game

After a severe financial crisis from 2000 to 2005 LEGO Company has regained competitiveness and have for the last 7 years experience two digits growth rates in both turnover and earnings. A recent expansion of the product portfolio is board games (LEGO Company, 2013).

Throughout the history of the LEGO Company, they have published many board games based around current product themes. The games have been developed and manufactured by sub-suppliers. In 2007 the whole board game setup was reconsidered and the conclusion was that LEGO needed to innovate the whole product setup.



Picture 2 LEGO Gaming Dice (LEGO Company, 2013)

The questioning approach revealed that most of the setup of the board game industry was well known both to LEGO Company and its competitors. Systematic questioning in the four dimensions of the 4P model indicated

that the most realistic dimensions to challenge where the product and the paradigm dimensions. These two innovation dimensions were challenged by introducing a new dice that do allow the players to change the sides of the dice (see picture 2).

In 2009 LEGO launched the product series with 10 parallel product set. All of the sets make use of the distinctive LEGO Dice - a solid plastic, LEGO-compatible cube with soft rubber rimming on each edge to give the dice a particularly strong bounce. Depending on the game, the dice can be built with different LEGO tiles on its faces, which will affect game play in different ways.

The new game setup does challenge most radically the product and paradigm dimensions but all four dimensions support the comprehensive innovation setup:

- **Product Innovation**
The Game Dice with replaceable sides.
Patenting the Game Dice (Gaming Dice and Game, 2011).
The possibilities of making dynamic rules.
The combination of existing product themes and games.
Introduction of mini-mini-figures.
- **Process Innovation**
The Game Dice molded in one piece.
Use of existing sub-supplier setup.
- **Paradigm Innovation**
Mothers can play LEGO with their sons and daughters.
The new play experience of being able to change the sides.
The mixture of game and building process.
- **Position Innovation**
The widespread use of common LEGO bricks.
Games based on existing LEGO themes, e.g. Harry Potter,

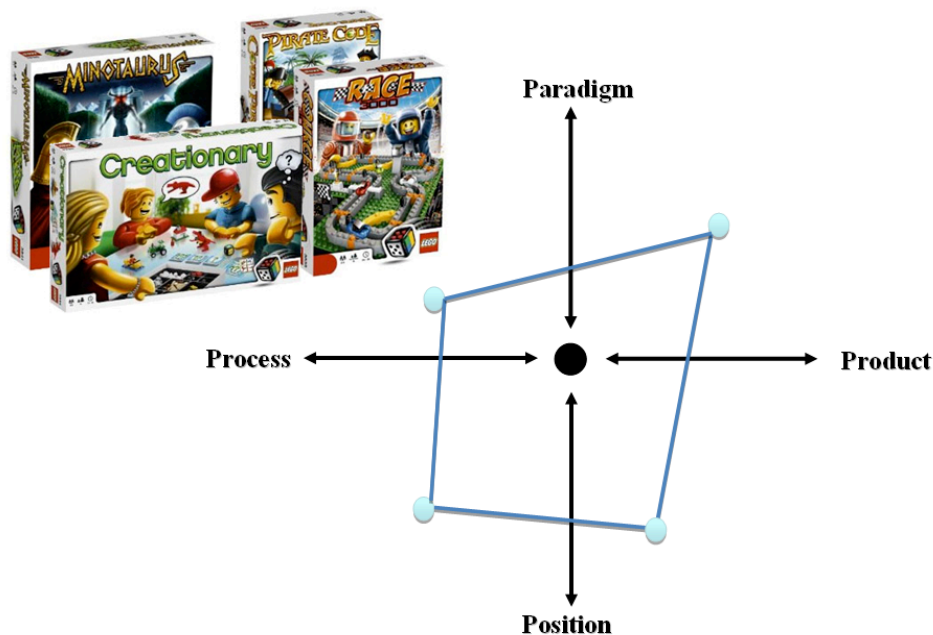
The listed innovation parameters don't tell the whole innovation story, but they represent what the product management and the initial product development team chose as the main focus areas.

It is not possible to define general guidelines for a competitive innovation profile. This will differ from industry to industry. But it is possible to identify some patterns that should attract management attention and it is possible to identify approaches that facilitate the exploration of specific challenges. The last part is what we have chosen refer to as "languages". This part will be elaborated further below. In this discussion we will continue to delimit our discussion to the 4P innovation model and the LEGO case.

INNOVATION LANGUAGE ELEMENTS

Each innovation dimension of the 4P model can be explored by questions, as described above. However, in order to create a dialogue and to be specific it is necessary to have access to a wider and more precise vocabulary. This wider vocabulary is a mixture of the specific conditions defined by the industry and various methods.

The dimensions of the 4P model can be explored in many different ways. The many cases have demonstrated that it is often beneficial to explore the dimensions in pairs. The LEGO Board Game case as described above can be illustrated graphically as shown in picture 3.



Picture 3 LEGO Board Game and the 4P innovation model

By exploring the innovation dimensions in pairs a graphical innovation profile emerges (see picture 3). The borders of the profile are indicating where specific and rich vocabularies have developed. Though the form of the profile is highly subjective (or collectively agreed) it has proved to have a strong impact in the process of challenging the innovation contributions.

The individual case of the firm determines the starting point and this is largely determined by how the problem is framed by the organization. In the case of LEGO the agreed challenge was to identify growth potentials outside the traditional LEGO market for construction toys mainly for boys.

Many firms separate the initial idea phase and the maturity phase (O'Connor et al., 2008). In the LEGO case three external consultancy companies were invited to submit ideas on what new markets LEGO could approach. Based on this input it was decided to focus on board games. After

the idea phase and the selection phase the incubation of the idea towards maturity was done internally and ended up with an innovation profile as described above.

The initial and most important step in determining the innovation profile was to explore the paradigm dimension. Board game is a large industry with big competitors and there are tough requirements to enter this market successfully. A paradigm break is the most powerful way of creating a competitive advantage.

However, a paradigm break is difficult because it doesn't yet have a language. The initial idea can be viewed as an abstract impulse but it remains abstract until more details are added. When more details are added nuances emerge and make dialogue and involvement possible.

The phase is best described as being complex. Complexity is referring to the fact that the relationship between cause and effect can only be perceived in retrospect. This means participants have to probe in order to gradually make sense (Snowden & Boone, 2007).

Several authors refer to the challenge of paradigm break as a process of reframing (Normann, 2001). Verganti (2003) supports the ideas of reframing, and, furthermore, point out the need for a language in order to express and discuss the idea. Finally, Duggan (2007) base his contribution on insights from recent brain research and make a direct connection between creativity and reframing of existing information in order to create breakthrough concepts.

A powerful language approach to explore this further is prototyping. Schrage (2000) promotes the viewpoint that prototypes create the space for innovation by providing the language that enables engagement. Prototypes engage the organization's thinking in the explicit. They externalize thought and spark involvement and dialogue.

The combination of constructing with LEGO and gaming was the initial bid on a paradigm break in the LEGO Board Game project. The further exploration was done by a number of prototypes. However, some of the first prototypes tested on potential customers revealed another potential paradigm break.

The test group reported an unforeseen feature of the LEGO Board Game. Mothers could now play LEGO with their sons. LEGO's traditionally male appealing construction theme has to a large extent excluded mothers to take part of the play. The board game approach changed this limitation and proved also to be less gender biased than the existing product portfolio.

The prototypes also support and allow for a gradual clarification of product specifications. This refers to the product dimension of the 4P Innovation Model (see picture 3). James G. March (2008) describes this phase in the following way: “Alternatives are not given but have to be discovered or created. Expectations are not known but have to be developed. That development introduces uncertainty and errors. Desires are neither clear, nor unified, nor stable, nor exogenous to the process of choice”. Brooks (1995) observes: “The hardest single part of building of a system is deciding what to build”.

The product specifications can be seen as the result of a process but the main part of the product specification literature are mostly concerned with the structure of product specification and less concerned with the process of creating the product specifications (Brooks, 1995). The relevant languages to apply in an exploration process should reflect this need.

The languages that stimulate the dialogue are mixtures of prototypes (Schrage, 2000), product specification (Pahl et al., 2007), concept generation (Goldenberg & Mazursky, 2002), technology s-curves (Christensen, 1992), and, technology maturity evaluation (Narayanan, 2001).

The initial specification in the LEGO Board Game case was challenged by the idea of combining the LEGO construction play and gaming. It was decided that the gaming should be guided by a dice; and that the dice should not be an ordinary gambling dice with six sides where each of the sides has a different number of spots (1 to 6).

Several versions of dices with alternative symbols were prototyped, and finally, the breakthrough emerged: The dice with replaceable sides and the combined noise reducing and stabilizing rubber protection (see picture 1). The innovation strength of the final solution was increased by the fact that the dice could be patented (Gaming Dice and Game, 2011).

The process innovation parameter in the 4P model is explored by means of various value-chain approaches (Fine et al., 2002). In combination with the paradigm innovation parameter it can be explored with a reframing perspective (Normann, 2001).

In the LEGO Board Game case the critical process innovation was the ability to mould the LEGO dice automatically in one piece. The mould needed new innovative features and ended up being the most expensive mould ever produced at LEGO. The rest of the involved value-chains were well known and largely reuse of existing setups.

The position innovation parameter in the 4P model is referring to the ability to increase market presence. Either by selling more to existing customers or by selling to new customers. Selling to new customers may additionally impact or change the profile of the whole firm.

When combining the position innovation parameter with the product innovation parameter the obvious language to explore this is product architecture (Sanchez, 2000). And, when combining the position innovation parameter with the process innovation parameter the obvious language to explore this is process architecture (Anderson, 1998).

As can be seen in picture 3 the LEGO Board Game project is assumed to have a significant position innovation contribution. This is largely explained by the modular structure in both product and process (Sanchez, 2000).

CONCLUSION

By adopting a language approach to the specific innovation exploration methods we have experienced a strong support to the cross-organizational dialogue and discussion that is crucial in the innovation process. Based on the well-known 4P Innovation Management model we have added the language approach and demonstrated that an innovation profile can be developed. Within the borders of the innovation profile there have been developed languages that more efficient support the transformation of abstract impulses to more specific features with a wider and more precise vocabulary.

Though the empirical study has included many firms the result is still mostly qualitative and the specific innovation profile will only make sense within the development team and the associated management. However, in this usage the profile has proven beneficial in order to specify and challenge innovation features.

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