

# Exploring Companies' Innovation Policies in the Industrial Sector in Central and Eastern Europe<sup>1</sup>

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## Abstract

**Purpose:** Despite the importance of innovation, the full innovation potential of companies operating in the industrial sector of Central and Eastern Europe (CEE) seems not to have been unlocked yet. Thus, the primary purpose of the study was to explore the key elements of company innovation policies applied on the way to successful innovation.

**Methodology:** The study is based on qualitative methods. The aim of the study has been achieved through 24 semi-structured interviews conducted with senior management, project leaders, and R&D specialists employed at companies operating in the industrial sector in CEE. The time frame covers the period of the fourth quarter of 2016 and the first quarter of 2017.

**Findings:** Managing disruption consists of focusing on innovation development stage and following market imperatives by making the innovation try to address the market needs. Balancing portfolio requires considering product and process innovation jointly. Furthermore, 62% of the interviewees say that breakthrough innovation results ultimately from numerous incremental advancements. As far as policy integration is concerned, achieving competitive advantage through internal research is common amongst technological leaders, while market contenders turn to external cooperation. Moreover, incorporating CSV principles into the concept of innovation policy appears to be a necessity. Managing intangibilities comes down to patents.

**Research limitations:** The research was burdened with such limitations as respondents experiencing time pressure and the use of only one source of information (the interviewees).

**Originality:** Despite much general evidence, the study attempts to complement the rare qualitative studies on innovation in CEE. It was carried out as a response to the lack of an in-depth study covering such recurrent challenges in the field of company innovation policies as disruption, portfolio balancing, integration, intangibilities' management, and play.

**Keywords:** innovation, innovation policy, industrial sector, Central and Eastern Europe

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## Introduction

The position of innovation is firmly grounded in the economic theory. Its ability to create competitive advantage (Trias and Kotler, 2013), optimise company internal processes (Tirole, 1995), stimulate the increase in the body of knowledge (Lam, 2006), and facilitate the pursuit of the most efficient organisational structures (Trott, 2008) determines its significance in theoretical considerations and business practice. At the same time, implementation of innovation leads to an increase in company value (Sztowski, 2016), which is the ultimate goal of every company's activity (Koller, Goedhart and Wessels, 2015).

In the complex economic reality, company innovation policies need to take a number of factors into account. It appears that the features of innovation per se and the characteristics of the company implementing innovation are both of crucial importance to determining the project's success or failure (Khansa and Liginlal, 2009). Moreover, as an innovation policy coordinates different fields of company activity contributing to innovation, the interaction among them needs to be considered as well (Hull and Rothenberg, 2008). A successful innovation policy is a complex and demanding construct.

Innovation management is an applied discipline driven by practice rather than by theoretical advancements. Despite the consideration of the effects of innovation projects, its focus is set on the process of arranging and deploying resources and capabilities within an organization (Dodgson, Gann and Phillips, 2014). A company innovation policy is an important area because the abilities of companies to benefit from innovation depend upon how well it is managed. In the case of the discussed research, the notion of an innovation policy covers all innovation management practices defined as "any structured aids, managerial or technical in nature, used for structuring or influencing the management and effective execution of the innovation process and associated activities" (de Waal and Knott, 2010, p. 253). It appears that implementation of an innovation policy is associated with superior innovation outcomes (Tidd and Thuriaux-Aleman, 2016) and superior company performance (Mol and Birkinshaw, 2009). However, studies looking specifically at companies as the level of analysis remain rare. As Keupp, Palmié and Gassmann (2012) signalled that while much research covered the capabilities and resources required for innovation, relatively little studies focused on the practices and processes needed to support it. Moreover, further studies on innovation policies in different times and contexts appear important as "innovation outcomes and processes are continually evolving" and "understanding contemporary practices is crucial" (Dodgson, Gann and Phillips, 2014, p. 7). It appears that recurrent challenges in the field of company innovation policies concern five

fundamental matters: disruption, portfolio balancing, integration, intangibilities' management, and play (Dodgson, Gann and Phillips, 2014).

Exploring the effects of innovation in more detail offers knowledge on the fundamental matter of disruption. Innovation by definition changes the status quo and thus its management should include the areas designed to benefit from internal change and respond quickly to changes made by competitors. From the point of view of theory development, the issue of balancing innovation portfolio seems to be still unsolved. While most companies address small improvements in their innovation policies, it is the breakthrough innovation that help companies grow new businesses and diversify by building upon and developing beyond the existing capabilities. Internal and external integration is challenging for most companies, as an innovation policy is required to take into account different internal and external stakeholders (Dodgson and Gann, 2014). Management of conflicts in many different insights into opportunities draws from the evolutionary framework of capability building and architectural thinking in design theory (Fujimoto, 2014). There seems to be a prevalent theoretical gap as far as intangibilities' management is concerned (Haskel and Wallis, 2013). Reputation, mindset, and culture for innovation, among others, are strongly related to the idea of innovation policy. Moreover, the progress in the development of intangible innovation is not easily noticeable, which causes management difficulties. Innovation requires creativity (Leonard and Barton, 2014). Exploring the connection between these two concepts is vital for further theoretical advancements in the field of innovation policies. Bureaucratic structures are indispensable on the one hand, but they suppress creativity on the other. Play is the antidote to bureaucratic structures, but keeping organization too loose discourages efficiency, though (Dodgson et al., 2005).

In the light of the above, the research question has been contained in the following question: what is the relationship between a company's innovation policy and the company's innovation performance? The primary purpose of the study was to explore the key elements of an innovation policy that determine the success of a given innovation. The study focused on the industrial sector of Central and Eastern Europe (CEE). There were two reasons for that. First, the enterprises operating in the manufacturing sector outdistance by far both service and agricultural businesses in terms of generating innovation (European Commission, 2016). Also, manufacturing sector benefits from the greatest share of business enterprise R&D expenditure (Eurostat, 2012). Second, despite active and substantial support, the full innovative potential of companies operating in Central and Eastern Europe seems not to have been utilized yet. More than 55% of all high-tech manufacturers develop still in German, Italy, United Kingdom, and France (Eurostat, 2012). Furthermore, Dodgson, Gann, and Salter (2008)

argue that most of the past research on innovation has focused on the USA, Japan, and Western Europe, and so the specificities of other regions have rarely been considered.

In order to achieve the said aim of the study, qualitative research has been performed. The research involved 24 semi-structured interviews conducted in the fourth quarter of 2016 and the first quarter of 2017. The interviewees were senior management staff, project leaders, and R&D specialists employed at multinational and local businesses operating in the industrial sector in CEE. The results have laid the foundation for further theoretical considerations in the area in question by exploring five fundamental fields of innovation policies from the perspective of companies operating in Central and Eastern Europe.

The paper is structured as follows. First, the conceptual background is presented. It contains previous research on innovation with special regard to innovation management. Second, the methods employed in the conducted qualitative study are covered. Third, the study results exploring the key elements of a company innovation policy in aspiring towards successful innovation are provided. The paper ends with a set of conclusions.

## Conceptual background

Despite the overall conclusion that an innovation policy is linked to company innovation outcomes (Tidd and Thuriaux-Aleman, 2016), there are a number of principles and contextual factors that influence innovation management. What is more, such factors depend on the company's and the industry's surrounding (Benders and Vermeulen, 2002).

The firm conceptual link between an innovation policy and achieving success in implementing innovation has been established already in previous studies (Mol and Birkinshaw, 2009). It involves four different elements. According to this framework, implementing an innovation policy results in: (1) each technological solution being understood in terms of its quantified contribution to corporate goals, (2) external sources of innovation being used in a structured way, (3) product/service portfolio being reviewed frequently and in a structured manner, and (4) the whole organization being mobilized to develop new ideas.

Once the link has been established, further studies are needed to let managers fully utilize the benefits of implementing innovation policies. As shown by Daniel, Myers, and Dixon (2012), company management staff constantly face innovation challenges and issues. Codified methods and solutions are available to many of them, but they

still struggle to identify which one might be the most appropriate in the context of their company. Yet, the methods in use do not yield the same effects across all regions and industries.

As far as achieving success in innovation through implementation of innovation policies is concerned, there are five fundamental matters requiring further investigation (Dodgson, Gann and Phillips, 2014): disruption, portfolio balancing, integration, intangibilities' management, and play.

In relation to managing disruption, individualised approach to innovation at its different development stages appears to be of value. From the innovation policy viewpoint, projects may be supported at the development stage – before the final result is achieved or at the commercialisation stage – after a new product is brought to the market and a new process is implemented. While previous research has emphasized such distinction (Greenhalgh and Rogers, 2006), no clear guidelines on when to support projects have been formulated yet. Furthermore, companies struggle to materialise benefits from innovation as soon as possible. In the contemporary business reality, time may determine the success or failure of a given project. Reaching the desired outcome before the competitors distinguishes market leaders from market contenders (Hargroves and Smith, 2013). In theory, this research argues that managing disruption leads to successful innovation performance through rapid achievement of innovation outcomes.

From the point of view of portfolio balancing, both the innovation type and its degree of novelty are crucial. Evidence concerning the impact of innovation type points to the advantage of new processes and organisational solutions (Hassan, Shaukat, Nawaz and Naz, 2013). It appears that these two innovation types involve lower costs than the development of new products and thus are most advantageous for companies. Besides, innovations differ in the degree of novelty involved (Taylor, Clay and Justin, 2013). It turns out that radical solutions offer a better basis for differentiation than incremental changes, which results in a more positive perception thereof (Ho, Fang and Hsieh, 2011). Based on the above considerations, it is argued that balancing portfolio improves innovation performance as it leads to market-oriented innovation decisions.

The issue of internal and external integration needs to include drivers and sources of innovation, legal and social responsibility requirements, and creating shared value (CSV) principles (Wójcik, 2016). Earlier studies have suggested that it is not solely innovation per se that counts, but also its source (Filson, 2002). A development involving alliances and acquisitions generates less value due to a dilution of benefits. Although the factor is conceptually complementary to innovation per se, it is potentially important

from the innovation policy perspective. Moreover, earlier studies have shown that socially responsible solutions add value to innovation. According to previous studies, CSR may be used to differentiate a company from its competitors, and can be achieved without a corresponding negative effect on financial performance (Hull and Rothenberg, 2008). In theory, the research implies that internal and external integration boosts innovation performance through efficient utilization of different innovation sources and compliance to social responsibility requirements.

Managing intangibilities covers numerous elements, patents being one of the most important of them. Previous research has confirmed the importance of patenting activities (Hall, Jaffe and Trajtenberg, 2005). Such protection prevents solutions from being copied and makes it possible to control the process of diffusion. At the same time, the indicator of a given patent's value is the extent to which it is cited (Khansa and Liginlal, 2009). In the light of the above, it is argued that managing intangibilities enhances innovation performance mainly through efficient patent management.

Company's internal organization impacts its single innovation projects (Cho and Pucik, 2005). The better the company balances play and bureaucracy, the higher the chances for successful development. The interplay between play (creativity) and bureaucracy (control) is especially important in R&D departments. On the one hand, a company's strong commitment to innovation, measured by the relation of R&D spending to revenues, increases the chances of successful development. On the other hand, results are always marked by uncertainty. The issue of the effects of R&D intensity is especially important since some previous research has pointed to a negative curvilinear relationship between R&D intensity and benefits in the form of market value change (Ho, Keh and Ong, 2005). In this context, the research implies that balancing play and control in R&D departments improves innovation performance.

## Method of empirical research

The empirical research was performed in the fourth quarter of 2016 and in the first quarter of 2017. It focused on companies operating in Central and Eastern Europe. The study concentrated on manufacturing industries representing the high and medium-high categories of technological intensity, with a particular focus on pharmaceuticals (Isic Rev. 3, no. 2423), chemicals, and chemical products (Isic Rev. 3, no. 24 excl. 2423), electrical machinery and apparatuses (Isic Rev. 3, no 31), and computing machinery (Isic Rev. 3, no. 30) (OECD, 2011). The sample consisted of 24 respondents. Purposive sampling was primarily applied to recruit innovation management specialists, includ-

ing: senior management staff, project leaders, and research and development specialists from different departments of the selected companies. The interviewees were selected through an analysis of publicly available documents and company websites. They were recruited according to pre-assessed knowledge and experience in innovation management. They were invited – via phone or an e-mail – to take part in a single interview. In order to obtain a comprehensive view on innovation policies, snowball sampling complemented purposive sampling. Additional participants were identified through referrals from the recruited interviewees. The characteristics of the interviews and the interviewees are summarised in Table 1. Age and (job) experience are presented in years, the industry column presents the Isic Rev. 3 classification, area of expertise stands for the respondent's innovation area of expertise, length of interview is given in minutes.

The purpose of the interviews was to focus as far as possible on particular objects (Flick, 2009, p. 155). The interviewees were free to present their views. One of the two basic roles of the interviews was to deepen the interpretation of previous findings (Flick, 2009, p. 155). The advantages of this method supported its employment in the present research. The applied semi-structured interviews were designed to explore the key elements of company innovation policies in the efforts aimed at successful innovation. The interviews were conducted by two researchers and recorded for further analysis. According to the methodology suggested in the reference literature (Galletta, 2013) the protocol was verified in a field test prior to the research.

The semi-structured interview protocol covered eight substantial questions, seven of which allowed respondents to add their comments freely, which is in accordance with the suggestions offered in the literature on the subject (Langridge, Hagger and Johnson, 2009). Moreover, it included complementary questions concerning respondents' age, experience, and area of expertise. The substantial questions referred to the five fields of innovation policies: disruption (2 questions), portfolio balancing (2 questions), integration (2 questions), intangibilities' management (1 question), and play (1 question).

In order to achieve a high quality of research, it is important to make sure that it meets certain specific requirements (Ali and Yusof, 2011; Golafshani, 2003). In the present research, internal validity – i.e. the degree to which the results correspond to the issue of interest – has been achieved through a strict focus on the matter of innovation policies. External validity consisting of covering the population of interest has been attained by a precise selection of companies and respondents subject to investigation. Objectivity – i.e. the extent to which the findings are free from bias – has been achieved by recording the conducted interviews, analysing the recorded material separately by two researchers, and formulating conclusions based on two deductions.

**Table 1.** Interviewees' characteristics

No	Age	Gender	Job position	Experience	Industry	Area of expertise	Length of interview	Sampling
1	38	M	Project leader	13	24	Prod	23:12	P
2	45	M	Senior management	21	31	Prod	29:55	P
3	35	F	R&D manager	10	2423	Prod	14:16	P
4	28	F	R&D manager	2	24	Prod	19:06	P
5	64	M	Senior management	40	2423	Prod/proc	21:16	P
6	38	M	R&D specialist	13	2423	Prod/proc	17:48	S
7	37	M	Project manager	14	2423	Prod/proc	21:33	S
8	47	M	Senior management	25	31	Prod	12:32	P
9	36	M	Senior management	9	30	Prod	13:22	S
10	34	M	Project leader	10	30	Mrkt	12:40	S
11	41	M	Senior management	3	31	Prod	13:42	S
12	40	M	R&D manager	18	31	Prod	16:23	P
13	43	M	R&D manager	20	30	Prod	22:45	S
14	37	M	Senior management	14	30	Mrkt	17:23	S
15	32	F	Senior management	10	2423	Prod	19:39	P
16	58	M	Project leader	35	24	Prod	21:37	S
17	40	M	Senior management	16	2423	Prod	14:11	S
18	32	M	Project leader	7	31	Prod/proc	15:01	S
19	50	F	Senior management	25	30	Mrkt	18:57	P
20	33	M	R&D specialist	23	31	Prod	16:41	P
21	38	M	Project manager	16	2423	Prod/proc	27:38	P
22	37	M	Project leader	13	2423	Prod/proc	11:26	S
23	38	F	Senior management	13	24	Prod	15:46	S
24	37	M	Senior management	15	31	Prod	26:45	P

M – male, F – female, prod – product innovation, proc – process innovation, mrkt – marketing innovation, P – purposeful sampling, S – snowball sampling

Source: own work.



As far as the sample size is concerned, qualitative studies are conducted to understand the investigated phenomena. Their aim is achieved when the information gathered covers the issue of interest thoroughly. Therefore, the size of the sample was not determined a priori, but the interviews were conducted until the saturation point. A theoretical saturation is achieved when new interviews do not add anything fresh to the already discovered patterns (Becker, 2012). The present research followed a typical path for homogenous groups, where the first few interviews provide the researcher with a great deal of information and the patterns are discovered around the 12<sup>th</sup> interview (Guest, Bunce and Johnson, 2006; Mason, 2010). Here, 24 interviews were conducted to explore the issues of interest fully.

In order to draw conclusions from the research material, data categorisation (Roulston, 2010) and thematic analysis (King and Horrocks, 2010) have been performed. Thematic analysis included three stages: descriptive coding, interpretative coding, and overarching themes. To attribute the first level of descriptive codes to the relevant themes, the two researchers reviewed the recorded interviews independently and identified, defined, and organized the themes that emerged from the data. Any identified discrepancies were managed through discussion. In the next step, the researchers re-analysed all of the recordings to identify instances of themes within the coding framework. They expanded or clustered thematic codes and interpreted the meaning of those clusters. Finally, the researchers derived together the key themes from the available data set. The procedure made it possible to point to consistent patterns in the obtained responses. The results are presented in the following section of the paper.

## Results

The results of the study show that managers treat innovation as one of their priorities, which is in line with the adopted theoretical considerations. All of the respondents have demonstrated both willingness to share and a high level of dedication and professionalism by being able to substantially answer all of the questions asked. Moreover, 89% of the respondents have emphasized the role of innovation by claiming it is a “necessity”, an “inseparable part” of all of their respective companies’ fields of activity, and that without innovation, “the company loses its ability to operate”. The key elements of innovation policies aimed at successful innovation are summarised in Table 2, followed by a descriptive component. The presentation is based on recommendations of Boyatzis (1998). The presentation follows a conceptual background, and is divided into five parts: disruption (codes: Stage and Time), portfolio balancing (codes: Type

and Degree of novelty), integration (codes: Source and CSV), intangibilities' management (code: Protection), and play (code: R&D).

**Table 2.** Thematic codes representing key elements of an innovation policy in implementing a successful innovation

Label	Definition	Description	Exclusion
Stage	Distinction of development and commercialisation of innovation	Interviewee speaks about inputs and outputs at each innovation development stage	Innovation source analysis (see Source)
	E.g. "we develop technical innovation, the costs incurred at the development stage are dominant".		
Time	Time needed to benefit from innovation	Interviewee speaks about the determinants of time needed to benefit from innovation	Description of all the actions taken before the implementation (see Stage)
	In order for benefits to materialise rapidly, innovation needs to "address directly the consumers' needs" and "correspond to market demand".		
Type	Distinction of different innovation types	Interviewee distinguishes product, process, marketing, and organisational innovation	Degree of novelty (see Degree of novelty)
	E.g. "competitive pressure forces the introduction of new products".		
Degree of novelty	Distinction of different degrees of novelty	Interviewee distinguishes incremental and radical innovation	Descriptions of evolutionary development process (see Stage)
	E.g. "implementing breakthrough innovation is only possible after a number of little improvements have been introduced".		
Source	Drawing innovation from different sources	Interviewee indicates the advantages and disadvantages of internal and external sources of innovation	Illegal sources (e.g. industrial theft)
	Advocating exploitation of all the sources possible: "there are no better or worse sources – we use all sources available".		
CSV	Creating shared value	Interviewee speaks about shared value and social responsibility	Social responsibility disconnected from innovation
	E.g. "consumers are more willing to buy responsible products that increase sales revenues".		

<b>Protection</b>	Protection of innovation against copying	Interviewee speaks in favour of or against legal protection of innovation	Licensing as a form of transferring the risk of ineffective protection from licensor to licensee
	E.g. “patents – that’s how we protect from immediate copying”.		
<b>R&amp;D</b>	Research, development, and complementary activities	Interviewee speaks about R&D department or another department whose responsibilities cover those of R&D	Copying of innovation (see Source)
	E.g. “increasing R&D spending is the only right direction”.		

Source: own work.

As far as managing disruption is concerned, the respondents have indicated the stage at which most attention is paid to innovation and the determinants of the time needed to benefit from new solutions. As stated previously, innovation development is a time-consuming process. It appears that a successful innovation policy channels the majority of efforts at the development stage as far as technical innovation is concerned (n=9). “Most costs are incurred to confirm the features of the new product,” as the interviewees have stated. Otherwise, innovation may be developed in collaborative and open structures. As mentioned by the interviewees in relation to non-technical innovation, “there is very little actual development, the solutions are directly implemented”. Importantly enough from the innovation policy viewpoint, innovation process engages different departments at different stages (n=8). Commercialisation stage is the domain of marketing department, and is covered by innovation policy to a smaller extent. A successful innovation policy should connect different development stages despite their dispersion within the structure of the company (n=10).

Heterogeneity of innovation causes implementation benefits to differ from one another. As far as the process of innovation implementation is concerned, it is the company’s internal commitment and experience that determine the rate thereof. However, according to 75% of the respondents, the biggest challenge faced by companies is product innovation. The time needed to actually benefit from a new products seems to be determined by consumers (n=9). Most importantly, consumers’ reception depends not only on a given innovation’s physical features, but also on its price (n=6). As stated by one of the respondents, “if the consumers accept the cost of the product, the product prevails on the market”. Also, the respondents have pointed to the crucial role of the reaction of competitors (n=5). It was said that “it is crucial for the benefits to materialise immediately”, before the competitors react.

As for balancing the portfolio of innovation, the respondents have specified the types and the degrees of novelty demonstrated by the innovations developed in their companies. Depending on categorization, a number of innovation types may be distinguished, with product innovation and process innovation being the most popular ones. As far as innovation policies are concerned, most of the respondents have considered them not to favour any of the innovation types. The interviewees have emphasized the complementarity of different innovation types (n=16). As stated by the respondents, "both paths need to be followed at the same time" and "none of the types dominate". In-depth considerations have revealed that process innovation is regarded to be continuous, and that its principal purpose is cost cutting (n=15). "The processes undergoes a constant improvement", one of the respondents has said. Product innovation is said to be a necessity for the company to survive on the market. As mentioned by the interviewees, "product must be a novelty", "our minimum is one new product per year". Moreover, an interviewee has pointed that "in the case of young companies, processes are important to be set, and in the case of experienced ones, processes are already well established and 95% of the success stems from new products".

Innovation can be divided into incremental and radical. The former is to improve the company's functioning gradually, while the latter focuses on single game-changing solutions. From the point of view of innovation policies, both types seem to be of similar importance. Following the evolutionary and the breakthrough principles at the same time has been emphasized by 62% of the interviewees. Importantly enough, the respondents stressed the issue of causality, where many incremental improvements lead ultimately to breakthrough changes. "Big innovations consist of little solutions", "the way to breakthrough innovation is through little steps," the respondents have claimed. It is in this light that a successful innovation policy has been described as a continuous process (n=15) bringing together all kinds of major and minor efforts. Furthermore, the respondents have also argued that market competition requires companies to develop radical innovation because incremental innovation is not enough to stand out against competitors. "There is a vital need for radical innovation to survive on the market", "we create radical innovation is response to market demand," the interviewees said. They also mentioned that "breakthrough innovation entails substantial costs" and that its development possibilities needed to be viewed through the real financial potential of a given company (n=7).

As far as integration is concerned, both the source of innovation and creating shared value appear to be essential. Internal and external cooperation requires management of different innovation sources, legal constraints concerning social responsibility and creating shared value (CSV) principles. In the contemporary economics, innovation

turns out to be omnipresent. Therefore, 79% of companies seem to look for a consensus between utilizing internal resources and external cooperation in the development process. The remaining 21% rely solely on their own resources. "Innovation requires internal testing, we carry out the whole process," one of the respondents said. There appears to be a positive correlation between the technological advancement and the propensity to develop innovation internally (n=11). "We develop innovation on our own, we keep the position of the market leader," claimed one of the respondents; "if insufficient funds are dedicated to R&D, the solutions must be copied," added another. Importantly enough, no company develops innovation detached from the market needs, with market research, conferences, and scientists being the primary sources of ideas.

Innovation is a multifaceted phenomenon. Thus, every innovation policy needs to take a number of aspects into account. It seems that nowadays the issue of creating shared value is central to management in companies operating in well-developed economies. According to 100% of the respondents, their companies are socially responsible, and such approach is reflected well in the applied innovation policies. It is important to stress that 83% of the respondents have emphasized the economic benefits stemming from implementing socially responsible innovation. The further 17% of the interviewees have pointed to external supervision and legal restrictions forcing new solutions to be socially responsible. Among the benefits named, there were three categories that prevailed – improved company perception, improved product perception, and job satisfaction. The respondents have claimed that "the company is perceived as reliable and offering products of high quality", "the social reception of the product and the company is better". As far as job satisfaction is concerned, the respondents have claimed that "our company concentrates on our responsibilities to our workers. Creating better working conditions is beneficial for all".

In the case of managing intangibilities, it is worth stressing that contemporary economy is characterised by a high level of openness – ideas, concepts, and solutions merge smoothly. 96% of the respondents have claimed that their companies protect innovation. The research has shown that 62% of companies prevent the dilution of benefits gained from innovation actively by undertaking patenting activity, and the remaining 38% of the respondents have appeared to rely on licensing and trademarks. Two regularities have been emphasized. First, no respondent considered patent protection as entirely effective. Second, despite a long-term ineffectiveness, patents have been regarded as reducing immediate copying. Furthermore, 37% of the interviewed companies have turned to be using patents as a quality statement – "the perception of the product improves," as they have described it.

As for play, the key issue concerns the right balance between play (creativity) and control in R&D departments. When it comes to R&D, it has been indicated that the actual development of innovation per se is the central point of every successful innovation policy. Bearing this in mind, it seems reasonable that most interviewees have argued that increasing the spending on R&D is a necessity (n=14). At the same time, due to the unpredictability of R&D outcomes, R&D departments seem to be cost-consuming – "(...) a bottomless pit," as described by one of the interviewees. Despite the strong pressure to increase R&D expenditure, 29% of the respondents are already satisfied with the current spending and are not planning any increase in this area in the future.

## Conclusions

Despite the central position of innovation in contemporary economics, innovation policies of companies operating in the industry sector in Central and Eastern Europe have been hardly explored. Therefore, the purpose of the study was to explore the key elements of company innovation policies in striving for successful innovation. The concepts of disruption, portfolio balancing, integration, intangibilities' management, and play were examined as part thereof. The research was based on 24 in-depth interviews targeting management staff, project leaders, and R&D specialists involved with CEE companies operating in sectors such as biotechnology, chemicals, pharmaceuticals, mechanical engineering, and IT.

As for the abovementioned five concepts, the research has shown that a successful innovation policy arranges and deploys resources and capabilities at the innovation development stage. The interviewed subjects have emphasized the necessity to utilize the complementarity of new products and processes and the evolutionary approach, where the ever-present pressure on introducing minor changes leads ultimately to breakthrough innovation. It appears that focusing on internal research and managing patenting activities supports achieving competitive advantage and prevents immediate copying of innovative property. According to the interviewees, a good innovation policy should respond directly to market needs and force socially responsible solutions. The key to a successful innovation policy is the right organisation of the company's R&D department.

Given the exploratory character of the study, its practical implications are limited. However, managers may take advantage of the patterns described as valuable insights into the aspects of an innovation policy. Practical implications of the research include such fields as cost planning, internal organisation, and employee rewarding system.

The research offers managers a signal that different development stages generate different level of costs, depending on the nature of a given innovation. While technical innovation involves substantial costs to be incurred at the development stage, a non-technical one requires financing during the stage of implementation. Such results should be included in the cost planning. Furthermore, as far as internal organisation is concerned, the research has shown arguments in favour of dividing responsibilities between R&D and marketing departments. While the former should handle technical tasks, the latter should: determine the market needs, indicate the direction of development, and determine the prices of the new products (which indirectly determines the maximum amounts spent on research and development). Lastly, as the research has led to a conclusion that the way to a breakthrough innovation is through little steps, the applied employee rewarding system should promote exactly such little advancements.

As for the set research question, the study points to a firm link between a company's innovation policy and its innovation performance. Moreover, the present research has provided context-sensitive evidence (Central and Eastern Europe, industries included in the high and medium-high categories of technological intensity), which is especially welcome in the case in question (Mol and Birkinshaw, 2009). In the light of the above, the present study has managed to complement earlier research endeavours. What is more, it has offered also some explanatory evidence concerning the recurrent challenges in the field of innovation policy as indicated by Dodgson, Gann, and Phillips (2014). It has assigned the concepts covered to eight thematic codes: disruption (codes: Stage and Time), portfolio balancing (codes: Type and Degree of novelty), integration (codes: Source and CSV), intangibilities' management (code: Protection), and play (code: R&D).

In addition to that, the theoretical implications of the study extend to game theory and project management theory. With regard to the former, the study has indicated and provided insights into the intra-organisational game played between marketing departments and R&D departments in the field of innovation management. The divergence of aims results in both departments applying individual strategies to maximize their respective payoffs. The game emerging from the study is non-zero-sum as a successful innovation project is beneficial for all of the parties involved. Also, in relation to product innovation, the game is sequential as the study of market needs is followed by an actual development process, which is followed, in turn, by the positioning of new products on the market. In the light of the above, the game appears asymmetric in its consecutive stages, with marketing department being dominant at its beginning and end, and R&D department dominating its central part.

Moreover, the research attempted to provide some insights into the project management theory. From the processual perspective, a project is treated as a form of decision outcome (Cicmil and Hodgson, 2006). The research has proven that a successful innovation policy assures a continuous process of generating minor improvements, which leads ultimately to a ground-breaking innovation. It is thus composed of consecutive stages. In the case of a successful process, each minor development is followed by a series of other developments in a knowledge – and experience-generating sequence. At each stage, managers evaluate minor upgrades and decide on their subsequent implementation or rejection. Therefore, they decide either to proceed to the next stage or to repeat the present one. In such context, a process where managerial decisions separate particular innovation development stages emerges. Such sequential representation sheds some light on the innovation management process from the point of view of the project management theory.

Judging by the outcomes of the research, its original purpose has been achieved. However, the field study was burdened with several limitations. First, despite the willingness to participate in the study, some respondents experienced time pressure, and in seven cases, the interviews were reduced to less than 15 minutes. Second, collection of data from only one source of information (the interviewees) could involve, among others, a desirability bias (i.e. interviewees say what they think the researcher wants to hear). Triangulating the interviews with other sources of information (such as e.g. company innovation plans) could limit this bias. Third, while the snowballing procedure made it possible to create a comprehensive view on company innovation policies, it made the interviewees respond in a cautious and conservative manner. One possible reason behind this is that the interviewees knew that their colleagues recommended them as potential subjects. Due to the nature of the study, its conclusions may not be generalised. Thus, the recommended – and possibly promising – direction for further research should involve exploring the issue of innovation policies applied by companies operating in the industry sector in Central and Eastern European via a representative quantitative research.

## References

- Ali, A. and Yusof, H. (2011). Quality in Qualitative Studies: The Case of Validity, Reliability, and Generalizability. *Issues in Social and Environmental Accounting*, 5(1/2): 25–64, <https://doi.org/10.22164/isea.v5i1.59>
- Becker, H. (2012). In: S. Baker and R. Edwards (eds.) (2012). *How many qualitative interviews in enough?* Discussion paper. National Centre for Research Methods.



- Benders, J. and Vermeulen, P. (2002). Too many tools? On Problem Solving in NPD Projects. *International Journal of Innovation Management*, 6(2): 163–185, <https://doi.org/10.1142/S1363919602000574>
- Boyatzis, R. (1998). *Transforming Qualitative Information. Thematic Analysis and Code Development*. Sage Publications: Thousand Oaks.
- Cho, H. and Pucik, V. (2005). Relationship between Innovativeness, Quality, Growth, Profitability, and Market Value. *Strategic Management Journal*, 26: 555–575, <https://doi.org/10.1002/smj.461>
- Cicmil, S. and Hodgson, D. (2006). New possibilities for project management theory. A critical engagement. *Project Management Journal*, 37(3): 111–122.
- Daniel, E., Myers, A. and Dixon, K. (2012). Adoption rationales of new management practices. *Journal of Business Research*, 65: 371–380, <https://doi.org/10.1016/j.jbusres.2011.06.033>
- De Waal, G. and Knott, P. (2010). Product innovation tool adoption behaviour in technology-based new ventures. *International Journal of Innovation Management*, 16: 1–26.
- Dodgson, M. and Gann, D. (2014). Technology and innovation. In: M. Dodgson, D. Gann and N. Phillips (eds.), *The Oxford handbook of innovation management*. Oxford: Oxford University Press, <https://doi.org/10.1093/oxfordhb/9780199694945.013.033>
- Dodgson, M., Gann, D. and Salter, A. (2008). *The management of technological innovation. Strategy and practice*. Oxford: Oxford University Press.
- Dodgson, M., Gann, D. and Phillips, N. (2014). *The Oxford handbook of innovation management*. Oxford: Oxford University Press, <https://doi.org/10.1093/oxfordhb/9780199694945.001.0001>
- European Commission (2016). *Science, technology and innovation in Europe*, [http://eeas.europa.eu/archives/delegations/south\\_korea/documents/news/2016/20160708-final\\_en.pdf](http://eeas.europa.eu/archives/delegations/south_korea/documents/news/2016/20160708-final_en.pdf)
- Eurostat (2012). *Science, technology and innovation in Europe*. Luxembourg: Publications Office of the European Union.
- Filson, D. (2002). The Impact of E-commerce Strategies on Firm Value: Lessons from Amazon.com and its Early Competitors. *Claremont Colleges Working Papers*, 6: 1–61.
- Flick, U. (2009). *An Introduction to Qualitative Research (4<sup>th</sup> ed)*. London: Sage Publications.
- Fujimito, T. (2014). Innovation management in Japan. In: M. Dodgson, D. Gann and N. Phillips (eds.), *The Oxford handbook of innovation management*. Oxford: Oxford University Press, <https://doi.org/10.1093/oxfordhb/9780199694945.013.018>
- Galetta, A. (2013). *Mastering the semi-structured interview and Beyond*. New York: New York University Press, <https://doi.org/10.18574/nyu/9780814732939.001.0001>
- Golafshani, N. (2003). Understanding Reliability and Validity in Qualitative Research. *The Qualitative Report*, 8(4): 597–607.
- Greenhalgh, C. and Rogers, M. (2006). The Value of Innovation: The Interaction of Competition, R&D and IP. *Research Policy*, 35(4): 562–580, <https://doi.org/10.1016/j.respol.2006.02.002>
- Guest, G., Bunce, A. and Johnson, L. (2006). How Many Interviews Are Enough? An Experiment with Data Saturation and Variability. *Field Methods*, 18(1): 59–82, <https://doi.org/10.1177/1525822X05279903>
- Hall, B., Jaffe, A. and Trajtenberg, M. (2005). Market Value and Patent Citations. *Journal of Economics*, 1: 16–38.
- Hargroves, K. and Smith, M. (2013). *The natural advantage of nations: business opportunities, innovation and governance in the 21<sup>st</sup> century*. London: Earthscan.

- Haskel, J. and Wallis, G. (2013). Public support for innovation, intangible investment and productivity growth in the UK market sector. *Economics Letters*. Amsterdam: Elsevier.
- Hassan, U., Shaukat, M., Nawaz, S. and Naz, S. (2013). Effects of Innovation Types on Firm Performance. An Empirical Study on Pakistan's Manufacturing Sector. *Pakistan Journal of Commerce and Social Sciences*, 7: 243–262.
- Ho, Y., Fang, H. and Hsieh, M. (2011). The Relationship between Business-Model Innovation and Firm Value: A dynamic perspective. *International Scholarly and Scientific Research & Innovation*, 5(5): 551–559, <https://doi.org/10.1109/TEM.2004.839943>
- Ho, Y., Keh, H. and Ong, J. (2005). The effect of R&D and Advertising on Firm Value: an Examination of Manufacturing and Nonmanufacturing Firms. *Transactions on Engineering Management*, 52(1): 3–14.
- Hull, C. and Rothenberg, S. (2008). Firm performance: the interactions of corporate social performance with innovation and industry differentiation. *Strategic Management Journal*, 29: 781–789, <http://dx.doi.org/10.1002/smj.675>
- Keupp, M., Palmié, M. and Gassmann, O. (2012). The Strategic Management of Innovation: A Systematic Review and Paths for Future Research. *International Journal of Management Reviews*, 14: 367–390.
- Khansa, L. and Liginlal, D. (2009). Has Decreasing Innovation Hurt the Stock Price of Information Security Firms? A time series analysis. In: *AMCIS, AIS Electronic Library, paper, 784*: 1–9.
- King, N. and Horrocks, C. (2010). *Interviews in qualitative research*. Los Angeles: Sage publications.
- Koller, T., Goedhart, M. and Wessels, D. (2015). *Valuation. Measuring and Managing the Value of Companies*. New Jersey: Wiley & Sons.
- Lam, A. (2006). Organisational innovation. In: J. Fagerberg, D. Mowery and R. Nelson (eds.), *The Oxford Handbook of Innovation*. New York: Oxford University Press, <https://doi.org/10.1093/oxfordhb/9780199286805.003.0005>
- Langridge, D. and Hagger-Johnson, G. (2009). *Introduction to Research Methods and Data Analysis in Psychology (2<sup>nd</sup> ed)*. Harlow: Pearson.
- Leonard, D. and Barton, M. (2014). Knowledge and the management of creativity and innovation. In: M. Dodgson, D. Gann and N. Phillips (eds.), *The Oxford handbook of innovation management*. Oxford: Oxford University Press.
- Mason, M. (2010). Sample Size and Saturation in PhD Studies Using Qualitative Interviews. *Forum Qualitative Social Research Sozialforschung*, 11(3), <http://nbn-resolving.de/urn:nbn:de:0114-fqs100387>.
- Mol, M. and Birkinshaw, J. (2009). The sources of management innovation: when firms introduce new management practices. *Journal of Business Research*, 62(12): 1269–1280, <https://doi.org/10.1016/j.jbusres.2009.01.001>
- OECD (2011). *Isic Rev. 3 Technology Intensity Definition. Classification of manufacturing industries into categories based on R&D intensities*, <https://www.oecd.org/sti/ind/48350231.pdf>.
- Roulston, K. (2010). *Reflective interviewing. A guide to theory and practice*. London: Sage Publications, <https://doi.org/10.4135/9781446288009>
- Szutowski, D. (2016). *Innovation and market value. The case of tourism enterprises*. Warsaw: Difin.
- Taylor, C., Clay, D. and Justin, C. (2011). A Study of Schumpeterian (Radical) vs. Kirznerian (Incremental) Innovations in Knowledge Intensive Industries. *Journal of Strategic Innovation & Sustainability*, 7(1): 28–42.
- Tidd, J. and Thuriaux-Aleman, B. (2016). Innovation Management Practices. Cross-sectional Adoption, Variation and Effectiveness. *R&D Management*, 46(3): 1024–1043, <https://doi.org/10.1111/radm.12199>

- Tirole, J. (1995). *The theory of industrial organisation*. Cambridge: MIT Press.
- Trias, F. and Kotler, P. (2015). *Winning at innovation. The A-to-F model*. UK: Palgrave Macmillan, <http://dx.doi.org/10.1057/9780230354104>
- Trott, P. (2008). *Innovation Management and New Product Development*. Harlow: Prentice Hall.
- Wójcik, P. (2016). How Creating Shared Value Differs from Corporate Social Responsibility. *Journal of Management and Business Administration. Central Europe*, 24(2): 32–55.