Abstract. Culture is a central topic of the behavioural studies of organisation. It has an impact on various business areas and business performance. Our intention is to examine the impact of culture on innovation activities of enterprises. Given the large differences in innovation activities and innovativeness in European countries according to different rankings, it is meaningful to explore possible reasons. In this regard, authors of scientific researches explore many aspects, whereas we have focused on the impact of culture. To go deeper into our research, we conducted an analysis of two cultures from one region. One group is represented by three countries: Germany, Austria and Switzerland (AT, DE, CH, respectively). The other group is represented by the Czech Republic (CZ). By undertaking a large-scale questionnaire survey in 2015-2018, we were able to obtain approximately the same sample for both groups, which allowed us to compare and draw conclusions. Both sample groups contained more than 400 respondents, with the first group having 574 and the second group consisting of 419 respondents. The aim of the research was to analyse the impact of national cultures on business behaviour, especially with regard to innovations. The contribution of this article is a comparative study of the in-depth analysis of cultural relations and innovation activities. The main results presented in this study show that cultural aspects in the examined groups have a strong impact on perceiving business partners as reliable, having trust in benefits of mutual cooperation, presenting positive role models or encouragement to innovation and creativity in education. In particular, willingness to cooperate and less anxiety or fear of know-hows being stolen, which is observed in the group of AT, DE, CH companies, may lead them to their position of strong and excellent innovators. Meanwhile, Czech companies and their behaviour are largely influenced by their historical experiences and only starting to move towards a more open innovation culture, with strategic partnerships being a new trend.

Keywords: Organization Culture; National Culture; Culture Dimensions; Innovation; Germany; Austria; Switzerland; the Czech Republic

JEL Classification: M14; O31; O32

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Impact of national culture on innovation activities of companies: a case of Germany, Austria, Switzerland and the Czech Republic
1. Introduction

Today, the promotion of innovation is a hot topic not only at the national or company level, but also at the level of the European Union. In the Europe 2020 strategy, one of the key objectives is to achieve smart growth based on knowledge and innovation. Horizon 2020 supports these objectives through activities aimed at excellence in science and achievement of industry leadership through innovation. Yet, innovativeness, as well as innovation activity, is different in each country. Innovations arise from ideas of employees, customers, companies, within a joint partnership, and so on. Herewith, organisational culture, which has to be an innovative culture, is always the starting point. Organisational culture is conditioned and influenced by the national culture, traditions and attitudes of a company to entrepreneurship and creativity in business. The research question is therefore what impacts the approach to innovation and innovation plays in those countries that are regionally close, yet culturally different. The aim of this research is to analyse the impact of national cultures on business behaviour.

According to a comparative assessment of research and innovation performance of European countries, elaborated by the European Commission, the positions of the examined countries have not changed dramatically during 2010-2016. The 2016 data are the most recent data provided by the European Commission. Switzerland and Germany position themselves as innovation leaders; Austria is viewed to be a strong innovator. On the other hand, the Czech Republic has retained its position of a moderate innovator. Even though the measurement framework in the European Innovation Scoreboard 2017 met several adjustments as compared to previous scoreboards, the positions have remained unchanged, with Austria and Germany achieving results similar to the 2016 data. (Figure 1). Based on innovation scoreboard results, we compare our research questions with regard to the excellent innovators (AT, DE, CH) and the moderate innovator (CZ) to identify the key differences (European Commission, 2016).

2. Brief Literature Review

The term "culture" comes from the Latin cultura, which refers to a cult or an object of worship and, in a broader sense, can be explained as the results of human interaction (Matijević et al, 2015). Culture can be seen as a key determinant of human behaviour. In general, it is described as a set of values, norms and behaviour patterns. Culture includes expected behaviour, beliefs, traits, values, language, and living practices shared by members of a society (Herbig & Dunphy, 1998). It represents collective faith and values as principal assumptions upon which rational arguments of society are based (Tyson & Jackson, 1997).

At the organisational level, culture is often perceived as a too complex and hard to define phenomenon which significantly affects organisational performance. On the one hand, culture may be a source of strength and competitive advantage (Lukasova, 2004; Serrat, 2017), and can have a positive impact on the overall business performance (Hilman & Kaipiainen, 2015; Rühle & Wagner, 2016; Nazarian et al, 2017). On the other hand, it may impede the organisational development, or even be a source of its destruction (Lukasova, 2004). If an organisation wants to move forward and be successful, it should be aware of the importance and impact of its culture. Culture plays an important part in supporting changes in an organisation and in implementing its strategies. If an organisation wants to avoid difficulties in promoting changes or implementing its strategy, its employees should regard themselves as belonging to it (Charvat, 2006). Due to appropriate organisational culture, employees can gain a sense of continuity, personal identification both with the organisations’ goals and the organization itself.

![Fig. 1: Comparison of innovation score of examined countries during 2010-2016 according to the European Innovation Scoreboard](image-url)
Nowadays, we can see a growing importance of organisation culture in the context of knowledge development and innovation. It has been suggested that culture is the third pillar of the knowledge economy, along with knowledge and control, emphasising the importance of culture as a key determinant of innovation performance (Leal-Rodriguez et al., 2013; Ozman et al., 2013; Hogan & Coote, 2014; Brettel et al., 2015; Naranjo-Valencia et al., 2016; Kassa, 2016). Culture has a profound influence on the innovative capacity, and it also provides social direction to the process of technological development (Herbig & Dupuy, 1998). According to the research conducted by Chua et al. (2015), culture affects cross-border creativity engagement and success and has an impact on the innovator’s ability to work creatively. In organisations, culture should also support the creativity, because, in general, creativity enhances innovative activities (Sarooghi et al., 2013). Organisational culture enhances firm innovation and can create a positive effect on firm performance, especially if the culture is oriented to values and practices, e.g.: adhocracy culture (adaptability), risk-taking attitude, ambitious objectives, priority to customer satisfaction and willingness to try out new ideas (Naranjo-Valencia et al., 2016). Rothwell & Wissena (1986) pointed out nine essential factors of innovation, in which three factors were directly and others indirectly linked to culture. Based on such results, it is essential to understand that culture can encourage and support innovation and innovative endeavours.

In this context, not only organisational culture but also national culture contributes to innovations. According Smale, national cultures socially integrate the behaviour, including innovation practice (Smale, 2016). There are studies about national cultures in connections to innovation growth of companies (Demirgüç-Kunt & Levine 2004; Furman, et al., 2002) that suggest four factors underlying most explanation why certain firms representing certain nations are more innovative than others. These factors are skilled labour, capital, government and culture. The results of other study (Tellis, Prabhhu and Chandy, 2009) imply that culture is an important driver of innovation, being even more important than labour, capital and government regulations. The finding is affected by increasing globalisation and the removal of barriers to movement of labour and capital. Today, it is easier to get labour and capital for the development of innovation from abroad than it was in the past; yet organisation culture is unique to each company. It is hard to define and to follow, it can be difficult to change, which therefore represents its significant competitive advantage.

Jones and Davis (2000) also confirm that national cultures affect innovation. Hofstede is best known for cultural studies. He describes the national culture as «the collective programming of the mind» (Hofstede, 2011, p. 3). However, he also points out that people can belong to different cultures at the same time, for example national cultures and organisational cultures. National cultures alone are considered very important in terms of their impact on economic factors. To compare, national cultures have created dimensions that define culture itself. They are power distance, uncertainty avoidance, individualism/collectivism, masculinity/femininity, long/short Term Orientation and indulgence/restraint (Hofstede, 2011). According to Hofstede (2001), cultures with lower uncertainty avoidance are unfamiliar risks. Low uncertainty avoidance thus implies willingness to enter into unknown ventures that seem to be necessary. Research has distinguished especially when dealing with radical innovations. Hofstede (2001) also suggested that cultures with low power distance have a greater tendency to innovate. According to Erdingen & Waarts (2003), innovative-oriented cultures should ideally have a low power distance, low uncertainty avoidance and long-term orientation. Other dimensions should be considered, depending on the information, so high power distance might prevent the spread of information. Innovation is stimulated by free communication, decentralisation and trust between the various hierarchical levels and thus the possibility to communicate their ideas and share knowledge within the structures of the organisation (Kassa & Vadi, 2010). Also Jones and Davis (2000) claim that power distance, uncertainty avoidance, individualism and long-term orientation influence the idea generation, centralised power, formal vertical communication flows, top-down control, formal rules and procedures, and resistance to change affects innovation. A less formal hierarchy of authorities and cross-functional and cross-cultural communication increases the knowledge and responsibility support innovations and central power, top down control, excessive rules, rigid stratification will hamper innovation (Jones & Davis, 2000). In terms of the dimension of collectivism and individualism, the initiation of innovation in a collectivist, given the ideas are in one head and the surrounding environment can either support it or not. Cultures based on individualism are usually more «free» and employees belonging to them have more opportunities to try something new, and also expect a reward and recognition of their individual contribution (Erdingen & Waarts, 2003). A culture of collectivism can have a positive impact on innovation. Several authors have investigated the dependency of the individualism/collectivism on the number of patents, inventions and creativity in the economy and discovered a significant positive correlation, except for family style collectivism which has negative results (Shane, 1993). In terms of the dimension of masculinity and femininity a direct impact on creativity and innovation has not been proven. In this sense, however, femininity is a way of management oriented more to people, a low number of conflicts and emotional support to employees. In this case, men represent assertiveness, hardness and focus on material success (Williams & McGuire, 2010). According other studies (Kassa & Vadi, 2010; Kassa, 2013), the most innovative cultures are characterised by a low level of uncertainty avoidance and a low degree of masculinity. Avoiding uncertainty may pose organisational culture barriers. Innovation is often associated with changes and, therefore, a degree of uncertainty. If a country/organisation has negative relationship with uncertainty, it tends to create rules and laws that reduce confusion. Individuals in such circumstances may also have less incentive to present their ideas and inventions because their ideas and inventions may be rejected.

The general level of human capital of a country, which includes knowledge, skills and abilities of the labour force, is considered to be one of most important factors of innovation. It can be improved with education which is commonly supposed to positively influence innovation (Kassa, 2016).

3. Purpose
The purpose of this research is to analyse the impact of national cultures on business behaviour. In terms of similarity, Ronen and Shenkar (2017) divided European countries into several groups: the Nordic countries (Sweden, Norway, Denmark, Finland), the Anglo-Saxon countries (Great Britain, Ireland), the Latin countries (France, Spain, Portugal, Italy, France, Italy), the Nordic countries (Sweden, Norway, Denmark, Finland), the Anglo-Saxon countries (Great Britain, Ireland) and the East European countries (the Czech Republic, Estonia, Hungary, Slovakia, Poland, Slovenia, etc.). For the purpose of this study, we select 2 sample groups which contain a similar number of respondents in order to provide a comparison, as well as a statistical evaluation, which tells about the behaviour of the total population. We have divided the respondents into a group of Czech companies (CZ) with 419 respondents and a group of Austrian, German and Swiss companies (AT, DE, CH - the German countries) with 574 respondents. AT, DE, CH businesses represent a group of more developed countries and achieve higher rankings in innovation authorities, while CZ, companies are considered to be new innovators. These two groups were chosen also because their geographical proximity and economic connection, however different cultural aspects. To conduct a deeper analysis of companies from the selected sample groups, we have analysed both groups with regard to the stage of maturity of companies in terms of operating growing and mature businesses.

4. Sample data and collection
The sample data were obtained within a research project, which was conducted during the 2015-2018 period. The data were collected by means of an electronic questionnaire in 2015 and 2016, with a sample of 419 CZ companies and 574 AT, DE, CH companies, and compared with the newest European Social or Economic data. The respondents were the owners, managers and employees.
of companies, who oversaw various sectors. We analysed 87 starting, 249 growing and 657 mature businesses.

In the survey, the respondents were asked to answer the question: «What is the level of pro-innovation culture in your country?», where they could choose from the numerical assessment on a scale from 1 to 4. The meaning of the numerical evaluation was as follows:

1 - very low, not existing;
2 - quite low;
3 - medium, medium high;
4 - very high.

When evaluating the data, we used the basic descriptive statistics and calculations of the mean percentage. When analysing the differences between the groups surveyed, (CZ and AT, DE, CH enterprises), we used nonparametric chi-square test.

5. Results

Czech companies have a much deeper fear of know-hows being stolen than the Austrian, German and Swiss companies do. Similarly, they perceive a higher level of administrative burden. Conversely, AT, DE, CH companies have a higher level of presenting positive role models, as well as a higher level of encouragement to innovation and creativity in education. (Figure 2).

The following Table 1 and Table 2 show the percentage of companies representing the two groups of AT, DE, CH and CZ businesses, who responded to the question with the evaluation of 3 or 4. Statistically significant differences were found in the issue of encouragement to innovation and creativity in education, the fear of know-hows being stolen, the level of the presentation of positive role models, the partners’ confidence in the benefits of mutual cooperation, culture and the ability to see opportunities.

The areas which indicated a statistically significant difference between the groups surveyed were further analysed in terms of the maturity stage of the companies (Table 3). The differences between starting, growing and mature AT, DE, CH and CZ companies can be observed in the question about providing encouragement to innovation and creativity in education. Among CZ businesses, a high level of incentives was seen by starting companies (52%), yet it was not so high in the group of growing (28%) and mature businesses (31%). In the group of AT, DE, CH companies, on the contrary, the most businesses that perceive a high level of encouragement to innovation and creativity in education are mature businesses (53%), start-ups, and growing businesses perceive it less (38%). In terms of the
question about presenting positive role models of successful, innovative entrepreneurs, the evaluation of answers given by 67% of AT, DE, CH mature businesses indicated high or very high values, which was 11 and more percent higher than those of CZ starting and growing businesses. However, in the case of CZ starting and growing businesses, it was 40%, comparable with the perception of starting and growing businesses in the C group. Differences between mature businesses in the CZ group and mature businesses in the AT, DE, CH group can also be seen in questions about confidence in the benefits of cooperation with partners, culture and ability to see opportunities.

In other questions, no big difference among the analysed start-up stage of the business has been found in each of the groups.

6. Conclusions

According to the research results, several significant differences were identified in the studied groups. To understand the interpretation of the results, it is necessary to be aware of cultural differences. With regard to the modern market economy, the Czech Republic has gradually created its business environment, however, the country’s negative experience relating to the collapse of enterprises, as well as the speculative behaviour of some owners or managers, has left its mark and lead to cautiousness. At the governmental level, such cautiousness and a desire to prevent fraud leads to increased administrative and bureaucratic burdens.

The business environment, as well as relations between enterprises, is comprehensible in terms of German, Austrian and Swiss companies. In particular, it is observed with regard to their willingness to cooperate and less anxiety or fear of the know-hows being stolen.

Another significant difference in the environment in which businesses operate is their source of competitiveness. Starting from the 1990s in the Czech Republic, low operating costs (wages, services and infrastructure) and the availability of cheap assets have been significant sources of competitiveness. In the advanced economies of Germany, Austria and Switzerland, businesses continue to seek innovation and strengthen competitiveness on the output side or processes in a strong competitive environment. Strategic partnerships as a source of competitiveness are only a new trend in businesses in the Czech Republic.

From the social aspect, innovation and entrepreneurial behaviour are also affected by education and the education system. The old system of education in the Czech Republic was not focused on strengthening entrepreneurial behaviour and entrepreneurial thinking.

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