Internal Factors Influencing Innovativeness among Hungarian Small- and Medium-sized Enterprises

An empirical analysis

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“If I had ask people about what they wanted, they would have said faster horses”
Henry Ford

1. Introduction

Today’s economy requires more and more engagement to innovation, since it is the key for sustainable competitive advantage, as the well-known saying goes “innovate or die”. Of course, innovation is a complex process, as the paper will show, it is not easy to identify why innovations fail or succeed. It is very interesting to investigate, which factors hinder innovativeness. There are internal barriers, which represent the impediments within an organization, and external factors, which are exogenous for firms (Madrid-Guijarro, Garcia, & Van Auken, 2009, p. 468). A company, if we assume a perfectly competitive market, has influence just on the internal factors. The innovation is important not just for an individual company, but also domestically. Hungarian small-and medium enterprises (SMEs) lag behind the other European Union (EU) countries’ SMEs, and minding their major role in the Hungarian economy, it can be harmful for the Hungarian economy. According to the SBA fact Sheet (2014), the proportion of SMEs, introducing product or process innovation was 16.8 percent in Hungary; meanwhile the EU average is 38.44 percent. Therefore, a significant gap needs to be closed by Hungarian SMEs (p. 12). The largest gaps are in introducing process innovations and in-house innovation (DG Enterprises and Industry, 2014, p. 13). The Hungarian legislation also knows about the phenomenon, and they know that the innovativeness of Hungarian SMEs and the country as a whole must be improved. Nándor Csepreghy, state-secretary for development project, said (2015) that the key for Hungarian success is the close up of SMEs to the EU level. National Economy Minister, Mihály Varga, said in 2014, “Hungary must become an innovation hub” and the government, in order to reach its goals, will use €2.3 billion to bolster R&D between 2014 and 2020. Intensive R&D spending is not sufficient solely, if companies miss the opportunities, cannot lead the inventions to innovations, and cannot manage the process. If companies knew which factors hamper the innovation process, they could dodge it; hence, it is important for the Hungarian economy-growth to identify the various obstacles of innovation for SMEs. The
Hungarian definition of SMEs is different from the EU one, this essay will present the Hungarian, since in the research it will examine Hungarian SMEs; therefore, for the purposes of the paper it is more appropriate. Data support that SMEs have a significant role in the Hungarian economy, maybe more significant than in other EU countries. The KSH (2013) also formulated that Hungarian SMEs’ ability to survive is low, and these two components jeopardize the Hungarian success (p. 3). Their major role in the Hungarian economy is the reason why Hungarian legislation has to help these firms to grow and to reach higher stability.

The introduction has already shown that Hungarian SMEs lag behind the European average, moreover, they have major role in the country’s economy. None of the companies can prepare to dodge the obstacles and hampering factors without knowing them. Therefore, it is crucial to identify them and test their presence in Hungary. This investigation aims to identify the major internal obstacles, barriers to innovation, and then analyses their role in Hungarian SMEs. Maybe the most important point is that SMEs’ proportion form national employment is 70.8 percent, meanwhile they give 99.8 percent of all the enterprises in Hungary. Furthermore, SMEs’ proportion from Hungarian GDP is 55 percent and they give the 58.3 percent of nationwide turnover (KSH, 2013, pp. 1-2). The main research question is therefore: How do different internal factors affect the innovativeness of Hungarian Small- and Medium-sized Enterprises. In order to get a thorough analysis in the topic the essay will provide a literature review in the second section.

The second sections will consist of a literature review that will contain information that includes the definition, concept, nature, typology, process, and management of innovation, furthermore will go through the main drivers of innovation, namely: general management, human capital, human resource management, corporate culture, technology and infrastructure, strategic thinking, finance, innovation management, organization structure and the problems associated with them. The third section will cover the research, based on the literature review, will describe the methodology, development, variables of the survey, and nonetheless will introduce the sample. The fourth section will be devoted to the analysis of the data, on the one hand as a descriptive statistics, on the other hand as a regression analysis, in order to find the effect of the variables on the innovativeness of the companies. Based on these findings, in section 5, the paper will discuss the results, and in section 6, the essay will draw not just a conclusion, but will also state further questions and limitations.
2. Literature review

2.1 Innovation

In order to get a thorough analysis of the topic, the essay will provide a literature review on innovativeness and barriers to innovativeness. In order to understand the problem and the impediments, it is vital to examine the innovation itself. In this section, the essay will show the definition, concept, nature, typology, process, management, and importance of innovation.

2.1.1 Definition

The first step to understand innovation is to understand the definition. There is no unified definition of innovation; what definitions have common, is that all of them define innovation more or less with *newness* and *novelty*. Goswami and Mathew (2005) articulated that the way organizations define the innovation also affects their innovativeness, it can foster or hinder the innovativeness of a company. Their study has shown that innovative companies perceive innovation more likely as “inventing something new” than non-innovative companies do (p. 378). On the other hand, less innovative companies adopt the, “following the market” and, “adopting something that has been successfully tried” as the definition of innovation (p. 378). Thus, the way one defines innovation can influence its company’s ability to innovate; therefore, the paper will introduce different innovation definitions.

First, to define innovation, it is vital to differentiate it from *invention*. The invention is a discovery or breakthrough, but not a commercialized idea; meanwhile innovation is a commercialized, tradable good (Diaconu, 2011, p. 129). Furthermore, invention is a static phenomenon, but innovation is a process. An invention is just the first step, to become an innovation it has to go through a whole number of processes, therefore innovation is not a static, rather a process.

Maybe the first definition of innovation was cerated by Schumpeter (1934), who said that innovation is a „new combination” of existing knowledge. Schumpeter defined five categories of innovation in his book *Theory of economic development* (1934). Schumpeter (1942) stated in his book that innovation is a process which causes the
destruction of the old structure, product, while creates a new set of combinations.
“Innovation can be defined as the application of new ideas to the products, processes, or
other aspects of the activities of a firm that lead to increased ‘value’” (Greenhalgh &
Rogers, 2010, p. 4). Goswami and Mathew (2005) stated that, „….innovation is also the
application of creative new ideas and the implementation of inventions in the
organization” (p. 381). This definition concentrates more on newness and novelty, it
handles innovation as something new, and not as recombination, or assimilation of
existing ones in a new way.

The European Commission defines innovation as, “The successful production,
asimulation [sic] and exploration of novelty in the economic and social spheres”
(European Commission, 1995, p. 1). “An innovation is the implementation of a new or
significant improved product (good or service), or process, a new marketing method, or
a new organizational method inbusiness [sic] practices, workplace organization or
innovation, as, “… innovation activities are all of the scientific, technological,
organizational, financial [sic] and commercial steps, including investments in new
knowledge, which actually, or are intended to lead to the implementation of
technologically new or improved products and processes.” (p. 18) “Any idea, practice, or
material artifact perceived to be new by the relevant unit of adoption” (Zaltman &
Duncan, 1977, p. 12). Innovation described by Costa Suoza and Bruno-Faria (2013) as an
idea that is not necessarily new but recombines old ones, in a significantly new way,
which requires creativity (pp. 111-113). These definitions are broader, not so strict, since
they handle the adaptation of technologies also as an innovation. *This paper combines
definitions of innovation, and it considers innovation as a process that combines existing
knowledge in a new manner or creates a completely new idea, which is not only invented,
but also commercialized or implemented, and therefore beneficial for the users with its
increased value.*
2.1.2 Concept

The innovation concept can be approached from the economic perspective, and from a firms’ point of view. Creative-destruction helps economic innovation through a dynamic process that involves either radical or incremental changes (Schumpeter, Theory of Economic Development, 1934) Greenhalgh & Rogers (2010) formulated the economic concept of innovation, where they introduced the economic benefits of process and product innovation. As it is shown on the Figure 1 (assume that there are no fixed costs), the process innovation in a perfectly competitive market results lower costs (MC2=AC2) than prior (MC1=AC1). Since the demand curve stays constant, customers will benefit from the innovation (blue area), because prices will fall. This benefit only occurs if we assume that other companies will use this innovative, cost-reducing process as well (pp. 9-12).

*Figure 1: Process innovation in perfectly competitive market (Greenhalgh & Rogers, 2010 p. 10).*
Figure 2 shows a monopoly situation where the monopoly finds a new, more effective way of production, because its initial marginal costs (MC$_1$=AC$_1$) will decrease (MC$_2$=AC$_2$). Therefore, it will cross the marginal revenue (MR) line deeper, thus, the monopoly will provide larger quantity, which causes price reduction (Greenhalgh & Rogers, 2010, pp. 9-12).

The product innovation effect differs from the process ones; therefore, the paper will briefly describe them as well. Product innovation has no gains for the innovator in a perfectly competitive market (with the assumption that each innovation can be competed immediately); hence, the essay will show the effects only in a monopolistic market. Figure 3 represents a monopolistic situation, where monopoly sets prices higher than the marginal costs, which will result profit as reward for innovation activity. In this situation some producer’s surplus will be realized (area ABCD), but some will be lost what is called deadweight loss (area BDE). The customers will profit from larger variety, and increased quality of products, and, even though, they will consume more than before. (Greenhalgh & Rogers, 2010, pp. 12-14). Figure 4 shows the effects of broader diversity of products. Customers might pay more for a more suitable product (Greenhalgh & Rogers, 2010, p. 14).
The paper briefly describes the economic aspect of innovation activity; the next stage will introduce the concept from the firms’ perspective. There are three major drivers of innovation within an organization: First, to reduce cost with more efficient production, therefore, the prices can fall and the company can acquire customers. Second, to increase demand thorough new products, therefore increase the profit of the company, and third, for innovation itself, because innovation can increase the firm’s innovation’s capability. The third one will lead to economic profits thorough the first or second opportunity.
The Schumpeterian view is looking for major, “sweeping changes that fundamentally restructure industries and market” (OECD, 2005, p. 30). These changes require experience, since today’s economy is knowledge-based; firms need to acquire specialized knowledge. Innovative activity acts as an interactive process that helps in creating knowledge within and outside of the firm; furthermore, the diffusion and application of the created knowledge (OECD, 2005, p. 28). Besides acquiring, maintaining, and protecting our knowledge is also important since the ability to protect innovation influences the incentives of innovative activity. If the company cannot protect it and it has to give out some or all of its profit from innovation, because the cost of innovations are higher than the profits firms will innovate less (OECD, 2005, p. 19).

The largest debates about this topic were decades ago, between Schumpeter argued Marschak, and Frisch. Today, the most accepted is the Schumpeterian concept of innovation, but the thesis will briefly show some of the other concepts, and debates among the creators of these ideas. Schumpeter argued that innovation and capitalism is like evolution that requires creative destruction. The author used biological analogy to clarify his concept with others (Louca, 2014, p. 1442). Louca (2014) cited many mails from Frisch, in which he articulated that innovation is about impulses and economic rationales (pp. 1442-1444). Louca (2014) also cited Schumpeter, where he argued that, “…there is an agent, within economic world which alters data and with these the economic processes: entrepreneurial activity” (p. 1443), therefore, Schumpeter argued that there is an entrepreneur, who makes things change and not recure Schumpeter believed that innovation has internal drivers, and not external impulses. Frisch’s counterargument committed to the impulsive concept that innovations are released periodically. Marschak could not agree with Schumpeter either and argued for the random concept of innovation. Schumpeter, furthermore, argued that the, “little devil” namely, “the monopoly” is necessary for innovation, which will diminish with time, as the competitors and imitators appear on the market (Louca, 2014, p. 1445). The three different concepts for innovation are the random technological innovations to Marschak, the external impulses for Frisch and the entrepreneurial, little devil view to Schumpeter, who also argued that innovation is not a probabilistic framework (Louca, 2014):

…innovations are such disruptions that emanate from a pathological behavior, a social deviance from norms, from daring entrepreneurs and, consequently, they cannot be described as if they were movements of particles in a
probabilistic universe, as exogenous, insignificant [sic] and non-systemic small shocks (p. 1448).

The Schumpeterian approach describes innovation as a qualitative change to economic development, and handles it as result of entrepreneurial activity. The innovation is mainly activities of firms, not like invention, which arises from social and economic environments. The organization or person that combines the resources is the entrepreneur; furthermore, imitators are also innovators, since they also have to combine the existing in a new way (Diaconu, 2011, p. 132). This stage introduced us to the concept of innovation. The paper considered the economic perspective and the aspect of individual firms. It showed that innovation is beneficial for customers in perfectly competitive and monopolistic market as well; nevertheless, it is prosperous to companies too.

2.1.3 Nature

Once the essay introduced the definition and concept of innovation, the next part will cover the basic, inherent features of innovation. Innovation has two dimensions: individual and social (Costa Suoza & Bruno-Faria, 2013, p. 110). Individuals are the drivers of innovation, but the innovation requires social acceptance as well, since an unaccepted invention cannot be innovation, because it will never be tradable. Innovation is a dynamic, heterogeneous process, which is not linear in nature and involves internal and external factors. It is characterized by organizational learning, uncertainty, potential for change, and solution of the problem, nevertheless, the interaction of market, technology, and organizations (Costa Suoza & Bruno-Faria (2013), Tidd, Bessant, & Pavitt (1997), Bolinao (2009), OECD (2005), Diaconu (2011), Buse et al., (2010), Diaconu (2011)). Heterogeneity can cause problems during the innovation process. It is the very nature of innovation to be beneficial not just for the company but for the economy as a whole as well. An invention is not an innovation itself, it must reach market introduction and requires entrepreneurial activity (Bolinao, 2009, p. 72), which is greatly uncertain process. Therefore, these process-steps require great risk-tolerance; otherwise, firms hesitate to innovate or cannot innovate at all (OECD, 2005, p. 30). Innovation also covers the low-tech, not just high-tech sector, since a certain improvement of a product is also innovation (Diaconu, 2011, p. 128). The imitators are also important for innovation, since they can make a product available for the mass market, and therefore
help in achieving social acceptance. Innovation can be an outcome of numerous other innovations and an input for further innovation processes, the innovation processes can be interrelated (Diaconu, 2011, p. 132). Innovation therefore is a heterogeneous, dynamic process, which is complex in nature and beneficial for multiple players of a market, nevertheless, it covers the high-tech, and low-tech sectors as well.

2.1.4 Typology

There are multiple typologies of innovation around; the essay will mention some of them. Maybe the oldest typology is coming from Schumpeter (1934), who described five kinds of innovation: new product, new process, new business model, new source of supply, and new market exploitation. Oslo Manual differentiates four kinds of innovation: product, process, marketing, and organizational (OECD, 2005). Diaconu (2011) mentions, “incremental” (continuously increasing nature of product/process) and, “radical” (changing the fundamental nature of the product/process) innovation types. Another distinction of innovation is discontinuous or disruptive (Goswami & Mathew, 2005), further typology for example: routine versus creative innovation (Storey, 2000), product, process, or management innovation (Madrid-Guijarro et al, 2009). These classifications rate innovation by its nature, speed, or frequency. There is no one best way in the classification; rather these methods complement each other.

2.1.5 Process

Innovation, as the paper already articulated, is a process. There are several kinds of process descriptions. This essay will show some of them. The processes differ from enterprise level, type of innovation, strategy, etc., but they have some common features. They all start the process with idea generation, and none of them describes innovation as a linear process. However, they are dynamic; the essay will introduce them as linear processes, which is just an assumption to make it easier to understand. These processes aim to develop a completely new or improved good and their costs are impossible to see provisory. Furthermore, innovation process depends not just on internal, but also on external conditions, and they require interaction within and among organizations (Diaconu (2011), Buse et al., (2010) (Greenhalgh & Rogers (2010)). Diaconu (2011)
describes the technological innovation as a process, starting with the invention and idea generation (p. 131). The invention is not enough alone, innovation, which is the combination of the knowledge the organization already possesses, is also necessary. It needs to be complemented with additional knowledge outside of the organization. The last step is to diffuse the innovation; it can be marketing, production any kind of activity that is required to spread the innovation. Figure 5 shows this process. Bolinao (2009) differentiates four steps (Figure 6) of the innovation process of SMEs. The first is the “Building blocks of innovation”, which is not just a scan of the environment for ideas, but also a strategic plan. The next is the “development of innovative responses to opportunities and threats”; in which firms develop the most suitable product/process. The third step, equal to Diaconu’s diffusion, is the, “commercialization of innovative response maximizing benefits to SMEs” and the last, “firm performance outcome”, which is the result of the previous steps (pp. 72-73).

Dundon (2002) defines nine steps of innovation (pp. 196-198). Step 1 is to gather information, choose the team, analyze the problem, and scan for more information that is external. Step 2 is to identify and clarify the problem as well as its causes, while additionally describing the most significant problems. Step 3 is to set the goals of innovation. Step 4 is to explore the market signals, search for stimuli, and analyze it. Step 5 is to use the stimuli to discover insights and use them to gain more reflections. Step 6 is to identify ideas, to select the best possible solution to the problem given the insights. Step 7 is to develop a roadmap, to make it a full plan, and consider its impact to the organization. Step 8 is to gain commitment, to identify supporters and finalize plan. Step 9 is to implement the plan, review the plan, learn from feedback, and adjust accordingly. Greenhalgh and Rogers (2010) divide innovation into five major steps (pp. 6-8).
The first three are just about creating the invention, using research and development, blueprints, external knowledge etc. In the fourth step the organization attains a tradable-product, which can be commercialized. The fifth step is the diffusion, the spreading of the product. The first four steps are not always inside of the firm, they can reach out to institutional R&D centers, universities, and scientists.

All of these flows start with idea generation, which is not necessarily an in-house action, then continues with the solution, the development of the innovation itself, which is beneficial to the customers. Afterwards, companies commercialize the solution; they make it mass-producible or applicable to different situations, and then the firm profits from the innovation.
2.1.6 Importance

After the introduction of innovation, the paper will show why innovation is important. Innovation contributes mainly to competitive advantage, increased profit and market share and crucial for the success of an organization (Motwani, Dandridge, Jiang, & Soderquist (1999), (Shiang & Nagaraj (2011), (Madrid-Guijarro et al. (2009), (Goswami & Mathew (2005), (Cetinkaya Bozkurt & Kalkan (2014), (Costa Suoza & Bruno-Faria (2013)). Innovation is one of the keys to competitive advantage, and it means higher profit, sales, or any other kinds of economic benefits. The essay now will show the different kinds of benefits. Forsman and Temel (2011) already stated that innovative companies have higher productivity and sales growth than non-innovative ones. It is also shown that high business performance reinforces diversified incremental innovations (p. 654). Innovators have higher growth rate of sales; furthermore, the radical innovators have even better performance (pp. 655-658). However, the operating profit and return on investment (ROI) is larger with non-innovators (Forsman & Temel, 2011, pp. 651-655). It is interesting, but logical, because innovation requires lots of investment and sacrifices from profit in the short run. Their study has shown that low-performing companies tend to develop radical innovations more than high performance firms do; furthermore, they showed that high performing companies have less risk-taking behavior, innovativeness, and proactiveness (p. 659). They showed that not only do firms with high performance tend to settle in terms of innovation, but also that diversity means a lot when it comes to innovation. Nevertheless, their study demonstrated that radical innovation is followed by sales growth, meanwhile incremental innovation results in higher ROI (pp. 655-658). These papers articulated that innovation is a main driver of competitive advantage, which is the key factor for long-term prosperity. Many definitions suggest that the importance of innovation is its contribution to performance (Goswami & Mathew, 2005). The initial advantage of an innovating firm diminishes as it gives signal to the market, with its high profit rate, and imitators will step into the market, and share the profits. (Diaconu, 2011, p. 132). Terzirovski (2010) showed that innovation strategy can be a positive and significant predictor of SMEs performance (p. 897), furthermore innovation has a cost reduction effect too (Greenhalgh & Rogers, 2010, pp. 9-15). Thus, innovation is good not just for the innovator, because it means competitive advantage, cost reduction, and enhanced performance, but also for the imitators, which can make it available for the mass market. Nevertheless, innovation is beneficial to the customers, who can select from
larger variety and higher quality products. These three kinds of benefits give the importance of innovation.

2.1.7 Management

The essay presented that innovation is crucial for competitive advantage, performance, and cost reduction, therefore, its management is vital for companies. Internal management systems that embrace appraisal systems, performance measurement, job definition, etc., and encourage entrepreneurial activity positively relate to process and product innovation within the organization (Motwani et al., 1999, pp.109-111). West and Anderson (1996) argue that top management teams are the most influential in the organization regarding innovation. Therefore, attitudes towards innovation influence a firms’ capability to innovate (p. 680). Today’s knowledge-based world requires good knowledge management and demands firms to connect the appropriate external source if needed. The essay already introduced the process-nature of innovation, since it is not an action alone, a leader, or manager needs to be there to coordinate the members of the system. Storey research also shows that it is important among managers to reach consensus about the meaning definition, significance, relevance, and priority (p. 358-359). This is important, because the more diversified the expectations of the managers about the innovations are, the more difficult to lead it through them, and it can yield in missed opportunities (p. 360). To show that there are more ways of innovation management, this essay will follow Storey’s (2000) description (pp. 361-365). There is no one best way of innovation management, e.g. large- and small-scale innovations requires different kinds of managers and management types (Goswami & Mathew (2005), Storey (2000)). There are managers who believe in strictly planned and well-regulated procedures. The, “planned, rational process” view is related to the product life cycle idea, since it requires planning, reviews, and assessments from the manager. If managers perceive innovation as a “budgetary and decision-making process”, than the key manager does not want to lose control over, and the leader thinks that accountability is the most important. Other managers believe in influencing others, therefore, they want to build a certain degree of enthusiasm among colleagues; hence, they focus more on individuals. This is not as planned; it rather tries to capture the creativity of employees. Other managers want to enhance the corporate capability of innovation. “Hero innovator” is an individual who requires protection from board members, since this person has a less
systematic methodology to create and carry out innovative ideas managers need to pay attention to them. The, “creative individuals” perception believes that individuals are the zero point of innovation, and act accordingly. Alternatively, some managers believe in networks and collaborations, e.g. in widely networked individuals as a source of innovation. Therefore, they send the key employees to fairs, conferences, exhibitions, etc. Finally yet importantly, some believe in the “inter-firm collaboration”, and these managers build contact to other companies and try to make tight bonds, shared knowledge, and cooperate. It is important to emphasize that there is no one best way, but there are hampering and facilitating factors, which the essay will specify later. The way how managers define innovation influence the firm’s ability to innovate. Furthermore, the way they manage innovation is a critical factor too. Some believe in well-regulated systems, others focus on individuals; meanwhile some put most of their efforts to networking and collaboration. Of course, this is not a one-way process; organization influences how its managers perceive innovation, thus innovation definition, therefore, management style, and organization are interrelated.
2.2 Influencing factors of innovativeness

In the last sections, the paper introduced the main elements of the innovation. The first part of the paper explained, how important innovation is, therefore, crucial to understand the factors influencing firms’ innovativeness. Researchers and managers have to know these barriers because they can have serious negative effects. This part will cover the impediments of innovation. This approach rooted in the Resource Based View (RBV), which treats firms’ performance as a function of firms’ intrinsic attributes, therefore, this paper will examine the internal factors influencing firms’ innovativeness. The following factors, since they are internal, influence each other, and they are interdependent.

2.2.1 Strategy

Ideas themselves are not enough to create sustainable competitive advantage, since they already fail at the “R” in the VRIN analysis, which means they are not rare. The same idea can be born in many heads but just a few will lead it to success. The reason is simple, an idea is not enough, there has to be an ability to link them to further steps, on other words, to lead them through the innovation process. Firms need the ability to capture ideas, and system to create innovation, and not merely a single idea, the ability to continuously create and utilize ideas is the key (Suresh, 2011, p. 41).

There are numerous studies supporting that planning and strategy help firms to gain to higher performance and enhanced innovativeness. Suresh (20111) articulated that, “…a long-term vision, big-picture, the ability to anticipate customer needs, changing lifestyles and market conditions, all feed into the innovation strategy that an organization should have” (p. 41), it is what a firm need to enhance the innovativeness. Brickmann, Grichnik, and Kapsa (2010) showed after a review of literature that it is fragmented in terms of the evaluation of the effects of the business-planning role in performance (p. 35). Although, they concluded, that business planning is beneficial for firms’ performance and it is a value creating process (p. 35). O'Regan, Ghobadian, and Gallear (2006) also find support that firms with formal strategy outperform the ones without one. These studies support the ideal that strategy and planning help firms to innovate.

There are many opportunities how companies can create sustainable organization, i.e. challenge top talent from their comfort zone, creating cross functional teams, establish
R&D centers, fostering change, and many more (Suresh, 2011, pp 41-42). Furthermore, the 7S model implies, strategy ensures the cooperation and alignment between strategy, structure, system, staff, skills, style of leadership, and shared values, therefore strategy is vital for companies (Mazzarol, Delwyn, & Reboud, 2014, p. 55). Mazzarol et al., (2014) suggest based on their case study analysis among innovative firms that entrepreneurial leadership, opportunity recognition strategic networking, and selection of growth vector in the company, furthermore, balancing the “strategic triangle” – which contains the strategy, structure, and resources – are essential and important in terms of strategy and innovation.

Although having a strategy is beneficial for innovativeness, there are moderating contextual factors i.e. the literature suggest that planning is more beneficial for new businesses, because of the motivation effects, on the contrary, according to Brickmann et al. (2010) new firms business planning yields in smaller returns (Delmar & Shane, 2003, p. 36). The findings suggest that in cultures with high risk-avoidance the planning yielded in worse performance than in not risk-averse cultures (Brinckmann et al. 2010, p. 36). Nevertheless, they find than the written plan and the planning process also enhance the performance of the company; last, but not least objective performance measures are better than subjective ones. Concluding the letter mentioned, the strategy and planning activity is generally beneficial for companies, which influences companies’ performance thorough different ways, but it has some contextual factors, which might moderate its positive effects.

The literature furthermore, identifies numerous problems associated with the strategic planning. These problems influence negatively the contribution of strategy to the innovativeness of a company. According to Macaneiro and Kindl da Cunha (2014), the lack of long-term vision hampers the innovativeness of a company. Strategy must formulate the long-term vision, thus it is a problem in strategic planning. Furthermore, Costa Souza and Bruno-Faria (2013) identified that the lack of incorporation of routines, short-term incentives, lack of consultants and time, and lack of planning in general are also harmful for the innovative ability. Numerous author mentioned the lack of R&D expenditures as a blocking factor of innovation (Subrahmanya (2013), Macaneiro & Kindl da Cunha (2014), Hadjimanolis (2000), Frenkel (2003)). Frenkel (2003) and (Madrid-Guijarro et al. (2009) reported the lack of partnerships and cooperation as a negative influencer of innovativeness. Nonetheless, lack of intellectual property rights (Buse, Tiwari, & Herstatt, 2010), lack of design departure (Subrahmanya, 2013), lack of
environmental scanning (Macaneiro & Kindl da Cunha, 2014), lack of good reputation (Galande & de la Funete, 2003) are also factors that are harmful for the innovation process.

This section showed the importance of strategic planning, since sole ideas are not enough, there has to be a system, which makes companies capable to capture these ideas. Furthermore, it shed light on the fact that there are moderating factors e.g. culture, finally identified the negative influencers of the innovativeness of a company in accordance with strategy such as short-term incentives, etc.

2.2.2 Management

2.2.2.1 General Management

Yuan, Guo, and Fang (2014) articulated that top management teams (TMTs), since they have influence on strategy and further decisions, can affect a firm’s innovativeness. Their research revealed that TMTs’ R&D experience positively affects companies’ innovativeness, since the R&D plays important role in firms’ innovativeness (Montoya-Weiss & Calantone, 1994). Furthermore, marketing experience plays an important role, since R&D investments have positive effects only if marketing experience is high among TMT members, because this enables them to perceive proper stimuli, recognize unmet market-needs, etc. (Yuan, Guo, & Fang, 2014, p. 328), nonetheless, firms have to exploit existing technologies in new markets (p. 1015) (Danneels, 2002, p. 1015). Nevertheless, Yuan et al. also find that TMT background diversity has a direct positive effect on innovativeness, which supports Hambrick, Cho, and Chen’s results (1996). Lack of prior business experience and managerial knowledge (Costa Suoza & Bruno-Faria (2013), Hadjimanolis (2000)) hamper the innovation.

Managers have to deal with four main problems according to Van de Ven (1986, p. 590). The whole process begins with the idea generation, and therefore, this is also the first problem, managers have to handle. “The process problem of managing ideas into good currency” (p. 591). Since innovation is a collective action managers have to coordinate the different interests in order to reach synergy and teamwork. Innovation needs a champion, who leads it to success, and requires people from different departments to contribute with their knowledge to the process. This network is important in developing
innovations. This also leads to the problem that someone will gain power with the innovation process, and whether the regime can remain on power (Van de Ven, 1986, pp. 592-593). During this step, the further problems can arise: lack of ability to incorporate new technologies, skepticism regarding the innovation, and lack of commitment from managers (Subrahmanya (2013), Macaneiro & Kindl da Cunha (2014), Madrid-Guijarro et al. (2009), Costa Suoza & Bruno-Faria (2013)).

The next is to make people care about new and innovative ideas, “The human problem of managing attention” (p. 591) states that people focus more on existing things rather than pay attention to new ideas. This also illuminates why organizations that are more successful resist innovating. They get verification that what they do is good; therefore, there is no need for change. People tend to appreciate routinized issues; therefore, they miss the real innovation opportunities (p. 591). “When people reach a threshold of dissatisfaction with existing conditions, they will initiate actions to resolve their dissatisfaction” (Van de Ven, 1986, p. 595), but if people adapt to it, they will not perceive that they reached the initial threshold. This diverts them from taking actions, thus, they miss innovative ideas, and they will act, when it is already too late, the innovation process becomes crisis management (Van de Ven, 1980). Difficulties of inter functional integration as well as end/short term incentives can negatively influence the innovation not just in this early stage, but also later on (Costa Suoza & Bruno-Faria, 2013).

The third problem arises when people identify a new idea. They will try to utilize and force their own ideas, but sometimes it is not possible. People have issues understanding part-whole relationships (p. 591), which explains the problem that the process of innovation is so long and large that individuals lose sight over it, potentially losing motivation. Teamwork is beneficial for organizations, since synergies can be utilized which means that the outcome is more than the sum of its parts (Smith, Collins, & Clark, 2005), but they need to be well managed. Since innovation involves more people with diverse references, expectations, etc. managers have to coordinate their transactions; they represent microelements of macro organizations, but, “micro-logic often creates macro nonsense” (Van de Ven, 1986, p. 598). The hologram metaphor describes that people have to include their ideas into the whole (Van de Ven, 1986, p. 605). This model requires creation of institutional context, which navigate the self-organized teams to the greater mission and strategy, furthermore, foster innovation.
The fact that innovation transforms the environment of the organization leads to the fourth problem. “The strategic problem of institutional leadership” is the final problem according to Van de Ven, which describes the problem of creating an environment that is capable of innovation (p. 591). Managers have to create this innovation-capable environment, in addition to internal and external networks. Van de Ven (1986) concludes Selznick’s (1957) work with the idea that managers have four responsibilities in this aspect: mission definition, embodying this into the organization’s structure and system, defend the integrity of the organization, handle conflicts (p. 602). In order to build a lasting and capable environment managers have to care about three principles. The first is the principle of negative feedback, which describes that “organization must have values and standards [sic] which define the critical limits within which attention to innovative ideas to focus” (Van de Ven, 1986, p. 603). Second, firms need to involve double-loop learning to their processes, in order to create the ability to change the criteria if necessary (p. 603), which is important to innovativeness. Finally, institutions have to embrace uncertainty by designing according to the holographic view, employ both various and redundant people within the autonomous groups (pp. 600-604), because both can be beneficial to the groups. This section emphasized the importance of the management in firms’ innovativeness, what kind of problems managers have to face, furthermore briefly mentioned the holographic view, and the three key principles leaders have to care, in order to generate and maintain an innovative organization.

2.2.2.2 Innovation Management

These are problems, which not stand solely; they could be in other categories as well. The below described problems could be handled as part of other categories. The literature did not differentiate it as a separate driver of innovation, since most of them did not analyze the internal problems throughout. Problems associated with innovation management may hinder the innovativeness of organizations, and the paper handles it separately because all of them somehow reflect to the lack of innovation management abilities. Difficulties in controlling and lack of knowledge on the innovation process (Frenkel (2003), Buse et al.,(2010)) are general and broad, but important problems in innovation management because if managers did not know how to control and manage the process, it would be difficult for them to do it well. The lack of guidance, moreover,
lack of multiple approach to innovation, or lack of adaptation to new processes (Macaneiro & Kindl da Cunha (2014), Subrahmanya (2013), Costa Suoza & Bruno-Faria (2013)) also hampers the innovation, and are innovation management problems. This section showed innovation management problems as management issues, but somehow more related to the innovation process than the general managerial dilemmas, therefore the paper handles them separately.

2.2.3 Human Capital

Managers are important, but not the only part of the innovation. Employees, or in other words the “human capital” of firms can generate innovative ideas, therefore, their role is paramount as well. De Winne and Sels (2010) found the relationship between the quality of human capital and the innovativeness among Belgian start-ups, but it needs to be managed; otherwise, full potential cannot be utilized (p. 1877). Human Resources (HR) can be a source of competitive advantage, but only if it is well managed, which means that they utilize the networks, trainings are available if necessary, etc. (De Winne & Sels, 2010, p. 1866).

Smith et al. (2005) concludes Cohen and Levinthal’s (1990) as well as Drazin and Rao’s (2002) findings, “… new product introduction is a function of a firm’s ability to manage, maintain, and create knowledge” (p. 346). Only human capital can generate knowledge, therefore it is crucial (Drazin & Rao (2002), Cohen & Levinthal (1990), Smith, Collins, & Clark (2005).

Research findings in this area are not unified. The main fragmentation is about when and how HR influences and relates to innovation (De Winne & Sels, 2010, p. 1865). Owners and managers’ knowledge and education are essential for the success of innovation, further external help such as consultants, independent board members can ensure fresh information and insights for key people (De Winne & Sels, 2010, p. 1866). Furthermore, managers’ diverse industry-background enhances the innovativeness of a firm (De Winne & Sels, 2010, p. 1878).

Knowledge workers and TMT are of utmost importance for the knowledge management, since the existing and accessible knowledge affects the new-product-launching activity of a firm (p. 355) (Smith et al., 2005, p. 346-355), therefore, managing the knowledge is paramount. If people with diverse knowledge combine ideas, they create new knowledge; therefore, hiring well-, diverse-educated workers is key for innovation
success. In accordance with this, the further problems arise: lack of technological expertise, furthermore overlook of new technologies, lack of technical education and trainings; nevertheless, the lack of prior work experience (Subrahmanya, 2013). These all have negative effect on firms’ innovativeness. Utilizing networks can be beneficial, but Smith et al. (2005) showed that strong network ties worsen the ability of broader network, because they are costly and undesired (p. 355), thus, a broad range of loose bonds is better than few strong bonds. An organization has as much knowledge as its members have, therefore, the management of human resources is vital for the innovation process, especially for the idea generation stage, which demands network and human capital.

In the quality of human capital, Costa Suoza and Bruno-Faria (2013) identified the further problems: lack of support from working groups, lack of diversity of groups, not sufficient educational background. Nevertheless, lack of adaptation of new ways of performing tasks, lack of cooperation, lack of constructive criticism and new people if needed (Costa Suoza & Bruno-Faria, 2013). Furthermore, insufficient number of employees, insufficient quality of employees, difficulties in working in teams, and small diversity of educational background are also important impediments to innovation (Costa Suoza & Bruno-Faria (2013), Frenkel (2003), Macaneiro & Kindl da Cunha (2014), Buse et al., (2010)). Finally, yet importantly, the lack of commitment of employees to innovation is also worsening the innovativeness of a company (Madrid-Guijarro et al., 2009). This section introduced the importance of human capital in innovation, furthermore, how their knowledge is important to the generation of new ideas, which is the basis point for innovation. Nonetheless, it described the importance of the networks of employees, and finally presented the problems associated with human capital.

2.2.4 Human Resource Management (HRM)

The sufficient human capital has to be managed well, in order to gain its maximum performance. The strategic importance of HRM is that it can enhance firms’ performance. (Cooke & Saini, 2010, p. 380). HRM practices are beneficial for a company, since they can enhance the innovativeness. However, it is important to keep in mind that HR practices pay off eventually (De Winne & Sels, 2010, p. 1879).

Human Resource management practices such as employee involvement, suggestion schemes, knowledge sharing are valuable for the company (Cooke & Saini,
Knowledge management is important, because existing knowledge determines the amount of new knowledge created in firms (Smith, Collins, & Clark, 2005, p. 346). Lack of training and education, qualified personnel can divert companies from innovation (Subrahmanya (2013), Costa Suoza & Bruno-Faria (2013), Macaneiro & Kindl da Cunha (2014), (Buse et al., 2010), Frenkel (2003)).

Sun, Aryee, and Law (2007) unfold that positive effects of High Performance Human Resource Practices (HPHRP) to the performance of the organization through many ways. Given the fact that HRM plays an important role in firms’ innovation ability, firms need to build their own HRM system, which has long-term objectives, and not just adapt others, because there are no same organizations. Cooke and Saini (2010) based on their investigation among 54 managers in Indian owned or Indian invested companies say that HR practices have positive effect on innovativeness (p. 389).

Attracting valuable experts, who can contribute to an innovation process, is important (De Winne & Sels, 2010, p. 1878). Lack of fresh people if needed, lack of ability to keep qualified employees is harmful for innovativeness of organizations (Madrid-Guijarro et al. (2009), Costa Suoza & Bruno-Faria (2013)).

Yu’s research (2013) shows that high-performance human resource practices (HPHRPs) positively influence the entrepreneurial activity in firms (Yu, 2013, p. 25). The HPHRP contribute to employees’ creativeness, management abilities, market observation abilities, and creates entrepreneurial environment within the company. HPHRP influence the entrepreneurship inside the company positively, therefore, HRM practices can upgrade firms’ performance, nevertheless, these practices make employees to valuable asset of a company (Yu, 2013). “HPHRPs are one of the activities of strategic HRM that can provide multiple technical skills and knowledge for employees and increase their as well as the organization’s flexibility in order to enhance organizational performance” (Yu, 2013, p. 17). HPHRP also encourages the cooperation among employees (Sun et al., 2007), which will promote risk-taking behavior. Furthermore, HPHRP bolster organizations’ learning-process, through promoting participation in trainings (pp. 21-28).

The environment of the organizations is more complex and dynamic than it used to be, thus the entrepreneurship within the organization is essential. (Yu, 2013, p. 25), because entrepreneurship is essential for innovation processes. Besides the management support, strategic Human Resource Management (HRM) can create entrepreneurial attitude, therefore HRM is important in innovativeness of a firm (Yu, 2013 p. 25).
HRM systems alone not sufficient, institutions also need HR managers, who are capable of managing the system. Shih, Chiang, and Hsu (2005) showed that HRM systems are better for an organization than other HRM practices (Shih et al., 2005). Cooke and Saini (2010) argue that literature and researches are diverse and contradictory about the effects of HRM on innovation (pp. 380-381). Some of them argue that HRM is a positive predictor of innovativeness of firms; on the contrary, some disagree with this argumentation. Interestingly, organizations, which consider HR as effective tool for innovativeness reported positive outcomes, such as increased productivity and efficiency, reduced absenteeism, commitment from employees and many more (Cooke & Saini, 2010, p. 390).

There are areas for improvement such as the managers in HR departments. Some companies reported lack of professional HR experts. HR managers are the one, who can affect the HR policies and incentives the most, thus their role is important. If these personnel are not experienced or knowledgeable, enough they can destroy a good working HR system too (Cooke & Saini, 2010, p. 390). Further areas for improvement identified by managers are “the need for greater democracy”, furthermore, “improvement related rewards” nevertheless, “job enrichment and satisfaction”, and “better recruitment, development, and deployment of talent” (Cooke & Saini, 2010, p. 390). Interesting, that “…monopoly position, lead to lower level of HR effectiveness” (Cooke & Saini, 2010, p. 393). Further investigations of supported, that poorly implemented HR initiatives make the HR ineffective (Cooke & Saini, 2010, p. 391) just as bad communication towards employees (Madrid-Guijarro et al., 2009).

This part introduced the importance of HRM, articulated that it has positive effects on innovativeness, HPHRP are important to enhance innovative performance, nevertheless, HRM should bolster entrepreneurial activity inside the firm. It also revealed that HRM systems are better, than independent HR practices, and identified problems associated with HRM.

2.2.5 Organizational Structure

Organizational structure has effects on innovative ability therefore, it is critical to analyze the hampering factors of innovation, which are associated with organizational structure. Findings supported the concept that certain kind of organization structure helps in innovation. Decentralized, but formal structure exhibit a significantly higher tendency
than any of the other forms to have introduced an innovation in recent years (Cosh, Fu, & Hughes, 2010, p. 307). “A (modern) szervezetek olyan, emberek és tárgyak alkotta rendszerek, amelyek tartós célt követnek, formális struktúrával rendelkeznek és cél szerű szabályokat követnek”\(^1\) (Dobák & Antal, 2010, p. 31). The contingency theory changed the perspective of an existing one best way of organizational structure (Dobák & Antal, 2010, p. 35),”… nem léteznek általános érvényű szervezési, szervezetalkítási alapelv…”\(^2\) (Kieser, 1995, p. 212).

The two main form, which the paper will briefly introduce, are organic and mechanic structure. Organic form best applicable in turbulent environments, meanwhile mechanic structure is better for stable environments. The innovation requires rather organic than mechanic structure, because of the uncertainty (Cosh et al., 2010, pp. 302-303), therefore firms’ set up needs to be organic. Cosh et al. considered two aspects of organizational structure: centralization, which refers to the extent to which managers involves other employees to the decision making, besides, formality, which has two extremes. The first is the organic structure in which informality is the norm, and functional specialization characterizes the mechanic structure (p. 303) (Cosh et al., 2010, p. 303).

There is no one best way, therefore, organizations need to adopt to their external environment, and foster their internal strength in order to become successful. There is more than one factor, influencing the optimal organizational structure. The literature differentiates external and internal factors. External factors are market environment, science-technological environment, cultural environment, and the network of the firm. Inner factors are the size of the organization, the procedures, and IT of the firm, the origin of the firm, the location, and number of plants, the main objects of the firm. The uncertainty and the complexity of the market determine the optimal organizational structure for a given situation (Dobák & Antal, 2010, pp. 41-61). The paper upon mentioned factors is the most important influencing factors of firms’ organizational structure, and firms need to set and change their structure accordingly.

There are moderating factors, such as whether the firm operating in high- or low-tech sector. Data weakly induced that young high-tech firms may benefit more from

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1 “Modern organizations are such people and object encompassing systems that follows a long-term goal, have formal structure and purpose-oriented rules” (Dobák & Antal, 2010, p. 31)

2 “…there are no universal organizing, organization transformational principles…” (p. 212) stated (Kieser, 1995, p. 212)
informal and decentralized structures than formal and decentralized ones (Cosh et al., 2010, p. 309). Centralized and formal structures seem to be worse companies in accordance with innovation (Cosh et al., 2010, p. 317). In general, Cosh et al. (2010) showed that the decentralized and formal structures are superior. This finding shows that organizational structure has effect on firms’ innovativeness, although, there are moderating factors. The organic set up is better than the mechanic is for innovative organization, and firms need to adopt accordingly, in order to facilitate innovation.

Authors identified various problems in organizational structure that negatively influence the innovative capability of a firm. Lack of transparency of processes, difficulties to cross-functional integration (Costa Suoza & Bruno-Faria, 2013), rigid organization (Macaneiro & Kindl da Cunha, 2014), high bureaucracy Buse et al., (2010), Madrid-Guijarro et al., (2009), lack of adoption of new technologies (Macaneiro & Kindl da Cunha, 2014) are all factors that are unfavorable for an innovative organization.

This section showed, how important innovation is, than introduced briefly the two main kinds of organization – organic and mechanic – and described that organic structure is better for organizations, furthermore articulated that in general, formalized and decentralized systems are the most beneficial, however there are moderating factors, finally presented the negative factors for and innovative organization.

2.2.6 Corporate Culture

First, it is important to articulate that the paper handles the organization (corporate) culture and organization structure separately. The first concentrate more on how people act within the organization, what are the values. The latter, approaches the formal, structural features of an organization.

Literature showed that organizational culture has major effects on the innovativeness of an organization. Organization culture can influence positively innovativeness (Feldman, 1988, p. 57). “Organization culture affects the extent [sic] to which creative solutions are encouraged, supported [sic] and implemented “(Kenny & Reedy, 2006, p. 124). Kenny and Reedy (2006) defines innovative culture as an organization in which continuous improvement is a norm throughout the firm. (p. 119)

Literature is assorted about the attributes of an innovative and creative organization (Kenny & Reedy, 2006, p. 119). The literature articulates many attributes of a corporate culture, which supports innovation. The four most important attributes of a
corporate culture that supports innovation are, “…corporate management is willing to take risks, the participation of all members of the firm is requested, creativity is stimulated and there is shared responsibility” (Kenny & Reedy, 2006, p. 123). As Kenny and Reedy’s work concludes the Asociación Española de Contrabilidad y Administración de Empresas (1995):

innovation culture as a way of thinking and behaving that creates, develops and establishes values and attributes within a firm, which may in turn arise, accept and support ideas and changes involving an improvement in the functioning and efficiency of the firm… (p. 123)

Hence, innovation culture is a way of thinking that helps organizations to be innovative.

Mission statement can have a positive effect and not just the existence of the mission statement, which is paramount, but also the members’ familiarity with it, which is a problem most of the times (Kenny & Reedy, 2006, p. 127). Corporate statement creates a “strong culture capable of appropriately guiding behaviors and actions” (Kenny & Reedy, 2006, p. 127). The organizational culture regarding the R&D is also important, separate R&D department, and an R&D-committed culture, could support firms’ innovativeness (p. 128) (Kenny & Reedy, 2006, p. 128). The commitment to R&D has significant relationship with the new product/service launching activity. The following factors have role in R&D commitment of a firm: adequate resources and funding, supportive management, technically competent team, good strategic directions and a non-constraining environment (Kenny & Reedy, 2006, p. 137).

The innovation strategy is also important, the best if TMT describes goals, but let the individuals great freedom in the execution (p. 129) (Kenny & Reedy, 2006, p. 129). Furthermore, the networks are also important for innovation processes, nevertheless, major drivers of innovation are the customers and the market (Kenny & Reedy, 2006, (pp. 131-137).

Since corporate culture is so important, it is crucial to identify what factors of organizational culture hamper innovation. Organizations that embrace compromises is not as innovative that the ones embracing argumentations (Feldman, 1988, p. 59). Selfishness, conformity, and idealism are all factors that have both, positive and negative effects on innovation (Feldman, 1988, p. 59). Idealism leads to overlook of market dynamics, risk aversion, because of a lack of some knowledge, “slow-growth culture” (p.
lack of environment scanning, conflicts, which could be harmful if they were not resolved, nevertheless, it causes centralized system, in lieu of decentralized, which is key for innovation processes, and new idea generation (Feldman, 1988, pp. 60-68). Conformity can lead to the lack of reasonable and forward-looking debate (pp. 60-68). Furthermore, selfishness drives people not to tolerate others' goals, which leads to discomfort and conflicts (pp. 60-68) (Feldman, 1988, pp. 60-68). Bad attitude towards new and innovative processes, furthermore unsupportive structure (Subrahmanya (2013), Madrid-Guijarro et al. (2009)) are also harmful for innovation, besides the lack of entrepreneurial attitudes (Subrahmanya, 2013), risk aversion and the desire to maintain status-quo (Costa Suoza & Bruno-Faria, 2013). Finally, yet important the employee resistance to change is also damaging the innovativeness of an organization (), Madrid-Guijarro et al. (2009), Frenkel (2003)). These factors influence negatively the innovativeness of an organization.

The paper handles fear inside the organization as part of the organization culture, but a bit separately from that. Literature recognize multiple sources of fear, which jeopardize the innovation. These fears can burden innovation; therefore, the paper would like to introduce them as well. Costa Suoza & Bruno-Faria (2013) identified the further sources of fear within the organization: changing routines, impending budget cuts, failure of new ideas, holding responsible for failure, changing hierarchy, reduction of power and prestige, uncertain, furthermore, Madrid-Guijarro et al. (2009) articulated that a fear also comes from difficulty to assess the viability of innovation. This part showed the significance of organizational culture in terms of innovativeness, then identified the different approaches to it, finally, it described the main sources of non-innovative corporate culture, with a special regard to the sources of fear.

2.2.7 Technological capacity for innovation

The literature outline that technology is important regarding the innovativeness of a firm. Quelin (2000) argues that in firms’ organizational capability technological competencies are important. O’Regan et al. (2006) also emphasizes the role of technology. Technology can limit a firm’s capabilities and, therefore, are important for the purpose of the research (Hunt, 1970, p. 242). Hunt (1970) stated that technology is important for differentiation strategy (p. 235); and differentiation strategy implicitly encompasses innovation. In Hunt’s terminology throughput interlaces the inputs and an outputs of a company. Throughputs are all the various things done on the input to
transform into output, which can be done with or without tools and machines (Hunt, 1970, p. 239). The input-throughput-output cycle represents the technological sequence of an organization; and they cannot exist solely (Hunt, 1970, pp. 240-241). Liu and Wu (2011) found that not just the technology itself that is important, but also the network around it (p. 32). Relational technology embeddedness can positively influence the structural technology embeddedness and both can effect firms’ performance in a positive way, furthermore, they can complement each other (Liu & Wu, 2011, p. 33).

Problems associated with the technology are the further: lack of technical equipment, lack of technological information (Macaneiro & Kindl da Cunha, (2014), Costa Suoza & Bruno-Faria (2013); Madrid-Guijarro et al., (2009)). Furthermore, lack of technological expertise and education (Macaneiro & Kindl da Cunha (2014), Subrahmanya (2013)), lack of infrastructure (Madrid-Guijarro et al., (2009), Costa Suoza & Bruno-Faria (2013), lack of environmental scanning (Hadjimanolis, 2000), lack of cooperation with external technology providers (Hadjimanolis, 2000). Nevertheless, lack of awareness of new technologies (Subrahmanya, 2013), lack of engineers (Hadjimanolis, 2000), lack of scientific employees (Hadjimanolis, 2000), lack of information from the market (Buse et al., 2010), lack of customer responses (Macaneiro & Kindl da Cunha, 2014).

This part of the essay introduced the importance of the technology in the innovation process and presented the most important factors that impede the innovativeness of a company.

2.2.8 Corporate Finance

Finance has also important role in innovation. Without appropriate founding, innovation process can fail. Financial development is associated with performance (p. 1548) (Ayyagari, Demirgüç-Kunt, & Maksomovic, 2011, p. 1548). These authors’ finding supports that external financing helps firms to introduce new product lines, new plants, etc. (Ayyagari et al., 2011, p. 1564). Financial constraints can be harmful to innovation. “Activities that increase financial exposure also increase risk, and activities that decrease financial exposure decrease risk. The role of financial exposure and cost of innovation may thus be important constraints on innovation” (p. 469) (Madrid-Guijarro et al., 2009, p. 469), nevertheless, high costs may thus be obstacles of innovation (Madrid-Guijarro et al., 2009, p. 468). Madrid-Guijarro et al. (2009) showed in their analysis
among Spanish manufacturing SMEs, that the worsening of the financial position negatively effects the innovativeness of a firm. Limited financial resources are also barriers of innovation according to this research (pp. 483-484). Costa Suoza and Bruno-Faria (2013) showed that financial resources availability is important. Nonetheless, companies reported high costs and innovation costs difficult to control as the top two barriers of innovation (Madrid-Guijarro, Garcia, & Van Auken, 2009, p. 476). The literature review shows how important finance is in innovation process, the lack of creditworthiness hampers it even more (Costa Suoza & Bruno-Faria, 2013).

This section revealed the importance of finance in innovation processes and showed what can be harmful to innovation associated with finance.
3. Methodology

3.1 Survey development

3.1.1 Introduction

The questionnaire (see Appendix 1.) was developed based on Subrahmanya (2013) survey. The questionnaire contains about 40 questions, and covers the background of the firm, the general features, the objectives of establishment, furthermore, the age, experience, and education of the CEO. Nonetheless, the age of the technologies used in the company, furthermore the value of the plant and machinery, nevertheless the share of export and domestic customers. The survey also examines the number and qualification of the employees, the R&D activity of the firm, besides, the interaction of the organization with others in accordance with the innovation and its frequency, furthermore, its effect. The questionnaire investigates the presence of design office and its functions, furthermore, firms’ strategy. The researcher also probes the attitudes toward innovation, and asks for the number of current product, and change implementing activity of the firm. The research investigates the competition on the market. It will examine the number of information-sources used for innovation, financing of the innovation, effect of innovation, and leader of it. The paper also considers the reasons why a company had to stop an innovation process. The questionnaire was developed to examine interrelation between different influencing factors and innovative capabilities.

Validity of the questionnaire is ensured, since it was already tested and used in another study, furthermore, other experts were asked about the validity and possibility of changes in questions. Data collection was in March- April 2015 with the scope of the last five years. Furthermore, changes in the questionnaire and translation to Hungarian made pilot testing necessary. The pilot testing involved three companies, and the feedbacks helped to finalize the survey. This research applied only necessary changes, mostly because of Hungarian specialties and irrelevant topic from this studies perspective, on the original survey (e.g. qualifications).
3.1.2 Variables

The dependent variables change if an independent variable changes. This survey’s dependent variable is the innovativeness of companies measured by the number of innovation in the last five years; this will be an appropriate indicator for innovativeness.

General features of the company were measured with the age, the share of export, furthermore the number of competitors for their most important product.

The questionnaire’s focus was to examine the impact of the nine main sources of innovation on companies’ innovativeness. The managerial impact was measured by the following variables: the age and qualification of the CEO, the experience of the CEO as top leader, and the previous managerial experience of the leader. Furthermore, the survey measured top managers’ attitude towards innovation. The questionnaire asked their opinion about the necessary frequency of business improvement (continuous=1, As when as required=2, should be taken up as projects=3), furthermore we asked them whether they think it is necessary for Hungarian SMEs to engage more to innovation (Likert scale 1-4, 1=totally agree, 4=totally disagree). These factors play an important role in the management of innovation processes. The measurement of human capital is the number of employees with more than ten years of experience. The literature suggested that innovation depended also on the experience of employees; therefore, the survey will analyze it as well. The HRM performance was determined whether they prefer Human Resource Development (HRD) as their strategy to enhance firms’ performance. Furthermore, the paper examines the number of organizational changes. These two factors enable the regression to induce HRM’s influence on innovation. To determine strategy, research asked the number of collaboration with external organization or individuals. The research asked the leaders, how often their organization used different kinds of competitive strategy (quality leadership, cost leadership, product differentiation, and product niche). These factors could determine the influence of strategy on innovation. The number of sources of information for innovation activity measured the innovation management ability. Corporate culture’s measure was whether the firm was established to implement and exploit new ideas; and the motivation for innovation within the organization. Organization structure was measured by the formality (0=formal, 1=informal) of the innovation, and by who was involved into the R&D of the company (broadening the product range, gain new market share, maintain market share, acquire new market, improve quality, and reduce costs). Sufficient technology presence was
measured by the age of the machinery in the production (Scale form newest to older than 10 years), further measure of the technology is a question regarding the opinion of managers, whether there is available technological infrastructure for the innovation, measured on a Likert scale (1=Totally agree, 4=Totally disagree). Measures of the financial health of a company are the market value of the plant and machinery.

3.2 Sampling

The questionnaires were sent around 800 SMEs across Hungary through informal and formal channels and we got 27 responses. The formal channel was the ISO 9000 Forum and the EOQ MNB. The Hungarian law adjudges (Act of 2004. XXXIV., 2004) SME, as a company: That has maximum 250 employees, or €50 million turnover or €43 million balance sheet total. The small enterprises have the definition of maximum 50 employees and €10 million balance sheet total. The Hungarian regulation, furthermore, adjudges that micro enterprises are the ones below ten employees. Researcher abide these rules as well, therefore the sample contains companies only below the above-mentioned parameters.

3.3 Method of Analysis

The survey and research considered the Hungarian definition of SMEs as basic. The database was cleared, and then analyzed with IBM SPSS Statistics 21 and Microsoft Excel. The researcher first executed a descriptive statistics and then a regression analysis in order to get to know, which factors influences the innovativeness of a firm and how. The regression analysis starts with the examination of the correlation between the variables to filter out high ones, which are interrelated, and therefore the research has to take interdependency into account, and then provide the regression itself. The research used linear regression to analyze the data. All upon analyzed factors will be tested, how they influence the innovativeness of companies. The nine factors will be analyzed separately, one-by-one, and the research will present their contribution to the innovativeness. Researcher tried more than one opportunity to analyze the regression. The first analysis was a Generalized Linear Model, but the Simple Linear Regression provided better output, which is simpler to interpret and the
4. Analysis

4.1 Descriptive Statistics

In order to understand the sample and the companies within the sample the first analysis provided here will be a descriptive statistical investigation.

First, the essay will provide general information about the company. The respondents operate in various industries. Six (21.4 percent) in machine tool industry five (17.9 percent) in computer, two (7.1 percent) in food, two (7.1 percent) in rubber, plastic and building material, and one (3.6 percent) in electronics. The other category contains two (7.1 percent) in packaging material and technology, one (3.6 percent) in industrial marking, one (3.6 percent) trade, three (10.7 percent) in consulting, and four (14.2 percent) in services. The respondents reported that the average market value of the plant and machinery (excluding land and buildings) is 415.83 million Ft. (=approx. €1.4 million). A Hungarian specialty is that most of the companies were established after 1990. During the years of communism there were just few private companies established. A Hungarian specialty that most of the companies were newly formed (26) just one was acquired and one established by a parent company. The Hungarian private companies are too young to be inherited. Statistics show that top executive established ten companies alone. Relatives of top executive created three, meanwhile third person established nine. Four companies were established by parent companies. The objective of the firm’s establishment: 32 percent marked to create and implement innovative ideas 79 percent signal to exploit market opportunities 14 percent indicated to gain self-employment 7 percent to create higher value added, and 4 percent to exploit opportunities offered by the previous employer. The average number of the major products is 23 within the sample, and the average number of minor products is 28. On average, the most important product has eight customer, the firm needs to compete on average with eight other companies and it has six supplier on average. The least important product has seven customer, nine competitor, and seven supplier. The market of the examined companies is on average 75 percent domestic and 25 percent export, meanwhile their suppliers are mainly domestic (64 percent) and 36 percent import. Most of the technologies (43 percent) used to
production are two to five years old, and most of the respondents (46 percent) indicated that the critical machines are also two to five years old.

This paragraph will describe the leaders and their beliefs. Approximately 14 percent of the companies’ leaders are between 30 and 39 years old, 25 percent is between 40 and 49, 21 percent is between 50 and 59, and 11 percent is older than 60 years old. Most of the leaders have MSc/University degree (44 percent), or BSc/College degree (40 percent). There is one company which leader has PhD and one which top manager has MBA. Two leaders have high school degree and one respondent did not answered the question. The top managers have on average 13.6 years of top-manager experience and 8.3 years of managerial experience. 19 (68 percent) leaders believe that business improvement should be continuous, six (21 percent) believed that it should be taken up as a project and three (11 percent) reported that it should be done as and when required. 93 percent of the responding leaders totally or generally agree that sufficient technical infrastructure for innovation is available for their organization. 71 percent totally and 29 percent generally agree that Hungarian SMEs should increase their engagement in innovations. The number of paid employees is on avg. 57 the standard deviation is 61, meanwhile the total employee number of the 28 companies is 1535.

20 companies reported that they are involved in R&D activities, in the vast majority (95 percent) of these companies the R&D is an informal process, meanwhile just 5 percent has formal R&D processes. One company uses both informal and formal R&D processes. The informal R&D activity involves in seven cases executives and supervisors, in two cases just the CEO; meanwhile in four cases it involves the CEO and executives as well as supervisors. Interesting, furthermore, that three companies involve the through organization and five a small groups of employees (other than the CEO/Executives/Supervisors).

15 (54 percent) firms responded that they got in contact with other SMEs in accordance with R&D, furthermore 13 (46 percent) marked University, 11 (39 percent) got in contact with large firms, meanwhile 5 (18 percent) indicated that they interacted with individual scientist/researcher and 4 (14 percent) reported interactions with R&D organizations. The respondents ranked these interactions according to their importance as well. The most important is the large firm, than University, than other SME, followed by R&D organization, and finally the individual scientist/researcher. 11 firms (39 percent) involved other organization to their innovation, meanwhile 15 (54 percent) did not, and two (7 percent) did not answer; the most commonly reported interaction was with other
SMEs. 64 percent of the 28 companies interacted in accordance with technology. The data shows that most of the interactions happened with other SMEs (27 percent) or customer organization (44 percent). Most of the cases it was technological help (44 percent), training (22 percent), or marketing (16 percent). During these collaborations, companies totally or generally agree (47 percent) that the collaboration enabled them to gain considerable, while 46 percent did not answer the question. Data suggest that interaction happened one to six months most commonly. 39 percent of the responding firms agreed totally or generally, that they gained managerial, organizational knowledge, while 47 percent did not answer. 11 percent agree totally or generally, that they received financial help, while 605 did not respond. 57 percent agreed totally or generally that the received technical help. 33 percent totally or generally agree that the gain marketing help, while 53 percent did not answer. Companies’ leader agree generally or totally (54 percent) that foreign collaborations and interactions helped them in their success.

Companies reported among the preferred functional strategy the followings: R&D/Technological innovation 79 percent, marketing 59 percent, Human Resource Development (HRD) 82 percent, and financial self-reliance 64 percent. However, the HRD was the most commonly marked, the respondents evaluated that R&D/innovation is the most important, meanwhile HRD is the second, followed by the marketing, and the financial self-reliance is the last. In 26 organization (93 percent) there is no separate design office; the two firms that have design office in one case they carry out process and product changes as well, and in the other case solely process changes. 23 companies (82 percent) use, in general, cost leadership-marketing strategy; meanwhile 13 companies (46 percent) chose the product differentiation, quality leadership, and product niche as a marketing strategy. Although, the quality leadership was rank as the most important marketing strategy followed by the product differentiation, than cost leadership and market niche.

22 firms (79 percent) did organizational changes in 45 cases, 21 firm (75 percent) implemented process change in 36 cases, 26 organizations (93 percent) technological changes in total of 92 cases. 21 firms (75 percent) innovate at least once in every year. 12 organizations (71 percent) implemented one to five innovation in the last five years, while three (18 percent) six to ten, and 2 (11 percent) more than ten. The responding organization implemented on average 12 high value innovation and 14 moderate value innovation to the last five years. 22 companies (79 percent) never had to stop an
innovation process, and in 5 (18 percent) cases, companies had to stop an innovation process. The reason for the latter was in two cases financial, one case personal, and two cases financial and personal. Group championed an innovation in 79 percent of the cases, and a people in 14 percent of the cases, while 7 percent did not answered the question.

The main objectives of innovation are to increase market share (82 percent), cost reduction (71 percent), extension of product range (64 percent), maintain market share (61 percent), and improving product quality (46 percent). Responding firms indicated, as a source of information for innovation in the first three place: R&D, production, and marketing. 50 percent of the companies experienced market share growth and 64 percent indicated new market share after the innovation was implemented. 46 percent of the companies indicated production cost reduction, 43 percent higher performance, and 39 percent new product/feature. In the majority of the cases (67 percent) there was no bank financing for the innovation. The research reveals that the most important changes in a product for a company is the new feature and better performance, meanwhile in processes the new tool for the process, higher accuracy of work, cost reduction, economies of scale, and higher operating speed.

4.2 Regression

The few number of responding firms, and the poor quality of the responses worsening the research scientific accuracy. In order to explore influencing factors, the researcher conducted a regression analyses. They were done separately on every group’s variables. This will show, how different factors influencing firms’ ability to innovate. Not all the results will be significant, because many independent variable have high p values (p>0.05).

The first step is to analyze the influencing factor of general variables. There is very strong positive correlation (r=0.941) between the number of firm’s competitors and firm’s domestic customer number. Furthermore, there is strong positive correlation (r=0.647) between the number of domestic customers and the number of innovations. The model explains 88.6% of the variation (R²=0.886) and the coefficients are significant on the 2 percent level (Sig. <0.02), therefore the results are significant. Firms’ age and its competitors’ number negatively, while, the number of domestic and foreign customers
positively influences organizations’ innovativeness. The p-p plot and the scatterplot are not perfect, but could be worse (see Table 1).

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Firm’s age</td>
<td>-.019</td>
<td>.164</td>
<td>-.034</td>
</tr>
<tr>
<td></td>
<td>Firm’s domestic customers</td>
<td>.271</td>
<td>.052</td>
<td>2.391</td>
</tr>
<tr>
<td></td>
<td>Firm’s foreign customers</td>
<td>.091</td>
<td>.064</td>
<td>.295</td>
</tr>
<tr>
<td></td>
<td>Firm’s competitor (most important product)</td>
<td>-5.975</td>
<td>1.388</td>
<td>-1.911</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Number of innovations
b. Linear Regression through the Origin

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Number of interactions</td>
<td>-.196</td>
<td>.104</td>
<td>-.402</td>
</tr>
<tr>
<td></td>
<td>Quality leadership as marketing strategy</td>
<td>4.595</td>
<td>2.063</td>
<td>.738</td>
</tr>
<tr>
<td></td>
<td>Cost leadership as marketing strategy</td>
<td>6.324</td>
<td>2.304</td>
<td>.786</td>
</tr>
<tr>
<td></td>
<td>Product Differentiation as marketing strategy</td>
<td>-2.462</td>
<td>2.955</td>
<td>-.306</td>
</tr>
<tr>
<td></td>
<td>Product niche as marketing strategy</td>
<td>-2.277</td>
<td>2.834</td>
<td>-.231</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Number of innovations
b. Linear Regression through the Origin

Strategy greatly influences organizations’ innovativeness. There are several strong positive correlated variables from range r=0.612 to r=0.775 (mark with bolds in Table 1). Furthermore, there is very strong positive relationship between cost leadership as marketing strategy and innovation (r=0.829), quality leadership and number of innovation (r=0.803), and product niche marketing strategy and product differentiation
marketing strategy ($r=0.816$). The model explain 86.9 percent ($R^2=0.869$) of the variance of the number of innovation, and coefficients are significant on the 3% level (Sig. <0.03). The p-p plot figure is acceptable. Both quality and cost leadership marketing strategy has positive effects on innovation, meanwhile the number of interaction shows negative relationship (see Table 2).

The next is to analyze the management variables. There is strong positive correlation between managers’ opinion about the necessity of more engagement for innovation and the number of innovation ($r=0.619$), nevertheless between the CEO’s previous experience and their perception about the innovation as continuous task ($r=0.710$). The model explains 90.9% of the variance of the dependent variable, and it is significant on 4% level (Sig. <0.04). Results from this model are, therefore, significant. CEOs’ experience as top leader, furthermore, young age positively influences innovativeness. Managers’ opinion regarding the necessity of further engagement in innovation in Hungarian SMEs has negative effect on innovativeness.

<table>
<thead>
<tr>
<th>Table 3: Coefficients$^a,b$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Manager is between 30 and 39 years old</td>
</tr>
<tr>
<td>Manager is between 40 and 49 years old</td>
</tr>
<tr>
<td>Manager is between 50 and 59 years old</td>
</tr>
<tr>
<td>Manager is more than 59 years old</td>
</tr>
<tr>
<td>Innovation should be a project</td>
</tr>
<tr>
<td>Generally agree with more engagement</td>
</tr>
<tr>
<td>CEO experience as CEO</td>
</tr>
<tr>
<td>CEO other experience</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Number of innovations
Two variables were excluded from the regression: manager’s perception whether the innovation should be continuous in the organization and the total agreement with the necessity of more engagement in innovation among Hungarian SMEs (see Table 3). Innovation management, according to the literature, can influence companies’ innovativeness. The model explains 30.8 percent (R²=0.308) of the variance, and the coefficients are significant on the 2 percent level (Sig. <0.02), therefore, their effects are statistically significant. The number of information sources positively influences company’s innovativeness (see Table 4).

<table>
<thead>
<tr>
<th>Table 4: Coefficients&lt;sup&gt;a,b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>1 Number of source of information for innovation</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Number of innovations
b. Linear Regression through the Origin

<table>
<thead>
<tr>
<th>Table 5: Coefficients&lt;sup&gt;a,b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>1 Number of employees with more than 10 years of experience</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Number of innovations
b. Linear Regression through the Origin

The human capital can affect the innovativeness of a firm. The model explains 28.1 percent of the variation (R²=0.281), and the coefficients have significance on the 5% level (Sig. <0.05), therefore results are significant. The number of employees with more than 10 years of experience has significant positive influence on the dependent variable (see Table 5).
HRM influences firms’ innovative capabilities. There is strong positive correlation between number of organizational structure changes and the number of innovation ($r=0.792$), and the same applies to HRD usage as competitive strategy and the number of innovation ($r=0.628$). There is very strong positive relationship between the HRD usage as competitive strategy and the number of structural changes ($r=0.909$). The model explains 67.7 percent of the variance ($R^2=0.677$), and the coefficients are on the 5 percent significance level (Sig. <0.05). The model has two variables, the number of organizational structure changes influences innovativeness positively on an appropriate significance level ($p=0.014$). The other variable, the presence of HRD as competitive strategy influence the numbers of innovation negatively, but not significantly ($p=0.246$) (see Table 6).

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of organizational structure change</td>
<td>3.881</td>
<td>1.276</td>
<td>2.956</td>
<td>0.014</td>
</tr>
<tr>
<td>HRD as competitive strategy</td>
<td>-3.238</td>
<td>-.532</td>
<td>-1.233</td>
<td>0.246</td>
</tr>
</tbody>
</table>

Table 6: Coefficients<sup>a,b</sup>

a. Dependent Variable: Number of innovations  
b. Linear Regression through the Origin

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal innovation</td>
<td>-4.333</td>
<td>-.119</td>
<td>-4.12</td>
<td>.701</td>
</tr>
<tr>
<td>Whole company involved</td>
<td>3.500</td>
<td>.136</td>
<td>.544</td>
<td>.615</td>
</tr>
<tr>
<td>Little group involved</td>
<td>2.000</td>
<td>.055</td>
<td>.220</td>
<td>.837</td>
</tr>
<tr>
<td>CEO involved</td>
<td>2.000</td>
<td>.055</td>
<td>.220</td>
<td>.837</td>
</tr>
<tr>
<td>Executive/supervisor involved</td>
<td>7.333</td>
<td>.402</td>
<td>1.396</td>
<td>.235</td>
</tr>
<tr>
<td>CEO and Executives</td>
<td>20.000</td>
<td>.774</td>
<td>3.109</td>
<td>.036</td>
</tr>
</tbody>
</table>

Table 7: Coefficients<sup>a,b</sup>

a. Dependent Variable: Number of innovations  
b. Linear Regression through the Origin
Organizational structure influences innovativeness too. There is strong positive correlation between informal innovation and the number of innovation ($r=0.666$), furthermore between the CEO/Executives participation in R&D and the number of innovation ($r=0.774$). The model explains 75.2 percent ($R^2=0.752$) of the variance, with a poor significance ($p=0.259$). The data suggest that formality of innovation reduces the ability of innovation, R&D’s performance, as companywide activity is better than its performance as little group’s or CEO’s activity. Regression analysis result also suggests that CEO and Executives participation in R&D is the best for firms’ innovativeness (see Table 7).

There is numerous correlation between variables of corporate culture, highlighted with bold in Table 8. The model explains 63.1 percent of the variance, and the coefficients are significant on the level 10% (Sig. <0.1), which is not perfect, but sufficient. The p-p plot is also acceptable but not perfect. The coefficients solely are not influencing the dependent variable on an acceptable significance level. Innovation that aims to maintain, gain market share, acquire new markets, or reduce costs positively influences firms’ ability to innovative. If firm was established to exploit innovative ideas, it is less innovative, as well as, when the innovation’s motivation aims quality improvement (see Table 9)
Table 8: Correlations<sup>a,b</sup>

<table>
<thead>
<tr>
<th>Std. Cross-product</th>
<th>Number of innovations</th>
<th>Establishment of the firm to exploit innovative ideas</th>
<th>Innovate to broaden the product range</th>
<th>Innovate to gain new market share</th>
<th>Innovate to maintain market share</th>
<th>Innovate to acquire new market</th>
<th>Innovate to improve quality</th>
<th>Innovate to reduce costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of innovations</td>
<td>1.000</td>
<td>.220</td>
<td>.329</td>
<td>.661</td>
<td>.596</td>
<td>.537</td>
<td>.347</td>
<td>.665</td>
</tr>
<tr>
<td>Establishment of the firm to exploit innovative ideas</td>
<td>.220</td>
<td>1.000</td>
<td>.000</td>
<td>.298</td>
<td>.348</td>
<td>.365</td>
<td>.385</td>
<td>.348</td>
</tr>
<tr>
<td>Motivation for innovation is broadening the product range</td>
<td>.329</td>
<td>.000</td>
<td>1.000</td>
<td>.778</td>
<td>.636</td>
<td>.572</td>
<td>.603</td>
<td>.545</td>
</tr>
<tr>
<td>Motivation for innovation is to gain new market share</td>
<td>.661</td>
<td>.298</td>
<td>.778</td>
<td>1.000</td>
<td>.778</td>
<td>.735</td>
<td>.689</td>
<td>.856</td>
</tr>
<tr>
<td>Motivation for innovation is to maintain market share</td>
<td>.596</td>
<td>.348</td>
<td>.636</td>
<td>.778</td>
<td>1.000</td>
<td>.381</td>
<td>.503</td>
<td>.636</td>
</tr>
<tr>
<td>Motivation for innovation is to acquire new market</td>
<td>.537</td>
<td>.365</td>
<td>.572</td>
<td>.735</td>
<td>.381</td>
<td>1.000</td>
<td>.632</td>
<td>.763</td>
</tr>
<tr>
<td>Motivation for innovation is to improve quality</td>
<td>.347</td>
<td>.385</td>
<td>.603</td>
<td>.689</td>
<td>.503</td>
<td>.632</td>
<td>1.000</td>
<td>.603</td>
</tr>
<tr>
<td>Motivation for innovation is to reduce costs</td>
<td>.665</td>
<td>.348</td>
<td>.545</td>
<td>.856</td>
<td>.636</td>
<td>.763</td>
<td>.603</td>
<td>1.000</td>
</tr>
</tbody>
</table>

<sup>a</sup> Coefficients have been calculated through the origin.

<sup>b</sup> Note: Sig. – (1 tailed) and N cells are deleted.
### Table 9: Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td>t</td>
</tr>
<tr>
<td>1</td>
<td>Establishment of the firm to exploit innovative ideas</td>
<td>-5.897</td>
<td>5.964</td>
<td>-.259</td>
<td>-.989</td>
</tr>
<tr>
<td></td>
<td>Motivation for innovation is broadening the product range</td>
<td>-7.655</td>
<td>4.699</td>
<td>-.644</td>
<td>-1.629</td>
</tr>
<tr>
<td></td>
<td>Motivation for innovation is to gain new market share</td>
<td>5.679</td>
<td>6.325</td>
<td>.558</td>
<td>.898</td>
</tr>
<tr>
<td></td>
<td>Motivation for innovation is to maintain market share</td>
<td>6.412</td>
<td>4.571</td>
<td>.539</td>
<td>1.403</td>
</tr>
<tr>
<td></td>
<td>Motivation for innovation is to acquire new market</td>
<td>5.531</td>
<td>4.830</td>
<td>.444</td>
<td>1.145</td>
</tr>
<tr>
<td></td>
<td>Motivation for innovation is to improve quality</td>
<td>-1.432</td>
<td>3.845</td>
<td>-.109</td>
<td>-.373</td>
</tr>
<tr>
<td></td>
<td>Motivation for innovation is to reduce costs</td>
<td>.156</td>
<td>5.326</td>
<td>.013</td>
<td>.029</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Number of innovations

### Table 10: Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td>t</td>
</tr>
<tr>
<td>1</td>
<td>Age of machines in production</td>
<td>-.882</td>
<td>.822</td>
<td>-.481</td>
</tr>
<tr>
<td></td>
<td>Totally agree with technology availability</td>
<td>11.010</td>
<td>5.671</td>
<td>.826</td>
</tr>
<tr>
<td></td>
<td>Generally agree with technology availability</td>
<td>7.955</td>
<td>5.155</td>
<td>.451</td>
</tr>
<tr>
<td></td>
<td>Generally disagree with technology availability</td>
<td>7.086</td>
<td>9.883</td>
<td>.201</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Number of innovations

b. Linear Regression through the Origin
Technology effects innovativeness as well. There is strong positive correlation \( r=0.736 \) between the opinion of managers about the availability of technical infrastructure and the age of machines. This means that the age of the machines in production somehow defined by whether managers totally agree with the availability of technological infrastructure. The model explains 42.5 percent of the total variable of the independent variable \( R^2=0.425 \), however it is statistically not significant, because \( p=0.296 \) is higher than 0.05 (see Table 10).

The paper in this section introduced the findings of the regression analysis. The poor quality of the sample made it impossible to analyze the influences of financial variables on innovation.
5. Discussion

The paper now interprets the findings. It will go through all nine factors, influencing companies’ innovativeness, and it will discuss data.

General factors explain 88.6% of the variation ($R^2=0.886$) significantly ($p=0.001$), which means that general variables strongly influence firms’ innovativeness, but not definitely. There is very strong correlation between the number of firm’s competitors and firm’s domestic customer number, furthermore, between the number of domestic customers and the number of innovations, which indicates that the more competitor a firm has the more domestic customer it has and or the other way around. The strong correlation between the number of domestic customers and the number of innovation implies that the more domestic customer a firm has, the more innovation it implements, in other words the number of domestic customers moderately determines the number of innovations. Coefficients show that age of the firm has negative effect on innovation; it supports the literature’s discovery, since it articulates that mature companies are less innovative. The amount of foreign customers also positively affects innovativeness. An explanation for these phenomena could be that the more customer a firm has, the more demand it gets to innovate, and if it wants to survive, it needs to innovate, in order to keep its customers. Interesting, that the number of firms’ competitors negatively influences the innovativeness. It could be an objective of a new research.

The significance of the model, examining the strategy variables, is appropriate, ($p=0.029$), therefore, these factors significantly influence the innovativeness. The influence is strong ($R^2=0.869$), but its real influence is unknown. The intrinsic assumption was that product differentiation and product niche strategy influence the innovative ability positively, not negatively. This finding does not support the researcher presumptions, but the low significance can be an explanation. The significance of the product differentiation and the product niche strategy is poor; therefore, it can be a stochastic result. The more interaction leads to worse ability of innovation. It, for some extent, contradicts the finding that the more resource the innovation come from, the more innovative the firm is. It could be explained by the resource scarcity. Cooperation requires resources, which might be taken from innovation-supporting functions. The very strong correlation of product differentiation and market niche is plausible, since these two marketing strategies are similar. Quality leadership is a positive influencer of the
innovativeness of the company; a possible reason is that, in order to reach higher quality, companies need to innovate products. The cost leadership marketing strategy has an even stronger effect on firms’ innovative ability, which can be explained by the fact that these organizations have to innovate not just the process, to produce more efficient and cheaper, but also the product, in order to make it simpler and more efficiently producible.

The quality of the managers explains 90.9% of the variance of the dependent variable and it is significant (p=0.030), therefore it is possible to express that the quality of management strongly influences firms’ innovativeness, but not certainly. The finding partially supports what the literature suggested. Young CEOs’ companies are more innovative, and old managers’ companies are less innovative. It could be explained by the risk aversion of elderly people. Top executives’ age influences negatively the innovativeness because managers older than 40 years were socialized during the Communist era, which means uncertainty is highly unpleasant for them. CEO’s experience as top leader positively influences the innovative ability of a firm, since they gain more management experience. Project understanding of innovation is beneficial. Organization whose managers agree that Hungarian SMEs should engage more in innovation are less innovative. It is an interesting finding; the underlying reasons could be studied in later researches. Manager’s experience very strongly correlates and influences the perception of the innovation. It is possible that more experienced leaders believe in continuous innovation within the organization.

Innovation management’s variable significantly explains 30.8 percent of the variance (p=0.017), therefore, the paper suggest, that the variable weakly and positively influence the innovativeness of a company. There is positive relation between innovativeness and the number of sources of innovation. This supports the literatures’ discovery that large variety of information input enhances organizations’ innovativeness. It has the underlying reason that various sources provide diverse information.

The quality of human capital weakly influences the ability of innovation. The number of employees with more than 10 years of experience positively influences companies’ innovativeness. It supports the literature’s theory, which describes that more experienced employee-base contributes to firms’ innovativeness. The results are significant (p=0.024), and human capital explains 28.1 percent of the total variable, therefore, it is possible that this variable weakly and positively influences the innovativeness of a company, but it is not granted.
HRM explains 67.7 percent of the variance, and the low p-value (p=0.004) determines that the model’s results are significant. The more agile and dynamic firms’ corporate structure, thus, the more changes they execute, the more innovative they are. HRD as competitive strategy hinders innovation, which is interesting. The literature suggests that HRD is an important, positive influencer of the ability of innovation, but this finding contradicts it. Poor significance (p=0.246) can be an explanation for this result.

The corporate structure explains 75.2 percent of the variance, with a poor significance (p=0.259), which indicates that organizational structures has an insignificant influence on firms’ innovativeness. CEO and Executives participation in R&D, nevertheless, informality of innovation strongly correlates with the number of innovation. It is more likely, that informality and the participation influence the innovativeness, than the other way around, but it is possible. The participation of CEO and Executives in R&D can positively influence the innovative ability, but it is possible that actually innovativeness influences these variables. The same applies to the informality of innovation. The variables of organizational structure do not influence significantly firms’ innovativeness, but the paper will show the findings. Formality of innovation can cause rigidity and uncertainty avoidance, furthermore, if people had to create innovative ideas and lead innovation processes, they could lose their enthusiasm towards it, which leads to worse ideas and the decrease of ability to innovate. Little groups and CEO participation is not as beneficial as participation of the whole company in the R&D processes. Little groups and CEOs cannot predict all future events. Rather, if every employee gave its contribution to R&D it could be more effective. The reason why participation of Executives/supervisors in R&D is more beneficial than the whole company remains hidden. It can be a future study’s object to determine this relationship, but the poor significance can be a reason. Nevertheless, the underlying of why CEO and executives cooperation in R&D is more constructive to innovation is also unsure.

The corporate culture variables explain the 63.1% of the variance, with weak significance (p=0.097), therefore, it can moderately influence the innovativeness, but it is not sure. This finding contradicts, for some extent, previous findings of this study that described quality leadership as a positive influencer of innovativeness. The fact that significance of this finding is worse implies to believe to the other result, thus, that quality leadership is a positive influencer of innovation. The overall low significance means that these variables not influencing the dependent variables significantly, but they interpret
that establishment of the firm to exploit innovative ideas, furthermore if innovation aims to broaden product range and to improve quality affects negatively companies’ innovativeness. Meanwhile, motivation’s goal to gain, maintain market share, or reduce costs positively effects innovativeness.

The technological capacity for innovation variables explain 42.5 percent of the total variable of the independent variable ($R^2=0.425$), however it is statistically insignificant, because $p=0.296$ is higher than 0.05. The model indicates that the age of the machinery has effects on innovativeness. The older the machines are in the production, the less innovation a firm can implement. This could be because of the lack of modern machinery, which would enable them to utilize their ideas. The analysis suggest that those managers organizations that totally agree that the “organization has sufficient available technological infrastructure” are more innovative, than the ones disagree with this statement. A possible reason is that technological resources are important for the innovation process, and the better managers assess the technological infrastructure availability, the more resource they have.

The poor quality of the sample made it impossible to execute a regression analysis with the financial factors. The effects of financial variables on innovation remained hidden; a future study might answer the question.

This part of the paper interpreted the results of the regression analysis, compared to the literature, and tried to reveal possible underlying behind the nature of influence.
6. Conclusion

6.1 Summary

Innovation is crucial for sustainable competitive advantage. Hungarian SMEs lag behind the EU average considering innovativeness, and regarding their major role in the Hungarian economy, it can cause serious problems. The government tries to improve the innovativeness of the SMEs. In order to understand innovation and be able to support it, managers and politicians have to understand the influencing factors of innovation. This study provides an empirical analysis among 27 Hungarian SMEs. The RBV handles competitive advantage as a function of internal factors. The paper also fills the research gap of lack of information about the influencers of Hungarian SMEs innovativeness and their effects. The essay has two part, a literature review, and an analysis. The literature review provides a thorough analysis of the internal influencing factors of innovation. First, it introduces the definition of innovation, and shows that it not unified. Their common point is that they all define innovation as novelty, newness. The paper showed the concept, nature, and multiple typologies of innovation. The essay also explained the process nature of innovation; innovation is not a static point in time, and it is a dynamic process, which needs to be managed. The importance of innovation, as the paper articulated, its contribution to the competitive advantage. Innovation is beneficial for the customer because it enables larger product variety, better performance, and enhanced quality, furthermore, inexpensive production, therefore, cheaper products. The management of innovation is important because this system requires an individual or team that keeps the whole process together. The paper identified and presented nine influencing categories: management, innovation management, human capital, human resource management, strategy, corporate culture, organizational structure, technology, and finance. The researcher analyzed their influences on innovation, except the finance because the poor quality of the sample restricted the regression analysis on the financial variable.

The paper identified various influencing factors. The most important findings:

- The number of domestic and foreign customers positively influence innovativeness, the more customer a firm has, the more innovative it is.
• The age of the firm influences innovativeness, the older the firm, the less innovative it is, which supports the literature’s theory.
• The number of competitors has a negative effect on innovativeness, the more competitor an organization has, the less innovative it is.
• Research shows that product niche and product differentiation strategies have negative effects on innovative abilities.
• The paper shows that the more interaction with other organization a firm has, the less innovative it is; a possible explanation is the resource scarcity.
• Research indicates that quality- and cost-leadership strategies are both positive influencers of innovativeness.
• The age of the CEO also influences innovation within a firm, young CEOs’ companies tend to be more innovative than old CEOs’ firms are.
• Experienced CEOs have positive effect on organizations’ innovative ability.
• The number of sources of information processed in a firm influences innovativeness, the more source a company has, the more innovative it is.
• This essay supports the literature that the experience of human resources has positive effect on innovation.
• Research shows that HRD practices have negative effect on innovation, which contradicts the literature.
• This paper displays that the more changes in the corporate structure a firm has, the more innovative it is, which means that agility is a positive influencer of innovativeness.
• The research discovered that both, technological capabilities and the set of corporate structure are insignificant influencers of innovative ability.

The findings have limitations, and one has to consider them before using the data to make further consequences.

The paper introduced the innovation, and the main factors influencing firms’ innovativeness. The finding is interesting, and fills a gap. The main result of the paper is its contribution to the understanding of firm level influencers of innovation.
6.2 Limitations and Further Research

This research has several limitations. The study based on 28 companies across Hungary and lots of question remained unanswered; therefore, the research cannot be representative and reflect the general innovativeness and problems with innovation in Hungary. The regression has limitations; the largest is the low significance. Researches in general, usually accept significance level $p<0.05$, however, in this analysis $p$ values are occasionally higher, but most of them is on the generally accepted significance level. The explanatory power of models is sometimes quite large, but without empirical knowledge, it is difficult to estimate, which $R^2$ values are actually useful. ISO 9000 Forum and EOQ HNC sent out the questionnaire, therefore, the companies responding already have some kind of quality management and they are better regulated and controlled than the average, therefore, it is possible that the research shows better innovative performance than it is usual in Hungry. Thus, further researches with more time and resource can aim a more broad analysis of Hungarian SMEs in terms of the size of the sample and the quality of the responses. Future papers should try to examine separately the above-mentioned influencing factors, in order to gain an even broader picture. Regional and country factors might influence the innovativeness of firms therefore there is limited applicability of the findings in other countries.
## List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EOQ HNC</td>
<td>Hungarian National Committee of European Organization for Quality</td>
</tr>
<tr>
<td>HPHRP</td>
<td>High Performance Human Resource Practice</td>
</tr>
<tr>
<td>RBV</td>
<td>Resource Based View</td>
</tr>
<tr>
<td>SME</td>
<td>Small- and Medium-sized Enterprise</td>
</tr>
<tr>
<td>TMT</td>
<td>Top Management Team</td>
</tr>
</tbody>
</table>
Reference list


Appendix 1.

1. Általános kérdések

1.1 Mi az Ön szervezetének tevékenységi köre?
(Kérem, jelölje a megfelelő választ. Többet is bejelölhet.)

- Számítógépipar
- Optikai ipar
- Elektronikai ipar

- Élelmiszergyártás
- Járműgyártás
- Gyógyszeripar

- Gumi-, műanyag-, építőanyag gyártás
- Gépipar

☐ Egyéb: Szöveg beírásához kattintson ide.

1.2 A vállalat alapításának éve: Szöveg beírásához kattintson ide.

1.3 Hogyan alakult a vállalat?
(Kérem, csak egy választ jelöljön meg.)

- Újonnan alakult
- Öröklött
- Felvásárolt

☐ Egyéb: Szöveg beírásához kattintson ide.

1.4 Ki alapította a vállalatot?
(Kérem, csak egy választ jelöljön meg.)

- Ön
- Rokon
- Más személy

- Külföldi anyavállalat

☐ Egyéb: Szöveg beírásához kattintson ide.
1.5 A vállalat jelenlegi cégformája?


1.6 Mi volt a vállalat megalakításának célja?

(Amennyiben több lehetőség is igaz, kérem, azt jelölje, ami a legfőbb cél volt.)

☐ Innovatív ötletek létrehozása és megvalósítása céljából.

☐ Piaci lehetőségek kiaknázására.

☐ Családi nyomás

☐ A korábbi munkáltató által biztosított lehetőség kihasználása

☐ Az önfoglalkoztatás elnyerése céljából.

☐ Kényszervállalat.

☐ Egyéb: Szöveg beírásához kattintson ide.

1.7 Kérem, válassza ki vállalatvezető korát:

Kérem, kattintson ide, majd válasszon a legördülő listából.

1.8 Kérem, válassza ki a vállalatvezető legmagasabb iskolai végzettségét:

Kérem, kattintson ide, majd válasszon a legördülő listából.

Amennyiben egyéb, kérem, pontosítsa: Szöveg beírásához kattintson ide.

1.9 Hány éve elsőszámú vezető a vállalatvezető? Szöveg beírásához kattintson ide.

1.10 Hány éves vezetői tapasztalattal rendelkezett a vállalatvezető, mielőtt elsőszámú vezető lett? Szöveg beírásához kattintson ide.
1.11 Kérem, a megfelelő négyzet segítségével adja meg a cégben jelenleg használt technológia, gépek korszerűsége?(Kérem, soronként egy választ adjon meg)

<table>
<thead>
<tr>
<th>Jelenleg a gyártásban használt technológia</th>
<th>Legújabb, modern</th>
<th>2-5 éves</th>
<th>6-10 éves</th>
<th>10 évnél idősebb</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>A cég számára kritikus berendezések</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

1.12 Mekkora a gyáregység és gyártóberendezések mai, piaci értére? (*A terület és az épületek nélkül. Becsült érték.)

Szöveg beírásához kattintson ide. **millió Ft**

1.13 A teljesítmény és siker fokozása érdekében mely versenystratégiát részesíti előnyben? Kérem, rangsorolja, ahol az 1-es jelenti a legfontosabbat.

<table>
<thead>
<tr>
<th>Versenystratégia</th>
<th>Előnyben részesíti?</th>
<th>Amennyiben igen, kérem, rangsorolja</th>
</tr>
</thead>
<tbody>
<tr>
<td>Igen</td>
<td>Nem</td>
<td></td>
</tr>
<tr>
<td>K+F/ innováció</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Marketing</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Emberierőforrás-fejlesztés</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Pénzügyi függetlenség</td>
<td>☐</td>
<td>☐</td>
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</tbody>
</table>

1.14 Kérem, adja meg értékesítésiének és beszerzéseinek területi megoszlását.
<table>
<thead>
<tr>
<th>Piac (vevők), az eladások becsült százalékában</th>
<th>Helyi, lokális</th>
<th>Nemzeti, de nem lokális</th>
<th>Export</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td>+</td>
<td>_____%</td>
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</table>

<table>
<thead>
<tr>
<th>Beszállítók, a vásárlási érték becsült százalékában</th>
<th>Helyi, lokális</th>
<th>Nemzeti, de nem lokális</th>
<th>Import</th>
</tr>
</thead>
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<td>_____%</td>
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</tbody>
</table>

1.15 Mennyi a szervezetben a fizetett alkalmazottak teljes létszáma?

Szöveg beírásához kattintson ide. fő

1.16 Emberi-erőforrás struktúra:

(Kérem, adja meg minden rovatban, az adott képzési szintnek megfelelő létszámat.)

<table>
<thead>
<tr>
<th>A jelzett kategória munkavállalóinak száma</th>
<th>Felső-vezető</th>
<th>Közép-vezető</th>
<th>Szakmunkás/betanított-munkás</th>
<th>Segéd-munkás</th>
<th>Egyéb</th>
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<tbody>
<tr>
<td>Az alkalmazottak iskolai végzettsége</td>
<td>PhD</td>
<td>Létszázm</td>
<td>Létszázm</td>
<td>Létszázm</td>
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<td>BSc/ Főiskolia Diploma</td>
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<td>Érettségi</td>
<td>Szakmunkás-levél</td>
<td>egyéb</td>
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<table>
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<tr>
<th>Az alkalmazottak munkatapasztalata</th>
<th>Egy speciális folyamatra kiképzett*</th>
<th>Általános, technikai képzettség#</th>
<th>Képzetlen</th>
<th>20-30 év</th>
<th>10-19 év</th>
<th>5-9 év</th>
<th>0-4 év</th>
</tr>
</thead>
<tbody>
<tr>
<td>Létszám</td>
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</tr>
</tbody>
</table>

*A cégben egy speciális folyamatra különlegesen kiképzett munkavállaló.

#A cégben belüli folyamatok nagy többségéről általános technikai tudása van.
1.17 Részt vesz-e az Ön szervezete K+F tevékenységben (termékfejlesztés vagy folyamatfejlesztés)?

☐ Igen  ☐ Nem

Amennyiben ige, kérem, pontosítsa:

☐ Formális (erre a célra van külön alkalmazott, vagy csoport, elkülönített költségvetésessel)

☐ Informális (Nincs erre a célra külön alkalmazott vagy csoport és költségvetés)

Amennyiben formális, kérem, adja meg a következő adatokat:

A jelenlegi K+F-fel foglalkozók létszáma: Szöveg beírásához kattintson ide.

A legutolsó évi K+F költségvetés: Szöveg beírásához kattintson ide. millió Ft

K+F eszközökbe fektetett összeg: Szöveg beírásához kattintson ide. millió Ft

Amennyiben a K+F tevékenység informálisan zajlik, kérem, adja meg kik végzik:

☐ Teljes vállalat  ☐ Kis csoport  ☐ Vezérigazgató/Ügyvezető

☐ Felső- és középvezetők  ☐ Egyéb, éspedig: Szöveg beírásához kattintson ide.
1.18 Előfordult-e az elmúlt 5 évben, hogy a K+F tevékenység kapcsán kapcsolatot teremtett az Ön szervezete a következő intézményekkel? (Kérem, jelölje, hogy kapcsolatba lépett-e velük a K+F tevékenységgel összefüggésben, ha többel is teremtett kapcsolatot, kérem, rangsorolja őket, fontosságuk szerint, ahol az 1-es a leginkább az 5-ös a legkevésbé fontos.)

<table>
<thead>
<tr>
<th>Teremtett-e kapcsolatot?</th>
<th>Kérem, rangsorolja őket fontosságuk szerint</th>
</tr>
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<tbody>
<tr>
<td>Igen</td>
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</tr>
<tr>
<td>Egyetem</td>
<td>□</td>
</tr>
<tr>
<td>K+F szervezet</td>
<td>□</td>
</tr>
<tr>
<td>Egyéni kutató, tudós</td>
<td>□</td>
</tr>
<tr>
<td>Nagyvállalat</td>
<td>□</td>
</tr>
<tr>
<td>Más KKV</td>
<td>□</td>
</tr>
</tbody>
</table>

1.19 Van-e az Ön szervezetén belül külön Design Office? (A Design Office, olyan tervező iroda, amely a K+F tevékenységeket segíti, koordinálja, esetlegesen változtatásokat is végrehajthat termékeken, folyamatokon.)

□ Igen □ Nem

Amennyiben igen, hajt-e végre változtatásokat?

<table>
<thead>
<tr>
<th>Terméken</th>
<th>Folyamaton</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Igen</td>
<td>□ Nem</td>
</tr>
<tr>
<td>□ Igen</td>
<td>□ Nem</td>
</tr>
</tbody>
</table>
1.20 A marketingsikerek eléréséhez melyik versenystratégiát követi?

(Kérem, jelölje, majd rangsorolja a használat gyakoriságától függően)

<table>
<thead>
<tr>
<th>Versenystratégia</th>
<th>Használja?</th>
<th>Ha igen, rangsorolja</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kielemelkedő minőség</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Költségvezető</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Termék differenciálás *</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Termék rés #</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

* - A versenytársakétól eltérő tulajdonságok.

# - speciális, kis sorozatú termékek.

1.21 Milyen gyakran kell Ön szerint a különböző üzleti területeket fejleszteni?

☐ Folyamatos
☐ Akkor, és amikor szükségszerű
☐ Projektként kezelendő

1.22 Az elmúlt 5 év során végrehajtott-e a következő változtatásokat?

<table>
<thead>
<tr>
<th>Végrehajtott-e?</th>
<th>Ha igen kb. mennyiszer?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Végrehajtott-e?</td>
<td>Ha igen kb. mennyiszer?</td>
</tr>
<tr>
<td>Igen</td>
<td>Nem</td>
</tr>
<tr>
<td>Szervezeti változtatás</td>
<td>☐</td>
</tr>
<tr>
<td>Művelet, folyamat változtatás</td>
<td>☐</td>
</tr>
<tr>
<td>Műszaki, technikai, technológiai változtatás</td>
<td>☐</td>
</tr>
</tbody>
</table>
1.23 Egyetért-e Ön azzal a kijelentéssel, hogy a fejlesztések végrehajtásához szükséges infrastruktúra rendelkezésére áll?
☐ Teljesen ☐ Inkább ☐ Inkább ☐ Egyáltalán nem
egyetértek egyetértek nem értek egyet értek egyet

1.24 Mit gondol, szükséges lenne-e, hogy a magyar KKV-knak egyre több erőforrást befektetnie az innovációba a mai globalizált világban?
☐ Teljesen ☐ Inkább ☐ Inkább ☐ Egyáltalán nem
egyetértek egyetértek nem értek egyet értek egyet

1.25 Mennyi a vállalat jelenlegi termékeinek a száma? (Kérem, soronként egy választ jelöljön meg)

<table>
<thead>
<tr>
<th></th>
<th>1-5</th>
<th>6-10</th>
<th>11-20</th>
<th>21-50</th>
<th>50-</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Főbb termékek</strong></td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td><strong>Egyéb termékek</strong></td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

1.26 Kérem, jelölje meg a táblázatban a termék vásárlóinak, a versenytársaknak, illetve a potenciális beszállítók számát. (Kérem, soronként egy választ jelöljön meg.)
<table>
<thead>
<tr>
<th></th>
<th>1-3</th>
<th>4-6</th>
<th>7-10</th>
<th>Több mint 10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A termék vásárlóinak száma</strong></td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>A legfontosabb termék</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>A legkevésbé fontos termék</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Versenytársak száma</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>A legfontosabb termék</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>A legkevésbé fontos termék</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>A potenciális beszállítók száma</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>A legfontosabb termék</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>A legkevésbé fontos termék</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
2. Innováció

2.1 Az elmúlt 5 év során mennyi technológiai változást vezettek be sikeresen? Kérem, változások alatt azt érte, mint például új termékek, továbbfejlesztett termékek, melyek a szervezet jelentősek és egyediek. (Kérem, a táblázatban a változások számát adja meg.)

<table>
<thead>
<tr>
<th>Változások száma</th>
<th>A szervezet számára nagy értékkel bír</th>
<th>A szervezet számára mérsékelt értékkel bír</th>
<th>A szervezet számára kis értékkel bír</th>
</tr>
</thead>
<tbody>
<tr>
<td>Új termék</td>
<td>Szöveg beírásához kattintson ide.</td>
<td>Szöveg beírásához kattintson ide.</td>
<td>Szöveg beírásához kattintson ide.</td>
</tr>
<tr>
<td>Továbbfejlesztett termék</td>
<td>Szöveg beírásához kattintson ide.</td>
<td>Szöveg beírásához kattintson ide.</td>
<td>Szöveg beírásához kattintson ide.</td>
</tr>
<tr>
<td>Új folyamat/eljárás</td>
<td>Szöveg beírásához kattintson ide.</td>
<td>Szöveg beírásához kattintson ide.</td>
<td>Szöveg beírásához kattintson ide.</td>
</tr>
</tbody>
</table>

2.2 Kérem, adja meg az elmúlt 5 évben sikeresen végrehajtott folyamat-/eljárás-/termékfejlesztések fajtáit és értékét az Ön szervezete számára.

<table>
<thead>
<tr>
<th>A termék-fejlesztés fajtája</th>
<th>Nem történt ilyen jellegű fejlesztés</th>
<th>Nagy értékkel bírt a szervezet számára</th>
<th>Mérsékelt értékkel bírt a szervezet számára</th>
<th>Alacsony értékkel bírt a szervezet számára</th>
</tr>
</thead>
<tbody>
<tr>
<td>Méret</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Forma</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Felhasználási terület</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Új tulajdonság</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Jobb teljesítmény</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
2.3 Mi a szervezet innovációs motivációja (új egyedi termékek, folyamatok, eljárások és változások megvalósítása)?
(Kérem, jelölje be az összes motivációs tényezőt.)

<table>
<thead>
<tr>
<th>A folyamat/eljárás fejlesztés fajtája</th>
<th>Magasabb működési sebesség</th>
<th>Költségesökkentés</th>
<th>Magasabb pontosság a működés során</th>
<th>Méretgazdaságosság növekedése</th>
<th>Új eszköz</th>
<th>Egyéb, éspedig: Szöveg beírásához kattintson ide.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Már kivont termékek helyettesítése</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Termékskála bővítése</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Piaci részesedés szerzése</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Piaci részesedés fenntartása</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Új nemzeti piacok megnyitása</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Új nemzetközi piacok megnyitása</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Termékminőség-javítása</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Költségesökkentés</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Egyéb, éspedig: Szöveg beírásához kattintson ide.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.4 Kérem, jelölje a fejlesztésekhez használt információk forrását és rangsorolja az első hármat, ahol az 1-es a legfontosabb, a 3-as a legkevésbé fontos.

<table>
<thead>
<tr>
<th>Rangsor</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing</td>
<td>☐</td>
</tr>
<tr>
<td>K+F</td>
<td>☐</td>
</tr>
<tr>
<td>Gyártás</td>
<td>☐</td>
</tr>
<tr>
<td>Versenytársak</td>
<td>☐</td>
</tr>
<tr>
<td>Együttműködés</td>
<td>☐</td>
</tr>
<tr>
<td>Tanácsadó</td>
<td>☐</td>
</tr>
<tr>
<td>Felsőoktatási intézmény</td>
<td>☐</td>
</tr>
<tr>
<td>Szakmai vásárok és kiállítások</td>
<td>☐</td>
</tr>
<tr>
<td>Szakmai folyóirat</td>
<td>☐</td>
</tr>
<tr>
<td>Egyéb</td>
<td>☐</td>
</tr>
</tbody>
</table>

Ha van egyéb, kérem, írja le néhány szóban: [Szöveg beírásához kattintson ide.]

2.5 Milyen gyakran hajt végre a szervezet egyedi változtatásokat termékben, vagy folyamatban/ eljárásban?

<table>
<thead>
<tr>
<th>Gyakrabban, mint 3 havonta</th>
<th>Legalább 3 havonta</th>
<th>Legalább 6 havonta</th>
<th>Legalább 9 havonta</th>
<th>Legalább évente</th>
<th>Legalább 15 havonta</th>
<th>Több mint 15 havonta</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
2.6 Kérem, válaszolja az alábbi kérdésekre az Ön által legjelentősebbnek vélt innovációval kapcsolatban.

Melyik innovációja az legjelentősebb?

Ez egy termék innováció? □ Igen □ Nem

Ha igen, kérem, nevezze meg a terméket: Szöveg beírásához kattintson ide.

Ez egy folyamat/eljárás innováció? □ Igen □ Nem

Ha igen, kérem, nevezze meg a folyamatot/eljárást: Szöveg beírásához kattintson ide.

Ehhez az innovációhoz szükség volt más szervezeteket bevonni?

□ Igen □ Nem

Amennyiben igen az alábbiak közül melyek voltak ezek?
(Több válasz is megjelölhető.)

Egyetem □

Nagyvállalat □

Másik KKV □

Egyéb, éspedig: Szöveg beírásához kattintson ide. □
Kérem, jelölje amennyiben tapasztalta az innováció után a következőket. (Több válasz is megjelölhető)

- Nagyobb piaci részesedés
- Új piacokon való részesedés

Vont-e be banki finanszírozást az innováció megvalósításához?

☐ Igen  ☐ Nem

Kérem, jelölje, hogy a következők közül mihez vezetett az innováció megvalósítása. (Több válasz is megjelölhető.)

- Termelési költségek csökkenése
- Új termék-tulajdonságok
- Magasabb termék teljesítmény
- Egyikhez sem

Az innovációt ki vezette sikerre?

☐ Egy ember  ☐ Csapat
2.7 Kellett-e valaha bármilyen oknál fogva megállítania egy innovációs folyamatot?

☐ Igen  ☐ Nem

Amennyiben igen, kérem, töltse ki az alábbi táblázatot:

<table>
<thead>
<tr>
<th>Leállított innováció neve</th>
<th>Innováció ideje</th>
<th>Pénzügyi</th>
<th>Műszaki</th>
<th>Személyi</th>
<th>Marketing</th>
<th>Egyéb (Kérem, pontosítása)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Szöveg beírásához kattintson ide.</td>
<td>Szöveg beírásához kattintson ide.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Szöveg beírásához kattintson ide.</td>
</tr>
<tr>
<td>Szöveg beírásához kattintson ide.</td>
<td>Szöveg beírásához kattintson ide.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Szöveg beírásához kattintson ide.</td>
</tr>
<tr>
<td>Szöveg beírásához kattintson ide.</td>
<td>Szöveg beírásához kattintson ide.</td>
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<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Szöveg beírásához kattintson ide.</td>
</tr>
<tr>
<td>Szöveg beírásához kattintson ide.</td>
<td>Szöveg beírásához kattintson ide.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>Szöveg beírásához kattintson ide.</td>
</tr>
</tbody>
</table>

2.8 Mennyi innovációt valósított meg az elmúlt 5 évben? Szöveg beírásához kattintson ide.
3. Kölcsönös együttműködés

KÉREM, CSAK AKKOR TÖLTSE KI, HA VOLT VALAMILYEN MŰSZAKI/TECHNOLÓGIAI/TECHNIKAI JELLEGGŰ EGYÜTTMŰKÖDÉSE MÁS SZERVEZETEKEL AZ ELMÚLT 5 ÉVBEN.

3.1 Volt technikai/technológiai/műszaki jellegű interakciója az elmúlt 5 évben más szervezetekkel?
☐ Igen  ☐ Nem

3.2 Kérem, adja meg ezen interakciók számát a megfelelő rovatban.

<table>
<thead>
<tr>
<th>Interakciók száma</th>
<th>Új termék fejlesztése</th>
<th>Termék továbbfejlesztése</th>
<th>Új folyamat/eljárás kifejlesztése</th>
<th>Folyamat/eljárás továbbfejlesztése</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Egyetem</strong></td>
<td>Szöveg beírásához kattintson ide.</td>
<td>Szöveg beírásához kattintson ide.</td>
<td>Szöveg beírásához kattintson ide.</td>
<td>Szöveg beírásához kattintson ide.</td>
</tr>
<tr>
<td><strong>Innovációs és szociális kutatóintézet</strong></td>
<td>Szöveg beírásához kattintson ide.</td>
<td>Szöveg beírásához kattintson ide.</td>
<td>Szöveg beírásához kattintson ide.</td>
<td>Szöveg beírásához kattintson ide.</td>
</tr>
<tr>
<td><strong>Nagyvállalat</strong></td>
<td>Szöveg beírásához kattintson ide.</td>
<td>Szöveg beírásához kattintson ide.</td>
<td>Szöveg beírásához kattintson ide.</td>
<td>Szöveg beírásához kattintson ide.</td>
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<tr>
<td>----------</td>
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</tr>
</tbody>
</table>

3.3 Kérem, a megfelelő négyzetben jelölje a kapott segítség fajtáját.

- [ ] Technikai/Információ
- [ ] Design
- [ ] Képzés
- [ ] Marketing
- [ ] Pénzügyi
- [ ] Gyártőeszköz
- [ ] Egyéb, éspedig: Szöveg beírásához kattintson ide.
3.4 Kérem, jelölje be az együttműködés gyakoriságát a különböző fajtájú segítségeknél:

<table>
<thead>
<tr>
<th>Segítség fajtája</th>
<th>Tech./Információ</th>
<th>Design</th>
<th>Gyártóeszköz</th>
<th>Képzés</th>
<th>Marketing</th>
<th>Pénzügyi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nem volt ilyenfajta segítség</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>1-6 havonta</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>7-12 havonta</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Évente egyszer</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Kétévente egyszer</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Ötévente egyszer</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Több mint ötévente egyszer</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
3.5 Hozzájutott-e szervezete az alábbiakhoz az együttműködések során? (nagyvállalat, KKV, K+F szervezet, oktatási intézmény, bank, egyéb együttműködő fél). (Kérem, soronként egy választ jelöljön meg.)

<table>
<thead>
<tr>
<th></th>
<th>Teljesen egyetértek</th>
<th>Inkább egyetértek</th>
<th>Inkább nem értek egyet</th>
<th>Egyáltalán nem értek egyet</th>
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<tbody>
<tr>
<td>Számottevő technikai tudás</td>
<td>☐</td>
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<tr>
<td>Menedzseri, szervezeti tudás</td>
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<tr>
<td>Pénzügyi segítség</td>
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<tr>
<td>Technikai segítség</td>
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<tr>
<td>Marketinget érintő segítség</td>
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3.6 Hozzájárultak a következők a szervezet sikereihez?(Kérem, soronként egy választ jelöljön meg.)

<table>
<thead>
<tr>
<th></th>
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<th>Inkább egyetértek</th>
<th>Inkább nem értek egyet</th>
<th>Egyáltalán nem értek egyet</th>
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</thead>
<tbody>
<tr>
<td>Interakció helyi szervezetekkel, intézetekkel</td>
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<tr>
<td>Nem helyi szervezetekkel, intézményekkel való együttműködés</td>
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<tr>
<td>Fővállalkozó</td>
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<tr>
<td>Külföldi együttműködés, interakció</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>