Types of Innovation within Corporate Incubators

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Abstract: To maintain market advantages many established companies facing the challenge that focusing on existing products is not enough. Companies are therefore forced to identify innovation outside their core business. A common approach to meet these requirements is the setup of a separated innovation path outside the corporate structures, a so called corporate incubator. Although there are some success stories, many of these corporate incubators fail. One major challenge corporate incubators are facing in their daily work is the innovation transfer within the corporate structures. To address this problem, the author develops a model to design the transfer process between corporate incubators and its parent company. This research paper states a contribution to the transfer model. So far, the transfer object as the main influencing factor within a transfer process from corporate incubators is only insufficient examined in science. The authors therefore aim to provide a practical classification of innovations which are transferred from corporate incubators to its parent company. Based on an intensive literature study characteristics to describe innovations from corporate incubators are identified and discussed. The identified characteristics are then used to define and describe 6 types of innovation which are common within a transfer process from corporate incubators.

1 INTRODUCTION

Increasing product lifecycle and changing market requirements are forcing established companies to rethink their product portfolio (Schuh et al, 2010). Focusing on incremental innovation is not enough to remain existing market advantages. Established companies are therefore aiming to expand their innovation focus from incremental innovation to radical innovation outside their current core business (Chang et al, 2012).

An approach to pursue radical as well as incremental innovation is the setup of a corporate incubator, a separate innovation unit (Schuh et al, 2017). Outside the corporate structures, corporate incubators focus on the development of radical innovations. In literature the organizational separation of explore and exploit activities is known as organizational ambidexterity (March,1991).

Within the innovation process, corporate incubators have to decide how to exploit the innovation. Due to its strategic alignment to the parent company, many of the developed innovation from corporate incubators are transferred within the corporate structures (Schuh et al, 2017). Especially for the series development and the market entry many resources are required, which often are not available at the corporate incubator.

However companies are facing major challenges within the transfer of innovation from corporate incubators into the parent company. Different innovation cultures or expectations, a lack of acceptance within the organization and a lack of resources are only some reasons why transfer process into corporate incubators fail (Schuh et al, 2019). To solve the described problem, the author develops a model of a transfer process from corporate incubators (Schuh et al, 2017).

The most influencing aspect of a transfer process is the transfer object. However so far, there is no definition of what kind of innovation are developed within corporate incubators. Although in the literature there are some approaches to characterize and describe transfer objects or innovation in general the specific aspect of a transfer between corporate incubators and parent companies is so far not yet discussed. Especially regarding the important characteristics of a transfer object from corporate incubators there is a lack of knowledge within the common literature. This paper therefore addresses the following research question:

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Which types of innovation are transferred from corporate incubators to the parent company and how can they be characterized?

The goal of this paper is therefore to identify transfer relevant characteristics of innovations and to derive different types of innovation from corporate incubators that can be found in practice. These innovation types will be used in future research to design a situation specific transfer process from corporate incubators to their parent company.

2 LITERATURE REVIEW

So far this specific research question has not been answered within the literature. Therefore a literature overview of close scientific areas is given and a discussion how to adopt these approaches for the specific problem will be done. At first common definitions of corporate incubators will be presented, followed by a definition of the term typing and a discussion of general types of innovation within the literature.

2.1 Corporate Incubator

There is no general definition for corporate incubators in literature. BECKER defines corporate incubators as independent units that operate outside of existing corporate structures. These are specialized in strengthening the technological basis of the company as well as pursuing new business opportunities. They act in the strategic sense of the company and their origin can be inside (internal startups) or outside the company (external startup) (Becker, 2003).

VON ZEDTWITZ defines five different types of incubators. As separated innovation units incubators pursue company internal projects which do not fit to the corporate strategy (Zedtwitz, 2003).

GRIMALDI AND GRANDI perceive corporate incubators as part of a diversification strategy and HANSEN ET AL. complements the known forms through introducing a network incubator which focusses on building an internal and external network for startups (Grimaldi and Grandi, 2005; Hansen, 2000). In the context of corporate incubators, other terms are also added, such as the term "corporate think tank", "entrepreneurial think tank" or the common name “Innovation Laboratories”, which focus on the creation of a creative innovation environment (Poguntke et al,2016;Lewis and Moultrie, 2005; Magadley and Birdi, 2009).

Various approaches of corporate incubators vary in their characteristics. All approaches have in common that corporate incubators offer additional services to internal and external startups in order to provide them with premises and financial support, such as coaching or access to resources or support from corporate departments (Grimaldi and Grandi, 2005; Hansen et al, 2000; Gassmann and Becker, 2006; Wagner and Wosch,2015; Lau, 2019).

2.2 Typing

The term typing describes an analytical research method consisting of a static or result-oriented and a dynamic or process-oriented perspective. The dynamic point of view represents the thinking process of type formation and the static point of view shows the result, the formed types and the typology (Rühmann, 2008; Welter, 2006). Typing supports the derivation of a defined numbers of types from of a large number of objects (Rühmann, 2008).

Type forming is the process to identify different types. Its primary goal is not just to group the field of investigation, the focus is instead on understanding and explaining complex realities and connections (Kluge, 1999).

A single type is defined by an amount of objects which have one or more common characteristics [22]. These characteristics vary from type to type in order to illustrate typical characteristic of a group. By combining different characteristics, the complex reality can be simplified and a better overview of the selected object area can be created (Hadeler, 2000).

The totality of all types is represented as result of the type formation. Only those cases are relevant which are practically usable and empirically verifiable in relation to the objective of the investigation without logical contradiction (Welter, 2006).

2.3 Typinging of Innovation

A general definition is that an innovation is an invention that has been successfully established on the market. An invention is thus the first realization of a technical solution described below. Incremental innovations are evolutionary further developments of already existing products. They are characterized by low risk, have a limited time horizon and mainly serve to maintain or expand existing market shares (Klappert, 2011; Störmer, 2010). Radical innovations, on the other hand, are based on new scientific principles and enable to address new markets (Henderson and Clark, 1997; Ili, 2010). They therefore entail high risks, but also great potential for success (Perl, 2007). Both, radical and incremental

innovations are necessary for long-term market success (Schuh et al, 2011).

HAUSCHILDT describes innovations in 6 different dimensions: content, subjective, procedural, normative, stakeholder and intensity (Hauschildt, 2016). According to HAUSCHILDT it can be differentiated between product innovation, process innovation and services innovation (Hauschildt et al, 2016). Service innovation are also referred to as business model innovations (Bessant and Tidd, 2015).

All of the described approaches are focusing on a general typing of innovation and not on the specific case within corporate incubators. Although some of the characteristic can be transferred on to innovation from corporate incubators some important aspects are missing. In the following chapters the described characteristics will be evaluated and relevant characteristics for the typing of innovation from corporate incubators will be added.

3 RESEARCH METHODOLOGY

This work is part of a thesis the author is developing for the design of type-based transfer processes of innovations from corporate incubators. The research design is based on the research methodology of applied science according to ULRICH (Ulrich, 1984). Following a structural approach, a practical problem with its theoretical deficit is identified and existing approaches in the literature are analyzed in order to derive possible solutions. The typing of innovation will mainly be based on intensive studies of existing literature and personal experiences. In the order of the process of applied sciences according to ULRICH, Chapter I of this paper identifies and structures a relevant practical problem as well as the underlying theoretical problem. Simultaneously, the need for research in this field is pointed out. In Chapter II, a literature search is carried out and existing relevant approaches are identified, which corresponds to steps B and C of the process according to ULRICH. Chapter IV will display the results and will be followed by the conclusion and an outlook for future research. This covers step D and E within the process of applied science (Ulrich, 1984).

To a problem and the preliminary stage of an innovation (Pleschak and Sabisch, 1998).

In literature, there are many different types of innovations. A common differentiation is made between incremental and radical innovations, which are briefly.

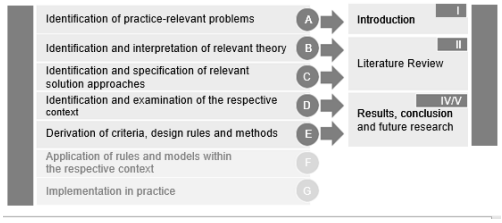

Figure. 1: Structure of this paper according to ULRICH [7].

4 TYPES OF INNOVATION WITHIN CORPORATE INCUBATOR

The goal of this paper is to identify different types of innovation within corporate incubators. Based on the types, a type-based transfer process can be designed in future research. For the identification of the innovation types relevant characteristics to describe an innovation are identified. Due to the context of an innovation transfer we are focusing on transfer relevant description factors. Based on the identified characteristics different types of innovation within corporate incubators will be derived and described.

4.1 Description of Transfer Relevant Characteristics

There is no general definition for corporate Transfer relevant characteristics of an innovation within corporate incubators are identified in this section. The analysis is based on a progressive analysis. At first different types of existing incubators were analyzed and characteristics of the innovation outcome were identified. Based on that, an analysis of the literature was done in addition, to identify general description factors for innovation. The identified characteristics were then examined for their transfer relevance. In total ten characteristics with relevance for the transfer process were identified: content of the innovation, innovation source, personal bond, dependence to the core business, documentability, complexity, innovation level, market potential, degree of maturity and risk.

VON ZEDTWITZ defines five different types of incubators. As separated innovation units incubators pursue company internal projects which do not fit to the corporate strategy (Zedtwitz, 2003).

4.1.1 Content of the Innovation

The content of the innovation refers to the innovation object. There are many different definitions of the content of innovation within the literature. In this paper, the content is divided into three characteristics: product innovation, business model innovation and technological process innovation. Product innovations occur when there are significant changes in product or service characteristics, whereas business model innovations refer to fundamental changes in value generation (Bessan and Tidd, 2015). Technological process innovations lead to new approaches to improve production processes (Barbero et al, 2014).

4.1.2 Innovation Source

The innovation source is understood as a characteristic for describing innovations (Lau, 2019). Innovations from corporate incubators originate from different sources. With regard to the relevance of the transfer process between internal incubators and parent companies, the innovation source can be described by two characteristics. Innovation can originate from internal or external of the corporate structures. Internal innovation are created by the employees of the parent organization. The development of an innovation without the involvement of the parent organization, e.g. by the incubator employees or external startups, is referred to an external source of innovation. (Schuh et al, 2017).

4.1.3 Personal Bond

Another characteristic of innovation from corporate incubators is the binding of knowledge to individuals. A categorization can be made between personal-related and non-person-related innovation. If the developed innovation is independent from a group or specific persons, it is described as non-personal innovation. Innovations that do not exist and cannot be transferred without the founder of the idea are described as personal innovations. Personal innovations are often based on patent protection or belong to a specific group which do not want to cut loose their innovation (e.g. startups).

4.1.4 Dependence on the Core Business

A relevant characteristic for the transfer process is the assignability of innovations to existing competences. The effort required to integrate innovation in existing structures increases with the distance between the innovation and the core business. Within the innovation management the 70-20-10 rule is used. Accordingly, companies should carry out 70% of their development projects in the core business, 20% in relation to the core business and 10% outside the existing core business (Drescher and Zeller, 2017). The strategic focus of a corporate incubator does not include the development of innovations within the core business of the company. The typing of innovations from corporate incubators is therefore based on the innovation characteristics with reference to the core business and outside the core business.

4.1.5 Documentability

The documentation of the innovations is essential for a transfer process. Therefore all relevant knowledge need to be transferred. The Literature states two different kinds of knowledge, explicit and tacit knowledge (Polanyi, 1966). Explicit knowledge, also known as non-personal knowledge, can be easily documented, stored and transferred to a third party (Nonaka, 1998; Zeppin, 2013). In contrast to that, implicit knowledge, known as personal knowledge, is based on personal experiences and hard to document (Zeppin, 2013).

4.1.6 Complexity

Transfer processes are decisively influenced by the complexity of a transfer object. Both the duration and the extent of the transfer vary depending on the degree of complexity. As the complexity of a transfer object rises, the recipient's adjustment efforts increase (Pleschak, 2003). Furthermore complex transfer objects need to be documented intensively (Meißner, 2001). However the complexity does not interlink with the documentability. There are complex objects that are based on explicit knowledge and easily can be documented (Petersen, 2012).

4.1.7 Innovation Level

The innovation level enables the measurement of the novelty of an innovation and represents another common descriptive feature for innovations (Kundt, 2014). The scope of a transfer process is related to the novelty of an innovation. The most common forms of differentiation are incremental and radical innovations (for details see section II.C.). However corporate incubators focus mainly on the development of radical innovations and incremental developments occur only occasionally. For this reason, the innovation level states a fixed

characteristic and is not suitable for the typing of innovations.

4.1.8 Market Potential

The market potential of innovations has a major influence on the transfer of innovation. Increased market potential can promote the acceptance of externally developed innovations within a company. The goal of corporate incubators is the development of innovations with a great leverage effect on the organization. The focus on radical innovations enables a high market potential in the long term. Projects with a low market potential are therefore outside the incubators scope.

4.1.9 Degree of Maturity

The degree of maturity plays an important role in the transfer process. If it is too high, the meaningful use of synergy potential is lost in the development process and acceptance problems are increased in addition. If the degree of maturity is too low, the economic and technical factors areoften not sufficiently developed yet. This can result in significantly higher transfer effort (Meißner, 2001). A study on the transfer process from corporate incubators done by the authors show, that most of the incubators use the proof of concept as the degree maturity to transfer the innovation into the parent company (schuh et al, 2019).

4.1.10 Risk

The risk of the transfer object is of great importance for the transfer process. Recipient and supporter must be identified within the structures of the parent organization to drive the innovation and bring it to market maturity. Corporate managers are intent on achieving financial goals and avoid high risks. Finding an internal buyer becomes more difficult as the level of risk increases. Even if the risk of an innovation may exist in various forms, innovation projects within corporate incubators are rather risk-loaded due to the radical degree of innovation.

Due to the strategic orientation of a corporate incubator the influencing factors *innovation level*, *market potential*, *degree of maturity* and *risk* can already be allocated to one defined characteristic as show in Fig. 2 and therefore are not suitable to be used for the following typing of innovations.

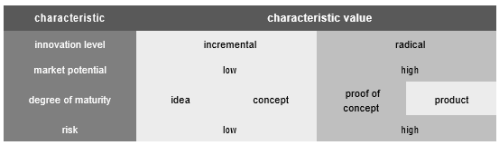

Figure 2: Fixed characteristics of a corporate incubator.

4.2 Identification of Type-forming Characteristics

For the typing of innovation within corporate incubators, the type formation process according to WELTER is used. Therefore the goal is to identify type-forming and type-describing influencing factors (Welter, 2006). To do so, the six identified characteristics were analyzed based on a consistency matrix to identify these characteristics which are not or less influenced by the others (see. Fig. 3). These factors can be excluded to be type-forming characteristics.

VON ZEDTWITZ defines five different types of incubators. As separated innovation units incubators pursue company internal projects which do not fit to the corporate strategy [9].

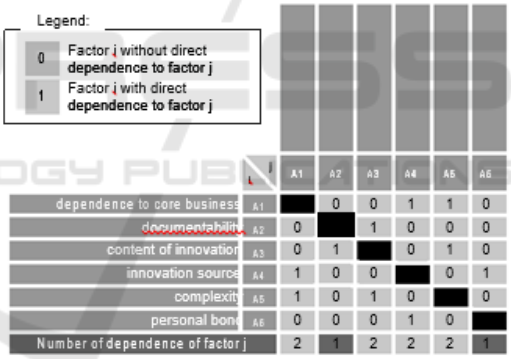

Figure 3: Consitency matrix.

The result of the analysis show that the factors documetability and personal bond are only influenced in a short amount and therefore can be excluded as type-forming characteristics. Regarding the four remaining factors it can be stated that the complexity is influenced from the dependence of the core business and the content of innovation, however does not influence these factors. Type-forming factors however have an influence on other characteristics, therefore the complexity can be excluded as type-forming factor as well.

4.3 Innovation Types within Corporate Incubator

Based in the identified three type-forming and three type-describing characteristics, innovation types within a corporate incubator can be derived. Even if not all the theoretically possible combinations of the characteristics are covered, six types of transfer objects from corporate incubators were identified which are common in industrial practice. The six types are described in the following.

4.3.1 Internal Product Innovation

The internal product innovation is characterized by being a new or changed physical product developed through the corporate incubator and close to the corporate core business. The source of the idea is a company internal employee. Internal product innovations tend to be associated with low complexity and are mainly based on explicit knowhow. The internal product innovation is a common innovation within a corporate incubators especially if the incubator focusses on a strong cooperation with its parent company.

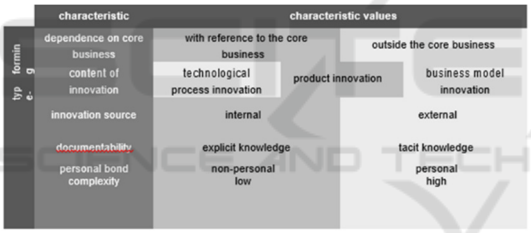

Figure 4: Characteristics of internal product innovation

4.3.2 Incubator Product Innovation

The incubator product innovation is characterized by the origin of the idea within the incubator. Corporate stakeholders are not involved in the idea generation process. The resulting knowledge is predominantly available in explicit form and the innovation is referenced to the core business of the parent company. Therefore the complexity of the product innovation can be regarded as low and there is no personal bond. The development of incubator product innovations is a common approach within corporate incubators. The incubator employees are empowered to think outside the day-to-day business and generate own ideas.

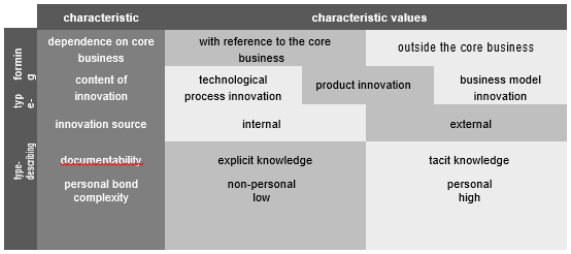

Figure 5: Characteristics of incubator product innovation

4.3.3 Incubator Business Model Innovation

Business model innovations which come from employees outside the organization are called incubator business model innovation. The source are primarily employees of the incubator, but can also be external incubator stakeholders such as customers. Incubator business model are predominantly in the core business and thus relate to existing competences. In addition, business model innovations are based on tacit knowledge, rather less complex and non-personal bonded.

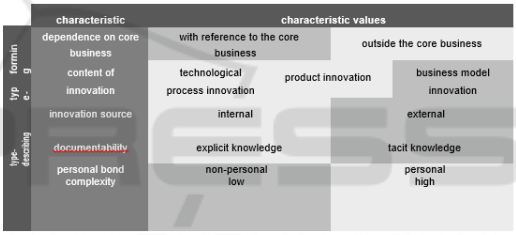

Figure 6: Characteristics of incubator business model innovation

4.3.4 External Process Innovation

External process innovations are characterized by their technological focus. As mainly technology developments they lead to improvements or changes in process flows within the organization. The origin of the innovations can be found externally, especially university cooperation play a decisive role for external process innovations. The innovation is not personal and can be integrated without restrictions within the organization, although the ideas are contributed by external experts. Technological knowledge is available in both explicit and tacit form (Gopalakrishnan et al, 1999). On the other hand, the complexity of such innovations is to be regarded as high.

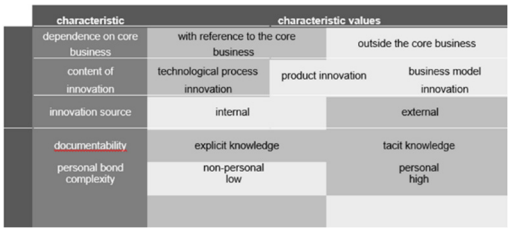

Figure 7: Characteristics of external process innovation

4.3.5 External Product Innovation

The external product innovation is characterized by the external origin of the idea. Especially startups can be seen as a major source for external product innovations. The focus of this innovation type is therefore a business area outside the core business. External product innovations thus define new fields of activity for the organization, which means that the transfer process involves a large amount of explicit and tacit knowledge. The complexity of external product innovations is therefore high. External product innovation are often bond to the founders of the idea, so that they need to be integrated into the parent company as well.

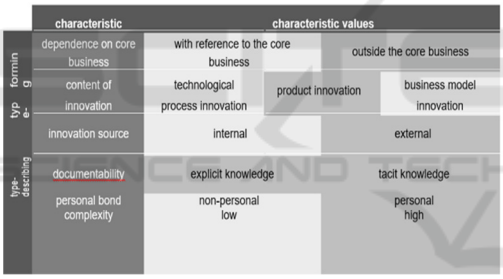

Figure 8: Characteristics of external product innovation

4.3.6 External Business Model Innovation

An external business model innovation is an innovation developed within the incubator which lies outside the core business. The innovation is not about a product, but about the way value is generated (a new business model). Like an external product innovation, the source is mainly an external startup and like an internal business model innovations, the complexity is rather low. Due to the external source of innovation, these types of innovations are often person bonded, with a high amount of tacit knowledge.

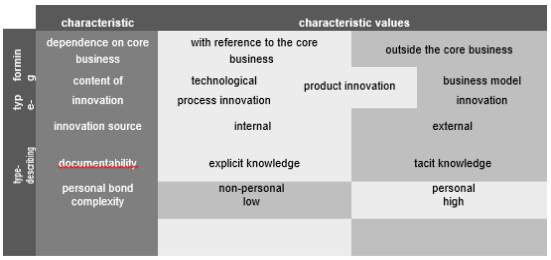

Figure 9: Characteristics of external business model innovation

5 CONCLUSION & FUTURE RESEARCH

Organizational ambidexterity helps companies to pursue incremental and radical innovation at the same time. Corporate incubators are one possibility to drive radical innovation outside existing corporate structures. Due to the strategic alignment and needed resources, many of the innovation from a corporate incubator are transferred into the parent company. However this innovation transfer is a major challenge for established companies. One important aspect within a transfer process is the transfer object. So far characteristics of innovations from corporate incubators were not sufficiently examined in literature.

In this research paper, we presented an approach to characterize different types of innovation from corporate incubators. In total ten characteristics that influence the transfer process were identified. These influencing factors were used to derive six types of innovation from corporate incubators. The different types were described based on their specific type-forming and type-describing characteristics.

The research paper states a contribution to a model of innovation transfer from corporate incubators which the author develops in his research. Based on the different innovation types, type specific requirements on the transfer process will be derived in future studies. The full model will finally be able to take all relevant influencing factor of a transfer process into account and give an instrument for a situation and context specific design of a transfer process from corporate incubator.

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