



**SELECTED ISSUES TO ENHANCE INNOVATIVENESS OF
COMPANIES**

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ABSTRACT

Innovations as well as innovation management are essential prerequisites for the competitiveness and profitability of companies. In order to create successful innovations, the innovation management process has to consider many aspects. There are internal aspects like strategic orientation, climate of creativity and structured process management as well. External aspects can be derived from environmental screening and trend monitoring.

This article is an analytical and conceptual paper. The research question is about the adequate management of innovation process. First the importance of innovations for companies and nations is proven through statistical data. On the basis of critical literature research, various innovation management processes have been examined. Issues in common are pointed out and critical aspects are derived. In chapter 5 we point out trend monitoring, customer integration and supplier integration.

The specific contribution for academic discussion is twofold: Firstly the necessity of a well-structured process for innovation management is pointed out. Secondly, there is a recommendation given to companies to overcome problems from outside (trend monitoring) and to use external resources (integration) from customers and suppliers.

Key Words: innovation, customer integration, supplier integration, technology, trend monitoring

JEL Classification: O32

1. INTRODUCTION

By definition innovations are always new and seen for the first time. Processes on the other hand refer to steps of work that are often repetitive and do not show a high degree of creative freedom. This apparent contradiction needs to be resolved as the output of new innovations, which is the essential prerequisite for growth and sustainability of companies in the technology market, can only be generated through the creation of a systematic approach to the creative input. It is necessary to create processes even at the level of idea creation in order to provide continuous creative input. Generating innovations requires a great degree of creative freedom as well as a certain degree of systematic in order to stay on target. Therefore the creation of innovation management processes should systematically support innovation and make it possible (Hofbauer/Sangl 2011). Process orientation also makes it possible for the new ideas to be made into concepts efficiently and effectively and to be developed further so that they become innovation which can succeed in the market. It is most important that the ability and readiness to create innovations as well as a systematic innovation management form the company and therefore secure the effectiveness and efficiency of the innovation activity (Hofbauer 2004, p. 2).

2. INITIAL SITUATION AND PROBLEM FORMULATION

Innovations are not only essential for the competitiveness and profitability of companies, but also crucial for the competitiveness of countries and therefore determining for the standard of living of the people. The European Community has recognized this and supports and stimulates innovation activities in all member states with a plurality of programs. The realized effects are analyzed in order to be able to readjust activities.

Since 2004 the Community Innovation Survey, CIS, collects data about innovation activities of companies every 2 years. The latest data were released in 2015 and refer to the reporting period from 2010 to 2012. Besides a broad spectrum of indicators for the innovation activities of companies, the share of innovative companies in all countries is also identified. Figure 1 shows the percentage of innovative companies in descending order comparing countries. Dark bars signalize above-average percentages of innovative companies. The vertical line shows the comparison to EU28 average (Eurostat 2015).

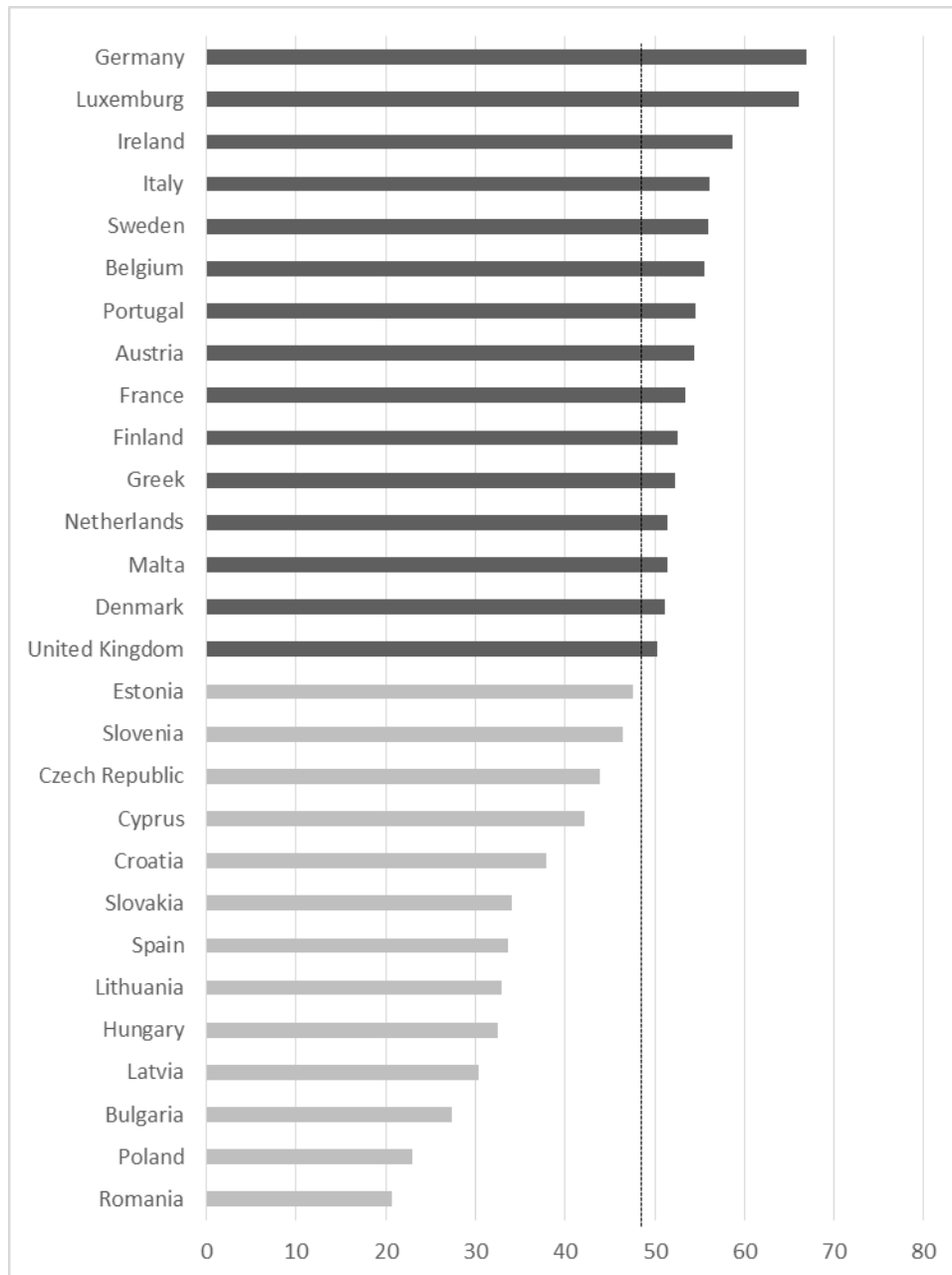


Figure 1: Percentage of innovative companies depending on countries (Eurostat 2015)

The EU-average percentage of innovative companies amounts 48.9%. This means that nearly every second company in the EU28 member states has generated innovations within the named period. The highest percentages are observed in Germany and Luxemburg although in both countries slight decreases were registered in the reporting period. The collected data included product and process innovations as well as organization and marketing innovations which are new for the company or represent significant improvements.

In order to analyze the top position of Germany and to explore the position of innovative

companies, a breakdown according to branches is additionally useful. The intensity of innovation describes the percentage of innovation spending on total sales of all companies within a specific branch. According to the German innovation survey, a publication of the *Centre for European Economic Research* in Mannheim (ZEW, *Zentrum für Europäische Wirtschaftsforschung*), the branches of vehicle manufacturing (10.2%), electrical industry (8.7%) and chemical/pharma (6.9%) have the highest percentages (Figure 2). ZEW is part of the Europe-wide innovation survey, which is called *Community Innovation Survey (CIS)*.

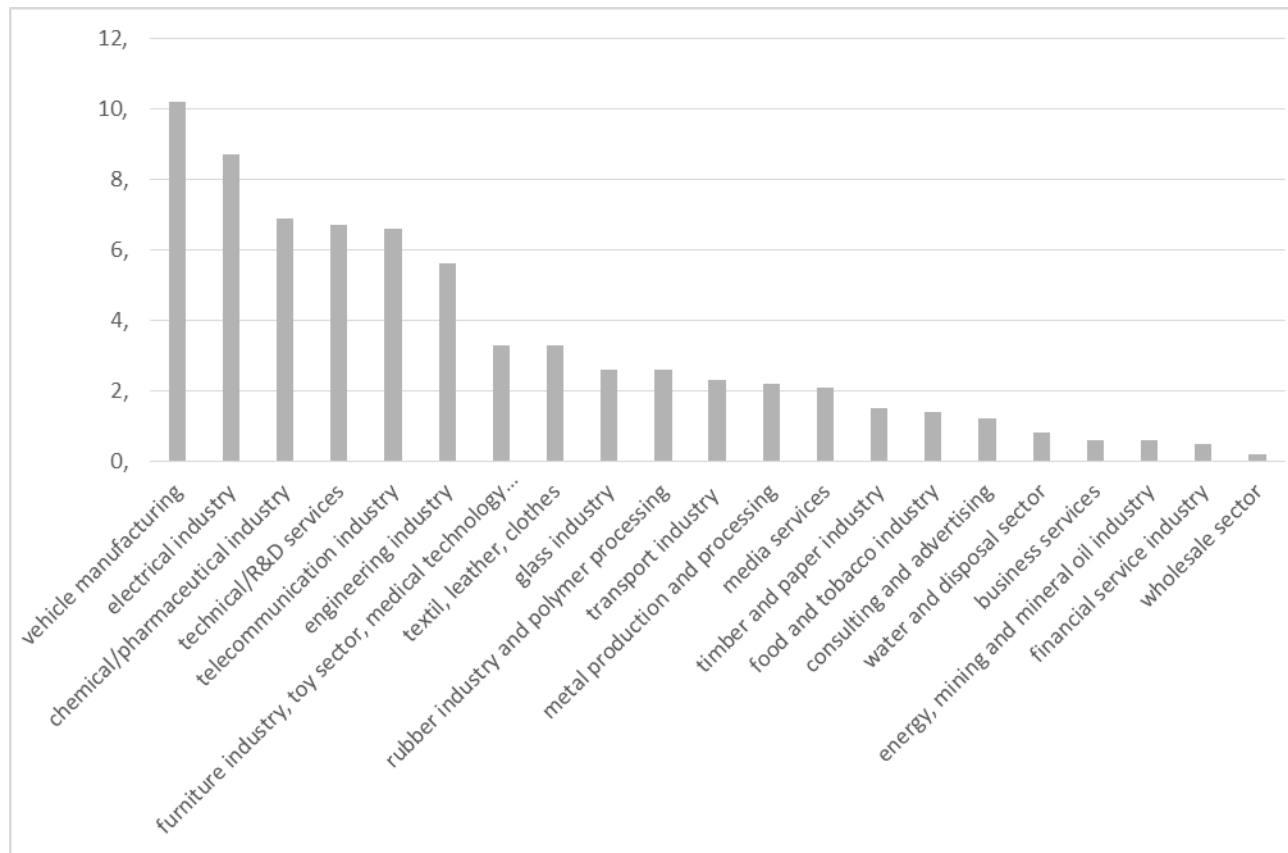


Figure 2: Intensity of innovation according to branches 2012

Thus we can conclude that both statistics prove, that the German core industries vehicle manufacturing, electronics and chemical/pharma hold the top position in the field of innovation.

This article gives attention to the research question, how to protect a leading innovation position in times of discontinuities and rising competition.

3. METHODOLOGY

The first part of this article consists of a critical analysis of the relevant literature. The different

innovation processes are compared to each other and linking as well as differentiating aspects are elaborated. Especially in the branches of vehicle manufacturing and electrical industry the intensity of innovation is very high (figure 2). Therefore innovation processes from these industries will be compared to theoretical findings. Subsequently current trends will be discussed and special consideration will be given to the integration of the customer and supplier side for problem solving.

4. FINDINGS OF LITERATURE ANALYSIS

Starting with the commonalities of successful companies this chapter presents the main findings of the comparison of popular innovation processes in scientific literature. Examining the corporate practice allows an analysis of the extent to which the identified elements can be found again.

4.1. Success Factors of Innovation Management

Scientific studies of medium-sized world market leaders show that there are connecting elements between them which appear to be decisive for their outstanding international performance (Frietsch et al. 2015):

- Global growth as a strategic corporate goal
- Commitment to active research and innovation
- Excellent process management
- Systematic knowledge management
- Scientific cooperation
- Know-how protection through quickness

Process orientation, systematic idea generation and the resulting quickness are essential and emphasize the economic sense of innovation processes.

4.2. Innovation Processes and Classification of Innovation Management

With the help of a systematic and process-oriented innovation process promising ideas shall be detected by intention rather than by chance (Uebernickel et al. 2016, p. 9 et seq.). Figure 3 gives an overview of the multitude of innovation process models found in literature.

Authors	Phase Organization						
	1	2	3	4	5	6	7
Hofbauer/Sangl (2006)	Strategic Orientation	Idea Management, Innovation	Conception, Transformation	Product Development	Market Testing	Market Development	Product Lifecycle Management
Hauschildt (1997)	Idea	Detection/Observation	Research	Development	Invention	Implementation	Exploitation
Reeder/Brierty/Reeder (1987)	Idea Generation	Screening	Idea Evaluation	Preliminary Business Plan	Product Development and Testing	Formal Business Plan	Market Launch
Geschka/Laudel (1992)	Strategic Orientation	Idea Finding	Selection of Proposals	Task Elaboration	Task Specification	Realization	
Brockhoff (1992)	Project Idea	Research & Development	Invention	Investment	Implementation		
Cooper/Kleinschmidt (1991)	Idea	Idea Selection	Development	Testing and Validation	Production and Market Launch		
Trommsdorff/Schneider (1990)	Problem Recognition	Idea Generation	Screening and Analyzation	Development	Testing and Validation		
Thom (1992)	Idea Generation	Idea Acceptance	Idea Realization				
Müller/Deschamps (1986)	Invention	Incubation	Implementation				

Figure 3: Selected innovation processes of the academic literature (Hofbauer/Wilhelm 2015, S. 10)

The idea and thus the creative element is the key component across all considered process. The final stage is mostly characterized by the implementation to the market. An upstream positioned strategic orientation, however, is only the starting point for few authors. The *Integrated Product Management Process* by Hofbauer/Sangl (2011) underlies this research article in order to cover the widest range of innovation management, starting with strategic orientation and ending with accompanying lifecycle management.

4.3. Innovation Processes in Practice

As well as in the scientific literature, there are also different innovation processes which are used in practice. The schematic illustration of Bosch Thermotechnik GmbH describes an example of such a practical innovation process (figure 4).

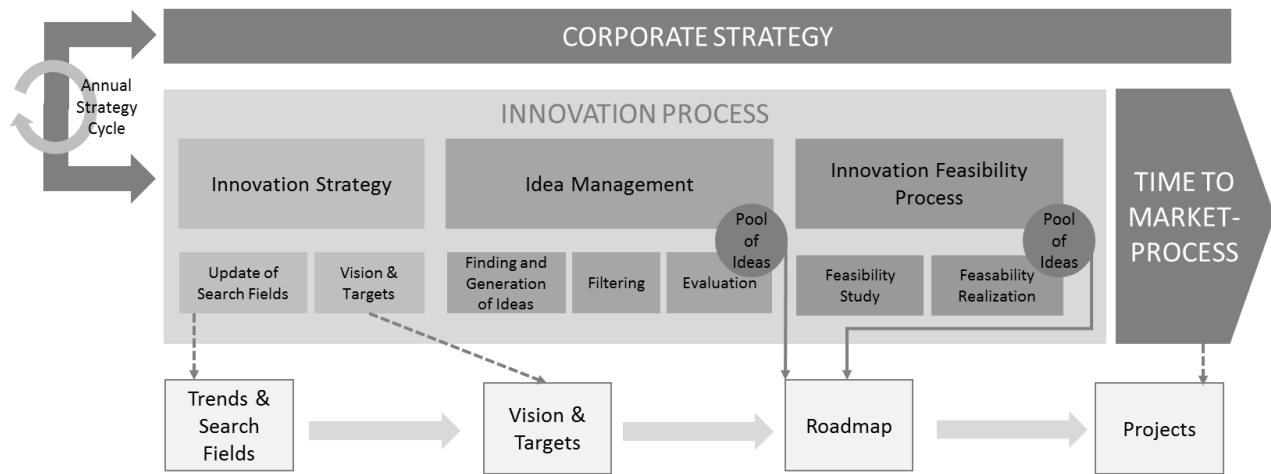


Figure 4: Example of an innovation process (Knospe 2011, p. 13)

The necessity of an innovation strategy is in the focus of this process in particular. The importance of the innovation strategy is clearly visualized by a special step in the innovation process and derived from the corporate strategy. Within this first process stage market and technology trends as well as megatrends are analyzed in order to deduce relevant strategic search fields and further on visions and targets for the innovation management.

Bailom et al. 2013 determines a commonality between above-average successful enterprises which differentiates them strikingly from those less successful: no matter what situation they are in, they are never content with just sticking with the company's present success. This continuing willingness to implement changes is considered by the authors as the most important property of particularly successful companies.

Statements of long-standing managers from well-known companies like Nestlé and Siemens confirm these obtained finding. They go even further and argue that today's success is one of the greatest threats because organizations then tend to simply try to copy the success patterns of the past. However, as a result, there is the risk of missing radical leaps in technology. When market and requirements have already changed, there is no more time available to react appropriately (Bailom et al. 2013, p. 61 et seq.). These findings also stress the significance of a strategic orientation phase at a very early stage of the innovation process as practiced in the above example.

5. DISCUSSION OF CURRENT TRENDS

During the last decades innovations were predominantly created in research and development departments within a single company. In the future, an increasing number of innovations will be generated in so-called innovation networks, where all potential sources inside and outside the organization will be used.

5.1. Trend Monitoring

In light of progressive discontinuity along with steadily more challenging strategies, the requirements for innovation processes have changed (Hofbauer/Sangl 2011, p. 312). Companies have to face them by adapting their business activities to the changed environment in order to remain competitive in an intensive and complex market environment. Figure 5 shows such a methodical approach, the so-called Trend Monitoring.

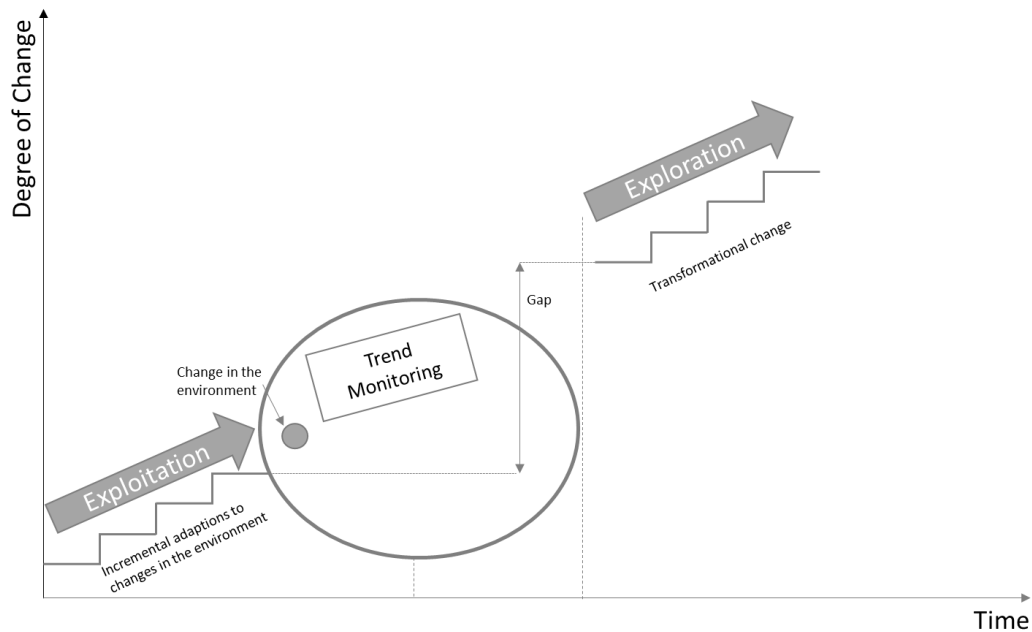


Figure 5: Trend Monitoring (Siemens 2014, p. 2)

Based on existing technologies innovations can be generated through exploitation. Trend Monitoring can help firms to uncover the indicators of structural interruptions in time so that firms can react to the new challenges with exploration. With only 10%, the number of innovations which are totally new to the market and generated through exploration is relatively low whereas exploitation generates 90% of the innovations. These innovations, however, are limited to incremental innovations because of their short-term oriented strategy (Hofbauer/Hofbauer/Sangl 2016).

The entrepreneurial vision is the key advantage of long-term analysis and can even be essential for survival as the examples of Agfa and Kodak demonstrate. They underestimated two main trends outside their firm. The technological change of the mass market towards digital cameras and the increased importance of social media caused the downfall of these two highly regarded companies.

To discover so-called fields of innovation the macro environment must be structured by dividing it into several dimensions. In the example of Trend Monitoring at Siemens, the business environment is subdivided into five categories: The dimensions of Environment & Resources, Politics & Legal, Science & Technologies, Economy & Enterprises and Society & Individuals (Siemens 2014, p. 6 et seq.). This aims to recognize and discover potential changes promptly, even if they are outside the enterprise, but affect the business at least indirectly.

5.2. Possibilities to Integrate the Environment

There are various sources for the generation of new product ideas outside the company. Scientific calculations of the *Centre for European Economic Research* documenting their Innovation Survey 2015 (figure 6) show with which partners companies prefer to enter into cooperation agreements for innovation projects (Rammer et al., 2016):

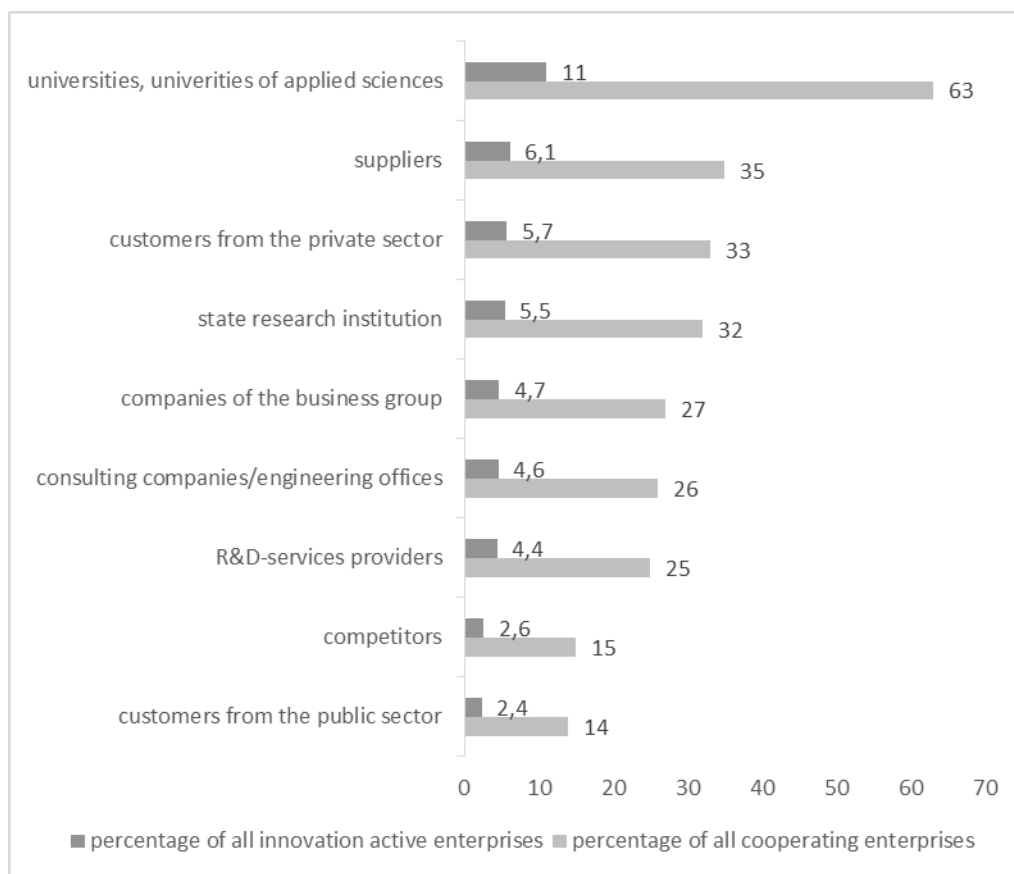


Figure 6: Preferred partners for innovation cooperation in Germany 2012-2014 (Rammer et al. 2016, p. 78)

Figure 6 shows the share of all German enterprises active in generating innovations on the one hand (dark bar) and for all cooperating and innovating companies on the other hand (light bar). The most popular partners for cooperation partnerships in terms of innovation are universities and universities of applied sciences with 63%, which means a share of 11% of all enterprises active in generating innovations. The second most frequent partners are suppliers (35%), followed by customers from the private sector with 33% ranking third. This statistical data is even more astonishing when it is taken into consideration that only real cooperation agreements are counted here. Pure contracts, where no active cooperation between both companies takes place, are not respected in this research. They would increase the proportion additionally because already 70% of the large companies use new technologies and open innovation concepts in order to develop new products and services. More than 50% use these approaches to integrate customers in their product development processes and approximately 60% apply Web 2.0 technologies to gain access to expert networks (Bailom et al., 2013, p. 92).

5.3. Customer Integration

As already shown in the previous chapter, customer integration is one of the most popular methods to identify new product ideas. Philips Healthcare, with their Value Proposition House (VPH), installed a process which focuses on the customer and puts him in the center. Knowing that successful innovations are often characterized by customer orientation, they take into account what users expect or not. To find out what customers anticipate, four steps have to be gone through. Thereby Philips Healthcare aims to gather the company's position from the perspective of the customers (Figure 7, Philips Healthcare 2014, p. 4 et seq.):

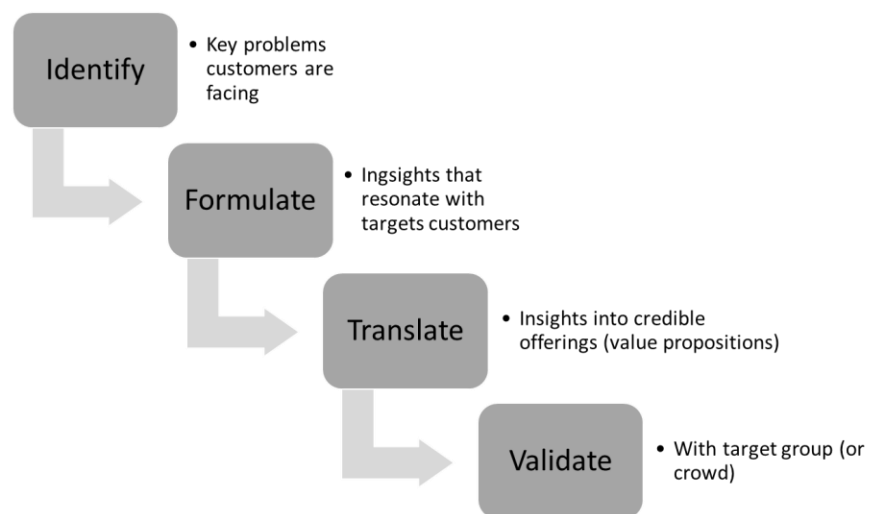


Figure 7: Insight Discovery Process (Philips Healthcare 2014, p. 9)

That means that customer integration is not only necessary for the identification of ideas, but in addition assumes a major role in the further steps of the product management process. An

overview of the most important advantage through customer integration in the different stages is provided by Hofbauer 2013, p. 14. There the customers' contribution is examined starting from the generation of ideas, their selection, conception and development through their market testing by several methods. Customer integration always has to be planned, managed and controlled under the perspectives of efficiency and effectiveness. The first necessary step therefore is to determine in which position of the value chain customers should and can be integrated (Hofbauer/Bergmann 2012, p. 27).

5.4. Supplier Integration

As well as the integration of the sales market, the procurement market also influences the innovation process. Particularly in times of ever more demanding customers and new social and economic conditions a well targeted supplier management supports maximizing the customer value through innovations. These changed market situations force companies to innovate continuously and develop them to market maturity. To establish competitive advantages it is essential for companies to ensure access to these new technologies by the procurement department. Therefore an ongoing market and technology screening is necessary to augment the scarce internal resources perfectly. For this reason strategic supplier management contributes to getting access to the most innovative suppliers and thus to taking advantage of the new technologies for their own enterprise. Figure 8 shows the structure of this supplier management process (Hofbauer/Mashhour/Fischer, 2016, p. 33).

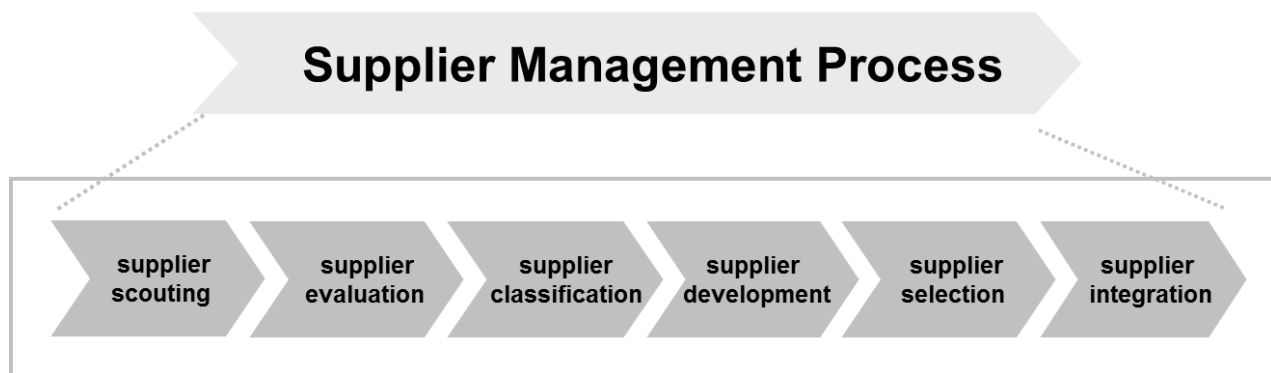


Figure 8: Steps of the supplier management process (Hofbauer/Mashhour/Fischer, 2016)

Looking at the allocation of innovations in the automotive sector, the outstanding potential of supplier innovations becomes clear: The number of patents granted increased significantly within only one decade. Whereas in 1992 there were only 1,081 patents granted, the number nearly tripled in 2002 with 2,802 patents granted. Only a closer examination, however, reveals the increased importance of supplier integration. In 1992 nearly half of the patents granted (48%) were generated by the OEM (Original Equipment Manufacturer) itself. Only ten years later supplier innovations made up nearly two thirds (65%) and so overtook the producer clearly (Schiele 2012).

There are several instruments within the scope of innovation management to embed suppliers in the most effective way. The tools range from innovation days and idea or concept competitions to integration of, or cooperation with, start-ups in terms of venture capitalists or angel investors.

CONCLUSION

Although there is no single reason for failure in market penetration because the reasons are always individual and are widely diverse, there seems to be one thing in common: in most cases the impression is that the customers did not play a decisive role or only played an understated one (Sauvonnet/Blatt 2015, p. 13).

The strategic partnership *Fit for Innovation* founded by the *German Federal Ministry for Education and Research (BMBF)* and the *European Social Fund (ESF)* determines that the bottleneck of innovativeness is not the existence of good ideas or new technologies but their successful and quick implementation and realization in innovative and marketable products and services (Knospe 2011, p. 7). In addition to the correctness and importance of an idea as such, it is the many steps until their realization which are especially critical to success (Knospe 2011, S. 8) and therefore should be led and controlled consequently by a strict management process, starting with an evaluation of the idea, its realization in terms of conception through the development of the physical product and process, the preparation of the launch and accompanying lifecycle management.

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