

CAN ONLINE PRESENCE GIVE COMPANIES A COMPETITIVE EDGE?

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Abstract: In this study the competitiveness of Hungarian enterprises was analyzed, because relatively little research has been conducted to investigate small enterprises. More specifically, the paper examines to what extent the use of online solutions gives companies a competitive advantage. Nearly 800 companies were involved in the research, for which a new methodology was used. It is built on a multi-step model, which is based on mathematical calculations. From the result of a questionnaire survey, variables were generated to create a number of competitiveness pillars, which were used to determine the final competitiveness index of each company. The research was carried out at the Faculty of Business and Economics, University of Pécs. Scientists from the Faculty of Engineering and Information Technology, University of Pécs were involved in the online analysis of the companies, the results of which were integrated into the research findings. The analysis shows that the companies, which do not use online solutions during their operations can be competitive but generally those present in the online space are more competitive, and use more sophisticated solutions in their business processes, which has a positive effect on several functions of the company. Overall these companies have a higher competitiveness index, which confirms that it is worth using online solutions for companies.

Keywords: Competitiveness index, Small enterprises, Online space, Competitive advantage

1. Preamble

Economic development is a strategic aim of the Hungarian government. The priority is not only to keep the economy on a proper level but also to increase this level [1].

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One of the well describable approaches of economic development is the increase of competitiveness. In macroeconomic point of view more worldwide organizations deal with determining how competitive the certain company is and defining their positions in the ranking. Generally, the description and ranking are based on complex indices. According to the data of World Economic Forum Hungary shows increasing tendency in the past years. In 2013 Hungary was in 63th place, in 2017-2018 in 60th place and in 2019 in 47th place in the world ranking list [2]-[5].

International Institute for Management Development (IMD) World Competitiveness Center measures a bit differently but logically the same way. In 2013 Hungary was in 50th place, in 2018 in 47th place and in 2019 Hungary kept this position in the world ranking list [6], [7].

It can be seen that Hungary showed some kind of increase in terms of competitiveness, which was more dynamic in the past years and it still keeps its position. There are several means and modes of economic development. Within this companies, especially small companies get outlined role, which is prioritized by economic decision makers too [8]-[17].

Meanwhile, some 'white spots' should be mentioned, which shade the picture. According to the 2019 year end data of Hungarian Statistics Office there are 721 818 operating companies. From these 720 793 (99.86%) are Small and Medium-sized Enterprises (SMEs) and 1025 (1.4%) are large companies. In terms of employment 3 121 384 people work in the total corporate sector, from this 2 220 823 people (71.15%) are employed at SMEs and 900 561 people (28.85%) work at large companies [18].

Data shows that the most enterprises are in SME sector, large companies take smaller portion of the total quantity. The picture is similar according to employment point of view but here large companies have bigger ratio. Thus, in case of companies there is no quantitative problem. The question is what is their quality? How competitive are they? If competitiveness is examined, how their operations and internal operation mechanism can be explored, what can give answer to this question?

Further economic problem is if it matters, if it is important where the company is in the space? In Hungary there are many economically intensively concentrated places, together with all of its positive extern effect. Of course its opposite can be found too. Although mainstream economics leaves the term and importance of space from its methodology, regional and space economics consider this as high importance. Thus more detailed view can be got about the real operation of the economy. Several national and international specialized literatures - some of them outlined - deal with this topic [19]-[24]. Besides it is important where the company is in the space - together with all of its positive and negative effects. This affects for example the development of innovation districts, local employability, labor market and several other things [25]-[27]. A question is that does it matter if the company is present in the online space? Do they use new ways during their operation, [28], [29]? If information technology terms are used, it can be asked, only offline presence is important or online presence also matters?

Obviously this is basically important but the Chinese coronavirus pandemic affects the world as an unexpected event. Due to the pandemic situation the governments had to launch some restrictions, which affect the physical/offline presence of the companies.

To solve this more companies have taken their operations into the online space. It is true that there are sectors, where it cannot be solved or just partly. But there are those where it can be implemented seamlessly.

Finally, it can be stated that enterprises have important role in economic development, which is verified by the high number of operating companies, but it cannot be seen how they operate, what qualitative characteristics they have and how competitive they are. This study would like to present a model, which meets the above criteria and company competitiveness can be measured more efficiently.

2. Methodology

It is not easy to determine competitiveness, because it includes more things. The type of competitiveness is an important factor, because there can be product, business sector, company, sector, region, national and international competitiveness [30]. All of them have different level and interpretation opportunity of competitiveness. In this study company competitiveness is important. In the past many studies dealt with company competitiveness, but these show miscellaneous view in terms of company size. There are studies, which examined the companies miscellaneous or focused on large company sector [31], [32], or SME sector [33]. There are few studies on SME competitiveness. [34], [35]. [36] dealt with the micro-level competitiveness analysis of SMEs, which analyses specifically the SME sector. The competitiveness of SMEs was analyzed according to this model. Although there are many excellent studies based on bigger/smaller change of this model [37]-[41], this study stays by the basic conception.

Before going on it is worth mentioning the examined sample. In the final sample there were nearly 800 companies ($N=798$), which are representatively layered in terms of company size, business sector and region. These companies were analyzed according to a specific approach. The competitiveness is built from pillars: human capital; financing; co-operation; product; administrative routines; competitive strategy; technology; marketing; internationalization; online presence. For high level competitiveness strong and high level of pillars are necessary. The structure of this model is that high level of pillars is required for high quality of competitiveness. The pillars are built from so called variables. These variables were made to help the model structure, what was put in form of thematic question in the applied questionnaire. All in all it can be stated that the competitiveness of small enterprises was created in a complex way, taking into consideration the different factors. Among these there are hierarchical order and it takes finally the SME index, which describes the competitiveness of small companies.

The variables have not been introduced yet. It would take so long to describe them in details this is the reason why only some of these are mentioned. The internationalization pillar contains foreign customers, export turnover and foreign language etc. factors. Technology means the level of technology in national context, the age and stage of development of the used technology.

The online presence pillar examines to what extent a certain company is present in the online space and its level of information communications development. The variables used to calculate this pillar include the technical features of the website, the

website services, the website content (double weighted), and the application of information communications tools and the degree of their originality. The variables are made up of numerous components, which include the amount of available information and data through the website, social media presence, information security, compatibility with mobile assets, e-commerce availability, broadband internet access, use of special software, uniqueness compared to competitors' websites. The different components were scored and these scores give the value of the online pillar, which is considered when the final competitiveness index (SME index) is calculated. The complete description of the conceptual model was already presented in [36], this is the reason why now it is not written due to size limit. Only one thing has to be mentioned that the count of competitiveness scores is built from more steps. This consists of the creation and normalization of the variables and pillars, the correction and weighting of distortion effects. Then it came as maybe the most important step the 'Penalty for Bottleneck' methodology, the detailed description of which was already given. In this case the adjusted pillars were punished with the help of the so called penalty function according to the following [42]:

$$h_{(i),j} = \min y_{(i),j} + (1 - e^{-(y_{(i),j} - \min y_{(i),j})}) \quad (1)$$

where $h_{i,j}$ is the modified value after the penalty in the case of j pillar of the i company; $y_{i,j}$ is the normalized value in the case of j pillar of the i company; y_{min} is the minimum value of $y_{i,j}$ in the case of i company; $i = 1, 2, \dots, n$ is the number of the companies; $j = 1, 2, \dots, m$ is the number of the pillars.

After the usage of the function the value of all pillars can be determined between 0 and 1 showing, which pillars are the weak points of the company. The higher this value is, the better the result is. The disharmony between the pillars has negative effect on the competitiveness, and the weak pillars weaken the other pillars too. This means that it is not worth increasing a good pillar value, because it will not raise the weaker ones. Thus the aim should be to strengthen the weakest ones. Finally, the creation of competitiveness score comes, which gives the SME index. This is done by adding the values of the 10 pillars. It can be stated that as a result of this method the competitiveness of the companies can be quantified as a certain number. The pillars can also be quantified and the variables can be used for analyzing purposes too. By using them, let us see how they formed in the research.

3. Results of the research

In this study companies with online presence are examined. Before going into the details, the notions of online presence, offline presence, online company and offline company need to be defined. Online companies are those whose operations and presence are to be found exclusively on an online platform. Offline companies are those whose operations and presence are not online. The study examines the companies in terms of their online presence. It can be stated that a company has online presence if it is an online company or if it is basically not an online company but uses online solutions

for some of its processes. That is, all online companies are present online, but not all companies who have online presence are online companies. And it is also possible that a company is not present in the online space, but there is a variable in the online presence pillar, which assesses certain information communication solutions, so the company may get a (not too high) score for the online presence pillar.

These enterprises are very colorful and it is not possible to cover all the details here, but some areas are worth focusing on. Some of the main topics are summarized comprehensively, what are shown in *Table I*.

Table I

Main data of companies with online presence [piece; %]
(Source: Author editing based on research data)

Online presence			Ratio of graduated employees		
total	798	100%	no graduated	66	16.3%
online	405	51%	low ratio of graduated	78	19.3%
offline	393	49%	middle ratio of graduated	77	19.0%
Economic sector			high ratio of graduated	76	18.8%
agricultural	10	3%	very high ratio of graduated	108	26.7%
industry	95	26%	Foreign language using		
service	267	72%	no foreign speaker	132	32.6%
no data	33	9%	1 language	57	14.1%
total	372	100%	2 languages	59	14.6%
Employees			3-4 languages	84	20.7%
1-9 employees	195	48%	5 or more languages	73	18.0%
10-49 employees	160	40%	Foreign customers		
50-249 employees	50	12%	no foreign customer	274	67.7%
Company age			max 25%	65	16.0%
1-3 years	15	3.7%	max 50%	27	6.7%
4-7 years	42	10.4%	max 75%	28	6.9%
8-12 years	74	18.3%	above 75%	11	2.7%
13 years or more	274	67.7%			

From *Table I* it can be read that almost 50% of the companies are not present in the online space. From economic sector classification it can be seen that nearly three quarters of the companies are in the service sector, around a quarter is in the industrial sector and the fewest is in the agricultural sector. 33 companies did not give its main activity but it was point of view only during sector classification. According to the number of the employees' classification micro-enterprises takes almost half of the examined samples.

According to company age classification a great majority of the companies (67.7%) are elder than 13 years, so these are matured companies. In terms of human capital there are fewer companies where there is no graduated employee, in the other cases the ratio is balanced, except for the very high ratio of the graduated employees, the number of which is the highest. In its globalized world the internationalization and proper foreign language knowledge is an important factor. Around a third of the companies do not speak any foreign languages, but a higher proportion speaks, among them there are high

numbers of more foreign language speakers. The share of the foreign customers is an interesting question. From the table it can be read that 70% of the companies do not have any foreign customers.

After general information it is useful to analyze what SME index scores the companies who have online presence got and it is worth going one step inwards and examines especially the online presence pillar. For this let us see *Fig. 1*, which shows histographic distribution.

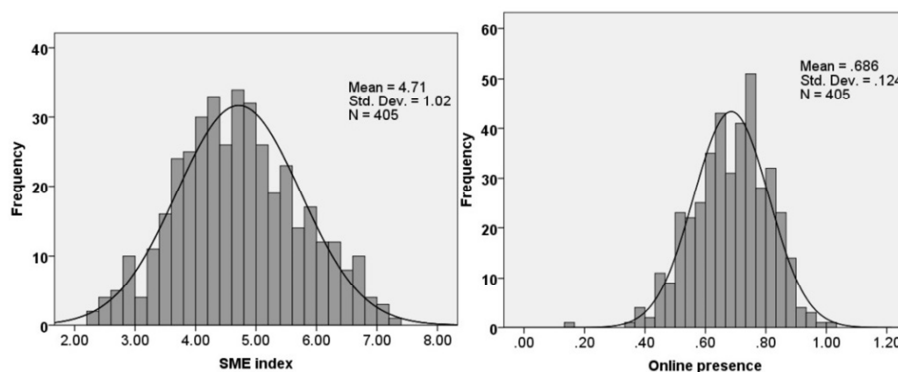


Fig. 1. The distribution of competitiveness and online presence scores
(Source: Author editing based on research data)

The histogram shows that in the distribution of the SME index there is symmetry with a small degree of asymmetry. The average SME index value of the companies whose operations are online is 4.71. There are more companies with a lower score, which is one of the reasons of the asymmetry. There are numerous companies between the scores of 4 and 5. From the full picture it should be seen that the distribution is similar to the companies who are not present in the online space but not exactly the same, because the average SME index value is 3.57 and more asymmetric with lower scores. In another words the companies who have online presence have one score higher value. In terms of online presence pillar the average value is 0.686, which is considered as higher value and the results thicken between the scores of 0.7 and 0.8. This fits in well with the preconception that companies who are present in the online space use more sophisticated online solutions during their operations. The company profile is an important factor too. In general, it is beneficial for a company to be present in the online space, because it is a huge asset for the company in terms of its competitiveness. There are companies whose operations are conducted mainly online. For them online presence is just run-of-the-mill. At the same time there are companies for which online presence is not important due to the nature of their profile. Most of the companies are between these two ends of the spectrum. The online presence of companies in different sectors of the economy is shown in *Fig 2*.

Fig. 2 shows the average value for each sector. The horizontal line represents the aggregated average, which is 0.67. Companies typically fall into three categories: *below the average* (below 0.67): (A) agriculture, (B) mining, (D) energy production; *average* (0.67-0.7): (C) processing industry, (F) building industry, (G) commerce and car repair

(N) administrative activities, (P) healthcare, (R) other services; *above average* (over 0.7): (E) water supply and waste management (H) tourism and hospitality, (I) logistics and storage, (J) information communication, (K) finance and insurance, (L) real estate (M) scientific activities, (O) education, (Q) leisure activities. It can be seen that online presence is not a silver bullet for every company, because for some it is not necessary or gives little. For most companies, online presence has a varying degree of importance and there are some for which it is essential.

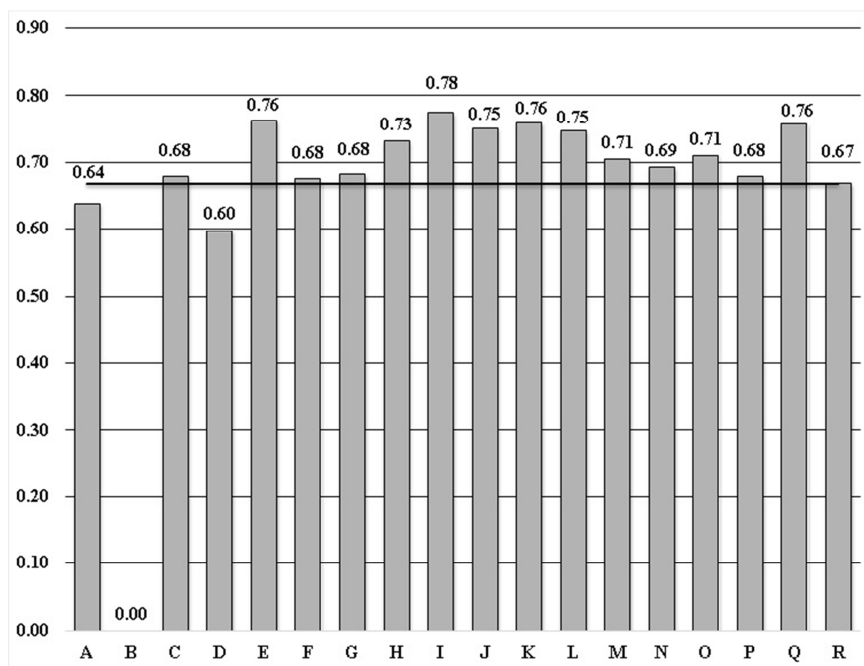


Fig. 2. The online presence value in different sectors
(Source: Author editing based on research data)

Finally, let us compare the companies with online presence and those without online presence in terms of their pillar values. Companies with average values in terms of their competitiveness were selected from both the not online presence set and online presence set and then the corresponding pillars were determined, which is shown in Fig. 3.

It can be found out that companies, which are not present in the online space have lower SME index and pillar values. The weaknesses of these companies are the online presence, the technology and the administrative routines. The companies, which have online presence, are stronger in all aspects compared with the not online presence ones. Strategy is the weak point of these companies but still better than the companies who do not operate in the online space. The strengths of the companies, which operate in the online space, are online presence, administrative routines and product development. That means that companies, which have online presence embrace digitalization, which affects the daily operation of these companies.



Fig. 3. The comparison of the pillar values of the online presence-not online presence
(Source: Author editing based on research data)

4. Conclusions

In this study the focus was on the fact that in economic policy point of view enterprises give important added value to the increase of macroeconomic development. This is a good way, but increasing the number of the enterprises only itself is a necessary but not definitely sufficient aim. To reach this, those enterprises are necessary the operation of which is in high level of standards and they should be developed also in micro level. It is important to note that the same scheme cannot be used for all the companies, because there can be big differences in their operations and the small companies - the number of which is the highest - should be handled in a small enterprise specific way. The method shown in this study serves this aim.

From this study it turned out that a half of the Hungarian small companies do not have online solutions during their operations. Those who have online presence are mainly in the service sector, more of them are micro- or small enterprises, relatively old, have high human capital potential, many of them do not have or have only a few foreign customer relations.

Their SME index showed a relatively homogenous distribution while the outlined online presence' pillar is a little bit asymmetric with higher score.

Finally, it could be seen that companies with online presence were basically better in all fields, in SME index and also in pillar values. The companies, which do not have online presence have many weaknesses, while the companies with online presence have fewer and less severe ones.

To take everything into account it is worth to give the question: Online presence is a cure-all? If short answer should be given, the answer is: no. But if the question is put in another way: Are companies with online presence more resistant to the 'diseases' of the economy? Then the short answer is: yes. If a longer answer should be given, it can be stated that of course there are many companies whose operation is not in the online space and are more competitive than the companies, which are present in the online space. It is not a cure-all that pulls the company out of bad situations. There are sectors where online presence is not definitely necessary or it does not ensure remarkable added value. Although companies with online presence are stronger, the company-wide management approach of, digitalization has a spill-over effect on other fields of the company. It does not give an answer to everything, and it does not solve all the problems, but during large economic shocks these companies can stand a better chance of survival. Many companies have reacted to this kind of situations and their operations have gone to new platforms: online ones. As it was previously mentioned, this does not mean that all the companies could or should use online solutions, but many companies have become more open to them and have recognized the opportunities lying in such online solutions. It does not mean that they cannot go bankrupt, but it can help them to recover after an economic 'disease' by using more efficient tools and can work with more confidence during their day-to-day operations.

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