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MODELS OF CROSS-BORDER SOCIAL RESPONSIBILITY IN THREE HUNGARIAN HIGHER EDUCATION INSTITUTIONS

Zsolt Dános

Abstract

The study examines the social responsibility of three Hungarian universities (Széchenyi István University, University of Óbuda, University of Miskolc) from the aspect of cross-border activities, which aimed to support Hungarian communities, organizations and cooperations. In the research, a case study was prepared in each of the three institutions, which can be classified as territorial research, which has been less researched even internationally in the field of university social responsibility. Cross-border activities play a special role in the spread of university social responsibility in Hungary, and they are also unique in an international context due to their specific system of relations. The research aims to provide a starting point for further research into the territorial effects of university social responsibility. The main result of the paper is a new approach of university social responsibility and third mission of higher education institutions.

Keywords

university social responsibility, Hungarian higher education, cross-border cooperation, minority's higher education, territorial impact study

JEL codes: I23, R11, M14

Introduction

The social and economic phenomena accompanying globalization have induced revolutionary changes also in education, the trends of which are currently ongoing. An accompanying phenomenon of this in higher education is the third mission which has appeared in addition to education and research. Nowadays, cross-country and cross-continental higher education cooperations are evolving both in the field of research and that of education, moreover, they expand to the third mission in some certain ways. These processes arrived to Hungary with some time lag after the regime change, and since then higher education trends have been consecutively reaching Hungary years later. This is also true for the recognition and the conscious application of the role of third mission. The phenomenon of university social responsibility being closely related to third mission must be mentioned here by all means as it has recently become more and more well-known in the strategic documents and practice of the domestic higher education institutions. The research aims to examine a specific aspect of this phenomenon in the practice of three Hungarian higher education institutions, namely the Széchenyi István University, the University of Óbuda, and the University of Miskolc.

To assess the scope of university social responsibility activities, the institutions' own websites were examined, and after defining the scope of activities, it was aimed to define their territorial directions and ranges. The study presents the related activities of cross-border and trans-border Hungarian communities towards the society by means of case studies of the three universities, and it also systematizes these in the field of social responsibility. The study primarily pays attention to activities towards Slovakia and Ukraine (Transcarpathia), as these are those target areas with a similar weight in all three universities.

The first part of the study briefly summarizes the concept of university social responsibility and its territorial aspects, then it presents the research methodology and the research process, and after introducing the research findings, it finally concludes the most important experiences of the research.

Theoretical background of the research – The concept of university social responsibility

One of the milestones in the history of university social responsibility is the signing of Magna Charta Universitatum (1988) which defined the mission of the following decades and the principles of operation from the viewpoint of universities. The document drew attention to the main tasks of the university, the management of culture, education and science (Hrubos 2006). One of the first signs of reacting to the changing environment was the 1998 UNESCO Decree, which systematized the 21st century tasks of higher education institutions (World Declaration 1998). The main task of higher education is the socio-economic role as set out by the document. Another decree of the UNESCO from 2009 also emphasizes the social responsibility of higher education (Gurria 2009), and expects a comprehensive ethical role from institutions through knowledge transfer. In Europe, this process began with the adoption of the 1999 Bologna Declaration that anticipated the recognition and spread of social tasks also within the countries of the Bologna Process. A newer concept of the social tasks of higher education is university social responsibility.

Although the literature on university social responsibility is becoming wider and more diverse, the level of theoretical elaboration, in fact, is still far below the level of its conceptual predecessor, corporate social responsibility (Jorge–Peña 2017). There is still much to be done in the modelling of university social responsibility, regardless of the fact that the literature has been dealing with various aspects of university responsibility for more than 20 years. The first appearance of the idea of university social responsibility is linked to Boyer (1996), who created the concept of Scholarship of Engagement which can be considered a forerunner of university social responsibility. Barker (2004) suggested the distinction of the practical forms of the scholarships, in which community partnership and other aspects were given a role. Bonnen's work (1998) attempted at an early interpretation, but besides this, the spread of the term, university (either state or private) civil engagement was also significant, which term was used as a kind of preliminary synonym of university social responsibility in literature (Esfijani et al. 2012). The research direction of the 2000s was mainly covered by the interpretation of sustainability within the university framework, the aim of which was to apply the aspects of sustainable development in university strategies.

One of the early initiatives of university social responsibility movement originated from Latin America with the cooperation of the universities of the continent, and one of its spiritual fathers is Francois Vallaeys, who is one of the main theorists of university social responsibility (2014). One of the first mentions of the intercontinental forms of university social responsibility is the organization called USR Alliance (today it is called Global USR Network), which was set up in San Francisco in 2008 (Esfijani et al. 2012). The basis of the initial models was characterized by comparison with and the distinction from corporate social responsibility (Jorge–Peña 2017). Having reviewed 15 years of theoretical literature, the previous authors identified four comprehensive areas where the institution should enforce social responsibility: education, research, university governance, and community participation. Perhaps the most widespread definition of university responsibility today derives from Francois Vallaeys (2014). His concept is closely linked to the idea of green university, and believes that sustainability and the fair organisation of learning and research assume that science and knowledge are not marketable products, because they are directly responsible for value creation. Other authors (e.g. Vasilescu et al. 2010) emphasize that trends around universities not only affect but also determine the roles universities play.

In Hungary, regarding the mission of higher education institutions, the research of Bander (2011) concluded that social responsibility became one of the most important tasks of higher education institutions. The research was carried out with relation to the development of U-Map mapping system of the European University Association, which was completed by

2010, and in which third mission and some of its elements (e.g. knowledge transfer, regional commitment) appeared among the examined dimensions. The research also found that if third mission appears in an institution, some form of social responsibility also plays a role. The measurement of third role activities is also included in the analyses of third and fourth generation universities (Kotosz et al. 2015), where third mission is linked to the university's direct relationship with economic and social actors, in which the shaping of social needs also plays a role.

It must be definitely stated that university social responsibility is indispensable without spatial dimension, thus this type of grouping is also possible. The basis of this is the social need to which responsibility is directed and the service or support which the university provides. The following territorial can be identified:

1. domestic responsibility
   a. local (settlement/micro-regional/county)
   b. regional
   c. national
2. international responsibility
   a. cross-border
   b. bilateral/multilateral
   c. macro-regional/continental
   d. global

This grouping is primarily suitable for classifying some particular activities, but it can deal with more general groups of activities or model activities only with reservations, therefore, only a part of the identifiable activities could be placed in this dimension, however, in case of some universities it can be fully applied, thus, it is possible to examine the cross-border activities out of the identified activities of the three universities.

A study of the author and Adrienn Reisinger (Dános–Reisinger 2020) proposed a classification of the practical activities of university social responsibility, which since then has been completed with new elements, as follows:

- Activities related to education: educational activities not related to traditional university tasks, educational activity serving social objectives as well; e.g. ethnic language teaching, training for social works, special fields of adult education and vocational education, special contents included in education (e.g. environmental contents, equal opportunity topics, holding seminars), online courses.
- Activities related to the dissemination of knowledge: this includes activities that are not directly related to the main educational line, but beyond that also helps disseminate knowledge among the population; e.g. Pensioners' University, the organization of scientific lectures, the establishment of professional workshops, the organization of series of lectures in high schools and exhibitions.
- Activities related to environmental sustainability: this includes all activities that can be grouped around environmental issues; e.g. selective waste collection, motion sensor lighting on corridors, modernization of heating, planting trees.
- Activities related to scientific activity and research: this includes all activities that promote the practical application and social service of the institutions' scientific results; e.g. participation in landscaping, site exploration, rescues and remediation, field research, action research.
- Activities related to dissemination and scientific communication: this includes activities that aim at the better knowledge and usability of scientific results; e.g. providing free accesses, open access applications, open research programs.
- Activities related to cultural activities: the dissemination of cultural contents created at universities, and ensuring their public availability; e.g. operation of film clubs, university stage, organization of concerts, ensuring publishing opportunities.

- Activities related to social relations (e.g. relation to civil society organizations, citizens): supporting social processes and embracing good issues can be in the focus of activities belonging to this group; e.g. donation, founding a civil society organization, supporting those in need, contributing to the organization of fundraising, charitable actions, supporting equal opportunities and anti-discrimination, volunteering.
- Activities related to corporate and professional relations: it is now essential for the operation of higher education institutions to have professional relations with market and non-market institutional actors, and during these activities several responsibility activities can be observed; e.g. launching joint projects, participation in strategic planning.
- Activities related to regional/local involvement: it is practically the dimension of regional involvement within the frames of which the practical forms of regional involvement emerge; e.g. the development of regional and territorial-level cooperations, participation in strategic planning (e.g. projects, cooperations, clusters), providing regional-level services (e.g. proposal writing, counselling).
- Employee-related activities – community building: institutions can engage in several activities that can help their employees and family members; e.g. the organization of joint teambuilding programs, support, flexible working hours.
- Student-related activities: provision of alumni services and student support services, scholarships, support for housing and purchasing course books, peer support, mental health support, consideration of student characteristics (e.g. young mothers, handicapped people, people with disabilities).
- Public, publicity-related activities: not a completely independent category, it includes all communication and organizational activities that do not belong to other forms; e.g. ensuring transparency in university issues, contents available on websites, launching campaigns, formulating social messages, glass pocket, operating internal organizational regulators and institutions.

Materials and methods

The antecedent of the research to be presented in the study was the author's research in the course of which the analysis of the websites and organizational documents of 21 Hungarian universities[1] was carried out by means of quantitative content analysis, and then, based on the results, case studies were created referring to more institutions. The study examines which areas of social responsibility activity of the institutions can be the elements of cross-border university social responsibility in case of Széchenyi István University, the University of Óbuda, and the University of Miskolc out of the 21 institutions.

The activities of each institution were identified by using the following methods:

- the qualitative content analysis of the institutions' websites,
- in-depth interviews conducted in March 2020 with university leaders and experts involved in the topic, one or two persons per institution.

The selection criteria for the above three universities were the followings:

- state-run universities;
- institutions with at least county or regional agglomeration;
- institutions having at least three faculties or training areas;
- their organizational units are located in a concentrated way, most of them can be found in one or two cities;

[1] As of 1 September 2019, these universities were listed as the state-accredited higher education institutions of Hungary under the classification of state universities in the Appendix 1 of Act CCIV of 2011 on National Higher Education. Since 1 August 2020 there have been only 14 state universities on the list, thus the Széchenyi István University and the University of Miskolc are classified as non-state universities.

- they have demonstrable R&D and socio-economic activities and relationships;
- they are located in different regions and counties;
- they have different sizes, education offers, and historical backgrounds and traditions;
- they have trans-border students, and trans-border or near-the-border training site.

Results

The activity dimensions presented in the theoretical part were divided into three major groups (intra-organizational activities, outer-organizational activities, activities performed by employees), along which those specific activities were identified that could be interpreted along cross-border territoriality (Table 1). Due to the diversity of the activities, the activities are not presented comprehensively, however, Table 1 still shows variously what types of activities are available for each higher education institution regarding the responsibility towards Hungarian higher education across the border and towards the widely interpreted society.

Table 1: Examples of activities in the field of cross-border university social responsibility

Activity dimensions/Sub-dimensions	Intra-organizational activities	Outer-organizational activities	Activities performed by employees
Education	attracting trans-border lecturers (teacher's mobility, scholarships for teachers)	launching off-site trainings, training and content development, local education (e.g. support for teacher training)	individual relationship building, individual commitments
Dissemination of knowledge	encouraging informative activities for Hungarians living across the border	developing informative activities or contents supporting it	publishing individual contents on the relevant topic (e.g. historical or cultural research blog)
Environmental sustainability	including trans-border environmental issues in the curriculum (e.g. mining, rivers)	trans-border research activities, training of related professionals in off-site training	participation in attitude formation
Scientific activity, research	supporting trans-border research topics	conducting trans-border research (e.g. ethnographic, historical, landscaping)	participation in attitude formation
Dissemination, science communication	involving trans-border lecturers	providing dissemination forms available for Hungarian living across the border (websites, publications, lectures)	participation in talent management
Cultural activities	displaying aspects of trans-border art and culture (e.g. exhibitions, literary competitions)	organizing joint programs with trans-border universities (e.g. sport events, cultural programs)	participation in trans-border associations
Social contacts	encouraging participation in non-governmental organizations, establishing university associations on related topics	cooperation with non-governmental organizations	participation in charity events, undertaking appearance, participation in non-governmental organizations

Corporate and professional relations	supporting students' internship	concluding cooperation agreements	personal networking
Regional/local involvement	training of shortage professions	participation in cross-border programs	personal participation in cross-border programs
Employees – community building	supporting the employment of trans-border employees	supporting and organizing exchange programs	individual involvement
Students	attracting students living across the border	supporting and organizing exchange programs, supporting international cooperations	participation in organizing student programs
Public life, publicity	public presentation of the support of Hungarians living across the border, publication of available services, activities	advertising of programs and social messages	individual involvement

Source: Own compilation

To introduce the practical form of social responsibility, the study presents three summarizing case studies which were created based on the above-mentioned methodology and which show the cross-border social responsibility of the three Hungarian universities.

Cross-border social responsibility at Széchenyi István University (Győr)

Many of the university's most significant activities take place in local/regional involvement and the complementary cross-border cooperations. This is also one of the most important factors in shaping its partnerships, i.e. the automotive industry from an industrial viewpoint, which is the greatest involvement area of the university. Here, the university's network of relationships extends beyond its own region, and it has also established close relationships with institutions within the CENTROPE region. Regarding the international involvement of the institution, it strives to increase it continuously, a focus of which is the generation of cross-border and trans-border cooperations. In respect of cross-border cooperations it is important to emphasize the university's INTERREG and other projects (Uszkai – Dános 2014), whereas in case of trans-border cooperations, its role played in the development of the education space of the Carpathian Basin is decisive, within the frames of which close relationships with more trans-border Hungarian higher education institutions have been established. The vision of the university also states that one of its key tasks and aims it to be the most important target institution of higher education in Hungary for the Hungarians of the Highland. In terms of university cooperations, mainly the traditional Austrian and German university relations predominate, but the relations are also strong with other institutions of the CENTROPE region.

In terms of the topic, the cooperations with Slovakia and Ukraine and the social responsibility developing along them are of particular importance. Although the university has cooperation with several higher education institutions in both countries, for the Hungarian nationality across the border the most important is the cooperation with the J. Selye University in Komárno and the Ferenc Rákóczi II Transcarpathian Hungarian College of Higher Education in Beregovo with which the Széchenyi István University has concluded inter alia an agreement on teacher and student mobility. The cooperation with these institutions do not differ formally from cooperation agreements concluded with any higher education institution, but the selection of institutions and the intensity of cooperation show that it is a conscious cooperation between Hungarian higher education institutions on both sides of the border. In case of Széchenyi István

University, this is closely related to social mission of the university, and the activities related to this can be classified as social responsibility.

The university also attaches great importance to the mobility of Hungarian students coming from across the border, and puts a great emphasis on the support of this. The largest group of foreign students at the university consists of the Hungarians living across the border, which is a characteristic of most of the Hungarian higher education institutions (the number varies, but typically means more hundreds). The mobility of Hungarian higher education students living across the border, their participation in Hungarian universities is enabled partly by programs supported by the Hungarian state (e.g. Makovecz Program), partly by initiatives led by other organizations (e.g. Balassi Institute) and by the EU-funded Erasmus and interstate cooperations (CEEPUS, International Visegrad Fund). Student services provided to the Hungarian students across the border generally do not differ from those provided to other foreign students, but in practice, due to different reasons (e.g. dual citizenship, cultural offer available through a common mother tongue), yet there are additional opportunities available for them. Another difference in the available student services could be whether the students takes part in a part-time mobility program or they are full-time students at the university.

The support of the Hungarians across the border can take many other forms besides the so-far mentioned higher education cooperations and student, teacher mobility programs. An important part of this is the Hungarian-Hungarian cooperation in scientific dissemination of knowledge and trainings as well as the propagation of the knowledge related to the Hungarian population of the Carpathian Basin. The related commitment appears, for instance, in one of the significant scientific dissemination activities of the university, i.e. the topic of the lectures of the Pensioners' University, where the issue of Hungarians living across the border is a recurring topic, but this element also appears in other events. The social responsibility that appears in the curriculum development is a much larger activity from the viewpoint of the Hungarians living across the border. One of the subprojects of the ongoing project titled "Higher education institutional development, a common improvement of the quality and accessibility of the programmes at Széchenyi University" (Reg. No EFOP-3.4.3-16-2016-00016) has been specifically subordinated to this goal.

The subproject titled "The development of the Carpathian Basin Educational Space" aims to develop pedagogical, tourism and civil engineering trainings in Hungarian language. In connection with teacher training, the aim of the project is curriculum development, the elaboration of methodological and pedagogical-psychological materials, within the frames of which the colleagues of the universities of Nitra, Komárno, Novi Sad and Cluj-Napoca as well as those of the college of Beregovo have participated in the work, and four curriculum modules have been developed by the end of the 2019. Besides these, a monography titled "Népi ismeretek az oktató-nevelő munkában" (Folk Knowledge in Teaching-Educational Work) was completed. The curricula have already been tested party at the university's teacher training faculty and party at the universities in the Highlands, Transylvania, and Vojvodina, and further works are also in progress. The subproject also included the deepening of higher education cooperations, the mobility of teachers, the organization of conferences, and the development of other trainings and curricula. Curricula related to tourism were implemented in cooperation with the Partium Christian University in Oradea. The curriculum development of civil engineering was completed together with four colleagues of the Faculty of Civil Engineering of the Technical University of Cluj-Napoca.

The training of Hungarian pedagogues across the border has been long in the focus of the university's social responsibility. The university recognized, already in 1990, that one of the key conditions for the survival of the Hungarians across the border was that teacher training should be available in Hungarian language and sustainable in the Hungarian-inhabited areas of the Carpathian Basin. The Apáczai Csere János Faculty had operated teacher training in

Komárno between 1992 and 2008, and since 1997, with a few years lapse, it has been providing summer in-service training for those teaching Hungarian language in the western diaspora of Slovakia. The university has been involved in professional cooperations, the organization of joint conferences as well as student and teacher study trips since the establishment of the institutional framework of Hungarian language teacher training in the Highlands. However, digital curriculum development is not only prevalent in the areas already mentioned, but it is also increasingly spreading to the university's other training areas of training, which in practice means that the curricula and trainings available on the e-learning platforms of the university will be accessible to anybody, facilitating this way the trans-border Hungarian higher education. Besides the conferences already mentioned, there are other types of events which serve the involvement of trans-border students, out of which the different school contests and competitions (both for domestic and trans-border students and institutions) must be highlighted. These activities fit in well with the other social responsibility processes of the university, however, they are also in line with the aims related to regional involvement.

Cross-border social responsibility at the University of Óbuda (Budapest and Székesfehérvár)

The university began to take university social responsibility seriously four or five years ago, however, striving after responsibility and the related activities had already been present in the life of the institution. This is also reflected in the institutional development plans (henceforth IDP) of the institution. The IDP for the period of 2007 and 2011 contains neither the concept of third mission nor that of social responsibility, whereas the IDP for the period of 2012 and 2015 contains social responsibility as a strength, but neither the third mission nor the social responsibility appears conceptually, and there is no related content among the strategic goals. However, the 4th strategic goal of the IDP for the period of 2016 and 2020 defines the aim that the university strives for developing a leading position in terms of university social responsibility. The university intends to achieve its strategic goals through wide-raging collaborations and diverse activities.

The Makovecz Program and the Carpathian Basin Higher Education Cooperation Framework Program, within the frames of which the university has concluded an inter-institutional agreement with several Hungarian trans-border institutions (e.g. Sapientia Hungarian University of Transylvania, J. Selye University, Subotica Tech-College of Applied Sciences, the Ferenc Rákóczi II Transcarpathian Hungarian College of Higher Education) to support students and teacher mobility, reached a breaking through in cross-border cooperations. The role of the university in supporting the trans-border Hungarian higher education, which is a key goal in the IDP, is outstanding. A part of this is a multi-annual Teacher's Day celebration with the participation of the representatives of Hungarian higher education of the Carpathian Basin. The university supports Hungarian-language education through cross-border cooperations, therefore, it has also launched trainings in Subotica and Odorheiu Secuiesc in collaboration with local higher education institutions. Besides supporting the Hungarian Language Teacher Training Faculty in Subotica, the university launched a mechatronics engineering training at the Faculty of Engineering of the University of Novi Sad, moreover, it donated laboratory equipment and technical books to the local higher education institution. The university took on a similar role in Odorheiu Secuiesc, where it has launched a bachelor's programme in light industry engineering with the opportunity to specialize in textile and printing industry since the autumn of 2014.

One of the pillars of cooperation is the delivery of curricula and the provision of online curricula to all Hungarian higher education institutions across the border on the K-MOOC (Carpathian Basin Online Educational Centre) open online training interface, through which the University of Óbuda aimed at launching and disseminating Hungarian-language online courses.

The target group of the courses is primarily the Hungarians in the Carpathian Basin, but anybody can access them in Hungarian language. K-MOOC provides a form of online education recognized by credits or certificate to students of higher education institutions, faculties and departments in the Carpathian Basin (teaching in Hungarian), and also supports lifelong learning. Any Hungarian-language university or college in Hungary and across the border can join the K-MOOC Network. Institutions joining the network can organize online Hungarian language courses for credits in any field of science, which are freely available to anyone in the system, and their students can also apply for courses announced by any other institution of the network. Currently 22 domestic and 14 trans-border Hungarian higher education institutions are members of the network.

The university contributes to the building of the Hungarian trans-border community in the field of higher education through a number of smaller activities. Through the Talent Management and Mentor program it embraces trans-border Hungarian students in the same way as its own students, and works, for example, as a managing agent at the Transylvanian Technical Conference of the Scientific Students' Associations. It regularly holds summer universities specifically for trans-border students, e.g. the Kandó Kálmán Summer University, which is aimed at Hungarian engineering students across the border. In terms of sport activities, the university is a frequent participant in the Cup of the Universities of the Carpathian Basin or the Selye-Cup in Komárno. The event was a part of several unique events, such as the Carpathian Basin Education Conference in Oradea at the Partium Christian University, one of the organizers of which was the Ágoston Trefort Centre for Engineering Education of the University of Óbuda.

A similarly interesting and unique initiative was the opening ceremony of the academic year held together with more trans-border institutions in 2013. The trans-border institutions – the Partium Christian University of Oradea, the Ferenc Rákóczi II Transcarpathian Hungarian College of Higher Education in Beregovo, the Sapientia Hungarian University of Transylvania in Cluj-Napoca, Târgu Mureş, Miercurea Ciuc, the J. Selye University in Komárno, the Subotica Tech-College of Applied Sciences and the University of Novi Sad Hungarian Language Teacher Training Faculty in Subotica – connected to the event via a two-way videoconference system. Many of the activities of the university presented here refer to longer-term cooperation and commitment, which is linked to the university's goal of being an impetus in social responsibility, in which trans-border objectives also have a place.

Cross-border social responsibility at the University of Miskolc (Miskolc)

A central element of the university's regional involvement is the improvement of regional competitiveness, whereas the social goal is to retain the youth of the region and to educate a committed local clerisy, i.e. the related educational activities and attitude formation. These aims are complemented with the support of Hungarian education in the Highlands and Transcarpathia. The own regional and the cross-border aims often complement each other, a form of which is that the university has launched two new training sites in Ózd and Sátoraljaújhely in cooperation with social and economic actors. Both sites are located in Borsod-Abaúj-Zemplén County, which rather strengthens the county-level involvement, however, as no higher education institution is available near either settlement within 60-70 km, so these trainings represent a suitable alternative also for cross-border and trans-border settlements. Since the majority of the youth of the area are disadvantaged or cumulatively disadvantaged, learning in more remote higher education institutions would cause these young people such cost-of-living problems that they cannot solve. That is why the opportunity for higher education in the vicinity is significant for them, besides the fact that the trainings also respond to local labor shortages, and the two trainings are also available to young people across the border.

The university has a wide range of social responsibility activities among which there are institutional-level activities as well as individual-level initiatives. One of the institutional-level activities is the implementation of cross-border projects at the university, out of which the FLOODRESC project, which takes places in the framework of Slovakia–Hungary Cross-border Cooperation Programme, is worth special mentioning. In the course of the project, the development of a GIS and decision-support system for flood management is implemented in cooperation with the University of Miskolc and its four partners – the Technical University of Košice, the University of Security Management in Košice, the Holocén Nature Conservation Association and the Directorate for Disaster Management of Borsod-Abaúj-Zemplén County. The University of Miskolc and the Technical University of Košice are also consortium partners in another cross-border project an aim of which is to establish a cross-border network of universities as proactive agents of energy-efficiency with own sustainable energy action plans, a set of promotions tools and pilot installations on RES – educational and research site with real cost-saving for university.

Also among the domestic projects supported by the European Union Structural Funds there are ones in which the aim is to support trans-border mobility. One of the aims of the project titled 'Főnix ME' – Renascible University (Reg. No. EFOP-3.4.3-16-2016-00015) is to encourage trans-border higher education cooperations to develop the Carpathian Basin educational space and in addition to this, to develop student and language services. From the viewpoint of university cooperations, the Makovecz Program, within the frames of which the university has established close relationships with more trans-border institutions, is also decisive here. The cooperation has been traditionally complex with the two higher education institutions of Košice, the Technical University of Košice (the first cooperation was signed in 1966) and the Pavol Jozef Šafárik University in Košice. In case of both universities, besides the departmental cooperations, programs at the university strategic level (e.g. mobility cooperations) and cultural and entertaining programs (e.g. joint sport days) have also been implemented.

Smaller institutional-level responsibilities show a various picture. The international student literature competition of the Eszterházy Károly College, the University of Miskolc and the J. Selye University took place among these. The Bridge Construction Competition, during which a bridge structure consisting of appropriate steel and cable elements must be designed using a special program, announced by the university for the students of both domestic and trans-border Hungarian secondary schools has a history of more than 15 years. The Faculty of Law regularly organizes programs for domestic and trans-border secondary education institutions, such as an open class or meeting with sample court hearing for Hungarian-language high schools in the Carpathian Basin. The project titled Cooperation of University Teaching Hospitals Miskolc–Košice was implemented within the framework of the Cross-border Cooperation Programme 2007-2013 Hungary–Slovakia with the participation of the Borsod-Abaúj-Zemplén County Hospital and University Teaching Hospital, the University of Miskolc, and the Pavol Jozef Šafárik University in Košice**.** *The project mainly focused on developing joint training programmes, in-service trainings, practical courses in the course of which it was also formulated that if the* Borsod-Abaúj-Zemplén County Hospital and University Teaching Hospital becomes a university teaching hospital of the Pavol Jozef Šafárik University in Košice, it *could solve the eventual cross-border labor shortage problems.*

The responsibility of the University of Miskolc appears not only in education, but also in other areas of life. The university together with the representatives of the Beregi Kommunális és Hulladékhasznosító Nonprofit Közhasznú Kft. in Barabás (Bereg Municipal and Waste Utilization Nonprofit Public Benefit Ltd.) gave lectures on selective waste management as part of an attitude formation campaign in more schools of Beregovo district in 2015. Then the campaign was closed with the involvement of the students of the Ferenc Rákóczi II

Transcarpathian Hungarian College of Higher Education in Beregovo**.** *The university also participated in the environmental protection programs of the trans-border regions, an example of which is the involvement in the exploration of the Transcarpathian salt mining and the preservation of the water quality of the Tisza River.*

Support for trans-border areas has also been manifested in donations and volunteering in some cases, such as in connection with the floods of Tisza in Transcarpathia or the Christmas charity shop initiated in favor of the Ferenc Rákóczi II Transcarpathian Hungarian College of Higher Education. The activities of the university reflect comprehensive idea of social responsibility towards Hungarians living abroad only in some areas, but commitment can also be felt through individual and departmental initiatives. However, awareness, organizing and planning tasks are areas that need to be developed by the university.

Conclusion

The aim of the study was to investigate the characteristics of a territorial group of social responsibility of Hungarian higher education institutions, i.e. those of cross-border activities and to present its form in practice in the case of three Hungarian universities. To do so, first the study made an attempt to identify sample activities within the categories established in the field of university social responsibility, for the practical examination of which the author prepared a summarizing case study of the three Hungarian higher education institutions. In these the author managed to present several activities and to make the related operation of the three institutions visible.

In case of Hungarian higher education institutions, responsibility related to cross-border society is of importance from more aspects. On the one hand, the pertaining activities already belong to the international dimension of the higher education institutions, and are really decisive in case of regional institutions. On the other hand, there is typically a high degree of mobility related to cross-border cooperations from the viewpoint of both student and teachers. Cross-border cooperations are based on a broad basis, ranging from common or pretty similar economic interest through cultural interlacements to joint projects. Because of it all, in case of most of the universities these types of activities are among the most intensive forms. Besides these, the cooperation and the support of Hungarian institutions in Hungary and across the border as well as purposeful social responsibility contain an important and ideological element. The support of trans-border Hungarian communities, staying in the homeland, and the preservation of identity are in the focus of this. The development of the Carpathian Basin educational space, which was tangentially mentioned in the study, also serves this aim, and is also supported by the government. Contributing to this plays an important role in the social responsibility of all three universities, related to which the universities generate activities.

Most activities take place within similar frameworks at universities, and there are some activities, initiatives in which all three universities take part (e.g. Makovecz Program, K-MOOC). The intensity and manner of the activities of each university are primarily influenced by the awareness of the institution, its strategic goals set in the field, the system of its relationships, traditions, and last, but not least, its current activity. The similarities between the universities are further enhanced by the fact that their number of students is similar, all three universities are known mainly for their technical profile, which has since been complemented with additional faculties and trainings, i.e. by now they have had a wide range of study programmes, their agglomeration is similar in size, and all three universities are open towards Slovakian and Transcarpathian cooperations.

The research can provide guidance for mapping the cross-border activities of the entire Hungarian higher education, which can contribute to the development of a comprehensive institutional and higher-level strategy and to support Hungarian higher education and nationality across the border.

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THE MAIN FINANCIAL CHARACTERISTICS OF THE SUCCESSFULLY OPERATING NEWLY ESTABLISHED ENTERPRISES

Balázs Patyi – László Pataki

Abstract
Starting a new business was always been a risky move, as the early years are critical to the future of the business. As many new businesses are goes bankrupt, our study examines successful businesses from a financial point of view. Our goal is to identify the factors that can be found in successful businesses and have contributed to the survival of the companies. Our research is based on a database analysis which contains 268 companies, established in 2012. We made calculations for seven years long period, based on the balance sheet and profit and loss account. Our investigation focuses on the profitability of companies, their financial situation and the efficiency of the business. The key success factors of the investigated companies are their dividend payment policies, liquidity, debt and cost structure and increasing net sales income. The results of our research can help to other new businesses.

Key words
Financial analysis. Successful operation. Profitability. Small and medium-sized enterprises.

JEL Classification: B26, B41, D02, G39

Introduction

In Hungary, the SME sector have a great importance, as these enterprises are present in large numbers. Béza Dániel and his co-authors (Béza et al., 2013) found that the share of the SME sector is outstanding in the EU and Hungary, and therefore their economic weight is significant. According to the data from the Central Statistical Office, the proportion of small and medium-sized enterprises was 99.1% of all businesses in 2018 (KSH, 2018). This data shows that the SME sector has an important role in the economy, but despite the large number of SMEs, the number of bankruptcy among the newly established companies is relatively high. Table 1 shows the survival rate of newly established enterprises depending on the year of establishment.

Table 1.: Survival rates for newly established enterprises between 2009 and 2013

Year of establishment	5 year survival rate
2009	80,47%
2010	76,37%
2011	72,67%
2012	74,68%
2013	72,08%

Source: the authors on the basis of https://www.opten.hu/kozlemenyek/mar-a-cegek-fele-sem-eli-meg-a-10-eves-kort

Based on the data in Table 1., it can be seen that for a newly established company the average survival rate of 5 years period is about 75%, i.e. one in four newly established companies will goes bankrupt within the first 5 years. That's why we thought it was worth looking at the remaining companies, exploring the factors that needed to make a successful company.

In the case of start-ups, the following factors can be identified in terms of survival and growth:

- Entrepreneurial skills acquired in education
- Internationalisation
- The acquisition
- Heterogeneity of the knowledge and skills of the founding team (Csákné et al., 2020).

Entrepreneurial skills of the entrepreneur and the team are important along the entire life of enterprises, through every stages of the entrepreneurial process (Dunay, 2019). According to Katits (2017), innovation is the key to the long-term success of businesses. Innovation is the base of survival, and investment helps the internal corporate growth. According to Vecsenyi (2018), businesses need to find the right answer to six challenges to stay successful for as long as possible. The six challenges are the follows:

- Keeping your business: External and internal tension, as well as managing changes properly is the key.
- Organizational challenge: This includes creating a division of labour, defining internal and external activities.
- Marketing challenge: Get your business accepted by your customers, and create, retain, and expand your customer base.
- Financial challenge: The primary priority is to create and maintain liquidity. It is also important to create the financing conditions for the investment, as improvements can help the company grow more quickly.
- Development challenge: Improve and renew the quality of your product or service so that customers choose them over competitors.
- The challenge of ownership: Preserve the ownership portion. In some cases, financing may cause the owner to lose a part of the ownership.

Poór (2016) sees the success of SMEs in their role as innovation. As many small companies supply large companies, they need to develop due to supplier compliance. Small businesses are much more flexible in their ability to respond to environmental changes and therefore have an important role to play in the innovation ecosystem. The use of new technologies also affects the success of businesses. Hegedűs says (2019a) that new technologies could lead to cost reductions, could improve efficiency and it can also improve monitoring.

There are many changes in the lives of organisations. Some effects need to be responded quickly, while others need to be responded more slowly (Noszkay, 2018). One of the key factors for success is the ability of the company to respond adequately to these changes. If the company succeeds in implementing the changes, it will gain a competitive advantage, which is crucial for its survival. The competitiveness and profitability of the companies are influenced by their age i.e. their position in their lifecycle (Illés et al., 2015).

According to Hayes (2018), successful companies often fall into the trap of “we don’t need to change”. Change is necessary and companies need to adapt to continue to succeed.

According to Vecsenyi (2018), the leaders of the companies have an important role in the successful implementation of the changes, because it is up to them whether the company can gain a competitive advantage from it. Successful change is vital, with five conditions of this being described in figure 1. (Vecsenyi, 2018).

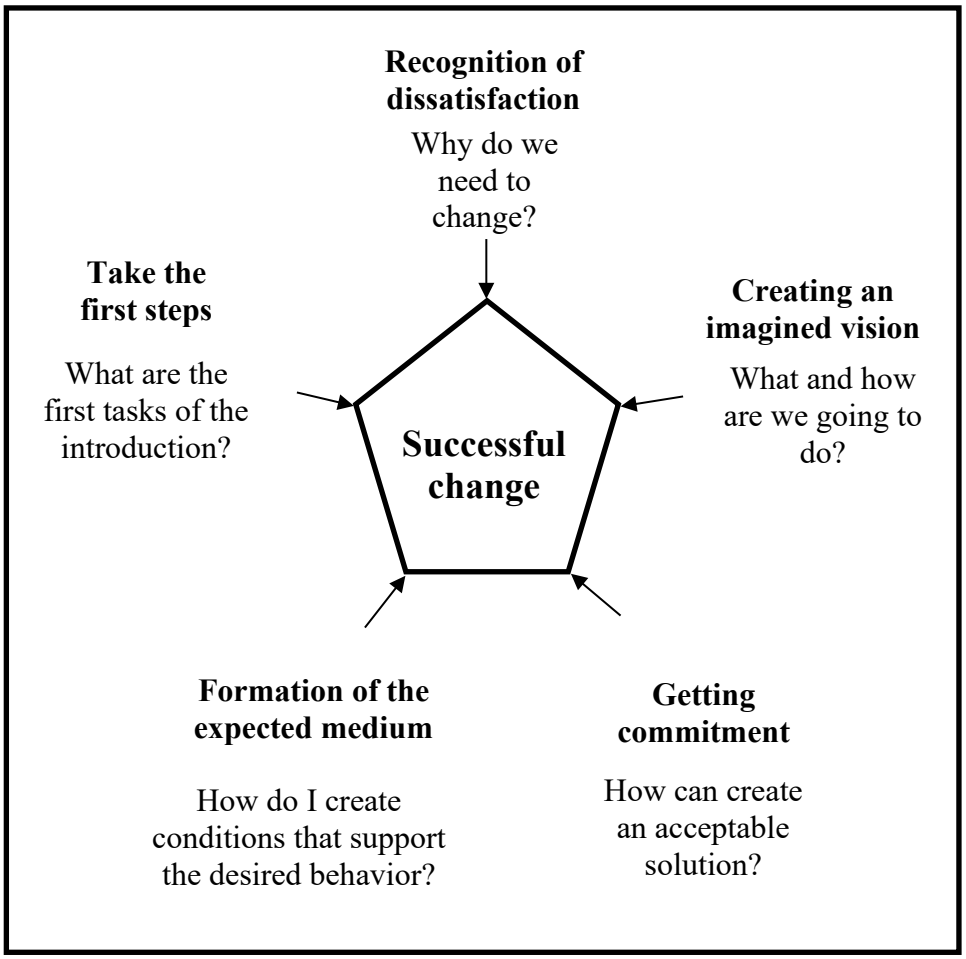


Figure 1. Conditions for successful change
Source: Vecsenyi, 2018

In the recognition of dissatisfaction aspect, the leader of the company should explain to the stakeholders the necessity and benefits of change. In the creating of the vision it is necessary to strive for activities and processes that need to be done differently than before. An important consideration is to obtain commitment, for example by involving stakeholders or by mapping the causes of resistance. The formation of the expected medium includes the conditionality that we need to create in order to ensure that the change is lasting. To this end, job descriptions, performance requirements and incentives should generally be changed. Taking the first steps identifies the important points associated with the introduction of changes. In the case of well-prepared changes, the people involved in the change will more easily accept the change and make it easier done.

In addition to managing changes properly, developing a business strategy is also a key factor in successful operation. The business strategy answers questions of profitability of the business or how to obtain a competitive advantage (Balaton and Tari, 2016).

In the most successful companies, marketing planning activity helps to manage the processes. These companies have multiple levels of reporting, strategies and programmes (Malcolm and Hugh, 2016). For new-born companies it is very important to make their plans as soon as possible, so in our turbulently changing world new planning methods like business modelling take the role of the traditional business planning methods (Illés, 2019).

However, creating an effective marketing plan for new businesses is a big challenge, so small businesses are looking for other opportunities. Social media is often used for marketing and advertising (Turner and Endres, 2017).

The marketing strategy plays an important role in the successful operation of the business. Józsa (2016) appreciates why strategic marketing is important for businesses. The process of strategic marketing is shown in Figure 2.

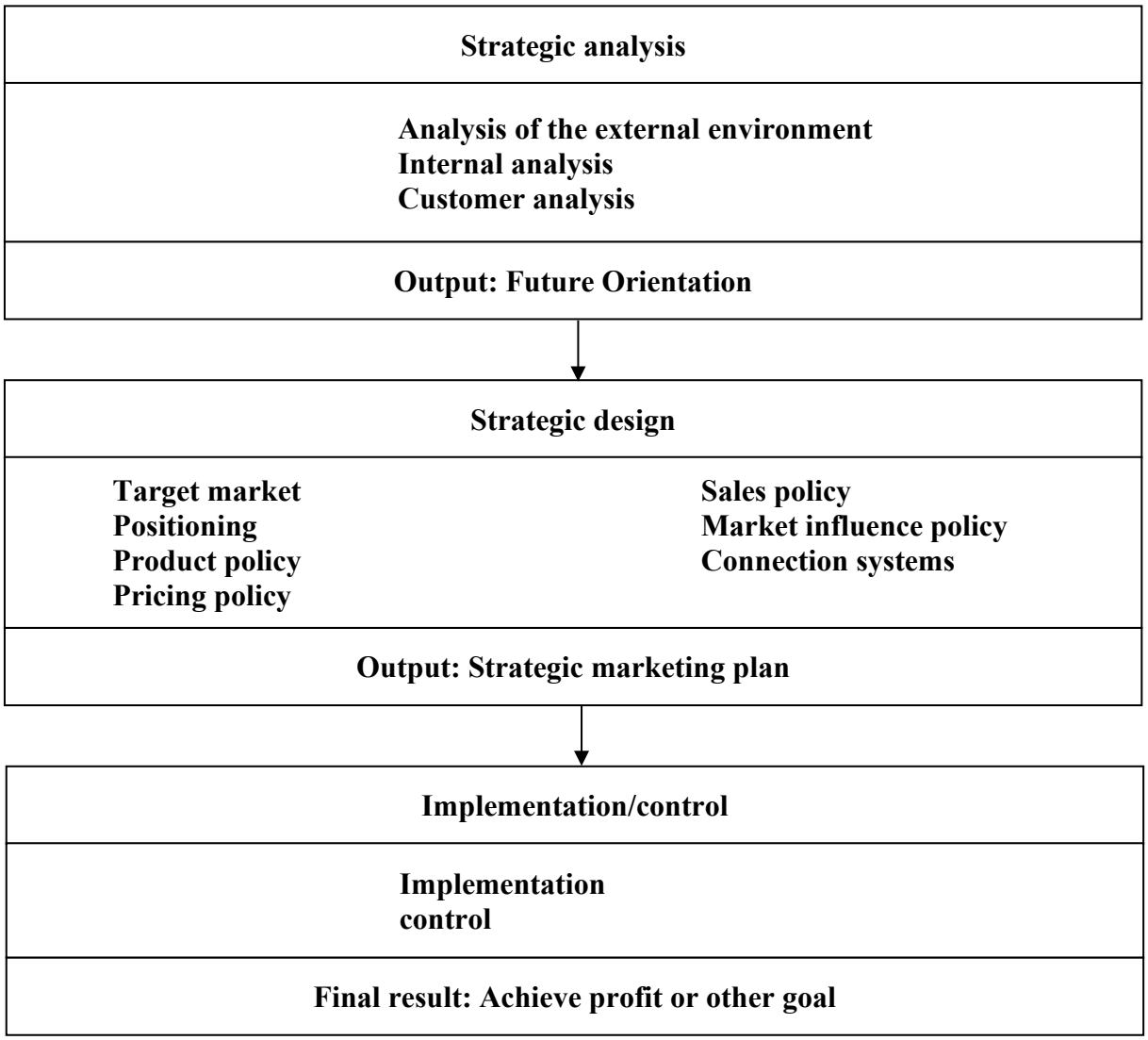


Figure 2. The process of strategic marketing
Source: Józsa , 2016

Strategic analysis can be used to identify the current situation of the business. Strategic analysis includes customer analysis, internal analysis of the company, and analysis of the external environment. Industry analysis, trend tests and portfolio tests play an important role in this context. Following the strategic analysis, the company already has a future orientation and the strategy can begin to develop.

A strategy should be developed to enable the company to gain a competitive advantage and improve its market position. Factors that are strong for the undertaking compared to competitors should be explored. Innovation, which also enables products to be developed, plays an important role in this respect. An important factor in developing this strategy is how to improve relationships with customers, to create business alliances, and to develop product and price policies.

The strategy plan that you have completed must be implemented by your business. Control also plays a key role in the process, allowing the necessary corrections to be made and

new decisions taken. As a result of a successful strategic marketing plan, the company is able to achieve its objectives and make a profit, which is essential for the successful operation and the survival of the business.

On the basis of the literature review, it can be clearly stated that a number of factors are necessary for the success of companies. Successful businesses are also key factors for the country operation. Hegedűs explains (2019b) that competitiveness is extremely important for a country and because of the big number of the domestic small and medium-sized enterprises, they play an important role in improving competitiveness if they are able to improve their productivity. The following we look at the characteristics of the successful, newly established businesses, from a financial point of view.

Material and method

In our research, we look at the key financial factors for successful operation in the newly established businesses. Because our research focuses on successful companies, we have chosen companies that have not went to bankrupt during the period under consideration. The period under consideration covers seven years, between 2012 and 2018. We thought we could identify the best operating businesses with a longer-term investigation. The database examined included companies established in 2012 in Nyíregyháza, the county seat of Szabolcs -Szatmár Bereg county, and also operated in Nyíregyháza in 2018. There are a total of 268 such companies, so we used the data of these companies in our research. The choice of Nyíregyháza was justified by the fact that we wanted to investigate the enterprises of a less economically developed county, but at the same time we were looking for a settlement of the size in which the number of companies allows reasonable conclusions to be drawn on the basis of the results obtained. The figure 3 contains the structure of our research.

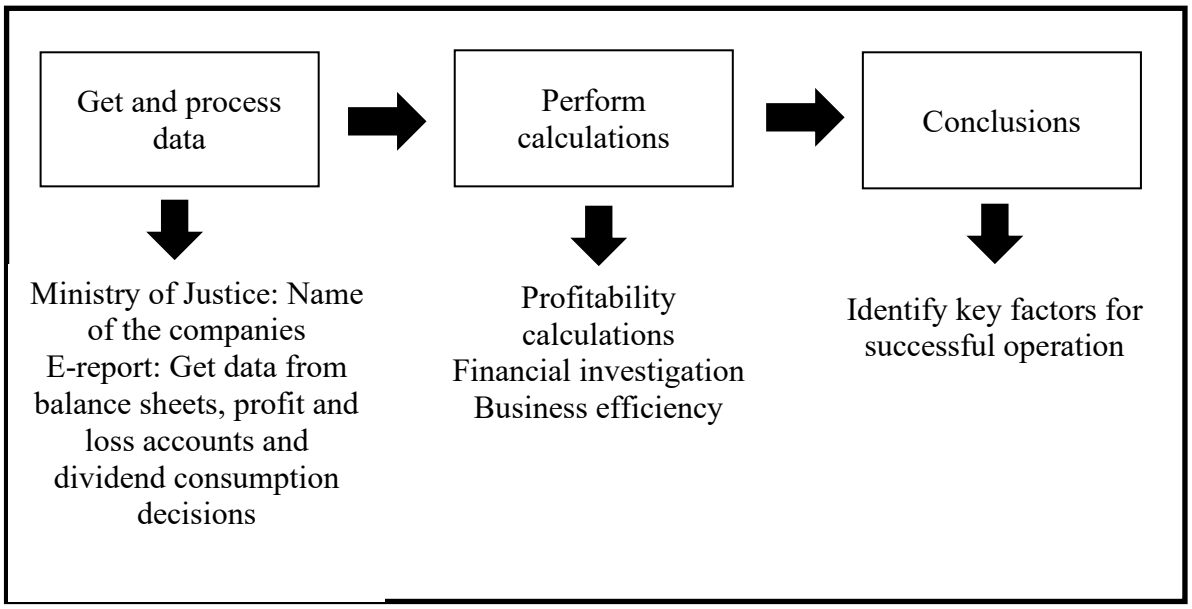


Figure 3. Logical structure of the research
Source: the authors on the basis of the research structure

We obtained the list of companies in the database from the Department of Justice's Corporate Service. The research is based on database analysis. The examined company balance sheet and profit and loss account data and decisions on dividend consumption from 2016 are derived from the database of Electronic Accounts Portal (https://e-beszamolo.im.gov.hu/oldal/kezdolap). The company data were transferred to Excel, and then data were aggregated. Because data were available for the same time interval in all companies,

it was possible to summarize them. The aggregation eliminated errors that would have occurred when calculating for each company. For example, if there is no net sale income in a given year, it is not possible to calculate certain profitability rates. We have made the calculations and drawn conclusions on the aggregated data. For the database, we looked at the profitability of the firms, their financial situation and the efficiency of their business. The results of the profitability investigation were presented in Table 2.

Table 2. Examination of the profitability between 2012 and 2018

Description	2012	2013	2014	2015	2016	2017	2018
Operating profit rate	7,2%	8,8%	7,0%	7,0%	5,4%	6,4%	7,5%
Net profit rate	6,3%	8,0%	6,5%	6,4%	4,7%	5,6%	6,6%
Dividend payment rate	18,2%	25,8%	35,6%	47,6%	37,1%	41,6%	42,7%
Profit retention rate	81,8%	74,3%	64,7%	65,4%	65,9%	59,7%	58,1%
Dividend coverage	5,5	3,9	2,8	2,1	2,7	2,4	2,3
ROA	7,2%	13,1%	11,6%	10,4%	7,0%	8,8%	10,0%
ROE	17,3%	46,7%	39,3%	32,0%	17,6%	21,0%	23,6%
ROI	17,6%	33,9%	31,1%	28,6%	20,2%	24,6%	28,4%

Source: the authors on the basis of aggregate balance sheet and profit and loss account data of the examined companies

From a profitability point of view, the operating and net profit rates are an important indicator, since it measures the proportion of the profit without costs to the net sales income. The operating profit rate compares the earnings before interest and taxes to net sales income and the net profit rate compares the earnings before taxes to net sales income. From the point of view of businesses, the higher value is favourable, because it means they can make more pure profit. During the period considered, the companies achieved an average operating profit rate of 7% and a net profit rate of 6,3 %. This is considered to be good for newly established enterprises, but it is important to look at how the values change in the years under consideration. It can be seen that the two values were highest in the year following the establishment and followed by a minor downturn. The figures only increased in 2017 and 2018, but still did not reach the values of 2013. Businesses can improve values by reducing costs. The evolution of costs is dealt with in more detail when we assessing efficiency. It is clear from the examination of the two profit rates that the companies made profit in each year. The way in which profits are used is very important for businesses. The company may decide to pay the profits as dividends, which will benefit the owners and investors. The other option is to withhold profits, which allows the company to set aside reserves for unexpected expenditure and create an opportunity to finance internal growth. It is essential to find a balance between the two uses. Profit retention dominated in the sample under consideration, with a profit retention rate above 50%. In the year of its establishment and the subsequent period, the level of profit retention was very high, so the companies focused on reserve making and internal growth. For the most successful companies founded in 2012, this strategy could be one of the keys to successful survival and operation. The dividend payment was only increased after the critical years following its founding- but even in 2018 the dividend payment rate remained below 50%. In the case of dividend payments, it is also important that they had an adequate amount of cover. The amount of earnings after taxes is more than twice the amount of dividends paid in each year examined, so the dividend coverage is good. In assessing profitability, we also examined the evolution of rates of return. They measure the amount of taxed profit relative to different balance sheet items. The value of the rate of return on assets (ROA), the rate of return on equity (ROE) and the rate of return on investments (ROI) changed similarly during the period

considered. The year following its founding saw the highest levels, followed by a downward trend until the end of 2016. The taxed profit was on average 9.7% of assets, 28.2% of equity and 26.3% of fixed assets during the period considered. Businesses have been able to achieve relatively high taxed results, which is an important element of their successful operation.

After profitability, we looked at the financial indicators of the companies, which values are set out in Table 3.

Table 3. Financial investigation between 2012-2018

Description	2012	2013	2014	2015	2016	2017	2018
Liquidity I	0,36	0,42	0,41	0,63	0,47	0,53	0,52
Liquidity II.	1,00	1,03	1,06	1,23	1,21	1,24	1,23
Liquidity III.	1,29	1,27	1,27	1,52	1,60	1,61	1,64
Ownership ratio	0,42	0,28	0,30	0,33	0,39	0,42	0,42
Debt ratio	4,36	1,61	2,09	2,25	3,01	3,04	2,99
Liabilities ratio	54,6%	63,9%	62,5%	55,9%	53,7%	52,7%	52,8%

Source: the authors on the basis of aggregate balance sheet and profit and loss account data of the examined companies

Measuring liquidity helps businesses to ensure the extent to which they can provide resources for current expenditure. Liquidity I. measures the size of liquid current assets (securities and funds) to short-term liabilities. The account of this indicator contains the assets that the firm can sell easily order to pay off the liabilities. We got relatively low value in the first years of its founding, but as of 2017, the value was already above 0.5. This means that the liquid current assets of the businesses account for nearly half of the value of short-term liabilities. Liquidity II. measures the amount of the most liquid current assets and receivables in relation to short-term liabilities. The counter of this indicator is already exceeding the size of the denominator, that is short-term liabilities. Liquidity III. measures the total current assets in relation to short-term liabilities. The values obtained increased year on year during the period considered. On the basis of the results obtained, it was found that there were no substantive liquidity problems for the companies under investigation and that the settlement of short-term balances was typically not a problem. The ownership ratio compares the value of equity to the size of all resources. These values are problematic, because businesses have an equity ratio below 50%. By the end of the period considered, the companies were able to increase this rate, but they still had very low values. The increase in the value of the indicator is driven by the earlier fact that the companies under investigation reinvested a significant part of their taxed profit back into the company and thus increased its equity. Nevertheless, it can be shown that the companies are not capital strength, especially during the period of the fund. During the financial investigation, we also looked at the debt ratio and the liabilities ratio. The debt ratio measures the ratio of equity to long-term liabilities. If the value is higher, the business is less indebted. The data show that businesses are not indebted in the long term, they can even to take out additional long-term loans. The liabilities ratio compares the size of liabilities to the size of all assets. The data show that the companies reduced the ratio of liabilities in relation to the proportion of assets during the period considered. Overall, the companies in the database were not indebted. Of course, the fact that newly established companies have very limited bank borrowing opportunities plays a strong role in this, as their creditworthiness is not, or at least, difficult to judge. Our investigations also showed that the stock of bank loans within the liabilities of the sampled companies was not significant and that instead other - mainly shorter-term - liabilities - mainly debts to suppliers - appeared to be greater amount, but below the level to risk short-term solvency.

In analysing the efficiency of the business, we examined the ratio of each cost level of the companies. The results shown in Table 4.

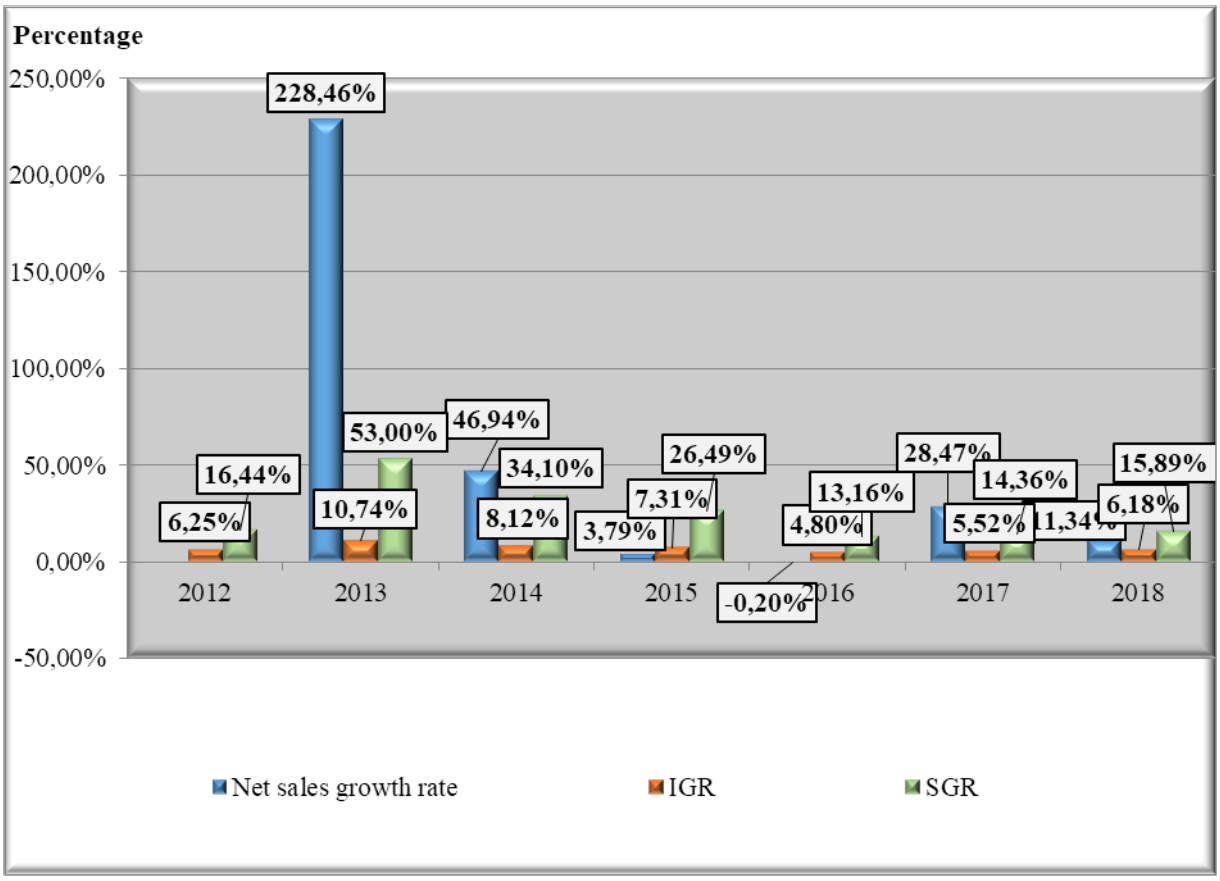
Table 4. Cost levels between 2012-2018

Description	2012	2013	2014	2015	2016	2017	2018
Cost of sales level	96,7%	94,8%	95,7%	95,3%	97,1%	98,7%	95,4%
Level of material costs	68,2%	71,4%	69,6%	63,9%	64,6%	66,4%	64,8%
Level of staff costs	24,2%	17,9%	21,5%	24,7%	26,0%	24,7%	22,8%
Depreciation level	2,7%	2,9%	2,3%	3,3%	4,0%	3,2%	3,2%
Level of other expense	1,7%	2,7%	2,4%	3,4%	2,4%	4,3%	4,5%

Source: the authors on the basis of aggregate balance sheet and profit and loss account data of the examined companies

The rate of costs to revenues is a key to efficient operation. In vain has a company a high net sales income, if the proportion of costs is almost the same or exceeds it. According to Zéman and Béhm (2016): "The assessment of business performance is greatly facilitated by the comparison of costs with sales revenue, and in addition, the examination of the cost structure." If costs are broken down in relation to net sales income, it becomes apparent that which costs dominate and which need to be reduced in order to increase efficiency. The sales cost level shows the ratio of total costs to net sales income. On average, costs accounted for 96,2 % of net sales income during the period considered. If businesses can improve this value, they can make even more profits. It is then necessary to look at which costs are dominant in businesses and on which ones could be reduced. In the sample under consideration, material costs are the largest item, which on average the 67 % of net sales income. The second item is staff costs, which is on average 23,1 % of net sales income. The level of depreciation and other expenses is relatively low and should not be focused on. It is hard for businesses to reduce staff costs, because average earnings have risen steadily in recent years and companies have to adapt to that. According to the Central Statistics Office, the average gross earnings of full-time employees were 237.695 HUF in 2014, 247.924 HUF in 2015 and 263.171 HUF in 2016 (KSH). The high proportion of material-related costs also indicates that the sampled companies are mainly producing or commercial, and that service-type companies with a typically lower material-type cost rate represent a lower proportion of the sample. Various investments and improvements can be made to reduce material costs. One of the objectives of reducing costs may be to keep the stock value as low as possible. According to Oláh and her co-authors, a stock control process controlled by suppliers can also be used to achieve cost reductions in stocks and related processes (Oláh et al., 2016).

In addition to the cost ratio, we examined the growth potential of enterprises. The results are shown in Graph 1.



Graph 1. Growth opportunities between 2012-2018

Source: the authors on the basis of aggregate balance sheet and profit and loss account data of the examined companies

In growth opportunities, we looked at the rate of net sales growth, the internal growth rate (IGR) and the sustainable growth rate (SGR). Increasing net sales income is vital for businesses as long as the goal is to grow and achieve higher profits. The companies under investigation were able to achieve a significant increase in nets sales incomes after its founding, as their incomes more than doubled compared to the previous period. Such growth rates are typical of start-ups. This growth rate decreased in the period that followed and there was even a decrease in 2016. The internal growth rate shows how much the company can grow by using only internal resources to grow. In order to achieve internal growth, profit retention is essential, which is typical of the companies under investigation. The sustainable growth rate shows how much growth they can achieve using internal and external resources if the resource structure remains unchanged. An interesting finding is that there were two years (2015 and 2016) during the period considered, when the net sales growth rate was lower than the rate of internal and sustainable growth. During these periods, businesses could have achieved more growth than they had achieved. Overall, the efficiency of the companies examined are adequate and they have excellent growth potential.

Conclusion

In the middle of our investigation were those most successful newly established companies that managed to overcome the difficulties of establishing and survived during the period considered. In our study, we looked at the profitability, financial situation and efficiency of companies to identify the factors that are characteristic of successful companies and have

helped the companies in the database to survive and grow. Based on the results, the success and the survival is due to the following reasons:

- In the dividend policy profit retention was the typical, especially in the difficult period following its founding. Through profit retention, they were able to provide adequate reserves for emerging costs and to finance internal growth.
- From a liquidity aspect, companies have no problems and the size of the short-term liabilities are not significant and can be adequately managed over an annual period. Of course, on the basis of liquidity ratios alone, it cannot be clearly stated that they were not have temporary liquidity difficulties for some shorter periods within a year. This would require liquidity balances, but there is no point in compiling such data from aggregated data.
- Businesses are not in debt to financial institutions and are able to get more loans. The fact that the loan opportunities of newly established companies are limited plays a key role in this. The increase in the equity ratio and a multi-year management history will allow for greater external resource raising (loans) in the future, which is essential for further sustainable growth.
- Firstly the material costs and secondly the staff costs are the determinant factors within the cost structure, but the increase in net sales income was not exceeded by the rate of increase in costs, the companies were able to produce positive results on the basis of aggregate numbers in each year of the investigation.
- The companies were able to continuously increase the net sales income, which is the basis for profitable operations. The expansion of market opportunities is therefore a prerequisite for the successful operation of businesses, but also a symptom of it.

The results of our research will hopefully help newly established businesses to survive and grow.

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THE CONCEPT OF INTEGRATIVE TRUST ON BUSINESS PERFORMANCE

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Abstract

This article set a goal to propose a model illustrating the scientific relationship of integrative trust in enhancing business performance. This study started by reviewing the connections of intra-organizational trust, inter-organizational trust, institutional trust, and business performance. This study then reviewed the previous empirical research and its theoretical point of view concerning the relationship between three types of trust and business performance. Based on the foundation laid by previous results, this study proposed a conceptual model of trust implementation on business performance. This study proposed that institutional trust would enhance inter-organizational and intra-organizational trust. Subsequently, inter-organizational trust would improve business performance.

Keywords

Intra-organizational Trust. Inter-organizational Trust. Institutional Trust. Business Performance.

JEL Classification: D23, L25, L86

Introduction

This research assessed previous studies to develop a new direction of trust on business performance. Recent studies revealed that trust might be a decisive view relating to business performance, but the relationship continues a debatable area of investigation. Davis et al. (2000), Jing et al. (2014), Oláh et al. (2017), and Allen et al. (2018) investigated that interpersonal trust had a positive influence on business performance. However, Zaheer et al. (1998) examined that interpersonal trust did not affect business performance. In a study of the direction between inter-organizational trust and business performance, most investigations indicated that a strong relationship of inter-organizational trust and business performance (Zaheer et al., 1998; Galford & Drapeau, 2003; Bien et al., 2014; Gaur et al., 2011; Vasa et al., 2014). The results, as mentioned earlier, were in contrast with the findings from Baranyai et al., 2012 and Oláh et al. (2019).

Regarding the impact of institutional trust and company performance, Goergen et al. (2013) examined that trust in government and trust in business partners performing together had a positive impact on company performance. On the other hand, trust in the public and stakeholders had a negative influence on the company's profitability (Oláh et al., 2019). From the review of the different results, this is the main point to conclude that limited attention investigated the relationship between interpersonal trust, inter-organizational trust, institutional trust, and business performance simultaneously. Therefore, this research proposed a research direction which investigated the effect of integrative trust on company performance intending to fill the results gap of previous studies. The research proposed a question on how the combined effects of institutional trust, intra-organizational trust, and inter-organizational trust, on business performance.

This study had the purpose of constructing a model of the institutional trust influence inter-organizational trust and intra-organizational trust, which might affect business performance. To support our goal, we reviewed the concept of direction institutional trust, interpersonal trust, intra-organizational trust, and business performance. Based on the foundations laid by this literature review, we proposed an integrative conceptual model of the

effect of trust implementation on business performance. This study consisted of an introduction part, mapping of preceding findings, and conclusion.

Materials and methods

This study intended to provide an integrative scientific review of intra-organizational trust, inter-organizational trust, and institutional trust and their relations to business performance. This study conducted a scientific literature review using Scopus and the Web of Science to find scientific texts published in refereed international journals in the fields of business and management. This study used specific keywords in the advanced search mode for documents published between 1995 and 2019. This study applied a systematic review of published articles. Then this study method classified the existing literature review based on the direction of intra-organizational, inter-organizational trust, and institutional trust on business performance by mapping the results of previous manuscripts (Tranfield et al., 2003).

We carried out the literature review in following steps: (1) this study selected a scientific database search service, in this study Scopus and the Web of Science. (2) This study searched by applying keywords, for example, 'trust', 'employee', 'manager', 'inter-organizational trust', 'trust in government' and 'business performance'. (3) This study selected texts in English relating to the research criteria, published in international journals focusing on business and management, and published between 1995 and 2019. This study found 144 scientific articles in Scopus and 64 research manuscripts in the Web of Science (4). This study then reviewed and examined the abstracts of the articles displayed. After studying the findings in the abstract of previous articles, this study summarized 29 scientific manuscripts listed in tables 1, 2, and 3, to support this study. (5) This study classified and categorized the papers based on topics, in terms of intra-organizational trust, inter-organizational trust, and institutional trust. (6) This study summarized the findings of previous scientific texts examining the effect of intra-organizational trust, inter-organizational trust, and trust in government on business performance.

Having conducted the systematic review, in this section, we detailed the findings of our summary of previous scientific research. First, we scrutinized the experimental results relating to the effect of inter-organizational trust on business performance. We then assessed the effect of intra-organizational trust on company performance. Finally, we also summarized the role of trust in government on performance through the direct and the mediating variables.

We summarized the direct effect of intra-organizational trust on performance in Table 1.

1. Table. The relationship between intra-organizational trust and business performance

Author(s)	Samples	Intra-organizational trust implementation	Findings
Robinson (1996)	125 newly hired managers from a variety of industries in the USA	Employee trust in an organization	Trust in the organization mediated the connection between psychological contract damage and work performance.
Rich (1997)	183 salesperson-manager dyads from 10 different U.S. companies	Trust between employees and the manager	Trust in the manager had a positive influence on sales performance and job performance.
Davis et al. (2000)	371 employees of restaurant industries	Trust in the manager and the organization	Trust in the general manager positively affected sales and profit.
Dirks & Skarlicki (2009)	174 financial services staff at the Western Canada bank	Trusted by colleagues	Being trusted by co-workers was related to a higher level of job performance

Brown et al. (2011)	2,680 workplaces in 2011 and 2,295 workplaces in 2004 from the Workplace Employment Relations Survey (WERS)	Trust in workplace organization	There was a definite connection between workplace performance measured by financial performance, labor productivity and product or service quality and average employee trust at both points in time.
Chen et al. (2012)	209 respondents from the National Defence University of Taiwan	Dyadic trust and trust in institutions	Trust had a strong association with voluntary employee performance.
Jing et al. (2014)	580 respondents consisting of 100 managers, 217 staff, and 263 customers in a pharmacy chain	Trust between employees and supervisor (manager)	High levels of trust might correlate to a positive business performance consisting of financial performance, customer and staff satisfaction, productivity, and both long-term manager and staff occupation.
Chen et al. (2014)	601 supervisor-subordinate dyads from 27 companies in a Taiwanese company	Trust between employees and supervisor (manager)	Trust operated as a mediating variable to empower the relationships between leader benevolence, morality, and employee in-role performance.
Vanhala & Dietz (2015)	411 samples from a forestry company and 304 respondents of an ICT company in Finland	Employees' trust in the company	Workers' 'trust in an organization' positively mediated the relationship between perceptions of Human Resource Management and a set level of staff performance, unit performance and organization performance.
Audenaert et al. (2016)	568 public service employees from 75 job categories in a large, public sector organization in Belgium	Trust-in-the-organisation	Trust-in-the-organisation mediated the connection between the strength of the expected climate and work performance.
Oláh et al. (2017)	51 logistics providers in Hungary	Trust	The level of trust in organization among employees and colleagues had a positive direction on earnings before tax
Hughes et al. (2018)	628 respondents in 103 teams for the 1st survey. 614 respondents in 99 groups for the 2nd survey in similar employees in a large insurance company in the Netherlands	Trust in a team	Trust in a team moderated the relation between the innovative behaviour of the employee and job performance.
Kloutsiniotis & Mihail (2018)	350 front-line staff in the Greek banking sector	Trust between employees and supervisor (manager)	Trust had a moderating role in empowering the relationship between the high-performance systems and employee outcomes. Employees trusted by their

			supervisors might be more determined in the workplace.

Source: authors' compilation, 2020

Based on the scientific results from previous articles, this study summarized the relationship between intra-organizational trust and business performance to support the proposed model. In this context, this study proposed that intra-organizational trust be categorized into three types: trust among colleagues, trust in the supervisor, and trust in the manager. We revealed that trust in colleagues and the team had a positive effect on work performance (Rich, 1997; Dirks & Skarlicki, 2009; Brown et al., 2011; T.-Y. Chen et al., 2012; Chen & Lin, 2015; Rajić & Milošević, 2016; Kornélia Lazányi et al., 2017; K Lazányi & Fülöp, 2017; Seilerová, 2019). Furthermore, trust in the manager had a positive effect on profit (Davis et al., 2000) and business performance in terms of financial performance and productivity (Jing et al., 2014).

Intra-organisational trust, also known as interpersonal trust, had a mediating role in empowering an employee's work performance in the company (Mura et al., 2019). Intra-organizational trust could perform as a moderating role; in this case, moderating the connection between the strength of the expected climate and work performance (Audenaert et al., 2016). Then, interpersonal trust might have a moderating role in empowering the relationship between the high-performance systems and employee outcomes, as well as performance assessment (Kloutsiniotis & Mihail, 2018). Next, employees' trust in an organization positively mediated the relationship between perceptions of Human Resource Management and a set level of staff performance, unit performance and organization performance (Vanhala & Dietz, 2015). Furthermore, interpersonal trust additionally could moderate the effect of uncompleted contracts on work performance (Robinson, 1996). In the case of leadership and innovative behaviour, intra-organizational trust had a mediating role on work performance by empowering leadership benevolence (Chen et al., 2014) and innovative methods (Hughes et al., 2018). To sum up, this study revealed that intra-organizational trust could perform as a mediating variable to empower the direction between two observed variables. Then this study proposed that intra-organizational trust would enhance the direction between institutional trust and intra-organizational trust.

In Table 2, this study provided a summary of the effect of inter-organizational trust on corporate performance. This study also reviewed the previous findings of direction between inter-organizational trust in business performance.

2. Table. The relationship between inter-organizational trust and business performance

Author(s)	Samples	Inter-organizational trust implementation	Findings
Tsai & Ghoshal (1998)	15 unit business in-home appliance, industrial equipment and computer communication sectors	Inter-firm trust	Trust had a positive influence on exchange collaboration related to product innovation.
Rampersad et al. (2010)	124 participants from an Australian biotechnology and nanotechnology network	Trust in a network	Trust had a significant influence on both network coordination and harmony.
Gaur et al. (2011)	Data from 565 German SMEs	Inter-organizational Trust	Trust had a positive influence on SME performance which varied on

			the level of external and internal uncertainty encountered by the leading business.
Laan et al. (2011)	30 key informants involved in a 40-million-dollar rail construction project in the Netherlands	The trust relationship between client and contractors.	The initial conditions of an inter-organizational relationship resulted in the sharing of risks and opportunities. Inter-organizational trust between client and contractor affected project outcomes.
Wei et al. (2012)	154 manufacturing firms in Taiwan	Inter-organizational Trust	Inter-organizational trust had a positive association with partner cooperation, which might affect the increase in performance in the logistics chain.
Cao et al. (2017)	136 supply chain specialist respondent among top management in four different companies in the USA	Inter-organizational trust	Inter-organizational trust moderated the connection between cloud computing and information sharing.
Bien et al. (2014)	104 biotech and pharmaceutical manufacturers in Taiwan	Trust between manufacturers	Trust had a positive direction on cooperative performance.
Lee et al. (2015)	375 samples of Korean SMEs in seven industrial clusters	Inter-organizational trust	Inter-organizational trust had a positive effect on innovation output. Innovation output indicated the number of products developed, process improvements, and patents achieved.
Meng (2015)	101 industrials practitioners such as project managers, procurement managers, contract managers and performance managers in the UK construction industry	Trust between project parties.	Trust had a significant role in enhancing collaboration affiliation. Trust had a positive influence on project performance improvement.
Lu et al. (2017)	243 manufacturing firms in China	Intra-organizational and inter-organizational trust	Precise intra-organizational and inter-organizational control had a positive effect on the performance of new product development. The interaction effect between inter-organizational trust and inter-organizational expert had a positive effect on new product development.
Balboni et al. (2018)	Sample of 138 global coalitions involving Italian firms and foreign partners	Trust in the international alliance	Trust had a positive influence on alliance success. Indeed, trust moderates the relationship between formal control and alliance performance by reducing the

			significance of output control and increasing process control.

Source: authors' own compilation, 2020

This study disclosed the direct effect and the moderating role of inter-organizational trust in business performance. Firstly, as the direct effect between inter-organizational trust on corporate performance, inter-organizational trust might improve company performance (Tsai & Ghoshal, 1998; Galford & Drapeau, 2003; Inkpen & Tsang, 2005; Hovhannisyan & Vasa, 2007;). For instances, Fang et al. (2008), Gaur et al. (2011), Wei et al. (2012), and Bien et al. (2014) examined the positive relationship between inter-organizational trust and business performance. Besides, Lee et al. (2015) and Lu et al. (2017) indicated the positive effect of inter-organizational trust on productivity in terms of creative output and new product development.

Inter-organizational trust likewise had a mediating role in empowering business performance. Inter-organizational trust had a positive relationship with partner collaboration (Tsai & Ghoshal, 1998; Rampersad et al., 2010; Wei et al., 2012) which might lead to better corporate performance (Wei et al., 2012). Also, network collaboration affected product innovation (Tsai & Ghoshal, 1998). Inter-organizational trust also had a mediating role in the relationship between formal control and network performance (Balboni et al., 2018).

Most of the scholars, displayed in Table 2, examined the association between inter-organizational and business performance in the enterprises' cases. Inter-organizational trust could perform a direct variable in connection with business performance, as examined by Gaur et al. (2011), Bien et al. (2014), and Lu et al. (2017). Besides, inter-organizational trust might moderate the relationship between two latent variables, which studied by Cao et al. (2017), and Balboni et al. (2018).

This study then continued to review the effect of institutional trust on business environment in Table 3.

3. Table. The relationship between institutional trust and business performance

Author(s)	Samples	Institutional trust implementation	Findings
Zak & Knack (2001)	41 countries of the World Values Survey	Institutional trust	Trust had a positive relationship with economic growth. The finding provided a new understanding of the perspective that social and institutional factors impact on financial performance.
Popper (2013)	-	Social trust	Social trust encouraged people to behave in specific ways but also discourage them with punishments for socially deviant behaviour. Political institutions, government and the judiciary might diminish the nurturing of levels of social trust. Social trust was constructed mainly from the grass rooted condition.
Askvik & Jamil (2013)	100 people in Bangladesh	Institutional trust	The high level of institutional trust presented a paradox. It implied that there might be

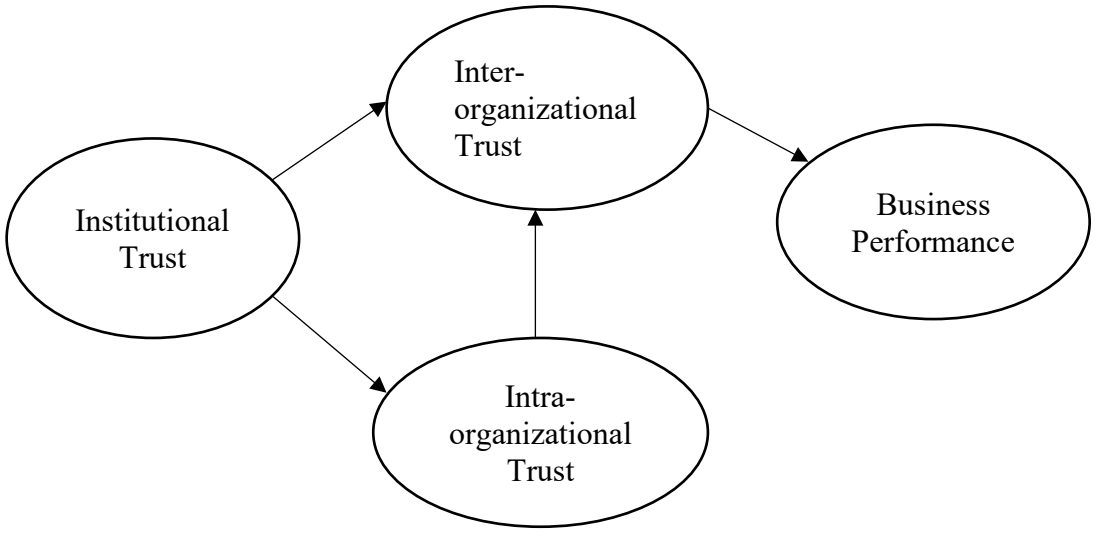
			dysfunctional for the emergence of a democratic governance system.
Bursian et al. (2015)	EU Countries	Trust in government	Trust and credibility played an essential role in monetary and fiscal policy. Trust in the government also determined conditions in countries with a simple business cycle.
Rim & Dong (2018)	1,121 samples consist of 380 in the USA, 355 in the UAE, 386 in Korea	Trust in government	The level of trust in government and business disclosed significant differences across countries. Trust influenced the increasing expectations regarding the economy. Also, trust in government affected the increase in philanthropic responsibilities. Trust in government even moderated high expectations regarding economic and charitable obligations.

Source: authors' own compilation, 2020

In a business network, institutional trust might enhance civic engagement in philanthropic activities, social activities, and business (Goergen et al., 2013). Concerning the business and economy, institutional trust had a positive effect on economic growth (Meyer & Meyer, 2017; Zak & Knack, 2001) and expectations regarding commerce (Bursian et al., 2015). Also, Goergen et al. (2013) argued that trust in a nation had a significantly negative impact on firm performance. However, if inter-organizational trust interacted with national trust, national trust had a definite relationship with company performance. To sum up, institutional trust might provide a significant climate for business. Institutional trust might improve the level of intra-organizational trust and inter-organizational trust, as the proxy of the pleasant level of business climate.

Developing a new direction of trust

After summarizing the previous manuscripts, we then proposed a direction of integrative trust on business performance. In this article, we postulated that institutional trust might directly enhance the level of intra-organizational trust and inter-organizational trust. Intra-organizational trust would perform as a mediating variable to enhance the direction between institutional trust and inter-organizational trust. Then, inter-organizational trust would boost business performance. We proposed the synergy effect of institutional trust, intra-organizational trust, and inter-organizational trust as integrative trust. An integrative trust might develop business performance. We illustrated the proposed model in Figure 1. We constructed the model contributing to resolving previously limited interest in the simultaneous relationship between institutional trust, intra-organizational trust, inter-organizational trust, and business performance.



1. Figure. Effect of integrative trust on business performance

Source: Al-Hakim & Lu, 2017; Davis et al., 2000; Dirks & Skarlicki,2009; Porta et al.,1996; Reimann et al., 2010; Sako, 1992; Vanhala & Dietz, 2015; Wei et al., 2012.

We suggested the concept of institutional trust denoted to the company's trust in the government (Bursian et al., 2015; Rim & Dong, 2018) and various institutions (Askvik & Jamil; 2013). Trust in government illustrated the extent of a company's belief in the quality of a bureaucracy which might operate autonomously from political pressure and had the strength and expertise to administer without having to deal with severe changes in policy, and could provide services to business (Goergen et al., 2013; Porta et al., 1996; Rim & Dong, 2018).

Intra-organizational trust showed an employee's willingness to trust in managers (Dirks & Skarlicki, 2009; Mayer & Davis, 1999) and company's organization (Audenaert et al., 2016; Vanhala & Dietz, 2015) based on the expectation that the management would take specific decisions that could be vital to employees (Dirks & Skarlicki, 2009; Guinot & Chiva, 2019). Trust in managers indicated that the employee would believe that the manager could apply a high level of skill to solve a particular problem. As a result, the manager had a positive influence on the employees' performance (Davis et al., 2000). Finally, trust in a company's organization defined the employee's belief in the company organization operating competently, being concerned about staff well-being, and treating stakeholders honestly and fairly (Vanhala & Dietz, 2015).

Inter-organizational trust explained a declaration of trust to the business partners, clients and contractors, and the network. The company might believe that their corporate partners would comply with the promises (Sako, 1992; Sako & Helper, 1998; Brower et al., 2009; Iancu & Nedelea, 2018), might behave or respond in a predictable and mutually acceptable manner (Porta et al., 1996; Castaldo et al., 2010).

Business performance denoted the ability of the company to maximize profit relating to assets, equity, and capital (Reimann et al., 2010; Al-Hakim & Lu, 2017). We suggested profitability consisting of Return on Asset (ROA), Return on Equity (ROE), Return on Capital Employed (ROCE), and Return on Sales (ROS) (Reimann et al., 2010).

Conclusion

A substantial number of studies revealed a positive effect of intra-organizational trust on business performance. Moreover, scholars examined the positive relation between inter-organizational trust and corporate performance. Institutional trust also provided support for a significant business climate. A higher level of trust had a direct influence on business

performance (Davis et al., 2000; Dyer & Chu, 2003; Galford & Drapeau, 2003; Allen et al., 2018). However, some scholars examined that various types of trust might perform as a mediating variable. Trust might have a direct influence on business performance (Zaheer et al., 1998; Palmatier et al., 2006). This study also propositioned that institutional trust (Porta et al., 1996; Goergen et al., 2013; Rim & Dong, 2018) might enhance intra-organizational trust and inter-organizational trust to improve business performance. Previous research examined institutional trust, intra-organizational trust, and inter-organizational trust in some discrete studies. On consequence, this study proposed a model of integrative trust, consisting of the concurrent institutional trust, intra-organizational trust, and inter-organizational trust, would improve business performance. Then, we could implement the proposed model to perform future research obtaining the empirical findings.

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THE EFFECT OF CORPORATE SOCIAL RESPONSIBILITY ON SMALL AND MEDIUM ENTERPRISE SUSTAINABILITY: BIBLIOMETRIC ANALYSIS

Gemechu Abdissa Shuremo - Csaba Bálint Illés - Anna Dunay - Mehrzad Abdi Khalife

Abstract: - The purpose of this study is to analyze the overall scientific studies done on the impact of corporate social responsibility on small and medium enterprises sustainability across the globe by using bibliometric analysis. 289 articles which were published over the years 1975-2020 was retrieved from Web of Science core collection database on 28th of April 2020 for analysis purpose. The findings showed that, small numbers of scholars from developing countries were participated on the scientific work of the subject. Specifically, only South Africa and Ghana produce few articles from Sub-Saharan African Countries. Thus, academicians and practitioners from low-income countries have taken note to contribute their own part on this scientific literature as almost none of the authors with an affiliation to developing nations were participated on the subject.

Keywords: Corporate Social Responsibility, Small and Medium Enterprise, Sustainability, Bibliometric Analysis.

JEL Classification: B52, Z13

Introduction

In today's competitive world, society expects more from business firms to be ethical and socially responsible more than the legal requirements. The most crucial force in all organization at the moment is the economic, environmental and sociopolitical shifts taking place in the world (Martínez, et al., 2018). Business stakeholders are more concerned about company engagement in numerous economic, environmental, and social aspects than solely profit making to stay in operation. In this regard corporate social responsibility is an ever-increasing important component of business world.

Even though the concept of corporate social responsibility was started to be studied in the mid- twentieth century, it has been significantly developed in the past two decades (Carroll & Shabana, 2010). Corporate social responsibility includes different aspects like stakeholder's involvement, economic growth, environmental conservation, ethical approach, responsible practice, moral obligation, accountability, and corporate responsiveness (Rahman & Post, 2012). Sustainability theory is one of the major streams of literatures targeting not only investors, but also the well-being of society and customers in the form of practices focusing at conserving natural environment (Valdez Juárez, 2017). The rise of international quality and environmental certifications are focused on corporate social responsibility indicates the importance of such certificate in increasing competitiveness among companies (Lee, 2008).

Enormous researches have been done on corporate social responsibility specifically in the past two decades (Jamali & Karam, 2018). So that we have now significant understanding of drivers and effects, the organizational importance, and contextual variety of corporate social responsibility (Aguinis & Glavas, 2012). However, in order to have a basic common understanding about corporate social responsibility, it is better to use theory reviews for explaining corporate social responsibility in more detail (Frynas et al., 2016).

There are two major forms of theories which are employed in the corporate social responsibility literature (Mellahi et al., 2016). These are theories linked with the internal and external drivers of corporate social responsibility. Institutional theory, resource dependency theory, stakeholder theory, and legitimacy theory are external which analyses the relationship between the company

and society. Whereas agency-based theory and resource-based theory are focus on identifying company management and social values of employees of the organization.

Small and Medium Enterprises (SMEs) have a crucial role to play in building a sustainable future through responsible business practices and there is a clear business case for SMEs to join this challenge. Responsible business practices are about continuous improvement; combined with sustainability reporting they reinforce each other, helping SMEs integrate sustainability thinking into the organization and capture new value. To be successful, companies cannot be indifferent to the society and environment in which they operate, and this is no different for SMEs. Peaceful conditions, a healthy environment, legal certainty, and good human relations within the company are key elements of business success. SMEs can start by ensuring that their vision, mission, strategy, and business model embrace responsible business practices and consider these practices as critical factors in the SME's future viability.

Corporate social responsibility helps small and medium enterprises (SME) to gain several advanatages like reputation, trust, motivation, attracting better employees, cost reduction and increased revenues (Zafar & Farooq, 2014). Since there are ample literatures that have various models to integrate and determine corporate social responsibility in big organizations, the best option for small and medium enterprise (SME) is to adapt this models and attempt to gain similar results as in large organization. The models are centered on activities, social, environmental (ethical-legal) and economic (Geva, 2008; Ma, 2012).

Even though small and medium enterprises (SME) have a vital role in implementing corporate social responsibility (Jansson et al., 2017), there is a lot of misunderstanding that corporate social responsibility is only applicable in giant and very productive business organizations (Meyer et al., 2017). In large business organizations as well as small and medium enterprise (SME), corporate social responsibility is serving as a channel in which the business firms can contribute to societal goal (Schmidt et al., 2018).

However, literatures regarding corporate social responsibility were centered on large business organization and multinational companies in which small and medium enterprises (SME) received little attention from researchers and practitioners (Attig, et al., 2013). There is a very scant research done on corporate social responsibility of small and medium enterprises in developing countries (Ciliberti, et al., 2008). The authors indicates that contribution of corporate social responsibility in small and medium enterprises (SME) both in developed and developing nations has been seen as extra activity and are not forced to generate a report for environmental and social sustainability as required in large firms.

Studies conducted by (Ciliberti et al., 2008; Jamali et al., 2009) also confirms very scant scientific production was cultivated up to now on the impact of corporate social responsibility on small and medium enterprise sustainability. Thus, it is very important to conduct a bibliometric analysis regarding the scientific production on the effect of corporate social responsibility on SMEs sustainability which was supported by content analysis to see line of research employed by different authors related to the subject matter.

To know the progress of research on specific area, bibliometric study is a special tool of quantitative analysis of scientific publications on that field (Sarkar & Searcy, 2016). According to (Álvarez-García et al, 2018), bibliometric analysis provides an important information for research scholars about the subject matters under the study. The growth of publication over time, highly productive authors, influential article and authors are among the particulars that bibliometric analysis can identify to measure specific subject (Milian et al., 2019). Furthermore bibliometric analysis builds the general picture of specific research field by showing its developments in the history of the subject using number of publications and citations as an indicator (Martínez-López et al., 2020).

Studies showed that corporate social responsibility is the most essential scientific field with difficult problem to measure due to the absence of clear definition and interpretation of

the concept (Carroll, 2000; Gjølberg, 2009; Heinz, 1976). Moreover, research can not disclose the keywords that emphasizes on the fact, siginificance of keyterms, as well as the map of their interrelationship and development (Sarkar & Searcy, 2016). The authors also underline the importance of quantitative bibliometric analysis to fill the gap existed in qualitative analysis of corporate social responsibility.

Study conducted by Hernández-Torrano & Ibrayeva, (2020) indicates that "the bibliometric analysis (map of the links between the keywords, the map clusters of research areas, map of the density of citations of the analysed keywords) shows that an important area of research in the field of corporate social responsibility is the results of the implementation of this concept. For these results to constitute a reliable source of information for the interested parties (stakeholders), they must be subjected to a process of measurement.".

Thus, among the significant indicators of bibliometric analysis; countries dedicating on the subject, journals that concentrating on the research area, number of publications with their respective citations, authors contributions, keyword network, keyword correlation, content analysis, trend of publication, top cited article and hot articles in this topics are the most observable indicators the authors of this article employed.

Therefore, the subsequent parts of this paper were structured as follows: section two outlines the methodology part of the study followed by section three in which method of data acquisition was addressed. Section four delineates the results, analysis, and discussion part of the paper whereas section five, the final part of this paper covers conclusion section of the study.

Materials and Methods

For scientometric investigation in the Corporate Social Responsibility of Small and Medium Enterprises starts with research questions. Based on the research questions, the different analysis use. The research questions are as follow:

- Research question 1: what is the trend of publications, and which countries are contributing more in the subject?
- Research question 2: What is the relation of the countries and how these countries are cooperating in this field of science?
- Research question 3: What are the top cited articles and what are the hot articles in this topic? and
- Research question 4: What are the major contents in this field of study and how these contents relate to each other?

The number of publications is a reliable indicator of the growth in the scientific subject, so the number of publications in the last years recorded and compared in this study (Ahmed & Huang, 2019; Det Udomsap & Hallinger, 2020; Hernández-Torrano & Ibrayeva, 2020b; Xie, Zhang, & Duan, 2020a, Abdi Khalife et al., 2020). The top contributors' countries and social networks of those top contributors are two other parameters of CSR and SMEs' bibliometrics analysis. These two shows the geographical distribution of contributors and the cooperation network of these contributors (Peng et al., 2020; Veloutsou & Ruiz Mafe, 2020; Zou et al., 2018). Visualization of the network helps scholars to have systematic thinking on the subject (Pauna et al., 2019). For the network analysis VOSviewer software used in this study (Corsi et al., 2020; Lawal et al., 2019; Yildiz, 2019). The VOSviewer software based on natural language processing (NLP) provides the clustering, mapping and visualization of the bibliometrics' networks (van Eck & Waltman, 2010).

The top-cited articles which are the most influenced article in the subject are essential to know the direction of the research in the topic (Hernández-Torrano & Ibrayeva, 2020a; Martínez-López et al., 2020b; Veloutsou & Ruiz Mafe, 2020; Xie et al., 2020a). The top-cited articles for the last two years represent the hot topic in the subject. To dig deeper into content

of publications, this article uses keywords analysis. Keywords are valuable representatives of the context of the articles (Liu, 2013; Veloutsou & Ruiz Mafe, 2020). Top used keywords plus these keywords network used for analyzing the situation of the subject. The top occurred keywords show the topic's top topic, and the network shows how these topics are related to each other. To finding study development potential, the keyword correlation matrix identified (Abdi Khalife et al., 2020). In this matrix, the relation between top occurred keywords identified. The correlation number shows the number of times the two keywords appeared together. If the number is low, it shows there is a high potential for future development.

Data acquisition

The bibliometric database employed for this study was Web of Science (WoS) which has been serving as the main source of data for most scientific publications (Hernández-Torrano & Ibrayeva, 2020; Merediz-Solá & Bariviera, 2019; O'Neill et al., 2020; Peng et al., 2020; Shonhe, 2020; Xie et al., 2020). Web of Science contains numerous bibliographic collections and utensils for data analysis that aids researchers to evaluate scientific research performance (Albort-Morant & Ribeiro-Soriano, 2016).

For this study two main keywords considered, first is corporate social responsibility in short CSR and second one is a Small and Medium enterprise in short SME. In the literature of these two main keywords different variation of these keywords has used. Hence, based on historical investigation of these two concepts following variation of these keywords chose for conduct search: "Corporate responsibility" or "corporate sustainability" or "corporate social responsibility" or "CSR" or "corporate sustainable development" or "corporate accountability" or "creating shared value" or "social wellbeing" or "social responsibility" "small and medium-sized enterprises" or "small and medium sized enterprises" or "small and medium-sized businesses" or "small and medium businesses" or "small & medium enterprises" or "small & medium businesses" or "small & medium-size businesses" or "small & medium-size enterprises" or "SME" or "SMEs" or "Small micro and medium enterprises" or "SMME" or "Small businesses" or "family businesses" or "family enterprises" or "small and medium scale enterprises" key words were employed to extract data from Web of Science core collection database. 289 articles which were published over the years 1975-2020 was retrieved from Web of Science core collection database on 28th of April 2020 and saved in the form of "Tab-del: mited (win, utf-8)" for analysis purpose.

Results, Discussion and Analysis

Trend of Publication in Web of Science Core Collection

The 289 articles from Web of Science Core Collection database were published intensively over the year from 2005-2020. From figure 1 below, one can observe that 2017 was the highest with 40 publications in a year. We also observe from the figure low growth rate between 2005 and 2008, higher growth rate 2009 to 2017 and a short declined in 2018 and 2019 rebounded back. The trend line indicates, the productivity of the publication is increasing over the observed years since 2005. We can examine with the aid of estimated trend line that publication on the field under study will continue to increase over the next five years if the value of R^2 1 or close to 1 (Crişan-Mitra, 2015). From figure 1, $R^2 = 0.8147$ which indicates the data used for this study shows a good adjustment to predict the publication growth for the next five years.

The first 5 years (2005-2010) of the publication trend in this field of science shows low production with publication index of 10.33 papers per year as it is in commence stage of the study of the subject. A significant growth of scientific publication has been noted from the year 2011-2017 with production index of 24 articles per year signifying the period in which academicians and practitioners were showing their attention in the subject. The productivity

index from 2018-2019 was high relative to the previous with publication index of 24.5 papers/year.

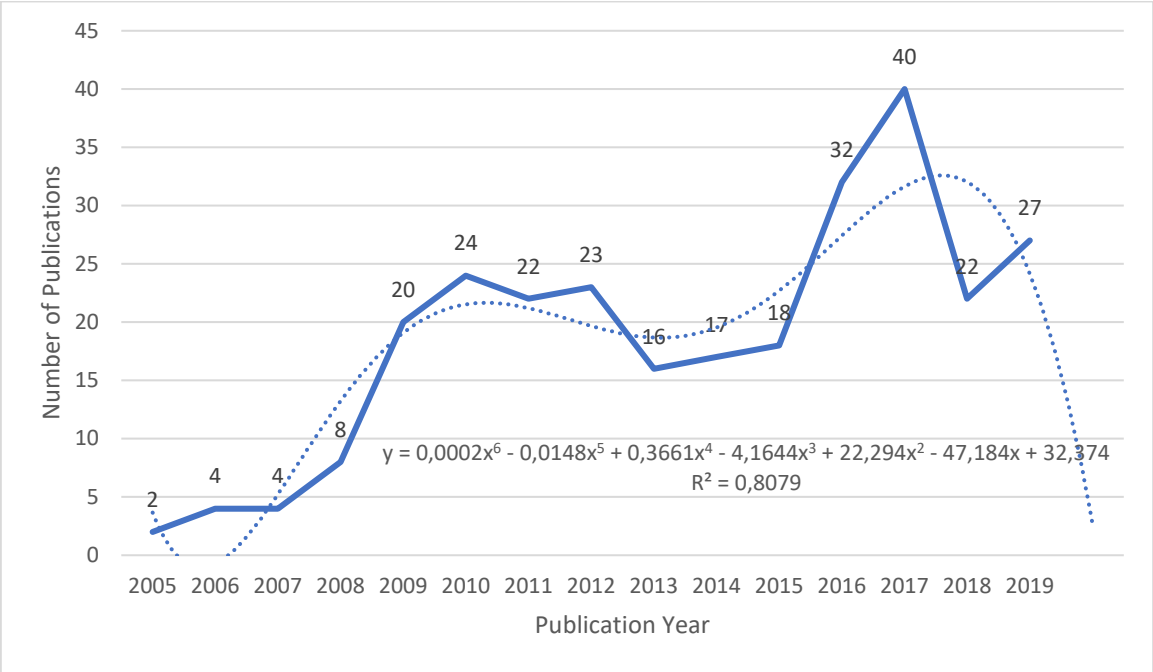

Figure 1: Trends of Publication in Web of Science
Source: own compilation from WoS

Contributing Countries on the impact of CSR on SMEs Sustainability

The relation of the authors by country is assessed as presented in the following Table.1. From the table, authors affiliation from Spain is the highest contributors with 33 publications followed by Italy and England with 29 & 28 publications respectively. Interestingly, many countries are cooperating in this field of science and have a collaborative relationship. Fig. 2 shows the top 27 countries with at least 4 publications.

Accordingly, countries authorship network map which was depicted in fig.2 below showed that Italy and Cyprus have a good cooperative relationship on the subject matter under study which was showed by the arrow in blue colour. Similarly, England, Ghana, and India showed a strong collaborative relationship indicated with the arrow in red colour. Peoples' r China has a relationship network with Norway which is indicated by an arrow with pink colour. USA and Denmark, France with Moroco, Netherlands with Canada, and Spain with Colombia have a good collaborative relationship.

The number of research done on corporate social responsibility of samll and medium enterprise in developing countries is very scant (Ciliberti, et al., 2008). Inline to Ciliberti, et al. finding, finger counted developing countries were participated as we refer from the following analysis table showing number of publications by countries. South Africa and Ghana is the only African countries participated in the subject with six and four publication from Sub Saharan Africa Countries (SSA). This indicates that less attention was given for the subject in the region.

Table 1: Number of publication by Country

Row	Countries	Number of publications	Row	Countries	Number of publications
1	Spain	33	15	Norway	6
2	Italy	29	16	South Africa	6
3	England	28	17	Canada	5
4	Peoples r China	25	18	Mexico	5
5	Romania	22	19	Morocco	5
6	France	19	20	Colombia	4
7	USA	15	21	Cyprus	4
8	Netherlands	12	22	Finland	4
9	Malaysia	11	23	Ghana	4
10	Poland	11	24	Greece	4
11	Australia	8	25	Lebanon	4
12	Denmark	8	26	New Zealand	4
13	Czech Republic	6	27	Pakistan	4
14	India	6			

Source: own compilation from WoS

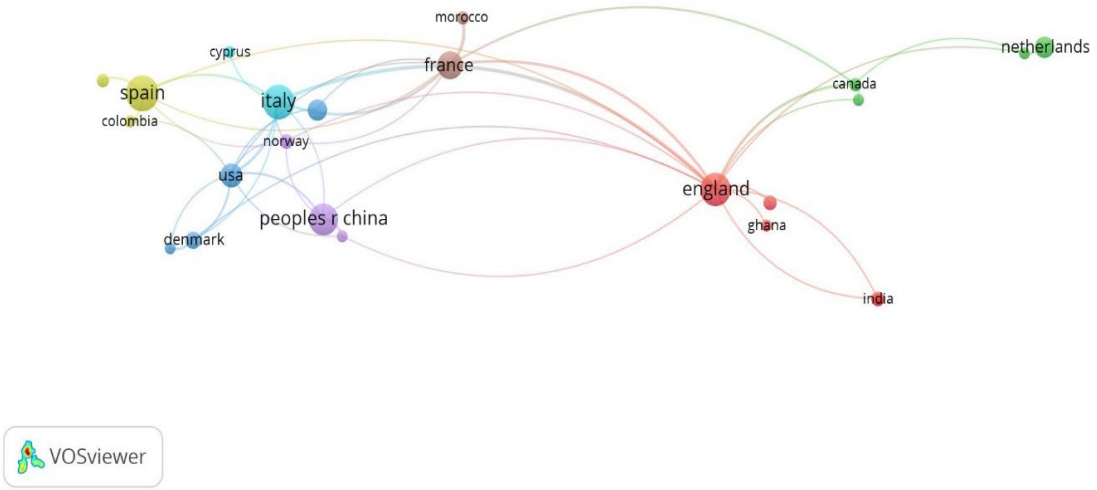

Figure 2: Countires authorship network

Source: VOS Viewer

Citation Network of Countries on the impact of CSR on SMEs Sustainability

In the following table 2 and figure 3, country's publication cluster and citation networks were examined respectively. Top 27 countries were categorized in to 10 clusters from which Romania and Czech Republic are standing alone. Countries in cluster 1 have siginificant number of publication followed by cluster 4 and 3.

The countries citation network in figure 3 indicating authors in Romania, Italy, Norwegn, Malesia, and Greece are citing each others work which was indicated by the blue colour and nodes eventhough they are in different cluster. Similarly, Denmark, England and Lebanon are citing their works from different cluster while France, Canada, Poland, Finland,

and Morocco have also in same citation network and the rest countries are citing each other which was indicated by yellow, green, red, and pink colour and nodes respectively in the visualization map.

Table 2: Cluster of Publication by Country

Row	Countries	Cluster	Number of publications	Row	Countries	Cluster	Number of publications
1	England	1	28	15	Mexico	4	5
2	Ghana	1	4	16	Spain	4	33
3	Greece	1	4	17	Norway	5	6
4	India	1	6	18	Pakistan	5	4
5	South Africa	1	6	19	Peoples r China	5	25
6	Canada	2	5	20	Cyprus	6	4
7	Finland	2	4	21	Italy	6	29
8	Netherlands	2	12	22	Australia	7	8
9	New Zealand	2	4	23	Malaysia	7	11
10	Denmark	3	8	24	France	8	19
11	Lebanon	3	4	25	Morocco	8	5
12	Poland	3	11	26	Czech Republic	9	6
13	USA	3	15	27	Romania	10	22
14	Colombia	4	4				

Source: own compilation from WoS

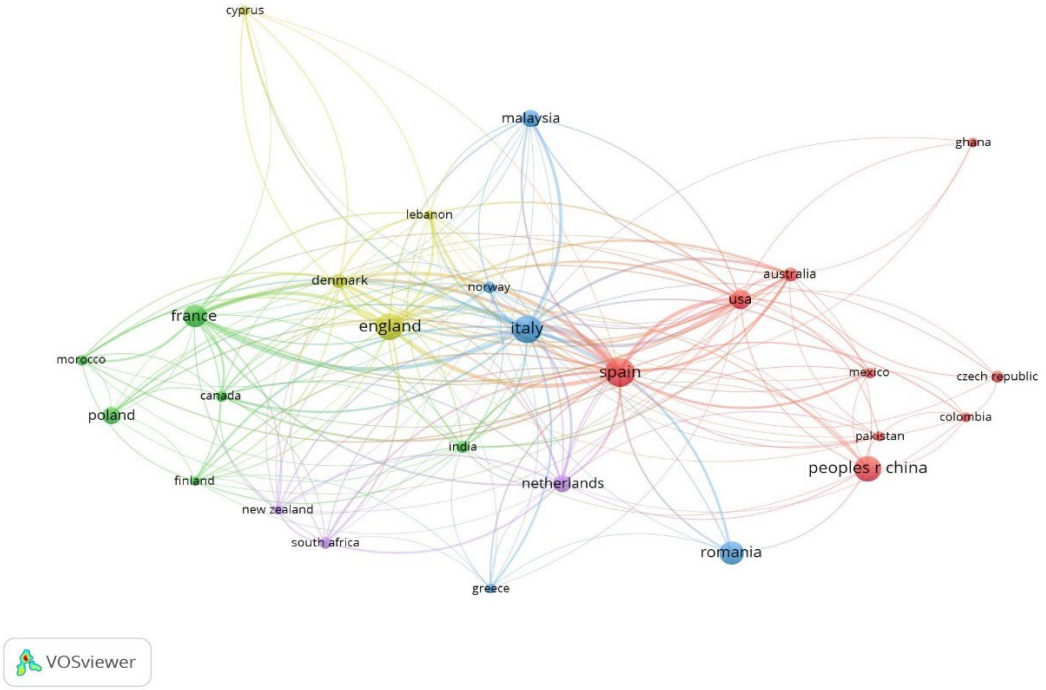

Figure 3: Countries Citation Network

Source: VOS Viewer

Top Cited Articles on the Subject

The following table 2 outlines the top cited articles of corporate social responsibility in SMEs in the rank of highest to the lowest which have more than 100 citations. From the 14 papers with more than 100 citations, only four documents; three from the last rows and the tenth one have less than 10 citations per year. Despite the ranking of the total citation, the fourth paper has the highest citation per year. From the top cited article from the 14 papers with more

than 100 citation, Drivers of environmental behavior in manufacturing SMEs and the implications for CSR (Williamson et al., 2006) stand first with 299 total citation and 19.93 citation/year followed by SMEs and CSR: An approach to CSR in their own words (Murillo & Lozano, 2006) with 271 total citation and 18.07 citation/year. SMEs and the fallacy of formalizing CSR (Fassin, 2008) stands on the last rank of top cited articles with 100 total citation and 7.69 citation/year.

Knowing the occurrence of citation in scientific studies gives an opportunity to identify important publications and an influential researches on the literature (De Bakker et al., 2005). 14 publications of the study have 100-299 citations which were identified as the most influential article in the scientific research literature on the subject under study. These papers were published from 2005-2012 during the first stage of the study on the subject in history.

Table 3 represents articles with high citation in the last two years, years 2018 and 2019. These articles are hot topic in the SMEs' SCR. The top cited article in the last 2 years is a systematic literature review about the integration of SCR in the SME (Ortiz-Avram et al., 2018), this article cited 16 times. At the end of table two articles cited 8 times in the last two years. The role of journal of cleaner production is non-negligible and ranks one and three in that table published in this journal. Sustainability journal is also having two records in that table, and it shows this journal also play significant role in the subject. The second top cited article is considering the role of activist in the European SMEs (Graafland, 2018).

Table 2: Ranking of the Top Cited Articles

Rank	Title	Authors	Publication Year	Total Citations	citation per Year
1	Drivers of environmental behavior in manufacturing SMEs and the implications for CSR	Williamson, Lynch-Wood, & Ramsay	2006	299	19.93
2	SMEs and CSR: An approach to CSR in their own words	Murillo & Lozano	2006	271	18.07
3	CSR strategies of SMEs and large firms. Evidence from Italy	Perrini, Russo, & Tencati	2007	243	17.36
4	Corporate Sustainability and Innovation in SMEs: Evidence of Themes and Activities in Practice	Bos-Brouwers & Hilke	2010	236	21.45
5	SMEs and CSR theory: Evidence and implications from an Italian perspective	Perrini Francesco	2006	231	15.4
6	Investigating Stakeholder Theory and Social Capital: CSR in Large Firms and SMEs	Russo & Perrini	2010	212	19.27
7	Investigating corporate social responsibility in supply chains: a SME perspective	Ciliberti et al.	2008	200	15.38
8	A 'business opportunity' model of corporate social responsibility for small- and medium-sized enterprises	Jenkins	2009	177	14.75
9	Peculiar Strengths and Relational Attributes of SMEs in the Context of CSR	Jamali et al.	2009	153	12.75
10	Corporate social responsibility and corporate performance: the case of Italian SMEs	Longo, Mura, & Bonoli	2005	145	9.06
11	Capabilities, Proactive CSR and Financial Performance in SMEs: Empirical Evidence from an Australian Manufacturing Industry Sector	Torugsa, O'Donohue, & Hecker	2012	127	14.11
12	The effect of buyer pressure on suppliers in SMEs to demonstrate CSR practices: An added incentive or counterproductive?	Baden, Harwood, & Woodward	2009	113	9.42
13	CSR in SMEs: do SMEs matter for the CSR agenda?	Morsing & Perrini	2009	109	9.08
14	SMEs and the fallacy of formalizing CSR	Fassin	2008	100	7.69

Source: own compilation from WoS

Table 3: Hot article: the last two years top articles

Row	Title	Authors	Source Title	Publication Year	Total Citations	Average per Year	2018	2019	2020
1	Exploring the integration of corporate social responsibility into the strategies of small-and medium-sized enterprises: A systematic literature review	Ortiz-Avram, Domnanovich, Kronenberg, & Scholz	JOURNAL OF CLEANER PRODUCTION	2018	16	5.33	0	7	9
2	Does Corporate Social Responsibility Put Reputation at Risk by Inviting Activist Targeting? An Empirical Test among European SMEs	Graafland	CORPORATE SOCIAL RESPONSIBILITY AND ENVIRONMENTAL MANAGEMENT	2018	16	5.33	4	7	5
3	Environmental management and corporate social responsibility practices of small and medium-sized enterprises	Dey et al.,	JOURNAL OF CLEANER PRODUCTION	2018	12	4	1	7	4
4	The Impact of Transformational Leadership on Job Performance and CSR as Mediator in SMEs	Manzoor et al.,	SUSTAINABILITY	2019	11	5.5	0	11	0
5	The role of negative and positive forms of power in supporting CSR alignment and commitment between large firms and SMEs	Harness, Ranaweera, Karjaluoto, & Jayawardhena	INDUSTRIAL MARKETING MANAGEMENT	2018	8	2.67	2	5	1
6	CSR and the Supply Chain: Effects on the Results of SMEs	Valdez-Juárez, Gallardo-Vázquez, & Ramos-Escobar	SUSTAINABILITY	2018	8	2.67	0	5	3

Source: own compilation from WoS

Keyword Analysis

Keyword analysis have a paramount importance for the indexation of all field of studies as this expressions are employed to access documents from scientific data bases very easily(Crişan-Mitra, 2015). Accordingly, table 4 below summarizes top 20 keywords in 289 articles published on corporate social responsibility of small and medium enterprise sustainability over the year 1975-2020. Performance, management, ethics, and perspectives are the most frequently used keywords which indicate these terms are topics related to corporate social responsibility and sustainability of small and medium firms.

According to (Okubo, 1997), the occurrence of group of terms can help to build visualization map to know most important themes of the subject under investigation and the relationship among the keywords. Considering this, figure 4 displays the keyword network visualization diagram/map of this specific study. As mentioned above; performance, ethics, management, strategies, perspectives, impacts are the most widely used terms represented by large nodes in the keyword network map indicating that, this are the main themes of the 289 articles retrieved for this study over the specified time period.

Generally, the summary table of keyword frequency and keyword network map display the same output as we see. It signifies that, the solid linkage amongst the theme keywords are the base for the scientific work of corporate social responsibility for the sustainability of small and medium enterprise. Business, competitiveness, financial performance, firm performance, framework, impact, innovation, sustainability, and sustainable development keywords are included in cluster 1 of table 4 and indicated by red color in figure 4. Behavior, business ethics, CSR strategies, ethics, governance, model, and perspective keywords are in cluster 2 of table 4 and indicated by green color in figure 4 whereas management, performance, stakeholders, and

strategies keywords are in cluster 3 of table 4 and indicated by blue color in figure 4 keyword network maps.

Keyword correlation matrix is using to identify the potential growth for the keywords in the subject. Table 5 shaped to show the correlation matrix of top ten keywords in the subject. Numbers in the correlation matrix show how many times the two keywords in correlation came to gather in the history of the subject. The lower the correlations number the higher the potential of the future development. Refer to table 5 there are two zeros, one between "performance and financial performance", and the second is between "business ethics and strategy". For the first case because both keywords are referring to performance and the duality of "performance and financial performance" does not have any valuable meaning. But, for the second case there is high potential between "business ethics and strategy". To look deeper in the matrix, it is obvious the "business ethics" has high potential for future development in correlation with the other keywords, because it has low correlation number with other area of research, mostly one and a two number. In the other part of the matrix number one correlation can be seen and those positions have high level of future growth potential. "Impact-perspective", "innovation-impact", "strategies-financial performance", and "sustainability-innovation" are the keywords with the correlation number one.

Table 4: Top 20 Keywords occurred in publications

Row	Keyword	cluster	Occurrences	Row	Keyword	cluster	Occurrences
1	Business	1	14	11	business ethics	2	16
2	Competitiveness	1	12	12	CSR strategies	2	11
3	Financial Performance	1	27	13	ethics	2	36
4	Firm performance	1	10	14	governance	2	13
5	Framework	1	11	15	model	2	13
6	Impact	1	24	16	perspective	2	30
7	Innovation	1	22	17	management	3	37
8	Sustainability	1	18	18	performance	3	49
9	sustainable development	1	10	19	stakeholders	3	13
10	Behavior	2	12	20	strategies	3	22

Source: own compilation from WoS

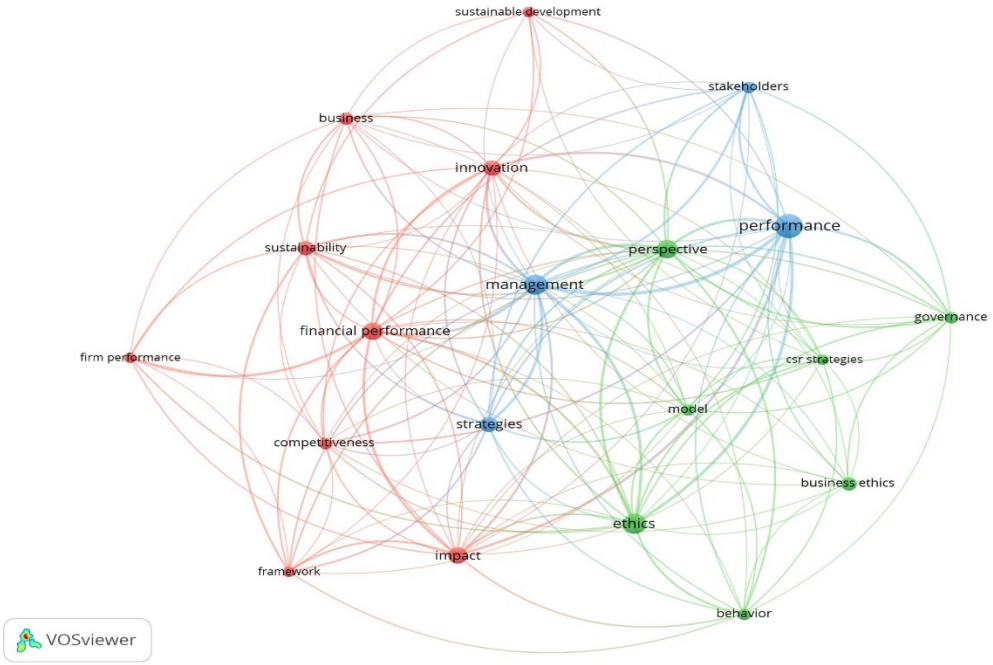

Figure 4: Keywords Network

Source: VOS Viewer

Table 5: Top 10 Keywords Correlation

Row	Occurrences	Keyword	Performance	Management	Ethics	Perspective	Financial performance	Impact	Innovation	Strategies	Sustainability	Business ethics
1	49	Performance	-									
2	37	Management	14	-								
3	36	Ethics	10	9	-							
4	30	Perspective	8	10	7	-						
5	27	Financial Performance	0	8	6	3	-					
6	24	Impact	8	5	3	1	7	-				
7	22	Innovation	6	7	3	4	5	1	-			
8	22	Strategies	4	8	2	4	1	2	3	-		
9	18	Sustainability	2	5	2	4	2	2	1	3	-	
10	16	Business Ethics	2	1	1	1	1	1	1	0	1	-

Source: own compilation from WoS

Conclusion

The study of corporate social responsibility impact on small and medium enterprise sustainability is growing into a common research field in today's scientific community. Research on the subject get an attention of scholars in the year 2005 and started to be indexed in web of science database since then. This study by search in the web of science core collection scientific database identified 289 publications records in April 2020. After the commencement of scientific study on the subject, it showed a rapid growth in 2009 and the level of publication kept the almost the same level, since that period of time. However, the productivity index of the subject in recent years started to decline specifically over the years 2018-2019 after a dramatically growth in 2017, overall, it seems the subject is reach to its maturity level.

In relation to author's country affiliation, Spain stands first followed by Italy, England, Peoples r China, France, USA, Denmark and so forth. From this observation, scholars from developing countries can take note to contribute their own part on this scientific literature as almost none of the authors with an affiliation to developing nation were participated. Abdissa & Fitwi (2016) indicates in their study, "Small and medium enterprise contributes over 60% of GDP and over 70% of total employment in low-income countries, while they contribute over 95% of total employment and about 70% of GDP in meddle-income countries". However, small and medium enterprise may generate negative social and environmental impacts if firms cannot include the issue of corporate social responsibility in their strategic plan to sustain their business (Baumgartner & Rauter, 2017; Martinez-Conesa et al., 2017). Thus, academicians and practitioners from Sub-Saharan African countries and low-income countries in general must get an alarm to increase the number of publications with strong scientific findings on the subject that integrate CSR and SME.

The top cited articles are the most influential publications that put a foundation ground for other researchers to concentrate on the subject. Evidence from data output showed, a significant growth of scientific publication has been noted from the year 2011-2017 with productivity index of 24 article/year signifying the period in which academicians and practitioners were showing their attention in the subject which is more than two times of the previous period index. In the last two years top cited articles introduced as hot topic in the subject. Six articles with more than eight citations introduced. The significant roles of the two major publications are significant. The first one is Journal of cleaner production and second one is sustainability. The top hot article is an article about the strategies of CRS in SMEs with application of a systematic literature review.

With respect to keyword analysis, performance, management, ethics, and perspectives are the most frequently used keywords and have strong linkage with one another as showed in keyword network visualization map. By use of correlation matrix the future potential growth keyword identified. Application of dual keywords suchlike: "business ethics and strategy", "Impact-perspective", "innovation-impact", "strategies-financial performance", and "sustainability-innovation" along with different variation of business ethic keywords are high potential keywords for future development. From this output, we concluded that, these terms are the words that are related to corporate social responsibility and sustainability of small and medium firms and are the theme keywords in scientific work of the subject.

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INVESTIGATION CORRELATION STUDY OF THE TOURISTIC USE OF MEDICAL SPA SERVICES IN A HUNGARIAN SPA TOWN

Zoltán Szabó

Abstract
In the last years trought the apperciation of health the tourism recognized the importance or health tourism based on medical water. Therefore there is a growing interest to know the uses of medical spa services. Aim of the study to contribute the limited research on the consumer behavior of the medical spa services. Specifically, the study explores to use of spa services among adult Hungarian tourists, with using socio-demographic characteristics. To this, I conducted a questionnaire survey and used univariate descriptive statistics and bivariate crosstable analyze for data processing. Six statement follows from the results, which help to the tourism planners make better use of new market opportunities, to the spa managers make better meet guest needs and in effective bath management.

Keywords
Consumer behavior. Health Resort. Spa Loving. Spa Services. Tourism.

JEL Classification: I31, J10, L68, M21, Z30, Z31, Z32.

Introduction

During the recent decades, touristic health development trips become more and more popular worldwide, due to the increasing importance of health, as the most valuable human asset (Alén et al. 2017). It is a well-known fact, that bad health results in significantly deteriorated life (Kopp 2007, Riskin 1996). People leading a health-conscious lifestyle show an increasing interest for health-related products and services (Printz-Markó 2019, Mühlhausen 2001, Kraft 1993). The trips related to medical tourism in order to receive the necessary treatments can either be preventive, (medical) treatment-, or aftercare-oriented (Hojcska 2019a). Therefore, a definition of medical tourism could be that its participants travel to a place out of their habitation in order to use health-related services (Printz-Markó – Albert Tóth 2018, Hojcska 2017a, Bauer 2008). According to predictions, a growing number of Hungarian population realizes that adequate health conditions constitute a foundations for work productivity as well as for emotional, intellectual and physical development (Botos – Kovács 2018, Baji 2015).

In Hungary, the social and economic transformation of the 1990's influenced the state-financed development of medical touristic institutions (Nemes 2009), being in pursuit of the service qualities provided by the best medical tourism centres of developed countries (Jandala et al. 2010). From 2000, the developments have gained a new momentum, resulting in the building of new bath complexes as well as medical- and wellness hotels, in parallel with the renovation and development of the existing ones (Mundruczó – Szennyessy 2005, Budai – Székács 2001). Due to these developments, there are several spa complexes in Hungary, which according to international standards, include adventure- and swimming pools as well as medical spas, and these have a significant business traffic from a touristic aspect (Hojcska 2019b, KSH 2013).

The specialized literature concerning the subject univocally agrees that the development of medical tourism based on natural capabilities is the essential breakthrough point of touristic industry (Lővei-Kalmár 2018, Li et al. 2017, Kincses 2014, Kulcsár 2013, Garcia-Altes 2005, Németh – Farkas 2005). Due to its outstanding thermal water supply, Hungary could be a highly relevant participant at the market of medical spa services; however, in order

to achieve this status, the balance and security of domestic market is of fundamental significance (Bíró et al. 2019). The actuality of the subject comes from the fact that the Hungarian market of demands in medical tourism is partially unknown, since recent researches have not investigated the correlations of the use of spa services within the spa resorts, thus this study fills in an existing gap. The novelty of the subject is provided by the fact that the use of the research results can promote the planning and development of medical tourism in Hungary, while at same time they also provide support for the spa management in the introduction of new techniques as well as in the development of cost-effective solutions and the economies of scale of services (Boros et al. 2012).

The objective of the research is to find the correlations concerning the use of spa services amongst spa-loving Hungarian adult population in order to understand the consumer behaviour of the use of spa services.

1. The Development of Kehidakustány and its Spa Resort

Kehidakustány is located in the Western Transdanubia region of Hungary, in the Northern part of Zala County, 24 kilometres from Keszthely and 30 kilometres from the county seat Zalaegerszeg, in the neighbourhood of internationally renowned spa cities (Hojcska 2017). Kehidakustány was formed by the unification of three, previously independent small villages, Kehida, Kustány and Barátsziget (Szóládi 2003). Kehida once had a central role in the county, as due to its location it provided a gathering place for the nobles of the county. The first written record about Kehida, is from 1232; during Hungarian history, the village was linked with several renowned noble houses as the Koppányi, Kanizsai, Deák, Hédervári, Szentkirályi, Széchenyi and Károlyi families (Mészáros 2007). The first written record about Kustány is found in the charter of 1181; and the village lost its independence during its merger with Kehida in 1977. Barátsziget was attached to Kehida in 1939 (Dominkovits et al. 2007).
During a research for drinking water base in 1978, thermal water – with a temperature of 49°C, and with especially high calcium-magnesium-carbonate content – was found in Kehidakustány in a 203 metres deep drilled well (Table 1).

Table 1 The chemical composition of the Kehida-Thermal Medical and Adventure Spa Resort

Components			
Cations		**Anions**	
Potassium	7,90 mg/l	Nitrate	not detectabel
Sodium	35,00 mg/l	Chloride ion	8,000 mg/l
Ammonium	0,53 mg/l	Bromide	0,090 mg/l
Calcium	**80,30 mg/l**	Iodide	0,028 mg/l
Magnesium	**30,50 mg/l**	Fluoride	2,500 mg/l
Iron	0,13 mg/l	Sulphate ion	46,000 mg/l
Manganese	not detectable	**Hydrogen carbonate**	**427,000 mg/l**
-	-	Sulphideion	3,200 mg/l
-	-	Dissolved phosphate	0,050 mg/l
Total	**154,36mg/l**	**-**	**486,87 mg/l**

Source: Based on data of the Kehida-Thermal Medical and Adventure Spa Resort Operating ans Service Ltd., own editing

In order to use the water for touristic purposes, six open-air bath pools were constructed in 1985, supplemented by a cold-water swimming pool in 1986 (Fejér 2015). From this time on, the premises of the thermal resort had a large number of visitors from May to September. The operating-owner of the thermal resort, the City Government of Kehidakustány got into a situation in 1998, that it was not able to operate the resort – still being a source of relevant income – in an economically efficient manner, according to new touristic needs. By this time, the City Government of Kehidakustány conceived a development purpose, to create a medical-touristic and recreational content befitting international standards, built on the excellent natural abilities and thermal water supply of Kehidakustány. In order to accomplish this purpose, a lease agreement for the operation and development of the thermal resort was created between the City Government of Kehidakustány and Kehida Termál Ltd. in 2000. In order to accomplish this purpose, a lease agreement for the operation and development of the thermal resort was created between the City Government of Kehidakustány and Kehida Termál Ltd. in 2000. The first stage started at the 16th of December, 2000, with a ground-breaking ceremony, and during its completion, 32 four star hotel rooms, the Deák Restaurant, the self-service restaurant, the cafeteria, 8 business premises, the management offices, a conference room for 100 people and a dressing room with 600 spaces were built. The cost for stage one was 927 million Forints, which consisted of 150 million Forints government support, 320 million Forints loan and 457 million Forints own funds. The 640 million Forints government funds received from the SZT-TV-1/01/03/02 application – calling for support for the purpose of thermal bath expansion and creation as well as related infrastructural and environmental development – presented to the Széchenyi Plan system of applications in 2001, provided the coverage to the completion of second and third stages. The result of this development was the creation of the medical and bath complex with its medical offices, the indoor medical- and adventure pools, the outdoor adventure pool, the saunas, and the indoor and outdoor spa complexes with their respective 815 m^2 and 852 m^2 of water surfaces. In the course of a fourth development stage, the most important element was the development of a commercial accommodation complex in order to reach higher touristic standards. Its course included the building of the medical hotel with 250 beds, as well as the Kehida Holiday Village with its 15 family apartments in 4 premises, and the Hertelendy House with its 24 standard double rooms. The thermal water found at Kehidakustány was declared to be medical water by the National Healthcare and Chief Medical Officer's Services in 2002. As a result of these developments, the Kehida-Thermal Medical- and Adventure Spa Resort and the commercial accommodation premises were opened in March 2003, as an up-to-date health complex even by international spa tourism standards. Further developments were carried out from own funds. The Deák Restaurant was extended, two outdoor kamikaze-slides were built, new catering premises, as the roaster and pancake pavilions were established, and finally, the northern entrance of the spa resort was created. The number of spa guest was already significantly affected by the developments, as the number of annual guests before the investments was about 120-150 thousand people, while in the years following these projects in increased to about 370-410 thousand visitors. Due to the spa development, commercial accommodation premises were created in the village in a fast pace in the form of guesthouses and pensions, whose significance was also seen in the further increase of the incomes of city government, thus making the development of local infrastructure possible. Due to the developments, the Kehida-Thermal Medical and Adventure Spa Resort was declared to be a medicinal spa by the National Healthcare and Chief Medical Officer's Services in 2014, and later in 2016, the spa resort and its direct environment was declared as a health resort by the name of "Kehidakustány Health Resort".

2. Medicinal bath services in the Kehida-Thermal Medical and Adventure Spa Resort

According to international health-touristic needs, in the Kehida-Thermal Medical and Adventure Spa Resort, spa services are divided into three departments; a Wellness & SPA department, the Sauna Oasis department and the Bathing department. The Wellness & SPA department offers massages, body treatments, aromatic baths and solarium, as well as beauty care, fitness and sports services. At the Sauna Oasis department, there are Finnish saunas, aroma- and music therapy cabin, infra-cabin, steam bath, a Kneipp treading pool and Jacuzzis. The bath department consists of three parts, the Adventure bath, the strand baths and the Medicinal baths, in which there are 15 pools, and altogether 2400 m2 of water surface awaits the visitors, supplemented by a three hectare large park. The 34-36 °C waters of the 5 medicinal pools of the Medicinal baths serve prevention, cure and rehabilitation (Table 2).

Table 2 The medicinal pool types and water temperature

Number	Pool types		Temperatue
1.	indoor	Circular sitting pool with medicinal water	34-36°C
2.		Medicinal pool with weight bath and neck shower	
3.	outdoor	Sitting pool with medicinal water	
4.		Roofed sitting pool with medicinal water	
5.		Large sitting pool with medicinal water	

Source: Based on data of the Kehida-Thermal Medical and Adventure Spa Resort Operating ans Service Ltd., own editing

In an indoor bathing hall, surrounded by a glass wall, there is a circular sitting pool, as well as a medical pool with weight bath and neck shower. In the recreational room of the Medicinal baths, there is a fountain, whose water is also perfectly suitable for drinking cures; its regular use is recommended for digestive problems. In the surroundings of the medicinal pools, there are tranquil resting places, created exclusively for adults.

3. Materials and methods

In order to reach my research objectives, I have chosen questionnaire survey as a quantitative research method. The survey measured the frequency of the use of Medical bath services by the tourists visiting the Medicinal and Adventure Baths of Kehida-Thermal Medical and Adventure Spa Resort. Seven further questions dealt with the socio-demographic characteristics of the tourists (Takács 2016). The instrument of data collection was a printed survey, which was sent to the interviewees by the help of a mediator. The selection of respondents was conducted with a randomized method (Babbie 2017) in the Medicinal and Adventure Baths of Kehida-Thermal Medical and Adventure Spa Resort. The respondents were required to be adult Hungarian citizens. The planned time of the data collection spanned from August 1. 2019, until the reception of 200 properly filled survey data sheets, which happened on the 18th of August 2019.

Concerning the socio-demographic characteristics of the 200 valid respondents, I successfully reached middle-aged Hungarian middle class in an extended sense (Table 3).

Table 3 Socio-demographic characteristics of respondents (N=200)

Characteristics of respondents		main	percentage
Gender	Woman	122	61.0%
	Man	78	39.0%
Age	18-39 years	101	50.5%
	40-59 years	68	34.0%
	above 60 years	31	15.5%
Highest level of education	Basic level	6	3.0%
	Intermediate level	135	67.5%
	Superlative level	59	29.5%
Economic activity	Active worker	153	76.5%
	Retired	30	15.0%
	Inaktive	17	8.5%
Family status	Single	50	25.0%
	Live in relationship	150	75.0%
Own sense of revenues	Below average	9	4.5%
	Average	171	85.5%
	Above average	20	10.0%
Habitat	Urban	124	62.0%
	Village	76	38.0%

Source: own calculation, own editing

The age groups of the respondents (39% men, 61% women) were 18-39 years (50.5%), 40-59 years (34.0%) and above 60 years (15.5%). Concerning the highest level of education, 3.0% of them had basic level, 67.5% intermediate and 29.5% superlative level of education; concerning economic activity, 76.5% were active workers, 15.0% retired and 8.5% inactive. Concerning family status, 25% of them were single, 75% were married or in a relationship; 62.0% of them had urban, 38.0% village habitat. Concerning their own sense of revenues, 4.5% were below average, 85.5% average, and 10% above average.

In the course of planning and execution of the quantitative research, I took into account the XLVI. Act of 1993 about statistics, especially its regulations concerning statistic data collection (8-9.§), statistic data collection by organizations outside official statistic establishments (15-16.§), and the publicity, protection and forwarding of statistical data (17-21.§).

The measurement of medicinal bath use frequency was accomplished by a sophisticated, five-stage Likert scale, where 1 meant “never”, 2. “seldom”, 3. “occasionally”, 4. “frequently”, and 5. “regularly”. The received data were processed by the 23.0 version of SPSS statistic analysing application of Windows 10 program package. Concerning data processing methods, I have used univariate descriptive statistical analyses, and bivariate cross-table analyses. In the cases where the contingency table corresponded with frequency requirements, namely the frequency number of the cells in total was less than 5 with a maximum of 20%, I have used Pearson’s chi-square test (χ^2), on a significance level of p=0.05, testing the strength of correlations between variables with Cramer’s V value. If the contingency table did not match

the analysis requirements, I have used Fisher's exact test to reveal correlations between the variables (Vargha 2015).

4. Outcomes

More than two third (69.5%) of the respondents from Kehida-Thermal Medical and Adventure Spa Resort used medicinal bath services during his stay at the Spa Department (Table 4).

Table 4 Frequency of use of spa services (N=200)

Frequency of spa use	Item number (N)	Cumulative number of items (N)	Percentage	Cumulative percentage
„regularly"	54	54	27.0%	27.0%
„frequently"	25	79	12.5%	39.5%
„occasionally"	34	113	17.0%	56.5%
„seldom"	26	139	13.0%	69.5%
„never"	61	**200**	30.5%	**100.0%**
total	**200**	**-**	**100.0%**	**-**

Source: own calculation, own editing

According to the table we can assert that 27.0% of the visitors of spa Department are "regular" users of medicinal bath services, but there are more (30.5%) of those, who "never" make use of them. More than one third (39.5%) of the respondents make frequent ("frequently" "regularly") use of medicinal bath services.

The gender of Spa Department visitors, and the contingency table (Table 5) about the use frequency of medicinal bath services corresponded with the frequency requirements, thus the correlation inspection between variables was conducted with Pearson's chi-square test (χ^2=5.551, $df_{\text{degree of freedom}}$=4). Since the significance of chi-square test (p=0.049) was lower than 0.05, according to the chi square test, null-hypothesis proved negative, which means that there is a correlation between the variables (H1). Cramer's value is V=0.219, thus there is a medium strength correlation between the variables.

Table 5 Gender of visitors to the Spa and a contingency table on the frequency of use of Spa services (N=200)

Spa		Gender of the respondent		Total
		Woman	Man	
never	Frequency	42	12	**54**
	% Spa	77.8%	22.2%	100.0%
	% Gender of respondent	34.4%	15.4%	27.0%
	% From of a total	21.0%	6.0%	27.0%
seldom	Frequency	15	10	**25**
	% Spa	60.0%	40.0%	100.0%
	% Gender of respondent	12.3%	12.8%	12.5%
	% From of a total	7.5%	5.0%	12.5%
occasionally	Frequency	19	15	**34**
	% Spa	55.9%	44.1%	100.0%
	% Gender of respondent	15.6%	19.2%	17.0%
	% From of a total	9.5%	7.5%	17.0%
frequently	Frequency	15	11	**26**
	% Spa	57.7%	42.3%	100.0%
	% Gender of respondent	12.3%	14.1%	13.0%
	% From of a total	7.5%	5.5%	13.0%
regularly	Frequency	31	30	**61**
	% Spa	50.8%	49.2%	100.0%
	% Gender of respondent	25.4%	38.5%	30.5%
	% From of a total	15.5%	15.0%	30.5%
Total	Frequency	**122**	**78**	**200**
	% Spa	61.0%	39.0%	100.0%
	% Gender of respondent	100.0%	100.0%	100.0%
	% From of a total	61.0%	39.0%	100.0%

Source: own calculation, own editing

While 38.5% of the men are regular, and 14.1% of them are frequent users medicinal bath services, among women these values are 25.4% and 12.3%. Thus, among men, the rate of regular and frequent users of medicinal bath services is higher. 19.2% of men use medicinal bath services "occasionally"; the rate of women doing so is only 15.6%. This means that among men, the rate of those who sometimes use medicinal bath services is higher. There is no significant difference between the rate of those men (12.8%) and women (12.3%) who seldom use medicinal bath services. While 34.4% of women never use medicinal bath services, by men this number is less than half, 15.4%.

Thus, the rate of those women, who never use medicinal bath services is higher. The age of the visitors of Spa Department and the contingency table (Table 6) about the prevalence of the use of medicinal bath services matched the frequency requirements, thus the correlation inspection between variables was conducted with Pearson's chi-square test (χ^2=56.100, $df_{degree\ of\ freedom}$=8). Since the significance (p=0,000) of the chi square test is lower than 0.05, according to the chi square test, null-hypothesis proved negative, which means that there is a correlation between the variables (H1). Cramer's value is V=0.375 thus there is a medium strength correlation between the variables.

Table 6 Age of visitors to the Spa and a contingency table on the frequency of use of Spa services (N=200)

Spa			Age of the respondent			Total
			18-39 years	40-59 years	Above 60 years	
	never	Frequency	43	10	1	**54**
		% Spa	79.6%	18.5%	1.9%	100.0%
		% Age of the respondent	42.6%	14.7%	3.2%	27.0%
		% From of a total	21.5%	5.0%	0.5%	27.0%
	seldom	Frequency	15	10	0	**25**
		% Spa	60.0%	40.0%	0.0%	100.0%
		% Age of the respondent	14.9%	14.7%	0.0%	12.5%
		% From of a total	7.5%	5.0%	0.0%	12.5%
	occasionally	Frequency	20	10	4	**34**
		% Spa	58.8%	29.4%	11.8%	100.0%
		% Age of the respondent	19.8%	14.7%	12.9%	17.0%
		% From of a total	10.0%	5.0%	2.0%	17.0%
	frequently	Frequency	7	15	4	**26**
		% Spa	26.9%	57.7%	15.4%	100.0%
		% Age of the respondent	6.9%	22.1%	12.9%	13.0%
		% From of a total	3.5%	7.5%	2.0%	13.0%
	regularly	Frequency	16	23	22	**61**
		% Spa	26.2%	37.7%	36.1%	100.0%
		% Age of the respondent	15.8%	33.8%	71.0%	30.5%
		% From of a total	8.0%	11.5%	11.0%	30.5%
	Total	Frequency	**101**	**68**	**31**	**200**
		% Spa	50.5%	34.0%	15.5%	100.0%
		% Age of the respondent	100.0%	100.0%	100.0%	100.0%
		% From of a total	50.5%	34.0%	15.5%	100.0%

Source: own calculation, own editing

The highest rate (71.0%) of regular users of medicinal bath services was among the people above 60 years of age; between 40-59 years this rate is lower (33.8%), and among people between 18-39 years it is even lower (15.8%). Thus, the rate of regular use of medicinal bath services is the highest among people above 60 years. The rate of frequent medicinal bath service use is the lowest (6.9%) between 18-39 years, in an increasing order they are followed by people above 60 years (12.9%) and between 40-59 years (22.1%). The highest rate of people who occasionally use medicinal bath services is between 18-39 years (19.8%), in a decreasing order they are followed by people between 40-59 years (14.7%) and above 60 years (12.9%). Thus, those, who use medicinal bath services on an occasional basis are mostly between 18-39 years. The rate of people seldom using medicinal bath services is almost equal between 18-39 years (14.9%) and 40-59 years (14.7%). There is no seldom user of medicinal bath services among people above 60 years. Those who never use medicinal bath services are in highest rate between 18-39 years (42.6%); in a decreasing order they are followed by people between 40-59 years (14.7%) and above 60 (3.2%). According to this, rate of those who never use medicinal bath services is highest between 18-39 years.

The economic activity of the visitors of Spa Department and the contingency table (Table 7) about the prevalence of the use of medicinal bath services did not match the frequency requirements, so the correlation inspection between the variables was conducted by Fisher's exact test (F=26.925). Since the significance of Fisher's exact test (p=0.000) is lower than 0.05,

according to Fisher's exact test, null-hypothesis proved negative, which means that there is a correlation between the variables (H1). Cramer's value is V=0.303 thus there is a medium strength correlation between the variables.

Table 7 Economic activity of visitors to the Spa and a contingency table on the frequency of use of Spa services (N=200)

Spa		Economic activity of the respondent			Total
		Active worker	Retired	Inactive	
never	Frequency	45	1	8	**54**
	% Spa	83.3%	1.9%	14.8%	100.0%
	% Economic activity of the respondent	29.4%	3.3%	47.1%	27.0%
	% From of a total	22.5%	0.5%	4.0%	27.0%
seldom	Frequency	23	0	2	**25**
	% Spa	92.0%	0.0%	8.0%	100.0%
	% Economic activity of the respondent	15.0%	0.0%	11.8%	12.5%
	% From of a total	11.5%	0.0%	1.0%	12.5%
occasionally	Frequency	28	3	3	**34**
	% Spa	82.4%	8.8%	8.8%	100.0%
	% Economic activity of the respondent	18.3%	10.0%	17.6%	17.0%
	% From of a total	14.0%	1.5%	1.5%	17.0%
frequently	Frequency	21	4	1	**26**
	% Spa	80.8%	15.4%	3.8%	100.0%
	% Economic activity of the respondent	13.7%	13.3%	5.9%	13.0%
	% From of a total	10.5%	2.0%	0.5%	13.0%
regularly	Frequency	36	22	3	**61**
	% Spa	59.0%	36.1%	4.9%	100.0%
	% Economic activity of the respondent	23.5%	73.3%	17.6%	30.5%
	% From of a total	18.0%	11.0%	1.5%	30.5%
Total	Frequency	**153**	**30**	**17**	**200**
	% Spa	76.5%	15.0%	8.5%	100.0%
	% Economic activity of the respondent	100.0%	100.0%	100.0%	100.0%
	% From of a total	76.5%	15.0%	8.5%	100.0%

Source: own calculation, own editing

The highest rate (73.3%) of regular users of medicinal bath services was found among retired people; the next, significantly smaller group are the active workers (23.5%) and inactive (17.6%). Thus, those who use medicinal bath services on a regular basis are definitely the retired people. Highest rate (13.7%) of frequent use of medicinal bath services is found amongst active workers, closely followed by retired people (13.3%), and a significantly smaller rate of inactive people (5.9%). The people who use medicinal bath services on an occasional basis with the highest rate (18.3%) are the active workers, in a decreasing order followed by the inactive (17.6%) and the retired (10.0%). The rate of people seldom using medicinal bath services is highest (15.0%) amongst active workers, followed by inactive people (11.8%).

There is no seldom user of medicinal bath services among retired people. The rate of those who never use medicinal bath services is the highest (47.1%) among the inactive; in a decreasing order they are followed by active workers (29.4%) and from a significant distance by retired people (3.3%). According to this, the rate of those who never use medicinal bath services is highest among inactive people.

The level of education amongst the visitors of Spa Department and the contingency table about the prevalence of the use of medicinal bath services did not match the frequency requirements, thus the correlation inspection between the variables was conducted by Fisher's exact test (F=10.353). Since the significance of Fisher's exact test (p=0.185) was higher than 0.05, according to Fisher's exact test, the null-hypothesis (H0) was accepted, namely, there is no correlation between the variables.

The habitation of the visitors of Spa Department and the contingency table about the prevalence of the use of medicinal bath services matched the frequency requirements, thus the correlation inspection between the variables was conducted with Pearson's chi-square test (χ^2=3.381, $df_{degree\ of\ freedom}$=4). Since the significance (p=0,496) of the chi square test was higher than 0.05, according to the chi square test, the null-hypothesis (H0) was accepted, namely, there is no correlation between the variables.

The family status of the visitors of Spa Department and the contingency table (Table 8) about the prevalence of the use of medicinal bath services matched the frequency requirements, thus the correlation inspection between the variables was conducted with Pearson's chi-square test (χ^2=15.835, $df_{degree\ of\ freedom}$=4). Since the significance (p=0,003) of the chi square test was lower than 0.05, according to the chi square test, null-hypothesis proved negative, which means that there is a correlation between the variables (H1). Cramer's value is V=0.281, thus there is a medium strength correlation between the variables.

Table 8 Family status of visitors to the Spa and a contingency table on the frequency of use of Spa services (N=200)

Spa			Family status of the respondent		Total
			Single	Live in relationship	
	never	Frequency	17	37	**54**
		% Spa	31.5%	68.5%	100.0%
		% Family status of the respondent	34.0%	24.7%	27.0%
		% From of a total	8.5%	18.5%	27.0%
	seldom	Frequency	12	13	**25**
		% Spa	48.0%	52.0%	100.0%
		% Family status of the respondent	24.0%	8.7%	12.5%
		% From of a total	6.0%	6.5%	12.5%
	occasionally	Frequency	8	26	**34**
		% Spa	23.5%	76.5%	100.0%
		% Family status of the respondent	1.0%	17.3%	17.0%
		% From of a total	4.0%	13.0%	17.0%
	frequently	Frequency	7	19	**26**
		% Spa	26.9%	73.1%	100.0%
		% Family status of the respondent	14.0%	12.7%	13.0%
		% From of a total	3.5%	9.5%	13.0%
	regularly	Frequency	6	55	**61**
		% Spa	9.8%	90.2%	100.0%

	% Family status of the respondent	12.0%	36.7%	30.5%
	% From of a total	3.0%	27.5%	30.5%
Total	Frequency	**50**	**150**	**200**
	% Spa	25.0%	75.0%	100.0%
	% Family status of the respondent	100.0%	100.0%	100.0%
	% From of a total	25.0%	75.0%	100.0%

Source: own calculation, own editing

The rate of regular users of medicinal bath services among people in a relationship is 36.7%, while among singles it is 12.0%. According to this, the rate of regular users of medicinal bath services is higher among people in a relationship than among singles. Frequent users of medicinal bath services are rather singles (14.0%), than in a relationship (12.7%). Thus, frequent users of medicinal bath services are mostly singles. The rate of occasional users of medicinal bath services among people in a relationship is 17.3%, while among singles it is 16.0%. This means that the rate of occasional users of medicinal bath services among people in a relationship is higher than among single people. The rate of those who seldom use medicinal bath services is higher (24.0%) among single people than among those living in a relationship (8.7%). Thus, seldom users of medicinal bath services are also mostly singles. While 34.0% of single people never use medicinal bath services, this rate is only 24.7% among people in a relationship. According to this, not using medicinal bath services is a characteristic that fits single people rather than people in a relationship.

The level of family revenues amongst the visitors of Spa Department and the contingency table about the prevalence of the use of medicinal bath services did not match the frequency requirements, thus the correlation inspection between variables was conducted by Fisher's exact test (F=3.992). Since the significance of Fisher's exact test (p=0.826) was higher than 0.05, according to Fisher's exact test, the null-hypothesis (H0) was accepted, namely, that there is no correlation between the variables.

Conclusion

By the socio-demographic characteristics of the 200 respondents providing valid replies, we were able to reach an extended form of Hungarian middle class. Thus, the sample is only representative to a limited extent, as the basic population is unknown.

From the cross-table of the gender of Spa Department visitors and the use frequency of medicinal bath services it occurs that the use of medicinal bath services is more frequent among men than among women. According to the correlation inspection, medium strength correlation can be found between the gender of Spa Department visitors and the use frequency of medicinal bath services.

The cross-table of the age of Spa Department visitors and the use frequency of medicinal bath services confirm that the use of medicinal bath services is most frequent among people above 60 years, and this rate continuously decreases among 40-59 and 18-39 age groups. According to the correlation inspection, medium strength correlation can be found between the age of Spa Department visitors and the use frequency of medicinal bath services.

The cross-table about the economic activity of Spa Department visitors and the frequency of the use of medicinal bath services point out that retired people use medicinal bath services more frequently than active workers or inactive people. According to the correlation inspection, medium strength correlation can be confirmed between the economic activity of Spa Department visitors and the use frequency of medicinal bath services.

There is no statistically confirmed correlation between the education level of Spa Department visitors and the use frequency of medicinal bath services, thus no correlation can be presented.

There is also no statistically confirmed correlation between the habitation of Spa Department visitors and the use frequency of medicinal bath services, thus no correlation can be presented either.

The cross-table about the family status of Spa Department visitors and the use frequency of medicinal bath services shows that people in a relationship use medicinal bath services more frequently than single visitors. According to the correlation inspection, medium strength correlation can be confirmed between the family status of Spa Department visitors and the use frequency of medicinal bath services.

There is also no statistically confirmed correlation between the family revenue of Spa Department visitors and the use frequency of medicinal bath services, thus no correlation can be presented.

The correlation-inspection outcomes received by the help of the survey conducted according to the basic research objectives, confirm six statements that can be considered as new scientific results:

- It is confirmed that men use the medicinal bath services of the Spa Department more frequently than women (1).
- It is confirmed that the older adults are, the more likely they make frequent use of the medicinal bath services of the Spa Department (2).
- It is confirmed that even the age group of 40's make quite frequent use of the medicinal bath services of the Spa Department (3).
- It is confirmed that the more discretional free time people have, the more likely they make frequent use of the medicinal bath services of the Spa Department (4).
- It is confirmed that people in relationship make more frequent use of the medicinal bath services of the Spa Department than single visitors (5).
- The analysis outcomes of the large sample confirm the raison d'être of further researches, the investigation of the correlations between the use frequency of medicinal bath services and the education level, habitation, family revenues of Spa Department visitors (6).

These novel scientific results can provide help for touristic designers, tourism-marketing experts to make better use of new market opportunities, while they provide help for spa managers in fuller satiation of visitor needs and in more economy-effective operation.

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A COMPARATIVE STUDY ON BEEKEEPING SECTORS BETWEEN THE VISEGRAD COUNTRIES

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Abstract
The beekeeping sector is a small sector in the EU, but plays an important role in agriculture, because of the process of pollination and honey production. The primary aim of the present study is to perform the comparative analysis of beekeeping sector in V4 countries for the 2018 beekeeping year. During the research and analysis, different international and EU databases were used. Secondary data used in the analysis derive from the reports of National Apiculture Programmes, the European Commission and from the databases of Eurostat, Faostat, Trademap and the United Nations Comtrade Database. Results show that the number of hives as well as honey production increased, the association of the studied regions in the field of beekeeping could greatly contribute to their profitability.

Key words
Visegrad countries, beekeeping sector, agricultural indicators, honey production

JEL Classification: Q17

Introduction

The European Union is an important actor in the world economy, not only in economic but also in political terms. EU is currently an alliance of 27 Member States, since the United Kingdom withdrew from the European Union on 31 January 2020 (European Union, 2020). The analysis of the economic situation of each group of countries has a great importance for its smooth operation (Fenyves et al., 2019). One of the most important Central and Eastern European collaborations is Visegrad cooperation (Káposzta – Nagy, 2015). This means a cooperation between 4 countries of the Central European region (Czech Republic, Hungary, Poland and Slovakia) at European and global level, strengthening the position of its members in all areas of common interest throughout European integration (Visegrad Group, 2020). The primary sector has played an important role in the national economies of all V4 member states over the last three decades (Fenyves et al., 2019). The beekeeping sector is an essential element of the whole economy. Through its contribution to the gross production value of agriculture and to livestock farming, honey plays a key role in the agricultural foreign trade based on its share in agricultural exports and its foreign trade balance (European Commission, 2019).

Consequently, due to the multifunctionality of agriculture, the competitiveness of each agricultural sector must be assessed in a complex approach (Illés, 1998; Popp, 2004; Törőné Dunay, 2012). Beekeeping sector has followed the history of mankind from the very beginning (Šedík et al., 2019), the most significant product produced by the sector is honey (European Parliament, 2018a), which has beneficial nutritional and physiological effects on the human body (Šedík et al., 2020). Beekeeping, as an economic and social activity, has a significant impact on the natural environment, plays an important role in the development of rural areas (Vishwakarma - Kumar, 2020, European Commission, 2020c) and is an essential element of sustainable development and consumption, thus, a central topic for researchers for years (Balsa-Budai et al., 2019; Pocol et al., 2020). The importance of the beekeeping sector worldwide goes far beyond its production functions; it is ecologically and biologically decisive (Utaipanon - Schaerf - Oldroyd, 2019; European Commission, 2019).

According to Káposzta and Nagy (2015), the cooperation between the Visegrad countries is successful and works well, within the framework of which common development

points must be explored in the future, despite the differences in development levels. In case of beekeeping sector, grants from the National Apiculture Programs could provide a basis for this - 50% of the funds is provided by the European Union and the remaining 50% is coming from the Member States' own national budgets (Pocol, 2011). Due to the serious bee health situation in recent years, the spread of bee diseases and bee deaths, the beekeeping sector is facing a crisis across Europe (European Parliament, 2018a). To improve this current situation, the European Union supports the sector with National Beekeeping Programs, which include several beekeeping measures to promote honey production and improve the quality of beekeeping products. The aim of National Beekeeping Programs is to develop the competitiveness of the sector, primarily by increasing the number of bee colonies and compensating for stock loss, increasing the number of professional apiaries, developing a network of consultants, providing modern equipments and technologies, improving honey quality and apiary productivity and regular monitoring of honey market (European Commission, 2013, 2016 és 2017).

Like all agricultural sectors, the performance of beekeeping also depends significantly on the weather and climate change (Ludányi – Csaba, 2020). In recent years, climate change in Europe has had a negative impact on agriculture; the number of unexpected natural events and extreme weather changes are expected also in the future (Jacobs et al., 2019). Good beekeeping practice is based on the proper keeping of bees, which is one of the cornerstones of quality honey production (Vishwakarma – Kumar, 2020). Climatic conditions (Jacobs et al., 2019), economic and natural factors play an important role in honey production (Halmágyi – Zajácz, 2008). The main indicators of the beekeeping sector are the number of apiaries and bee colonies and the development of their honey yield (Chlebo, 2017; Šedík et al. 2017), on the basis of which the structure of honey production in the sector is presented in this present study.

Material and methodology

The primary aim of the study is to present the beekeeping sector in the V4 countries. Comparative and time series analysis were used in order to present the Visegrad group. Secondary data used in the analysis derive from the reports of National Apiculture Programmes and the European Commission and from the databeses of Eurostat, Faostat, Trademap and the United Nations Comtrade Database. The analysis focuses on the relationship between key sectoral indicators in V4 countries analysed in 2018. Statistical data were supported by related current research results gathered through the relevant literature sources. However, it is important to mention that areas affecting beekeeping sector are still critically under-explored, the number of research is still marginal. The identification of sectoral problems and development opportunities is significantly hampered by the lack of information available to the authorities on the actors in the sector and honey production.

Results and discussion

The role of agricultural sector in the economies of the Visegrad countries

According to Eurostat (2019), the real GDP and per capita GDP growth rates in the V4 countries are relatively high among the EU member states, which is a relevant indicator of economic development and economic performance (Ivanová – Masárová, 2018). Although the share of agriculture in total gross value added in the V4 countries is not outstanding compared to other sectors, we must not forget its crucial role. Raw material production will play a key role in feeding the future population, and due to the geographical location and opportunities of the region, the functioning of the primary sector will continue to be crucial (Fenyves et al., 2019). Despite the small size of the beekeeping sector, it has a decisive importance for agriculture (Halmágyi - Zajácz, 2008), both in terms of its contribution to the gross production value of agriculture and to the value of animal husbandry. (Hungarian National Apiculture

Program, 2019). Table 1 summarizes the most important agricultural indicators in the Visegrad countries.

Table 1: Major agricultural indicators in the V4 countries

	EU-28	V4 - Share of EU-28	Poland	Hungary	Czechia	Slovakia
Total land area (2016), km²	4 346 737	12,1%	307 236	91 248	77 212	48 702
Gross Domestic Product (2018), EUR billion	15 898.3	5,8%	496.4	133.8	207.8	89.7
Population (2018), million	512.4	12,5%	38.0	9.8	10.6	5.4
Employment in agriculture (2016), % share of total employment	4.2 %	-	10.1 %	5.7 %	2.7 %	2.1 %
Persons employed in agriculture (2016), number	9 720 600	21,0%	1 608 800	247 280	137 860	46 740
Farmland, utilised agricultural area (2016), thousand hectares	173 339	14,1%	14 406	4 671	3 455	1 890
Farms, agricultural holdings (2016), number	10 467 760	18,1%	1 410 700	430 000	26 530	25 660
Contribution of agriculture to Gross Domestic Product (2018), share of GDP %	1.1 %	-	1.8 %	2.3 %	0.8 %	0.6 %
Gross value added, at basic prices (2018), EUR million	181 738	8,3%	9 347	3 465	1 687	541
Value of agricultural output, production value at basic prices (2018), EUR million	434 291	9,5%	25 010	8 444	5 290	2 318
Value of crop output (2018), EUR million	224 850	8,9%	10 822	4 889	2 954	1 236
Value of animal output (2018), EUR million	172 000	11,2%	13 552	2 967	2 015	779
Honey production (2018), thousands EUR	13 733 317	24,32%	1 586 063	844 000	631 811	278 385
Agricultural factor income per annual work unit, change 2018/2017	-4.6 %	-	-13.5 %	4.0 %	-4.7 %	-2.0 %

Source: Own adaptation based on Eurostat data (2018, 2019 and 2020) and European Commission data (2020a and 2020b)

Among the Visegrad countries, Poland has the largest share of agriculture, the largest number and proportion of people employed in agriculture, followed by Hungary - which is far behind Poland -, then followed by the Czech Republic and Slovakia. Based on the data it can

be clearly seen that the role of agriculture in terms of employment is considerably smaller in the last three countries, the total number of people employed in the primary sector does not reach the result measured in Poland. Compared to other V4 countries, Poland has the largest agricultural area (more than the other 3 countries combined), however, the area per holding is the smallest. In terms of the number of farms, significant structural differences can be observed in the primary sector among the Visegrad countries. The number of farms in the Czech Republic and Slovakia is much lower, they have a concentrated economic structure, while the number of farms in Poland and Hungary is very high, and we can talk about a fragmented economic structure in their case. Based on the gross value added at basic prices and the production value at basic prices, also significant differences can be measured – the values are the highest in Poland, followed by Hungary and the Czech Republic with significantly lower total gross value added, while Slovakia lags far behind also the other two Visegrad countries. Comparing the gross value added, a decrease was observed in the primary sectors of the Visegrad countries in 2018, with the exception of the Czech Republic, where there was a minimal increase. In 2018, compared to the previous year, the gross value of agricultural output increased slightly in the Czech Republic, Hungary and Poland. Furthermore, there are significant differences between the shares of crop production and animal husbandry in all four countries studied. In case of Hungary, the Czech Republic and Slovakia, crop production has a larger share than animal husbandry, while in Poland the livestock sector has a larger share and the value of agricultural output is the highest here. In the European Union after a period of growth, the index of agricultural factor income per annual work unit fell by -4.6 % in 2018 from the peak of the previous year. In the Visegrad countries the agricultural factor income per annual work unit in 2018 was down too, except in Hungary, where the index rising +4.0 % (Eurostat, 2019 and 2020).

Honey production

World honey production has grown steadily in recent decades (Statista, 2019; Faostat, 2020). According to Trademap (2020), almost half of the production in 2018 (1850.9 thousand tonnes) was in Asia (835.6 thousand tonnes) and a third in Europe (426.4 thousand tonnes) (Figure 1). 14% of the total production was produced by the European Union (258.6 thousand tonnes) and 9.1% by the countries outside the EU-28 (167.8 thousand tonnes). Almost 24% of world honey production comes from China, 6% from Turkey, while Argentina, Iran, the US, Ukraine, Russia and India also contribute 4-4% to the total production. The V4 countries accounted for 3.5% of world honey production in the reviewed period: Hungary 1.5%, Poland 1.3%, the Czech Republic 0.5% and Slovakia 0.2%. All honey marketed in the EU must fulfil the rules on quality and labelling laid down in the "honey directive" 2001/110/EC. (European Commission, 2020d)

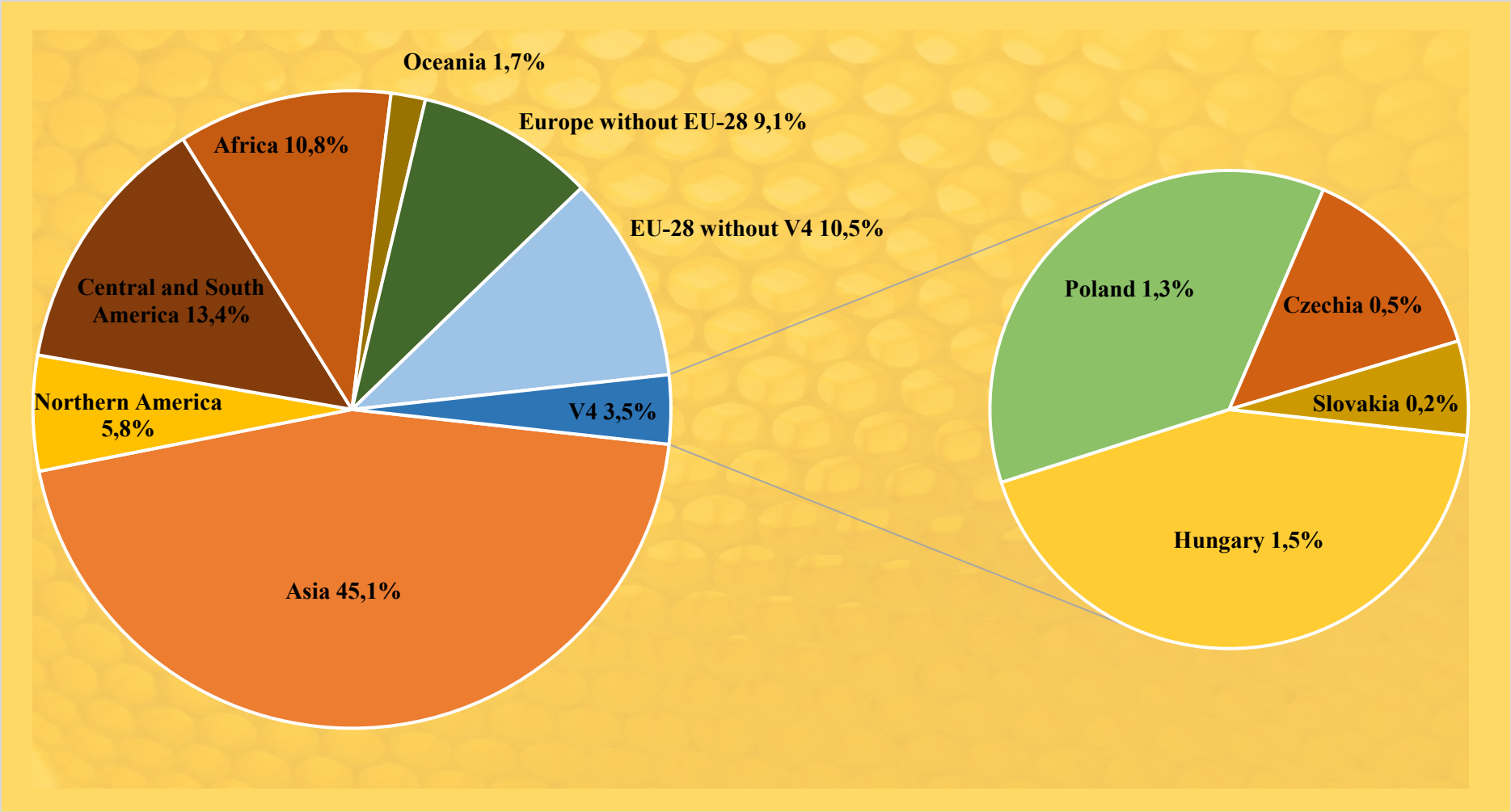

Figure 1: Word total honey production in 2018 (%), based on the amount of honey produced (thousand tonnes)
Source: Own adaptation based on Faostat data (2020)

In 2018, the largest honey producing countries in the European Union were Spain (14.1%), Romania (11.3%), Hungary (10.8%), Poland (9.1%), Greece (8.3%) and Germany. (7.9%) (Figure 2). The Czech Republic has the 12th place, while Slovakia is the 15th largest honey producing country in the EU. Annual average honey yields varied widely by member states in 2018, increased significantly in Finland, Germany and the United Kingdom, while decreased significantly in Sweden, Poland, Luxembourg and Hungary compared to the previous year (Faostat data, 2020).

EU-28	tonnes	%
ES	36 394	14,1%
RO	29 162	11,3%
HU	27 963	10,8%
PL	23 472	9,1%
EL	21 400	8,3%
DE	20 333	7,9%
FR	17 489	6,8%
BG	10 338	4,0%
PT	10 030	3,9%
IT	9 500	3,7%
UK	9 392	3,6%
CZ	8 992	3,5%
HR	8 727	3,4%
LT	4 207	1,6%
SK	4 112	1,6%
AT	4 000	1,5%
SE	3 400	1,3%
FI	2 606	1,0%
LV	1 998	0,8%
DK	1 500	0,6%
SI	1 360	0,5%
EE	1 253	0,5%
CY	584	0,2%
IE	271	0,1%
LU	128	0,0%
BE*	-	-
NL*	-	-
MT*	-	-
Total	**258 611**	**100,0%**

* No data are available for 2018

Figure 2: EU-28 total honey production in 2018 (tonnes)
Source: Own adaptation based on Faostat data (2020)

In the V4 countries, the volume of honey production increased from 2000 to 2018, to a lesser extent in Slovakia (+17.7%) and the Czech Republic (+19.1%), and to a greater extent in Poland (+72.2%) and Hungary (+84.4%) (Figure 3). Furthermore, Poland's role in EU honey production and trade has increased significantly since 2005 (Borowska, 2016). In 2018, the amount of honey produced by Hungary and Poland was significant also at the EU level. The

Czech Republic produced less honey than the previous two, while Slovakia produced less honey than the other V4 countries, mainly due to its natural endowments and the differences in the size of the other Visegrad countries (Faostat data, 2020). Rape and acacia honey are produced in significant quantities by Hungary and Czech Republic (Přidal, 2003; Titěra, 2013; Hungarian National Apiculture Program, 2019), while Slovak producers prefer the production of darker, forest and pine honey (Šedík, 2016).

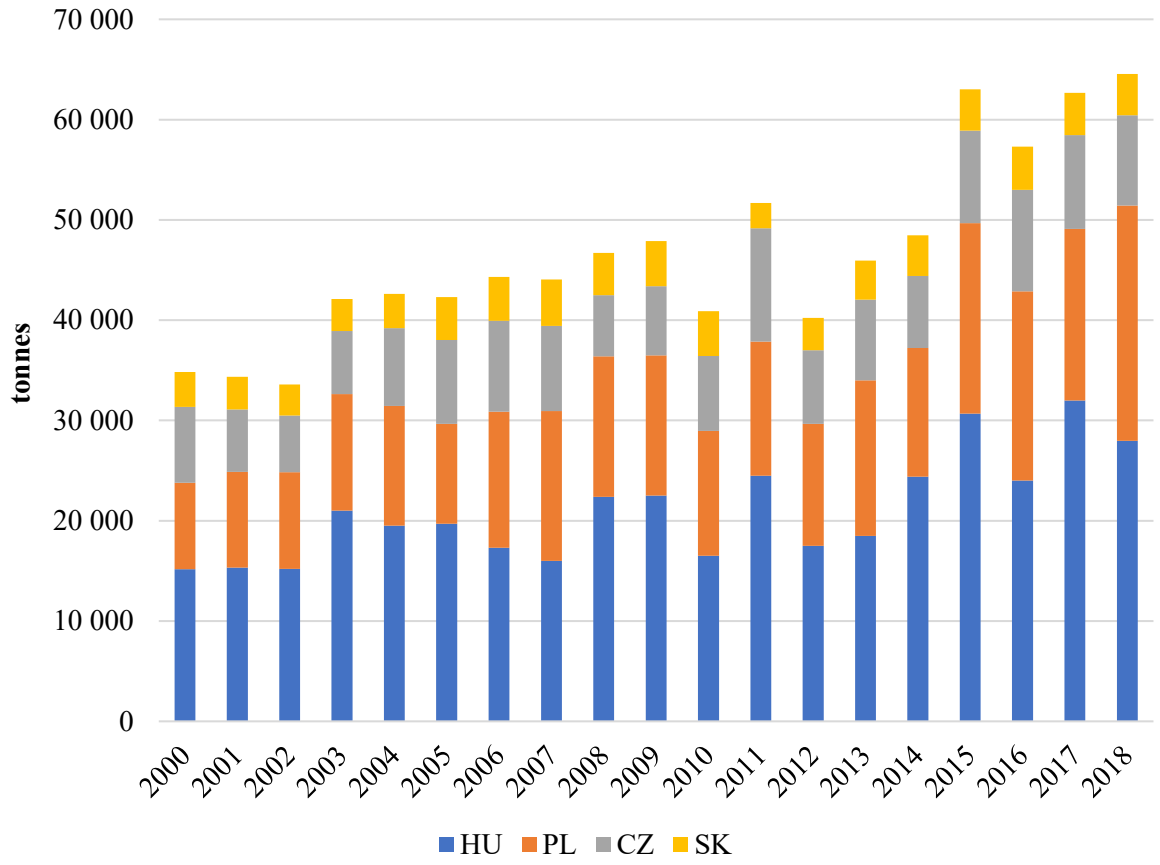

Figure 3: Honey production of V4 countries between 2000 and 2018, based on the amount of honey produced (tonnes)

Source: Own adaptation based on European Commission data (2020a and 2020b)

In terms of honey production, the world's largest honey importers were the European Union, North America and Asia, while the largest exporters were Asia, Central and South America and Europe outside the EU-28 in 2018. In 2019, the number of beekeepers in the EU exceeded 650 000, caring for more than 18.5 million bee colonies, producing an average of 280,000 tonnes of honey per year, thus, making the Union the world's second largest honey producer (European Commission, 2020a). However, in terms of honey production, the EU is a subsistence economy only in about 60% with an average annual import volume of over 200,000 tonnes mainly from China (40% of total imports), Ukraine (20%), Argentina and Mexico (European Parliament, 2018b; European Commission, 2020a). At present, China is the main supplier of honey to the EU, as it imported honey mainly from Argentina until 2010 (*United Nations Comtrade,* 2020).

The honey trade balance of the European Union is negative, with an average annual export volume of around 20,000 tonnes, the main markets being Switzerland, Saudi Arabia,

Japan, the United States and Canada (European Parliament, 2018b), with an increasing trend in exports. (Popp et al., 2018).

In the world the average consumption of honey per person ranges from 0.5 kg to 1 kg per year. Multi-floral and rape honey are the most commonly consumed in EU (Kružík et al., 2019), uni-floral honey are popular products due to their special, unique taste, and protected designation of origin honeys are becoming increasingly popular (Borowska, 2016). However, according to Popp et al. (2019) the population of less developed EU member states (such as Romania and Hungary) has a relatively low willingness to buy local products. Based on the research published by Fehér et al. (2020) food industry has to face with new challenges - food market is quite saturated (Kiss et al., 2020), but changes in consumer demand may provide possibility for development (Šedík et al., 2018).

Structure of the beekeeping sector

Table 2 illustrates the structure of the beekeeping sector in the V4 countries in 2018. 69% of all beekeepers in the EU-28 were members of a beekeepers' association. Analysing the situation of Visegrad countries it can be seen that this rate is about 60% in Hungary and Poland, and almost 90% in Slovakia and the Czech Republic (European Commission, 2020a and 2020b). In terms of the number of bee colonies, Hungary had the highest proportion of beekeepers with a size of more than 150 bee colonies among the V4 countries. In case of the other 3 Visegrad countries, their numbers are negligible, with around 3% of EU-28 beekeepers being professional, ie those with at least 150 bee colonies. The average number of hives per beekeeper was 26 hives in the V4, which is above the EU average (21 hives).

Table 2: Structure of beekeeping sector in the V4 countries (2018)

	EU-28	Poland	Hungary	Czechia	Slovakia
Number of beekeepers (2018)	606 082	62 575	21 565	49 486	17 171
Number of hives (2018), thousand hives	17 577	1 633	1 237	673	302
Average Number of Hives per Beekeeper (2018), hives	21	22	55	11	16
Average colony density (2018), colony/km^2	4.0	5.3	13.6	8.7	6.2
Average Yield of Honey (2018) kg/hive	22	14	21	14	16
Honey production (2018), tonnes	258 611	23 472	27 963	8 992	4 112
Honey - imported quantity (2018), tonnes*	207 376	25 712	*	2 801	1 439
Honey - exported quantity (2018), tonnes	27 283	14 646	22 018	1 285	340
Honey production (2018), thousands EUR	13 733 317	1 586 063	844 000	631 811	278 385
Honey - imported value (2018), thousand EUR*	451 085	52 853	*	7 040	3 883
Honey - exported value (2018), thousand EUR	150 078	36 356	76 735	4 490	1 036
Honey trade balance in value (2018) thousand EUR	-301 007	-16 497	76 735	-2 550	-2 848
Average Prices for Multi-floral Honey (2018), site of production, EUR/kg	6.46	5.81	5.16	6.62	6.50

Average Prices for Multi-floral Honey (2018), in bulk at wholesalers, EUR/kg	3.79	2.79	1.97	3.51	3.50
Average Production Cost (2018), EUR/kg	3.90	3.15	2.10	1.95	3.50
Budget Allocated by National Apiculture Programmes for 2020, thousand EUR	40 000	3 938	3 120	1 266	735

* No data are available for Hungary's import markets for 2018

Source: Own adaptation based on European Commission data (2020a and 2020b), Trademap data (2020) and *United Nations* Comtrade data (2020)

The amount of honey produced by the Visegrad countries accounted for 25% of the Union's total honey production (258 611 tonnes), supported by 22.6% of the total support of the National Apiculture Programs (40 000 thousand euros) in 2018. Almost 25% of EU-28 beekeepers (600.000 producers) and about 22% of all bee colonies in the EU (more than 17 million) were owned by V4s. Most beekeepers were active in Poland and the Czech Republic, with significantly fewer producers in Hungary and fewest in Slovakia. We can observe also significant differences in terms of bee colonies. In this case Poland and Hungary are in the top, significantly behind them, with almost half as many bee colonies in the Czech Republic and a quarter in Slovakia. In 2018, the average number of hives per beekeeper was 21 on average at EU level, well above the EU average in Greece (147 bee colonies), Spain (103 bee colonies) and Romania (80 bee colonies). In Hungary, the average number of bee colonies per beekeeper was 55, therefore the average annual honey yield per colony was 21 kg, which is almost the same as the EU average (22 kg / bee colony). The other V4 member states had significantly fewer bee colonies: in Poland with 22 bee colonies per beekeeper producing an average of 14 kg of honey, in the Czech Republic with 11 hives producing 14 kg honey in the hive, and in Slovakia with a little higher number of bee colonies (16 hives on average) producing a honey yield of 16 kg. At the EU level, the average bee density is 4 bee colonies / km2, which is more than three times higher in Hungary (13 bee colonies / km^2). Moreover, all V4 countries exceeded the EU average, Hungary was followed by the Czech Republic (8 bee colonies / km^2), Slovakia (6 bee colonies / km^2) and Poland (5 bee colonies / km^2).

In terms of honey production, Hungary was in the first place among the V4 countries in 2018, followed by Poland, the Czech Republic and Slovakia with a significant difference in terms of volume produced, however, Poland is ahead of Hungary in terms of value. The proportion of differences in value between the Visegrad countries is significantly lower than the amount of honey produced by the countries. According to Trademap (2020) and United Nations Comtrade (2020), with the exception of Hungary, the other V4 countries are all net importers of honey, and a significant difference can be observed between the countries' honey trade balances. In 2018, Hungary exported honey of outstanding value (76 735 thousand euros), more than Poland (36 356 thousand euros), the Czech Republic (4 490 thousand euros) and Slovakia (1 036 thousand euros) combined. The largest export markets of the Czech Republic are Germany, Slovakia, France and the UK. Honey produced in Slovakia is exported mainly to the Czech Republic, Poland, Italy and Hungary, while Hungary mainly exports to Western Europe: Italy, Germany and France and to Japan. Poland's primary export markets are Germany, France, Spain and the UK (*United Nations Comtrade,* 2020). Ukraine exports the most honey to the Visegrad countries, accounting for almost 15% of its honey production and almost 30% of the value of total honey exports (*United Nations Comtrade* data, 2020).

The value of imports in Hungary is considerably lower than in other V4 countries, hovering around 1000-2000 thousand euros annually. In 2018, Poland imported the highest

value (52 853 euros), followed by the Czech Republic (7 040 euros) and Slovakia (3 883 euros). Poland mostly imports from Ukraine, China and Bulgaria, Slovakia's honey imports are typically from Moldova, Ukraine and other European countries, while the Czech Republic's largest import markets are Ukraine, Germany and Slovakia (*United Nations Comtrade* data, 020).

In V4 countries, the average prices for multi-floral honey in the bulk at wholesalers, (3.79 EURO / kg) are below the EU average price. In case of the Czech Republic and Slovakia average prices for multi-floral honey in site of production, (6.46 EURO / kg) is above the EU average, while Poland and Hungary are below the average. Based on both site of production and bulk at wholesalers, Hungary is in the last place, beekeepers producing in the Czech Republic and Slovakia are able to sell the honey produced at significantly better prices, and production costs are relatively high. As far as market challenges are concerned, the European Union's beekeepers are increasingly threatened by competitors on the world market (European Parliament, 2017). In recent years, EU producers' market share has fallen, mainly due to significantly higher production costs and more expensive honey prices (European Commission, 2020a), which has also affected V4 beekeepers.

According to reports from the European Commission (2020a and 2020b), the number of beekeepers in the EU increased by 7.6% in the 2020-2022 time period compared to 2017-2019. The number of beekeepers was highest in Germany, while Poland was in 2nd place - the number of beekeepers there increased by almost 19% (74 302 people). The Czech Republic is the 3rd largest EU member of beekeepers (61 572 people), with the number of beekeepers up almost 25%, Hungary is currently 10th (22 447 people; + 4.1% increase), and Slovakia is 11th (18 586 people; + 8.2% increase). The number of bee colonies in the EU increased by 5.1% from 2018 to 2019. There was an increase in colony numbers in the member states, with the exception of Malta and Sweden, where there was no change. Slight decrease in Hungary (-0.01%), significant decrease in the Netherlands (-8.1%), slight increase in Poland (+2.8%), in the Czech Republic (+1.8%) and in Slovakia (+1.7%) an increase was observed in 2019. Among the EU member states, Spain, Romania, Poland, Italy, France and Greece have the largest number of hives. Hungary is 7th, the Czech Republic is 11th and Slovakia is 14th in terms of the number of bee colonies.

Compared to the period 2004-2006, the number of apiaries and the number of bee colonies in Hungary increased by 41% for the period 2017-2019 (Figure 4). In Poland, the number of apiaries increased by 46% and the number of bee colonies increased by 71%. The number of beekeepers in the Czech Republic and Slovakia has slightly decreased, yet the number of bee colonies they care for has increased significantly, by almost 42% in the Czech Republic and by 54% in Slovakia.

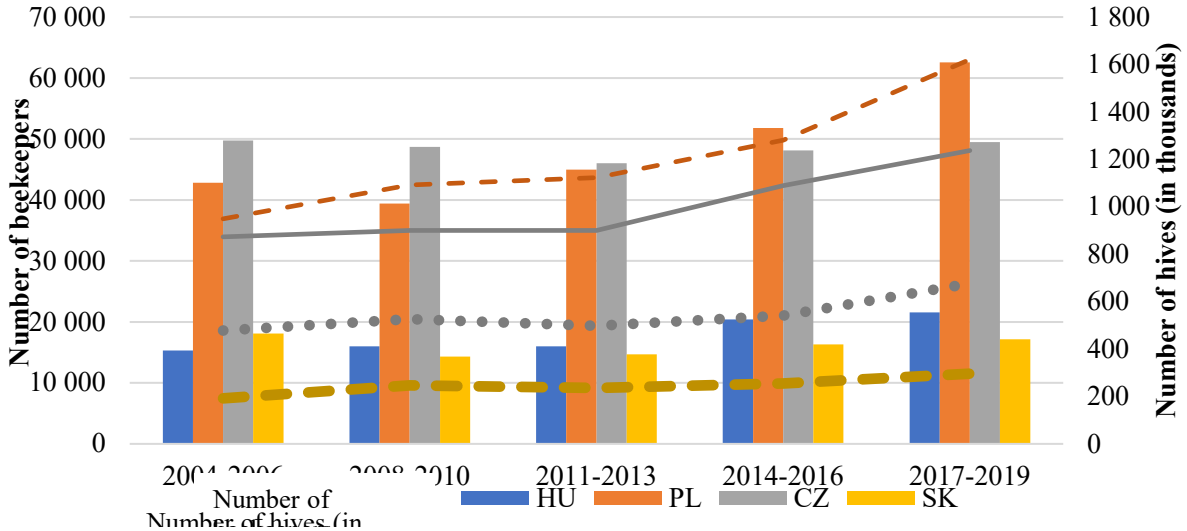

Figure 4: The number of beekeepers and the number of hives in the V4 countries (2004-2018)

Source: Own adaptation based on European Commission data (2020a and 2020b)

Conclusion

Many economic and cultural links have developed between the Czech Republic, Poland, Hungary and Slovakia as a result of their co-operation dating back several centuries. They became members of the European Union at the same time in 2004. Since then they have become increasingly important in the European economy, and today they have become essential players in the common European economy and policy (Fenyves et al., 2019). Although the importance of V4 agriculture has decreased in recent years in some national economies, due to the multifunctionality of agriculture (Törőné Dunay, 2012; Illés et al, 2012.) it is not enough to interpret mere economic indicators, as its importance extends to global food and other areas based on agricultural production (Fenyves et al., 2019), not to mention the other positive externalities of the given specific sector (Nyárs, 2001; Árváné, 2011).

The honey production of the countries is mainly influenced by the size of the agricultural land, the topographic conditions and the quantitative and qualitative condition of the bee pastures. Agricultural production around the world is determined by climatic conditions and the weather of a given year. In southern European countries, the climatic conditions are more favourable for beekeeping sector (European Commission, 2020d), however, Slovakia is at a disadvantage in terms of the volume of honey production due to its smaller area and mountainous location compared to other v4 countries. Hungary has the highest honey production in terms of production, despite the fact that there are three times as many beekeepers in Poland and twice as many in the Czech Republic. The number of beekeepers with at least 150 bee colonies is also significantly higher in Hungary, the number of bee colonies per beekeeper and the overall bee density are several times higher than in other Visegrad countries, however, the price of honey is the lowest here, both for site of production and bulk at wholesalers. The bee colonies of professional apiaries (producing over 150 beehives) with migratory beekeeping provide at least twice the yield of an average apiary. Consequently, before-mentioned phenomenon and climatic conditions can explain the high yields realized in Hungary. Nevertheless, beekeepers producing in the Czech Republic and Slovakia are able to sell the honey they produce at significantly better prices. Low purchase prices and high production costs are a major concern for industry (except in the Czech Republic).

An increasing trend of cooperation between the Visegrad countries has been observed in recent years (Káposzta – Nagy, 2015), however, due to country-specific problems, it would

be worth to strengthen the agricultural cooperation. Based on the research, it is proposed to harmonize the national development directions supported by the National Apiculture Programs (especially in the field of R&D) and to encourage and develop cooperation within the cross-border beekeeping sector. Furthermore, it is recommended to integrate and translate R&D results into beekeeping practice and to develop new joint research directions for the future. The increase in the number of bee colonies is a good illustration of the effectiveness of the National Apiculture Programs, however, in terms of the overall profitability of the sector, EU average prices have practically not risen, while production costs are rising and import prices are falling. This poses serious challenges to the sector, therefore, support from the National Apiculture Programs is still needed, partly in terms of the sector's essential role in the environment and partly in terms of impact on agriculture and trade (European Commission, 2019). The research also points out that the cooperation of the studied regions in the field of beekeeping could greatly contribute to their profitability, the successful cooperation of the Visegrad countries could have an impact on the operation of the European Union and thus the world economy and influencing the whole European integration (Fenyves et al., 2019).

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AN OVERVIEW OF GENERAL PATTERNS OF PRODUCTION, COMPETITIVENESS AND TRADE OF SLOVAK CEREALS SUPPLY CHAIN

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Abstract

In our paper we try to analyze general patterns and prognosis of the situation in the cereals supply chain and its consequences on its competitiveness in the domestic and international markets. From ex post data analysis (2012-2016) we conclude that the analyzed supply chain is influenced mainly by competition pressure from EU market, the development of commodity prices in the international markets, higher costs of production and lower intensity parameters compared to more advanced EU members. Cereals are among commodities produced at sufficient amount to satisfy the requirements of processing industry and consumption in Slovak Republic. Regarding the future development of agri-food market until 2020, based on ex ante analysis taking into account situation in the international markets, demand and supply in intra EU market or external world market, it is expected that comparing to average values of the period 2012-2016, the production of cereals will fall. Cereals belong among commodities where even in 2020, Slovakia will still achieve self-sufficiency (at the level 80 %).

Key words

Competitiveness, Supply chain, Cereals, Self-sufficiency, Trade balance

JEL Classification: D24, F14, L81, Q17, N50, Q13, Q18

Introduction

Cereals are a very important subsector commodity group crucial for maintaining food security, as raw material for a large scale of food and nonfood as well as an important source of nutritional and energetic value. This production process is very sensitive to land and climatic conditions and the quality of production is very closely related to biological material as well as technological process production, manipulation, storage and packaging. Boreková (2006). In Slovakia there are specific technical norms for wheat („STN"): food wheat (quality classes E, A, B): STN 46 1100-2 and wheat for animal feed: STN 46 1200-2. (Vilček et. al., 2005). Cereals in general and wheat specifically rank among most important commodities in terms of nutrition and as a food source used since 10 000 years. (Macquarie agricultural funds management, 2014).

Food supply chain is a very important element and process that covers commodity production, processing, up to final product to final consumer. Simply this is a process including production up to final consumption (Bečvářová, 2006, Benda-Prokeinová, et.al.). The agribusiness supply chain hinges on two criteria, namely, how well goods and services flow from businesses to consumers, which is referred to as efficiency, and how the supply chain system meets the needs of consumers, which is referred to as responsiveness. Although supply chain decisions in manufacturing and services are driven by these two criteria through six drivers, agribusiness becomes complex because of two groups within the system, namely, the farm gate produce market and the processed goods market, and the play of a host of operators who tend to have divergent business objectives, with a narrow focus on short-term gains and decision unit level profit making. Farm gate produce markets are mostly dominated by traders, and are biased towards traders, not farmers. Consumers also do not benefit, and the inefficiency in the system is only helping intermediaries (Chandrasekaran and Raghuram, 2014). Vertical coordination is a phenomenon related to instruments and elements or transactions, thanks to

which products move along supply chain from production to final consumption (Frank and Henderson, 1992). Food and agricultural supply chains in developing and transition countries have undergone tremendous changes in the past decades – many of these unimaginable twenty five years ago. The most important changes are the shift from domestically oriented tot globally integrated food supply chains and from state-controlled systems to private governance in the agri-food system. Companies and property rights have been privatized, markets liberalized, and food supply chains integrated into the global economy.

An important aspect of these changes is that liberalization and privatization initially caused the collapse of state-controlled vertical coordination. However, more recently, privately governed vertical coordination systems have emerged and are growing rapidly. This is a response to consumer demand for food quality and safety on the one hand and the farms' production constraints caused by factor market imperfections on the other hand. Swinnen et. al. have shown both theoretically and empirically that these changes have major effects on quality, equity and efficiency of the supply chains and, more generally, have major implications for economic performance and development in these countries (and beyond) (Swinnen et. al. 2007).

If competitiveness is a country's major concern in international trade, then it should also be concerned about the attractiveness of the sectors in which it is competitive. In a "no-free-trade" world, trade policies should concentrate on those sectors considered most attractive. This is the conclusion of the advocates of the new thinking about trade theory as advanced by Brander and Spencer (1985) and Krugman (1984). This interest is shared, although from a different perspective, by the constant market share analysis school (Holden, Nairn and Swales, 1989), which explains how structural and non-structural changes affect the position of nations in international trade. Other approaches in economic literature that associate changing market patterns with economic performance, mainly in developing countries, focus on studies of export performance (Singer and Gray, 1988) and export instability (Love, 1985). Business economics literature on portfolio planning has developed various descriptive and analytic tools to link the competitive position of firms to market attractiveness (Gluck, 1985). However, the competitiveness of nations with regard to changing market patterns has received little attention in the literature. This may mean overlooking significant aspects of the importance of structural and competitive changes that affect the position of countries in international markets.

In this paper we try to analyze general patterns and prognosis of the situation in the cereals supply chain and its consequences on its competitiveness in the domestic and international markets.

Materials and methods

As primary data source for this paper were data from institutions like Statistical office of Slovakia, Ministry of Agriculture, domestic research centers NPPC-VÚEPP, PPA-SR, PPA-ATIS, ÚKSÚP, international institutions, etc.

For the classification of the international trade with commodities, the Harmonized system of European Union has been used as it is the rule with the Custom statistics of the Slovak republic. The source for the EU intratrade is INTRASTAT – SK and for the trade with third countries is EXTRASTAT. The European Union includes all 28 member states (EU 28). All other trade partners are marked as third countries.

In this paper we have used the following methodological approach to calculate the following indicators:

a) Comparative Price level (CPL)

$$CPL = \frac{Pd}{Pf},$$

where:

Pd domestic price (processor) of the commodity produced in Slovakia,

Pf foreign price (processor) of the commodity produced other than in Slovakia.

- If CPL ≤ 1,15, the commodity is price competitive in domestic market.
- If CPL ≤ 0,85, the commodity is price competitive in international markets.

b) Self-sufficiency of cereals in the Slovak market

Self-sufficiency is calculated based on methodological approach of Eurostat, as the following:

- self-sufficiency = (production / consumption)*100

c) Lafay index

$$LFI_j^i = \left(\frac{X_j^i - M_j^i}{X_j^i + M_j^i} - \frac{\sum_{j=1}^{N}(X_j^i - M_j^i)}{\sum_{j=1}^{N}(X_j^i + M_j^i)}\right) * \frac{X_j^i + M_j^i}{\sum_{j=1}^{N}(X_j^i + M_j^i)} * 100$$

where:

X_{ij} export of country „i“ in the commodity group „j“

M_{ij} import of country „i“ in the commodity group „j“

N number of analyzed commodity groups,

where the sum of LFI for all analyzed commodity groups is equal to 0, i.e. $\sum_{j=1}^{N} LFI_j^i = 0$.

Lafay index could be divided into three main components (Burianová and Belová , 2012):

$$LFI_1 = \frac{X_j^i - M_j^i}{X_j^i + M_j^i}$$

$$LFI_2 = \frac{\sum_{j=1}^{N}(X_j^i - M_j^i)}{\sum_{j=1}^{N}(X_j^i + M_j^i)}$$

$$LFI_3 = \frac{X_j^i + M_j^i}{\sum_{j=1}^{N}(X_j^i + M_j^i)}$$

than:

$$LFI = (LFI_1 - LFI_2) * LFI_3 * 100$$

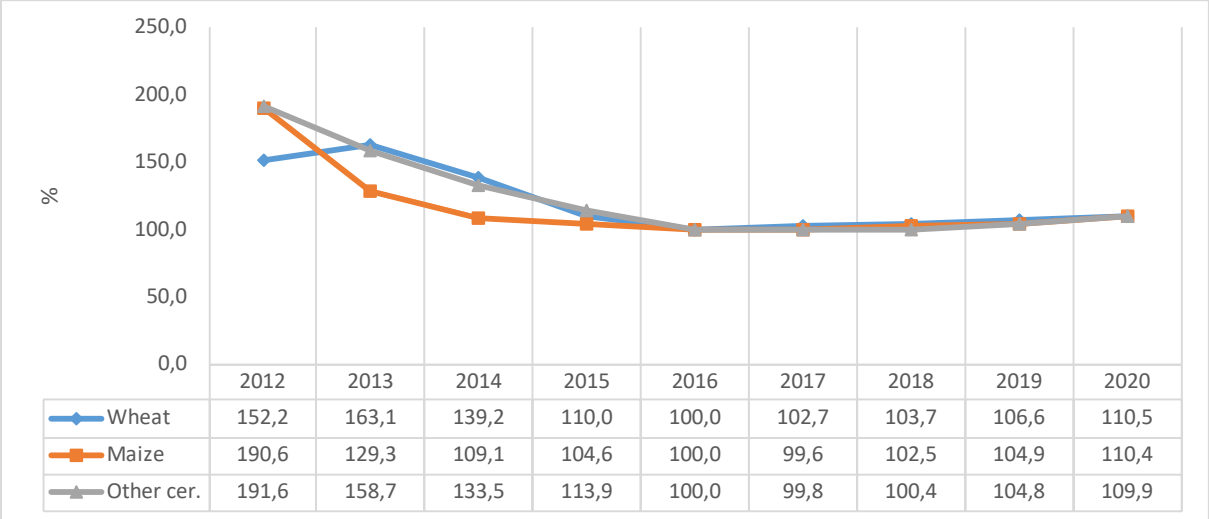
- LFI_1 – calculates the net export given commodity based on its turnover. This indexes is known otherwise as Ballassa RCA index.
- LFI_2 – compares total net export (the sum of all analyzed commodities) to their total turnover. The difference of first two components has a positive value if $LFI_1 > LFI_2$, that means RCA index of a given commodity is higher than RCA index of the sum of all other analyzed commodities.
- LFI_3 – corrects for the value of the expression in the brackets. It expresses the share of the given commodity on total turnover.

- The positive value of LFI index indicates the existence of comparative advantage for a given commodity or commodity aggregation.
- The negative value of LFI index indicates, that there is no specialization and as a result there is no comparative advantage for a given commodity or commodity aggregation (Zaghini, 2005).

Results

CEREALS

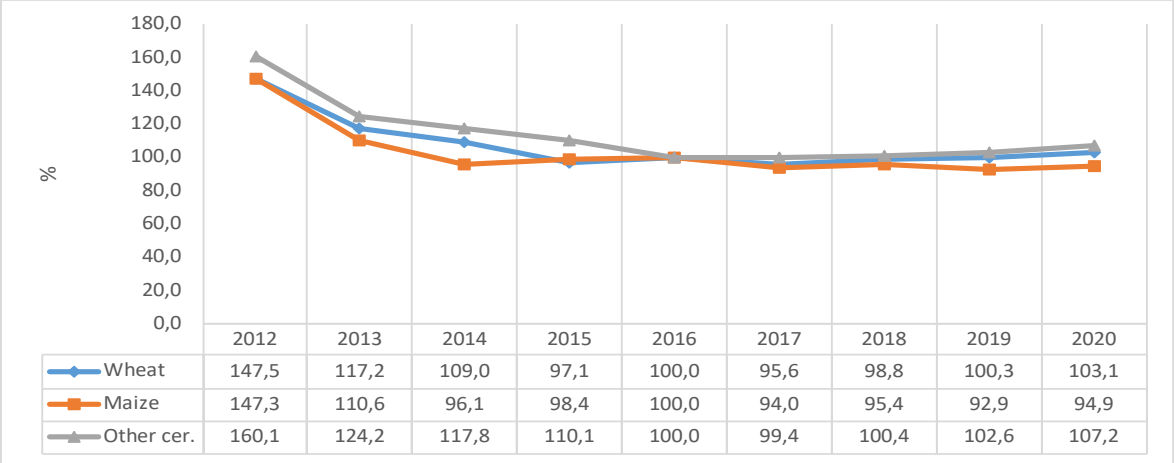
The period 2012-2016 is characterized by high volatility of cereal prices. They were at their peak at the beginning of this period and then started falling gradually. Assuming average yields, adequate changes in reserves and slightly higher oilseed prices, since 2018 it is real to expect increasing cereals world prices, where in 2020 they could be 10 % higher than in 2016, also for each cereal commodity.



	2012	2013	2014	2015	2016	2017	2018	2019	2020
Wheat	152,2	163,1	139,2	110,0	100,0	102,7	103,7	106,6	110,5
Maize	190,6	129,3	109,1	104,6	100,0	99,6	102,5	104,9	110,4
Other cer.	191,6	158,7	133,5	113,9	100,0	99,8	100,4	104,8	109,9

Graph 1: Development and prognosis of world prices for cereals (2016 = 100 %)
Source: OECD-FAO, calculations NPPC-VÚEPP

Due to price transmission cereals prices in EU are partially affected by global trends confirmed by higher prices at the beginning of the analyzed period. In the respective figure we present the development and prognosis for the period 2012-2020. Assuming standard market conditions until 2019 compared to 2016 in EU there is a possibility of declining (resp. stagnating) average cereals prices. This more apparent with maize (-5.1 %), while wheat (+3.1 %) and other cereals (+7.2 %) might achieve higher prices.

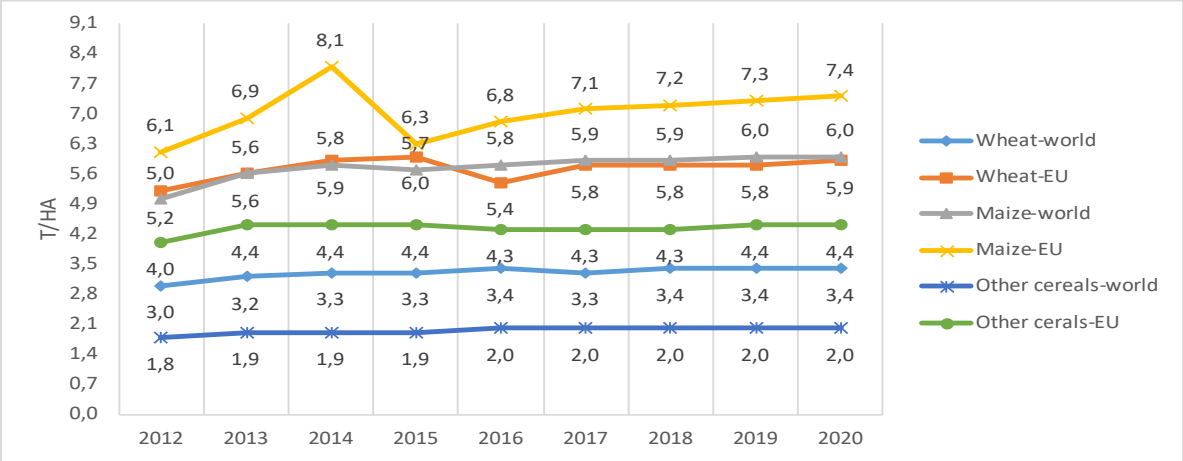


	2012	2013	2014	2015	2016	2017	2018	2019	2020
Wheat	147,5	117,2	109,0	97,1	100,0	95,6	98,8	100,3	103,1
Maize	147,3	110,6	96,1	98,4	100,0	94,0	95,4	92,9	94,9
Other cer.	160,1	124,2	117,8	110,1	100,0	99,4	100,4	102,6	107,2

Graph 2. Development and prognosis of farm prices for cereals in the EU (2016=100%)
Source: OECD-FAO, calculations NPPC-VÚEPP

Production

According to the OECD-FAO prognosis during 2016-2020 there is no expectation that the cereals growing area might increase globally, given limited resources. Based on this, the growth of global cereals production will depend in the next decade on higher yields, while their growth rate will be slower than in the previous period.



Graph 3. Development and prognosis of cereals yields per hectare in the world and the EU (t/ha)
Source: OECD-FAO, calculations NPPC-VÚEPP

The values of cereals productions in the world and EU are given in Table 1. for the period 2012-2020. In the forecasting period the growth dynamics of the world production of wheat, maize and other cereals will be higher than in EU countries. Average production values in the EU are excepted to increase in 2020 compared to the average values of period 2012-2016 for wheat by 5.9 %, maize by 6.5 % and other cereals by 0,6 %.

Given normal standard conditions, the production of ***wheat*** might reach by 2020 the volume of 771.4 million tones, or 7.3 % higher than 2012-2016 average. EU will produce almost 20.4 % of the total volume. Other countries to contribute to production growth will be India, Russia, Ukraine, Argentina, Pakistan and Argentina. In China (the second biggest producer of wheat after EU), production is expected to stagnate.

Table 1. Development and prognosis of cereal production in the world and EU (1000 t)

PRODUCTION		Real situation						Prognosis				Index	
		2012	2013	2014	2015	2016	average 2012-2016	2017	2018	2019	2020	2016/2012	2020/avg. 2012-2016
Wheat	-world	656 893	712 628	730 761	736 155	759 372	719 161	744 155	755 512	763 321	771 415	115,6	107,3
	-EÚ	135 414	144 883	157 342	161 366	144 405	148 682	154 178	155 402	156 338	157 504	106,6	105,9
Maize	-world	873 297	1 015 684	1 034 725	1 005 149	1 034 329	992 637	1 042 429	1 050 807	1 066 211	1 078 871	118,4	108,7
	-EU	59 820	67 037	77 905	58 266	59 911	64 588	65 681	66 813	67 879	68 796	100,2	106,5
Other cer.	-world	276 861	295 324	303 692	298 910	301 585	295 275	302 081	305 441	308 505	311 848	108,9	105,6
	-EU	87 538	96 278	95 685	93 755	93 013	93 254	93 146	93 607	93 685	93 846	106,3	100,6

Source: OECD-FAO, calculations NPPC-VÚEPP

According to OECD-FAO total world production of maize in 2020 will reach 1 078.9 mil. t, which means an increase by 8,7%. EU will produce 6.4% of the total global volume. Other big producers will be USA, Brazil, China and Argentine.

Global production of ***other cereals*** in 2020 will reach 311.8 million tones or 5.6% higher than the average 2012-2016, while EU have a 30.1% share on total production. Biggest producer with higher production will be EU, India, Argentine, Nigeria and Ethiopia. USA might decrease the growing area due to higher yields in previous years.

Consumption

Total consumption of cereals globally is expected to grow faster than in the EU (average consumption of period 2012-2016 compared to 2020). In the period 2017-2020 the global human wheat consumption per capita will stay approximately the same (+0.7%), while a slight increase in consumption is expected with other cereals (+3.8%) and maize (+3.0%). EU wheat and maize consumption per capita is expected to stay at same level in 2020 (-0.5%) but the consumption of other cereals might slightly increase (+1.6%).

Based on OECD-FAO forecasts, wheat global consumption by 2020 might reach the volume of 767.9 million tones, and compared to the average volumes of 2012-2016 it represents an 8.1% increase. This increase will be influenced by higher human consumption of wheat in developing countries due to population growth, income as well as continuing process of urbanization.

Table 2. Development and prognosis of cereal consumption in the world and in EU (1000 t, kg/inhabitant)

CONSUMPTION		Real situation						Prognosis				Index	
		2012	2013	2014	2015	2016	average 2012-2016	2017	2018	2019	2020	2016/2012	2020/avg. 2012-2016
Wheat	-world	687 224	697 353	708 283	715 977	742 905	710 348	754 244	753 154	760 605	767 947	108,1	108,1
	-EÚ	118 990	116 235	126 080	130 046	130 524	124 375	130 653	128 588	129 017	129 398	109,7	104,0
Maize	-world	891 378	964 863	997 207	1 008 199	1 039 861	980 301	1 041 341	1 058 328	1 072 232	1 083 198	116,7	110,5
	-EU	72 922	76 506	76 156	74 619	74 122	74 865	75 290	75 964	77 174	78 371	101,6	104,7
Other cer.	-world	276 367	282 219	295 918	293 311	288 398	287 243	298 083	300 293	304 119	307 209	104,4	107,0
	-EU	83 327	83 285	81 627	81 893	82 721	82 571	85 597	84 644	84 820	84 457	99,3	102,3
Consumption/inh.		Real situation						Prognosis				Index	
		2012	2013	2014	2015	2016	average 2012-2016	2017	2018	2019	2020	2016/2012	2020/avg. 2012-2016
Wheat	-world	66,9	67,0	66,9	67,1	67,1	67,0	67,6	67,7	67,6	67,5	100,3	100,7
	-EÚ	109,7	109,6	109,8	110,0	110,3	109,9	109,3	109,2	109,2	109,1	100,5	99,3
Maize	-world	17,7	17,7	17,7	18,1	18,0	17,8	18,1	18,2	18,3	18,4	101,9	103,0
	-EU	9,5	9,5	9,5	9,6	9,6	9,5	9,6	9,6	9,7	9,7	100,5	101,6
Other cer.	-world	10,3	10,1	10,4	10,1	10,4	10,3	10,4	10,5	10,6	10,6	100,2	103,8
	-EU	9,4	9,4	9,4	9,4	9,4	9,4	9,3	9,3	9,4	9,4	100,5	99,7

Source: OECD-FAO, calculations NPPC-VÚEPP

Out of total wheat consumption, 68% represented on average wheat human consumption in 2012-2016 and this share might remain the same in 2020. Wheat is also used for production of animal feed and biofuels. In 2020 according to OECD-FAO estimation almost 19.5 % of wheat consumption will go for animal feed while 1.8 % of global wheat consumption will go for the production of biofuels.

Table 3. Development and prognosis of cereal consumption in the world and in EU (%)

Indicator		Total consumption = 100 %; share of production of:					
		animal feed		food		biofuel	
		avg.2012-16	2020	avg.2012-16	2020	avg.2012-16	2020
Wheat	-world	18,9	19,5	68,4	68,0	1,8	1,8
	-EÚ	40,5	42,4	44,7	42,8	4,5	4,1
Maize	-world	56,1	58,2	13,2	13,1	16,5	16,9
	-EU	78,5	77,3	6,4	6,3	9,2	10,0
Other cer.	-world	56,0	56,1	25,9	26,8	2,5	3,3
	-EU	73,2	73,2	5,8	5,6	2,2	2,7

Source: OECD-FAO, calculations NPPC-VÚEPP

The maize global consumption until 2020 might reach the volume of 1 083.2 million tones, and compared to average values for the period 2012-2016 it represents an 10,5% increase. Out of the total global maize consumption, during 2012-2016 period on average up to 56% went for animal feed production, and in 2020 consumption for these purposes might slightly increase. Maize consumption is also destined for food and biofuel purposes. In 2020 according to OECD-FAO estimations 13.1 % of maize consumption is for human nutritional purposes and for biofuel purposes another 16.9 %. In the EU more than three quarters of maize consumption goes for animal feed purposes.

World consumption of other cereals until 2020 might increase by 7 % and in the EU it is expected same tendency (+2.3 %). The European Union is a very important consumer of other cereals as in 2016 had a share of 28.7 % on global consumption, and in the future it is expected to remain unchanged (27.5 % in 2020). A very important part of consumption goes for the needs of poultry industry. Almost 56 % of global consumption of other cereals is used for animal feed purposes. The rest in 2020 it is estimated to be used for biofuel production almost 3%.

International Trade

The international trade with cereals will be influenced by the situation in global market, mainly prices, supply and increasing demand for cereals for animal feed purposes in developing countries. In the international trade with cereals, the dominant exporting positions will be kept by the same players, starting with USA, EU, Canada, Australia and Russian Federation. Main cereal importers are Egypt, Indonesia, Algeria, Japan and Brazil.

The breakdown of individual cereal commodities shares is as the following:

- *Wheat exports* 71% EU (19 %), USA (14 %), Russian Federation (15 %), Canada (12 %) and Australia (11 %);
- *Wheat imports* 25% Egypt together with Indonesia, Algeria, Japan and Brazil;
- *Maize exports* 87% USA together with Brazil, Ukraine, Argentine and Russian Federation;
- *Maize imports* 41% Japan together with Mexico, EU, South Korea and Egypt;
- *Exports of other cereals* 90% EU, Australia, USA, Ukraine, Argentine, Russia and Canada. USA will keep the position as biggest exporter of other cereals ;

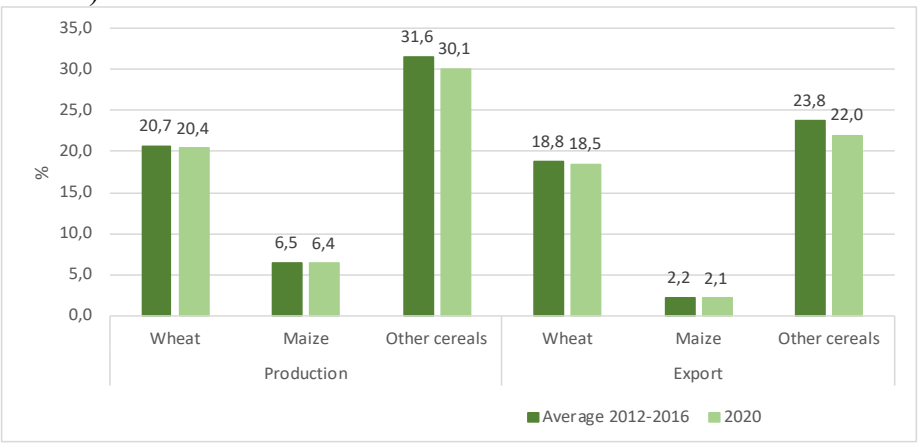
- *Imports of other cereals* 29% China and 41% Saudi Arabia together with Japan, USA, Islamic Republic of Iran. China in accordance with its policy of absolute self-sufficiency for selected commodities (wheat, rice...) concentrates on imports of other cereals.

Table 4. Development and prognosis of international trade with cereals in the world and EU (1000 t)

IMPORT		Real situation						Prognosis				Index	
		2012	2013	2014	2015	2016	average 2012-2016	2017	2018	2019	2020	2016/2012	2020/avg. 2012-2016
Wheat	-world	140 551	152 885	160 379	161 713	168 088	156 723	166 391	171 499	174 028	176 045	119,6	112,3
	-EÚ	5 250	3 724	5 685	6 628	6 054	5 468	5 670	5 509	5 393	5 379	115,3	98,4
Maize	-world	100 981	122 199	126 084	135 913	139 297	124 895	136 739	137 256	138 080	139 406	137,9	111,6
	-EU	10 978	15 000	9 430	13 286	14 000	12 539	12 755	13 400	12 085	12 324	127,5	98,3
Other cer.	-world	29 558	34 673	45 438	45 984	37 926	38 716	38 344	38 880	39 869	40 876	128,3	105,6
	-EU	636	460	478	628	538	548	532	567	663	721	84,6	131,6
EXPORT		Real situation						Prognosis				Index	
		2012	2013	2014	2015	2016	average 2012-2016	2017	2018	2019	2020	2016/2012	2020/avg. 2012-2016
Wheat	-world	132 269	159 290	158 099	164 404	174 952	157 803	168 816	173 924	176 453	178 470	132,3	113,1
	-EÚ	22 891	31 641	34 541	33 890	25 498	29 692	28 473	31 670	32 818	33 030	111,4	111,2
Maize	-world	89 850	137 710	126 021	139 317	140 489	126 677	137 932	138 449	139 272	140 599	156,4	111,0
	-EU	1 825	3 110	3 964	2 245	2 955	2 820	2 221	2 831	2 842	2 964	161,9	105,1
Other cer.	-world	35 449	41 813	51 410	51 398	44 700	44 954	43 397	43 934	44 922	45 930	126,1	102,2
	-EU	8 058	9 265	13 142	14 598	8 380	10 688	8 949	9 462	9 775	10 082	104,0	94,3

Source: OECD-FAO, calculations NPPC-VÚEPP

The values for the cereals global and EU trade in 2012-2020 are presented in table 4, where it is apparent that export and import volumes in 2020 compared to average volumes in 2012-2016 are expected to grow by more than 10% for wheat and maize and by 2-6% for other cereals. In the EU the situation is expected to be more complicated, wheat and maize experts are expected to grow, but the imports to the contrary will fall gradually. Given the assumed stagnation of other cereals supply at home and the intensification of animal production, until 2020 their export is expected to fall (-5.7 %) while their import to EU market will substantially increase (+31.6 %).



Graph 4. The EU share of production and import of cereals on total world trade volumes (v %)

Source: OECD-FAO, calculations NPPC-VÚEPP

The analysis of selected indicators of competitiveness for the cereal supply chain

Price competitivenes analysis based on CPL

For the period 2012-2016 the development of farm prices of wheat, barley, and maize in V4 countries has faced variety of fluctuations, but it is apparanet the tendency of falling prices for all cereal commodities and in all analyzed countries. We haved followed the price competitiveness toward other selected countries based on the index of Compared Price Level (CPL) for the following commodities.

With respect to competitiveness in domestic markets the CPL index at domestic markets should not increase above 1,15, i.e. domestic prices should be at the maximum 15 % higher than the country where imports come from. In line with this hypothesis in the period 2012-2016 Slovakia has been price competitive for commodities like wheat, ray, barley (except for Hungary in 2014) and maize toward EU as well as V4 countries.

Similarly, regarding the competitiveness in global markets, CPL index in global markest should not be higher than 0,85, i.e. Slovak commodity prices should be at minimum 15 % lower than export partners. In the period 2012-16 in V4 markets Slovak commodities were not competitive for none of the analysed commodities. Only in 2014, Slovak maize was relatively succesful in Czech maize market. In EU market Slovak commoities were more competitive especially toward the end of analyzed, especially wheat and maize.

Table 5. Farm prices for cereals and their CPL

Commodity	Year	EUR/t					CPL			
		SVK	CZE	POL	HUN	EU	CZE	POL	HUN	EU
Wheat for consumption	2012	205,4	200,8	213,8	208,8	225,7	1,02	0,96	0,98	0,91
	2013	174,4	203,6	190,0	160,6	213,5	0,86	0,92	1,09	0,82
	2014	155,3	162,8	163,6	156,2	182,2	0,95	0,95	0,99	0,85
	2015	152,7	158,4	160,0	155,8	175,0	0,96	0,95	0,98	0,87
	2016	126,2	137,0	143,5	130,7	152,5	0,92	0,88	0,97	0,83
	2016/2012	61,5	68,2	67,1	62,6	67,6				
Barley for breweing	2012	216,8	204,8	216,1	232,7	239,3	1,06	1,00	0,93	0,91
	2013	201,7	214,8	177,7	177,5	214,9	0,94	1,14	1,14	0,94
	2014	178,6	187,5	160,5	145,0	185,4	0,95	1,11	1,23	0,96
	2015	160,5	179,0	146,7	143,4	178,6	0,90	1,09	1,12	0,90
	2016	149,4	164,9	136,6	129,8	167,1	0,91	1,09	1,15	0,89
	2016/2012	68,9	80,5	63,2	55,8	69,9				
Ray for cons.	2012	208,1	203,1	186,0	190,3	213,4	1,02	1,12	1,09	0,98
	2013	160,9	177,9	148,3	144,8	163,7	0,90	1,08	1,11	0,98
	2014	136,5	142,8	131,7	126,0	146,2	0,96	1,04	1,08	0,93
	2015	136,3	143,6	125,1	126,1	137,7	0,95	1,09	1,08	0,99
	2016	120,4	138,8	122,1	113,2	136,1	0,87	0,99	1,06	0,88
	2016/2012	57,8	68,3	65,6	59,5	63,7				
Maize industrial	2012	199,7	187,7	174,9	196,0	220,0	1,06	1,14	1,02	0,91
	2013	172,7	194,8	159,9	164,3	204,1	0,89	1,08	1,05	0,85
	2014	128,7	154,3	130,2	134,4	165,5	0,83	0,99	0,96	0,78
	2015	139,6	138,6	135,6	137,1	158,1	1,01	1,03	1,02	0,88
	2016	128,3	144,3	141,5	133,8	160,0	0,89	0,91	0,96	0,80
	2016/2012	64,3	76,9	80,9	68,3	72,7				

Source: ŠÚ SR, MZ ČR, AKI MR, FAPA PR, Eurostat; calculations NPPC-VÚEPP

Note: nonavailable data, average EU prices EÚ – estimations

Competitiveness based on Lafay index

Based on estimated values of Lafay index from all *agrarian commodities* analyzed Slovakia is competitive in EU market with commodities like wheat, barley and maize , while in third countries market with wheat and maize.

Situation is more complicated with *processed products*. Slovakia has shown for a long time comparative advantage in global markets for products like malt, processed cereal grains, and mill and starch remains. Slovak beer, malt extract, cereal products (code HS 1904) and bakery products are competitive only in third countries markets while wheat flour only in EU market.

Table 6. Competitiveness of cereal supply chain commodities based on Lafay index

Kód CS	Komodita	Territory	2012	2013	2014	2015	2016
1001	Wheat	EU	1,438	2,076	2,764	3,382	4,138
		Third Coun.	0,139	0,024	0,262	0,313	1,308
1002	Ray	EU	-0,083	0,024	0,079	0,029	0,020
		Third Coun.	0,053	0,034	0,011	-	0,023
1003	Barley	EU	0,202	-0,066	0,230	0,464	0,443
		Third Coun.	-0,001	0,018	-0,015	-0,010	0,043
1004	Oats	EU	-0,001	-0,006	0,019	0,008	0,014
		Third Coun.	0,013	0,003	0,005	0,004	0,011
1005	Maize	EU	1,078	0,921	1,138	1,136	0,822
		Third Coun.	1,462	1,092	1,750	1,671	0,682
1101	Wheat flour	EU	0,272	0,311	0,253	0,189	0,205
		Third Coun.	0,002	0,003	-0,002	0,041	-0,002
1102	Cereal flours other	EU	-0,010	-0,002	0,000	-0,002	-0,014
		Third Coun.	0,000	0,000	-0,002	-0,004	-0,001
1103	Cereal semolina	EU	0,023	0,017	0,001	0,000	-0,024
		Third Coun.	-0,001	-0,003	-0,003	-0,003	-0,002
1104	Cereal grains	EU	0,104	0,120	0,092	0,049	0,076
		Third Coun.	0,126	0,148	0,334	0,949	0,518
1107	Malt	EU	0,965	1,134	1,150	1,168	1,231
		Third Coun.	3,819	2,263	1,998	2,026	1,542
1108	Starch, inulin	EU	0,021	0,121	0,093	0,093	0,110
		Third Coun.	0,109	-0,057	-0,022	0,008	0,220
1109	Wheat gluten	EU	-0,014	-0,015	-0,015	-0,014	-0,013
		Third Coun.	-	0,000	0,000	-	-
1901	Malt extract	EU	-0,293	-0,254	-0,296	-0,427	-0,454
		Third Coun.	0,205	0,215	0,316	0,380	0,389
1902	Pastas	EU	-0,194	-0,227	-0,231	-0,167	-0,190
		Third Coun.	-0,310	-0,184	-0,069	-0,164	-0,207
1904	Products from cereals	EU	-0,206	-0,201	-0,191	-0,154	-0,121
		Third Coun.	0,585	0,686	0,778	0,552	0,459
1905	Bakeries	EU	-0,900	-0,832	-0,676	-0,911	-0,717
		Third Coun.	0,445	1,087	1,405	1,385	1,559
2203	Malting beer	EU	-0,385	-0,420	-0,512	-0,679	-0,550
		Third Coun.	0,274	0,305	0,269	0,633	0,297
2302	Mill bran	EU	0,122	0,143	0,159	0,187	0,117
		Third Coun.	0,100	0,051	0,009	0,055	0,182
2303	Starch remains	EU	0,421	0,488	0,389	0,362	0,361
		Third Coun.	1,873	2,854	3,106	1,212	1,661

Source: ŠÚ SR, estimations NPPC-VÚEPP

Competitiveness analysis based on intensity parameters

The intensity parameters for plant production are substantially influenced by climatic conditions in the given year. I order to minimize this effect we have chosen for comparison three year average hectare yields between Slovakia and EU countries for the period (2014-2016).

Wheat and barley yields in Slovakia vary approximately at the same range as EU average. Highest yields for these commodities are achieved in member states situated further north including France and Austria. From V4 countries the most successful is Czech Republic. Situation with maize less favorable in Slovakia. From the aspect of production intensity Slovakia seems competitive only toward Poland, Balkan countries, Lithuania and United Kingdom.

Graph 5. Comparison of hectare yields for cereals in the EU (SR = 100 %)
Source: Eurostat, calculations NPPC-VÚEPP, Note: average values for 2014-2016

Conclusion

In our paper we try to analyze general patterns and prognosis of the situation in the cereals supply chain and its consequences on its competitiveness in the domestic and international markets. From ex post data analysis (2012-2016) we conclude that the analyzed supply chain is influenced mainly by competition pressure from EU market, the development of commodity prices in the international markets, higher costs of production and lower intensity parameters compared to more advanced EU members. Cereals are among commodities produced at sufficient amount to satisfy the requirements of processing industry and consumption in Slovak republic. Regarding the future development of agri-food market until 2020, based on ex ante analysis taking into account situation in the international markets, demand and supply in intra EU market or external world market, it is expected that comparing to average values of the period 2012-2016, the production of cereals will fall. Cereals belong among commodities where even in 2020, Slovakia will still achieve self-sufficiency (at the level 80%).

Based on selected approaches of evaluation of agrarian trade Slovakia is competitive in EU market in commodities like a wheat, barley, maize as wells as in third countries markets with wheat and maize (code HS 0709). Regarding processed food products situation differs. Slovakia has for a long time comparative advantage in EU market in commodities like wheat flour, malt, while in third countries markets in commodities like malt, mill and starch remains, beer, malt extract, bakery products, cereal products (code HS 1904).

Based on the above mentioned results we conclude that regarding competitiveness of Slovak agri-food commodities in domestic and international markets there are huge reserves. The share of Slovak commodities on Slovak market is permanently reducing. A lot of policy steps are required to improve the situation, leading to increased productivity, further restructuring in farming sector, increasing efficiency of production, supporting innovation to increase quality and marketing of agri–food commodities.

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