



INNOVATION STRATEGIES IN THE CONTEXT OF THE PARADIGM OF THE FIVE DIMENSIONS OF INNOVATION STRATEGY

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ABSTRACT. Background: As a concept that is owned and discussed by many business disciplines the terms innovation and innovation strategy can have many different definitions. This paper aims to provide an overview of innovation strategies in the context of the paradigm of the five dimensions of innovation strategy first introduced by Trilling & Blaeser-Benfer. A literature review was used to generate a representative pool of definitions of the term innovation, including definitions from the different disciplinary literature sources of economics, innovation and entrepreneurship, business and management, and technology. In a second step the core essences of the accumulated definitions are synthesized into a final definition of innovation. In a third step the synthesized definition of innovation is applied to the context of the paradigm of the five dimension of innovation strategy to allow the establishment of a coherent and cohesive overview of the resulting innovation strategies.

Methods: This paper utilizes a first analysis of literature on innovation and innovation strategies which includes a number of academic journal articles and books, in total 23 sources, published between the years 1987 to 2019 to achieve its mentioned aim.

Results: The central aim of this paper can be identified in providing a comprehensive overview of the topic of innovation strategies in the context of the paradigm of the five dimensions of innovation strategy and the presented definition of the term innovation.

Conclusions: The information presented in this paper can serve as a clarifying starting point for further research activities in the field innovation and innovation strategy by providing a general overview of the topics mentioned. Based on the findings of this paper it appears reasonable to recommend further research to specify the characteristics and practical applicability of possible innovation strategies in different innovation dimensions.

Key words: innovation, strategy, innovation strategy, definition of innovation, five dimension of innovation, review innovation.

INTRODUCTION

Innovation is one of the key factors of the success of a company and is an essential strategic component to survive in a growing competitive market environment. Innovation does not have to be an accident, with a well-defined strategy a company can control and manage the generation of innovation [Disselkamp 2017, Janjić, Rađenović 2019, Jia, 2019]. But there are many definitions of the term innovation and a variety of meanings

and approaches for innovation strategies exist [Baregheh, Rowley, Sambrook 2009]. At first this paper introduces a possible definition for the term innovation by describing and synthesizing relevant definitions that can be found in the reviewed academic literature. After this, this paper is concerned with the definition of the terms strategy and innovation strategy. As the final result of this paper a description for the five dimensions of innovation strategies and an exemplary approach for each innovation strategy dimension is provided in an overview. Therefore, the central aim of this paper can be

identified in providing a comprehensive overview of the topic of innovation strategies in the context of the paradigm of the five dimensions of innovation strategy and the presented definition of the term innovation in this paper. This paper utilizes a review of literature on innovation and innovation strategies to achieve its mentioned aim. Therefore, a number of academic journal articles and books, in total 23 sources, published between the years 1987 to 2019 have been analyzed in the light of innovation and innovation strategies. This literature review is a critical foundational analysis of published sources and literature on the particular topic of innovation and strategies for innovation.

DEFINITION OF INNOVATION

The term innovation is of Latin origin and means renovation or change. In general innovation stands for the three-step process of an idea, invention and diffusion (Fadiah et.al., 2016). Therefore, in a business context innovation can be conceptualized as an incidence (idea) for a product or a service (invention) which has not been there before and which results in a high market acceptance (diffusion) [Dörr and Müller-Prothmann 2014]. Notation 1 results for this article to define the term innovation.

idea + invention + diffusion = innovation (1)

This definition is in agreeance with most of the definitions shown in Table 1 and shall be applied for this paper. Notation 1 makes clear that in the context of innovation the differentiation and separation between the terms invention and innovation is of high relevance [Dörr and Müller-Prothmann 2014]. The difference between the terms can be identified in the circumstance that invention only means the creation of a product or service based on an idea, but innovation always includes the successful diffusion of a solution for an existing problem which results in a high market acceptance of the idea and its manifestation in the form of an invention. Thus, the novelty of an invention is not necessarily the key factor of an innovation. The important aspect is that the included invention has not necessarily to be novelty but

the change it causes has to be [Granig and Hartlieb and Lercher 2014]. Therefore, notation 2 results.

The change an invention causes must be novel. (2)

To analyze innovation strategies, it is of high importance to provide a clear definition for all relevant terms. Therefore, the following section presents definitions for the terms innovation and strategy and the combination innovation strategy. As already mentioned in the introduction, the term innovation can be defined in various ways. Table 1 provides an overview about established definitions of the term innovation of the last 90 years.

An example is now introduced to demonstrate the described main characteristics of innovation as established by notation 1 and 2. An employee from the company 3M, Mr Silver, got the task to evolve a glue for several applications (idea). In 1968, he developed a slightly adhesive glue (invention), but at this point there was no interest of the market for this specific glue. After six years a colleague, Mr Fry, has searched for something which could be helpful to mark something but can be removed. He improved the idea of Mr Silver and developed the post-it-note. Caused by a high market acceptance (diffusion) the idea became an innovation and it is still used [Hutzschenreuter 2009]. The provided example illustrates the described the process of idea, invention und diffusion which results in the creation of an innovation.

DEFINITION OF INNOVATION

According to N. Fadiah et.al. [2016] and C. Li [2020] there are two main dimensions of innovation in which innovation could be arised: Technological innovation and administrative/managerial innovation [Fadiah et.al. 2016, C. Li 2020].

The dimension of technological innovation shall be defined as the development of a technological idea to an invention which has a direct and successful impact on the economic performance of the company offering the

invention to the market. Technological innovation can be represented by new technologies manifesting in new physical products or new service products [Fadiah et.al. 2016]. The innovation dimension administrative / managerial innovation shall now be defined as innovations which have an impact on the social aspects of a company. The social aspect has a major influence on the general performance of a company. Administrative/managerial innovation involves changes of elements associated with the organization's social structure. This innovation dimension could be new policies, new procedures, organizational forms, encourage expansions, reward staff's creativity, exploring best method to achieve corporate goals.

The differentiation between the two dimensions of innovation therefore involves the extent of the change impacting company core operations. Technological innovation affects all object- or service-related innovations and reflects changes in the end product or service offered by the company while administrative/managerial innovation involves changes in the social structures of a company which only indirectly impact the end product or service offered [Fadiah et.al. 2016]. Notation 3 results.

Innovation can manifest in the innovation dimension of technological or administrative/managerial innovation. (3)

As a summary, the following notations are established as a foundation to define the term innovation for this paper.

idea + invention + diffusion = innovation (1)

The change an invention causes must be novel. (2)

Innovation can manifest in the innovation dimensions of technological or administrative / managerial innovation. (3)

A definition of term innovation can now be established through the synthesis of the established notation 1, 2, and 3: An innovation is an idea located either in the technological or administrative/managerial dimension and

which is developed to an invention which again has a concrete solution for an existing problem, is well-accepted by a high number of people and causes novel change. Based on this definition it is now possible to discuss the term innovation strategy in a coherent and precise fashion.

INNOVATION STRATEGY

In the context of defining strategy, Henry Mintzberg states that a strategy is a plan which has some sort of consciously intended course of action and furthermore a strategy is a guideline to deal with a situation [Mintzberg 1987]. If a company wants to develop an innovation, it needs a plan in the form of precise course of action to generate innovation for a given corporate context. Since the previous section defined the term innovation, the term innovation strategy is now defined as: An innovation strategy can be described as a scope of actions for all innovative procedures in an organization which includes strategic goals and guidelines which have the vision to develop innovation [Goffin, Herstatt, Mitchell 2012].

According to Trillig and Blaeser-Benfer [2014], an innovation strategy can be achieved within a paradigm of five dimensions: Technological-orientated, time-orientated, market-orientated, competition-orientated and cooperation-orientated [Trillig, Blaeser-Benfer 2014]. The following now describes the different dimensions of an innovation strategy and provide concrete approaches for each dimension.

A **technological-orientated innovation strategy** contributes to the development of new products or services. In this context Varadarajan states that innovation of a product means an idea for a new product which meets a currently unmet need of customers or an idea which is better than existing products or represents an improvement of an available product [Varadarajan 2018]. One possible approach to generate technologic al-orientated innovation is the technological-push strategy. This strategy firstly emanates from a company by developing a specific product or service and then "pushing" it in the market hoping for

diffusion [Corniani 2008]. The most common approach of companies for this strategy is focusing on research and development (R&D) activities.

A **time-orientated innovation strategy** is defined based on the diffusion theory of Rogers. In his diffusion of innovation approach, he defines diffusion as the process in which an innovation is spread over a certain time through several communication channels among of members of a social system. According to Rogers [1993] diffusion consists out of four elements: innovation, communication channels, time and the social system [Rogers 1993]. The pioneer strategy is one possible approach to realize a time-orientated innovation strategy. It is also known as the “first-to-market” approach and it is the strategy for the first element of diffusion, the innovation element. It describes the idea, that a company wants to generate innovation and wants to be the first market participant (inventor) which offers a new innovation to the market and aims to capitalize from a first mover advantage that outweighs the costs of being a first mover. The first mover advantages can span over a long time and can be helpful for generating higher market shares or brand proliferation [Robison, Urban, Kalyanaram 1994].

The **market-orientated innovation strategy** could be defined as the opposite of the technological-orientated strategy. It has the focus on understanding and defining the most relevant needs of a specific market and to develop an innovation which fits the identified market needs [Corniani 2008]. The most common approach is the pull strategy which focuses on the customer needs. Through intensive customer surveys a company wants to obtain information about the most important customer needs. After an understanding process of the needs an innovation is generated which fits the identified customer needs.

The position of a company in comparison to its competitors is one major success factor. The theory which underlies the competition-orientated strategy is the approach from M. E. Porter. He describes the strategy of companies in comparison to its competitive environment. In Porters theory there are two dimensions

which are of high importance to define a **competition-orientated strategy** [Porter 2013]: Strategic advantage (separated into unique perceived by customer and low-cost position) and strategic target (separated into industrywide and particular segment only). By putting these dimensions into relationship three main competition-orientated strategies may result: Differentiation, overall cost leadership and focus strategy [Porter 2013].

Differentiation (unique perceived by customer/industrywide): A company with a differentiation strategy is outstanding in comparison to its competitors through a high standard of quality. All innovations underlay the permission of quality and have to please the customer [Porter 2013].

Overall cost leadership (Low cost position/industrywide): A company with an overall cost leadership strategy is confronted with a high number of competitors. Its success factor is represented by low cost production which allows the company to offer their products or services for a low price. For this strategy companies have to develop especially innovations which simplify processes or products to get the opportunity to decrease the production cost [Porter 2013].

Focus (Particular segment): The idea of this strategy is to serve a specific market segment and not the overall market. The number of competitors is low and a company which follows this strategy must generate a combination of differentiation and cost leadership with the focus on the specific needs of the customer in the market segment. Therefore, all innovations have to consider customer needs [Porter 2013].

The general approach of **cooperation-orientated innovation strategies** is that a company opens itself to the environment and thus consults external influences for the innovation process. This strategy is mostly used by small and medium-sized enterprises which have imitated resources for the innovation process and need help from external partners [Sarpong, Teirlinck 2017]. There is a high diversity of collaboration types, for example research joint ventures, non-equity contractual collaborations and joint projects,

formal and informal arrangements [Antonioli, Marzucchi, Savona 2016]. One popular approach for a cooperation-orientated innovation strategy is the open innovation approach. This approach is proposed by H. W. Chesbrough. The open innovation concept provides insights into how firms can harness inflows and outflows of knowledge to improve their innovation success [Enkel, Gassmann, Chesbrough, 2009]. The next section now summarizes all described strategic dimensions and their resulting strategies. Table 2 gives an overview about the mentioned innovation strategy dimensions and each concrete innovation strategy.

CONCLUSIONS

This paper introduces, reviews and discusses possible definitions for the terms innovation and innovation strategy which are extracted out of a selection of relevant academic sources. Through this, it is shown that both terms can have various meanings for different contexts. Based on the reviewed literature a precise definition of the term innovation is introduced and applied to definition of the term innovation strategy for this paper. This is achieved by synthesizing the identified main characteristics of the term innovation and applying it to Mintzbergs definition of the term strategy. Five dimensions of innovation strategy are identified and for each dimension one possible innovation strategy was described.

This article shows that the research topic innovation and innovation strategy have a high level of diversity and variety. The information presented in this paper can serve as a clarifying starting point for further research activities in the field innovation and innovation strategy by providing a general overview of the topics mentioned. Based on the findings of this paper it appears reasonable to recommend further research to specify the characteristics and practical applicability of possible innovation strategies in different innovation dimensions. Furthermore, the varying origins and perspectives impacting the definition of innovation make it appear reasonable to further analyze how these differences can be described and specified, for example in terms of

geographical and cultural differences in the definitions of innovation.

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STRATEGIE INNOWACJI W KONTEKŚCIE PARADYGMATU PIĘCIU WYMIARÓW STRATEGII INNOWACJI

STRESZCZENIE. Wstęp: Na podstawie wielu istniejących dyscyplin terminy innowacja i strategie innowacji mogą mieć wiele definicji. Niniejsza praca ma na celu przedstawienie przeglądu strategii innowacji w kontekście paradygmatu pięciu wymiarów strategii innowacji wprowadzonej po raz pierwszy przez Trilling & Blaeser-Benfer. Przeprowadzony przegląd literatury miał na celu stworzenie takiego terminu innowacja, który byłby interdyscyplinarny, tworzony na podstawie źródeł literaturowych z dziedziny ekonomii, przedsiębiorczości, biznesu i zarządzania oraz technologii. Kolejny etap pracy to sformułowanie ostatecznej definicji innowacji. Ostatni etap pracy to zastosowanie definicji innowacji w kontekście paradygmatu pięciowymiarowej strategii innowacji, aby umożliwić ustanowienie spójnego przeglądu powstałych strategii innowacji.

Metody: W niniejszej pracy dokonano analizy światowej literatury na temat strategii innowacji i innowacji. Przeanalizowano łącznie 23 pozycje literaturowe, które zostały opublikowane w latach 1987-2019.

Wyniki: Głównym celem niniejszej pracy był przegląd literatury w temacie strategii innowacji w kontekście paradygmatu pięciu wymiarów strategii innowacji i wyjaśnienie przedstawionej definicji innowacji.

Wnioski: Informacje przedstawione w niniejszej pracy mogą służyć jako punkt wyjścia dla dalszych działań badawczych w dziedzinie innowacji i strategii innowacji poprzez podsumowanie aktualnego przeglądu we wspomnianych tematach. Na podstawie wniosków zawartych w niniejszej pracy uzasadnione wydaje się prowadzenie dalszych badań w celu określenia cech i praktycznego zastosowania możliwych strategii innowacji w różnych wymiarach innowacji.

Słowa kluczowe: innowacje, strategia, strategia innowacji, definicja innowacji, pięciowymiarowy wymiar innowacji, przegląd innowacji

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