

With Cross-Industry Innovation to a Circular Economy

Core competence transfer as the basis of sustainable business

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Abstract— The cross-industry innovation approach can help companies diversify their existing core competencies into new sectors or industries with as little risk as possible. In five systematic phases, the management level is enabled to identify potentials for cross-industry innovations from existing innovative problem solutions or core competencies of the company. With this approach, existing core competencies of the company can be used sustainably and in the long term, thus contributing to a circular economy. Instead of constantly building up new skills and resources, the already established resources are used sustainably and, if necessary, adapted to raise cross-industry innovation potential. The cross-industry innovation approach helps companies to transform their existing business model and form a sustainable business model.

Keywords— Cross-Industry Innovation; Cross-Sector Innovation; Circular Economy; Open Innovation; Sustainable Business; Sustainable Innovation; Sustainability

I. INTRODUCTION

The diversity of global and local industry and customer requirements is constantly increasing. Digitalization in particular has gained enormous momentum in recent years and is now demanding changes in all areas of society and the economy. This is also accompanied by increasing demands on companies at various levels. The megatrend of digitalization is stimulating the pressure for change in companies immensely [1]. Increasing complexity in product development, accompanied by a high demand for know-how and resources, shorter product life cycles and an ever-decreasing time-to-market can be observed. This puts companies under increased time and innovation pressure [2]. Which makes it necessary to adapt old business models, but also offers the opportunity to develop new business models.

In the long term, this gap between increased internal systemic and external requirements as well as shortened development times can only be countered with a change in the use of resources, increased efficiency in the innovation process or greater flexibility in the strategic orientation of the company [3]. This can be achieved by adapting the innovation process to a sustainable use of core competencies [4].

"Growth in stagnating industries can result from three starting points: Customer loyalty, propaganda or from innovation." [5] For this, a rethinking of companies is necessary in order to survive against competitors [6]. Digital technologies, such as big data, blockchain and cloud

computing are the basis for overcoming the challenges of digital transformation and developing a digital business model and are already being used in a large number of industries [7].

In the following, the cross-industry approach is first described as an enabler of the circular economy. Then the inside-out approach and the special role of core competencies will be discussed in detail. Finally, a process model is presented based on cross-industry innovation, which combines the previous aspects and enables a circular economy.

II. CROSS-INDUSTRY INNOVATION, AN ENABLER OF THE CIRCULAR ECONOMY

The development of new ideas and the implementation of successful innovations on the market is not only time-consuming, but the cost factor also plays a major role. Conventional development processes require a very high capital investment and at the same time the prospects of success are not guaranteed [8]. Cross-industry innovations help companies to sustainably commercialize existing know-how and core competencies in other markets [9].

The cross-industry innovation approach offers the possibility of opening up new sectors and business areas without the risk of losing competencies and having to develop completely new products. Rather, this approach enables companies to strengthen their existing competencies and capabilities and to identify and leverage cross-industry potential [2]. In this way, their own core competencies are strengthened in the long term and transferred to other sectors. Cross-industry innovation thus contributes to cross-industry solution development and a circular economy by applying an open innovation strategy [10].

In the cross-industry innovation approach, companies from different sectors enter into cooperation. In this way, successful mergers can be created without the cooperating companies being in direct competition [11]. By using heterogeneous sources to generate ideas and a high cognitive industry distance, cross-industry innovations have a higher potential for radical innovations [1].

In contrast to intra-industry approaches, cross-industry innovation combines problems and existing solutions in a new way across existing industry boundaries. This is done by using the idea of analogical thinking and development [13]. There are hardly any limits to the creative scope; not only the know-how of companies from other sectors, but also

technologies, patents, business processes or different approaches to solutions can produce innovations when adapted across sectors [14].

These approaches can reduce development time, risk and effort. The cross-industry innovation approach thus contributes to a sustainable economy [15].

III. CORE COMPETENCIES AND THE INSIDE-OUT APPROACH

The concept of core competence, as a sub-area of a resource analysis, is to be assigned to the newer strategy theory [16]. The concept of core competence is to be understood as an outstanding capability that overlaps the functions of the value chain, even across different business areas, which holds specific corporate knowledge and thus simultaneously represents a differentiation from other companies [16]. A core competence can only be described as a strategically relevant resource if it represents an advantage over the competition [16]. Core competencies are also permanent and transferable causes of a company's competitive advantage based on resources and capabilities [17].

Within the framework of the cross-industry innovation approach, the potential for new business areas or new sectors is examined on the basis of the identified and abstracted core competencies in order to achieve the creation of a strategic competitive advantage. The final assessment of whether the identified core competencies represent actual strengths can only be meaningfully evaluated in relation to possible new sectors or current competitors [16].

Resources of any kind that are considered valuable are referred to as core competencies. These can also be present at all levels of the value chain and represent both supporting and primary activities [18]. Supporting activities include business infrastructure, human resources, technology development and procurement. Primary activities include inbound and outbound logistics, operations (all activities of production), marketing and sales, and customer service activities [19].

In order to determine the intrinsic value of a corporate resource or core competence, and thus whether the resource represents a real competitive advantage, it must be valued accordingly. In order to achieve the best possible valuation, a competitor analysis would theoretically be possible, in the context of which an analogous resource analysis of the strongest competitors could be carried out. In practice, this is rarely possible in a comprehensive manner and hardly practicable. One common method is the VRIO scheme. The acronym VRIO stands for the properties to be checked: value, rarity, inimitability and organization [16]. The attribute "Value" describes the existence of an increase in value that is made possible or reinforced by the resource in question [16]. The attribute "rarity" in this context expresses a competitive advantage that arises from the fact that the resource or capability under consideration is so highly differentiated that only one or very few companies have it. The attribute "inimitability" applies if at least one of the following characteristics is fulfilled. The competence is based on empirical knowledge or achievements that remain

causally incomprehensible. This is the case, for example, with artistic creation or advisory services, since these are based on individual knowledge or skill. In addition, such competence may also have arisen historically or from the interaction of different social structures [16]. The fourth characteristic of the VRIO scheme to strive for is "organization". In this context, this means the organizational anchoring of the resource to be tested in the company in such a way that the company can actually use the resource in a way that promotes the company [20].

Only if all four criteria of the VRIO scheme are fulfilled is a competence also a core competence and thus to be located as a long-term competitive advantage. If, on the other hand, the competence is not anchored in the organization, i.e. if the evaluation of the O-criterion is negative, the competence is an unused competitive advantage. If the competence can also be easily imitated (negative assessment of the I criterion), only a short-term competitive advantage can be assumed. If, in addition, the R criterion is also negative, the competence is not rare and one speaks of competitive equality. If the competence under consideration is additionally assessed as not valuable (V criterion), this can have an effect on the company as a competitive disadvantage [21].

The starting point for the inside-out process of the cross-industry innovation approach are innovative solutions, core competencies, knowledge, products or innovations that already exist in the company [22]. In this process, new product-market combinations are developed [9]. With relatively low monetary and time expenditure, increases in turnover can be achieved, for example, through licensing. The inside-out approach can reduce development time, risk and effort. Inside-out approaches often result in radical or disruptive innovations [15].

IV. WITH CROSS-INDUSTRY INNOVATION TO A CIRCULAR ECONOMY

The cross-industry innovation approach enables companies to transform their existing business model and form a sustainable business model. The transformation is carried out using the modified cross-industry innovation approach.

In the cross-industry innovation approach presented below, five successive phases, which systematically interlock, are run through. The output of the upstream phase generates the input for the downstream phase. The entire five-phase process, which is based on the cross-industry innovation approach, can be seen in Fig. 1. In the first phase, the analysis phase, the strategic group in which the company under consideration operates in the industry context is first analyzed. In addition, the core competencies of the company that are most interesting for further analysis are evaluated and selected. Subsequently, in the second phase, the abstraction phase, the previously selected core competence is broken down into its basic core competence elements in order to obtain a sector-unspecific description of the core competencies. With these split core competence elements, analogous sectors are searched for in the analogy phase. These are industries that have a similar need for the

core competence elements as is the case in the domestic industry of the company under consideration. The identified bundle of foreign industries is evaluated in the downstream assessment phase using the two main criteria of "industry attractiveness" and "strategic compatibility". The main criterion "industry attractiveness" is made up of the sub-criteria "innovation activity", "industry entry barriers" and "position in the industry life cycle"[23]. The sole object of evaluation is the individual foreign industry, i.e., it is the independent criterion. The dependent main criterion "Strategic Compatibility", on the other hand, evaluates the gap in the characteristics of the sub-criteria between the dominant strategic group of the individual foreign industry and the strategic group of the home company. The sub-criteria of the main criterion "strategic compatibility" are "industry distance", "competitive strategy" and the "degree of vertical integration".

The classification of the individual foreign industries on the basis of the two main criteria mentioned is carried out in the developed "industry attractiveness portfolio" based on the portfolio method. The industry attractiveness portfolio is shown in Fig. 2.

Based on this portfolio representation, the classified industries can be classified into the three portfolio standard strategies "monitoring", "selection" and "investment". Each of these three areas in the portfolio reflects specific strategic fields of action. In the final phase, the strategic adaptation, sector-specific strategies for action and cooperation are discussed and developed.

The research model developed enables companies to identify their own core competencies and thus make visible those sectors which, from the company's point of view, have cross-industry innovation potential. Based on this, sector-specific, strategic recommendations for action and cooperation strategies can be developed in order to be able to raise the cross-industry innovation potential. Due to the already existing core competences in the company under consideration, a diversification with minimal risk can be achieved through the raised innovation potential and sustainable economic activity can be achieved.

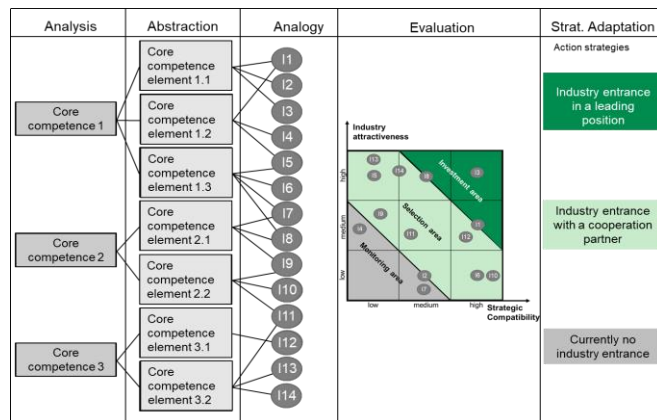


Figure 1: The new five-phase cross-industry innovation process.

V. CONCLUSION

The five-phase cross-industry innovation approach presented can help companies to detect their core competencies, identify diversification potentials and thus create a sustainable business model in the long term, which builds on existing competencies and capabilities and successively expands them. This sustainable management of corporate competencies and resources can have an impact on the entire business model and, for example, lead to a higher return on investment through the improved utilization of corporate competencies. Instead of constantly building up new competencies and resources, the already established resources are used sustainably and, if necessary, adapted to leverage cross-industry innovation potentials. The cross-sectoral innovation approach can thus help companies to transform their existing business model into a circular business model.

Future research could address the explicit theoretical and operational challenges and needs for adaptation to circular business models.

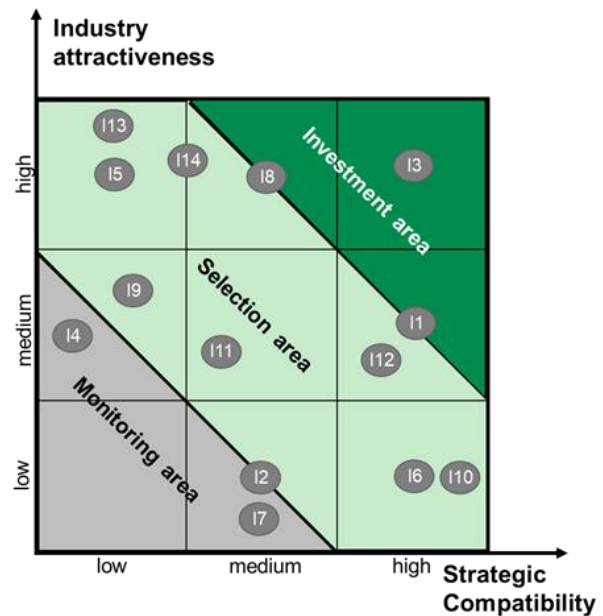


Figure 2: The industry attractiveness portfolio is developed in the evaluation phase and shows the interesting industry options.

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