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The Scope of Digital Tools and Opportunities in the Life of Hungarian and Slovakian Enterprises and Their Impact on Business Competitiveness

Janos Varga
Obuda University

Agnes Csiszarik-Kocsir
Obuda University

Abstract: The competitiveness of enterprises is a critical factor that underpins economic growth, innovation and overall social development. The importance of this issue is not only for the operation or success of an individual enterprise. Successful and competitive businesses can come together under the umbrella of an industry and together could form a competitive industry that can also have an impact on the development and state of the national economy. Competitiveness needs to be built and strengthened by conscious means, while protected against other attacks and threats. Efforts should be made to identify obstacles and barriers that could hamper the strengthening of the competitiveness of an economic operator. These should be tackled more consciously so that there are no significant differences between organisations or countries, for example in terms of innovation, development or positive change. Business competitiveness is an integral part of economic viability, job creation, innovation and the overall well-being of societies, so it is by no means irrelevant what factors may hinder entrepreneurs and what barriers to business success and competitiveness exist. Competitiveness is the focus of this paper, which will be accompanied by an appropriate literature review and a presentation of primary research findings.

Keywords: Digital tools, Business engineering, Business competitiveness

Introduction

All businesses have an interest in maintaining a competitive advantage. As a business organisation, our goal is to constantly strive to gain an advantage over our competitors, because it is hard to think of a business that does not have potential competitors or challengers in the business markets. However, the advantage does not create itself. It requires targeted investment in some area that actually results in the business having a differentiated capability and thus being able to meet needs in a different or novel way. All businesses have an interest in gaining and maintaining a competitive advantage, because this is what secures a lasting advantageous market position. Competitive advantage is nothing more than the sum of organisational capabilities to satisfy consumer needs at a much higher level than before. If a company has these capabilities and can satisfy consumer needs and expectations at a much higher level, it is likely to be able to achieve sustained business success. But the first step is to create the capabilities that are needed to do this in the first place. This is where the definition of competitiveness comes from. If we want to express the concept of organisational competitiveness in very simple terms, we should perhaps start from the above logic and look at all the potential material and non-material resources that an organisation has, as well as the capabilities it needs.

The success of the action (and hence the success of the management activity) will be determined by the extent to which the right competences are successfully provided. From this point of view, we can say that organisational competitiveness is ultimately the sum of organisational potentials that the enterprise can use and exploit to meet organisational goals, realise profits or satisfy customer needs. Where the necessary capabilities cannot be

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demonstrated and acquired, where organisational potentials cannot be managed effectively, the firm will be at a competitive disadvantage compared to firms that have been able to do so over the same period of time. The 21st century has given a new meaning to the concept of competitiveness. Increasingly, resilience, flexibility, adaptability, adaptability and variability are being stressed as essential factors of competitiveness. All this is not far from the truth, as the changing business environment demands new types of qualities from modern businesses. In a period of crisis, the question of how to remain competitive, how to withstand challenges and how to respond to the difficulties that economic operators face on a daily basis has become even more important. Perhaps never before has the issue of competitiveness factors been more topical than it is today. This paper focuses on this very topic and, in addition to a brief literature review, presents the results of a primary research study.

Literature Review

Competitiveness is perhaps one of the most complex and controversial definitions in the field of management and organisation. There is no single definition, nor is there agreement among experts on the factors that determine competitiveness. Analysing competitiveness is not an easy task (Zhao-Qi, 2021). In most cases, to analyse competitiveness, we need to compare at least two actors, as this is the only way to determine whether one is at an advantage or not (Berger, 2008). However, no two countries are the same, just as no two businesses are the same (Collis-Montgomery, 2008). These reflections highlight that the analysis of competitiveness has to be treated very differently for each economic actor, as the competitiveness of countries can be interpreted and analysed somewhat differently than for economic corporations (firms) (Chikan et al., 2022). This paper does not aim to interpret national or economy-wide competitiveness. The main focus is on defining the competitiveness of enterprises, which is also not a simple task.

It is very difficult to generalise, as firms themselves may be characterised by different industries, different operating environments, different profiles, markets or organisational cultures. What is more, in many cases even the corporate governance system can make a difference between firms (Ekom -Etim et al., 2023). What is a success factor for one firm may not be a success factor for another. Competitiveness is a complex word composed of the words competition and capability. The first is perhaps obvious, since economic agents are essentially not unique players in the market. The latter, however, needs much more explanation. Competitiveness of economic agents refers to all the capabilities and endowments they possess that they can (or could) effectively put at the service of value creation at all levels (Chikan et al., 2022). The existence of capabilities and endowments determines potential competitive advantages and the ability to satisfy needs at a higher level than before. Firm competitiveness is determined by the extent to which firms can adapt to changing circumstances, have specific capabilities and strive to achieve continuously better results, although the size of organisations is also closely related to competitiveness factors (Lafuente et al., 2020). Competitiveness therefore implies a set of specific organisational characteristics, potentials, skills and capabilities that enable firms to better respond to external and internal environmental challenges, or even to influence and shape their own business environment. Being able to do something is, in essence, what competitiveness is all about. One must be able to adapt, innovate (Yang et al., 2022), develop, achieve business success, etc. (Akben-Selcuk, 2016). However, if one does not build the right capabilities in the organisation, there is nothing to change and the organisation will sooner or later fall behind (Cetindamar & Kilitcioglu, 2013). However, competitiveness can be defined not only in this context. Competitiveness at the firm level is expressed in terms of positioning, persistence and wealth creation, but it also increasingly includes sustainability (Serban et al., 2023). In a competitive environment, it implies continuous innovation, constant adaptation and a constant need to comply (Asim et al., 2023). However, a new strand in the literature on firm competitiveness points to the importance of subjective factors (Navarro et al, 2016), in addition to the usual determinants. According to this strand, competitiveness is ultimately determined by the attributes, capabilities and skills of the firm's participants. In addition to hard factors, so-called soft factors are also valued. These include people and their skills, knowledge and creativity. Equally, we can consider as a source of competitiveness the right organisational culture, good working conditions, excellent organisational infrastructure, excellent and people-oriented management, a well-defined organisational strategy (Friesenbichler & Reinstaller, 2022), the business model of the enterprise, etc.

As can be perceived, competitiveness can be improved in almost all areas of business operations (Latifah et al., 2021). As our business environment is constantly changing, strengthening competitiveness remains a perpetual task for responsible entrepreneurs and managers. If there were no change, there would be no need to address competitiveness. If our competitors were not evolving or customer needs were not changing, there would be no need to strengthen competitiveness (Flak & Glod, 2020). But the reality is quite the opposite. Everything is constantly changing, so no firm can be satisfied with its current level of competitiveness in the long term.

Sooner or later, all organisations will become outdated, obsolete or rusty, and will need to strengthen or improve their competitiveness. The sources of competitiveness were stressed much earlier, in the 1970s, by Peter Drucker, the father of modern management. He highlighted potential sources of competitiveness such as knowledge and innovation, creative labour and organisational development. The importance of innovation must be emphasised (Gottinger, 2022). These factors are still highly relevant and important competitiveness factors in the 21st century. The question of what economic actors see as the basis of their competitiveness is still an important issue today. The primary research, the results of which are briefly summarised in this paper, deals with a slice of this question. What makes this research unique is that it allows a comparative analysis between two countries.

Material and Method

The analysis presented in this paper is intended to present part of the results of a survey conducted in Hungary and Slovakia in 2023. A complex questionnaire was used to assess the competitiveness factors of Hungarian and Slovakian SMEs in terms of environmental challenges, green transformation, project approach, digital asset use, along the operational characteristics of enterprises. The present questionnaire survey was preceded by several rounds of consultations, expert interviews with enterprises in the two countries, and a test questionnaire in order to assess as accurately as possible the factors that determine the competitiveness of the SME sector in the two countries. The results of the research are based on 427 questionnaires from Hungary and 181 evaluable questionnaires from Slovakia. In the present study, the opinions of the sampled enterprises on the use of digital tools were surveyed. We asked enterprises to rate the digital solutions used in their business using a four-point Likert scale. We offered them four six categories: not at all, rather not, rather yes and completely yes. Businesses were categorised according to their presence in the market, based on the number of years of operational experience since their inception. The composition of the sample is shown in the figure below:

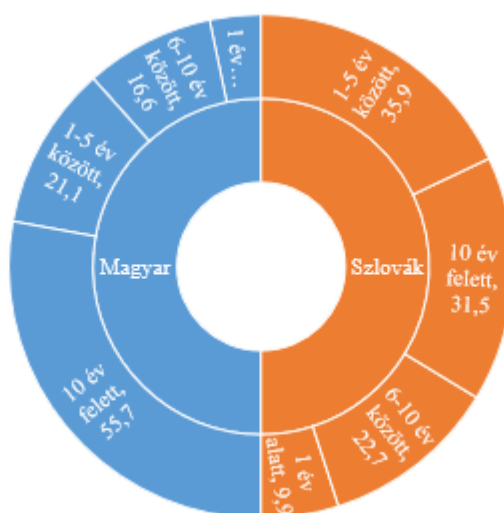


Figure 1. Composition of the sample based on the operational experience of enterprises in Hungary and Slovakia
Source: Own research, 2023, N = 427 (Hungarian), N = 181 (Slovakian)

Results

In the course of the research, we sought to find out to what extent the use of traditional and innovative digital tools is typical of the everyday operations of Hungarian and Slovakian businesses. Twelve potential tools were evaluated with businesses, including long-established and widely used solutions, and we also looked at innovative, novel solutions and how they are typical of the life of SMEs in both countries. The average scores for Hungarian businesses show that the use of mobile phone applications is the most common, with the highest average score. This was followed by a high proportion of online communication interfaces, which was the second most frequently used, and the use of online booking, ordering and purchasing solutions. For all three scoring factors, the average score is above 3.0, which means that businesses are highly characterised by their use of these tools. It could be said that almost all the businesses in the sample have such solutions.

For Slovakian businesses, the top solutions are the same as for their Hungarian counterparts, but the order is different. Slovakian businesses ranked the use of online communication interfaces first, followed by mobile phone applications, which ranked second in terms of usage. This was followed by the use of online booking, ordering and purchasing solutions, which also ranked third in the opinion of businesses. The same can be said for Slovakian businesses as for Hungarian businesses, in that the top three digital solutions were all rated with an average score of 3.0 or above. It can also be said that, although with lower scores, they are tools that are typically present in all enterprises. At the bottom of the list, businesses in both countries ranked the usability of chatbots, virtual reality and augmented reality. It can be seen that the use of chatbots is more prevalent in Slovakian businesses, although it is ranked third from the bottom for both countries. The same is true for virtual reality, which came second from the bottom, and augmented reality, which was rated very low for all businesses, with Hungarian businesses giving it a slightly higher average score.

Table 1. Frequency of use of digital devices by average values in Hungary and Slovakia

	Hungarian		Slovakian	
	Average	Source	Average	Source
Electronic payment facility (POS)	2,951	1,023	2,873	1,038
Online booking, ordering, purchasing solution	3,021	0,994	3,077	1,019
Digital /customer management software	2,529	1,024	2,564	1,087
Modern energy optimisation (sensors, etc.)	2,433	1,045	2,343	1,013
Mobile phone applications	3,447	0,872	3,298	0,972
Augmented reality (AR)	1,981	0,850	1,972	0,833
Virtual reality (VR)	1,993	0,798	2,061	0,844
Chatbot	2,122	0,898	2,249	0,924
Management software	2,941	1,092	2,773	1,085
Online communication interfaces	3,349	0,933	3,309	0,945
Automation systems	2,600	1,073	2,586	1,016

Source: Own research, 2023, N = 427 (Hungarian), N = 181 (Slovakian)

We also looked at the characteristics of these digital solutions in terms of the groups based on operating time. For Hungarian enterprises, the use of digital tools, whether traditional or innovative, is overwhelmingly more characteristic of more mature enterprises. For Hungarian enterprises, organisations with between 6 and 10 years of operational experience are the most likely to use electronic payment, chatbots and automation systems in their operations. In the higher category, businesses with more than 10 years' experience lead in the use of online booking, ordering and purchasing solutions, modern energy optimisation tools, mobile phone applications, business management software and online communication interfaces. Other tools are rarely found in enterprises in other categories. What is noteworthy is the use of digital shopping management software, which is typical of businesses with between 1 and 5 years of operational experience, and the same can be said for the use of augmented reality in this size category. The use of virtual reality, always a digital tool, is highest in businesses with less than 1 year of experience, which is probably due to the fact that these businesses are the ones that are innovative or start-ups and are keen to experiment with new and innovative solutions.

The picture for Slovakian businesses is very heterogeneous. Surprisingly, it is not the more mature companies that are the most advanced in terms of usability. Enterprises with less than 1 year of operational experience had the highest average score for electronic payment, online booking, ordering, shopping solutions, digital customer management software, augmented reality, virtual reality, chatbots, etc. Other size categories were absent from the top of the podium. Interestingly for Slovakian enterprises, enterprises with between 6 and 10 years of operating experience were ranked first only for modern energy optimisation tools and automation systems, and enterprises with more than 10 years of operating experience were ranked first only for online communication interfaces and management software. The groupings by category show that Hungarian enterprises tend to be the more mature, with at least 6 years of operational experience, and their Slovakian counterparts are the more mature, with the least operational experience. It should be noted, however, that they represent a relatively small proportion of the sample, which may somewhat distort our results.

In the next section of the paper, we will present the results of the analysis of variance carried out. We wanted to assess whether there was any correlation with the operational experience of the organisations with regard to the digital solutions listed. From the perspective of the Hungarian companies, for the twelve tools examined, it can be stated that only three of the tools used show a correlation with respect to the grouping criterion, based on the level of significance. These tools were modern energy optimisation solutions, chatbots and case management software. For these factors only the significance level was below 5%, suggesting a relationship.

Table 2. Average frequency of digital device use by category in Hungary and Slovakia

		Hungarian		Slovakian	
		Average	Source	Average	Source
Electronic payment facility (POS)	in 1 year	2,821	1,090	3,111	0,900
	Between 1-5 years	3,044	1,005	2,862	1,044
	Between 6-10 years	3,085	0,952	2,780	1,061
	Over 10 years	2,891	1,042	2,877	1,070
	Total	2,951	1,023	2,873	1,038
Online booking, ordering, purchasing solution	in 1 year	2,643	1,162	3,111	0,963
	Between 1-5 years	2,978	1,005	3,108	1,017
	Between 6-10 years	2,915	0,858	3,024	0,987
	Over 10 years	3,113	0,998	3,070	1,083
	Total	3,021	0,994	3,077	1,019
Digital /customer management software	in 1 year	2,429	0,959	2,611	1,037
	Between 1-5 years	2,722	1,039	2,554	1,046
	Between 6-10 years	2,662	1,068	2,537	1,142
	Over 10 years	2,429	1,003	2,579	1,133
	Total	2,529	1,024	2,564	1,087
Modern energy optimisation (sensors, etc.)	in 1 year	2,071	0,858	2,222	1,114
	Between 1-5 years	2,333	1,049	2,200	0,971
	Between 6-10 years	2,310	0,965	2,463	1,098
	Over 10 years	2,550	1,073	2,456	0,965
	Total	2,433	1,045	2,343	1,013
Mobile phone applications	in 1 year	3,357	1,096	3,222	0,943
	Between 1-5 years	3,311	0,895	3,154	1,034
	Between 6-10 years	3,268	0,925	3,098	1,044
	Over 10 years	3,563	0,802	3,632	0,771
	Total	3,447	0,872	3,298	0,972
Augmented reality (AR)	in 1 year	2,000	0,816	2,222	0,943
	Between 1-5 years	2,056	0,916	1,938	0,747
	Between 6-10 years	1,915	0,751	1,902	0,860
	Over 10 years	1,971	0,859	1,982	0,876
	Total	1,981	0,850	1,972	0,833
Virtual reality (VR)	in 1 year	2,071	0,663	2,389	0,979
	Between 1-5 years	1,978	0,821	2,000	0,661
	Between 6-10 years	2,056	0,754	1,951	0,921
	Over 10 years	1,971	0,819	2,105	0,920
	Total	1,993	0,798	2,061	0,844
Chatbot	in 1 year	2,036	0,922	2,500	1,098
	Between 1-5 years	2,111	0,892	2,185	0,768
	Between 6-10 years	2,423	0,995	2,220	1,037
	Over 10 years	2,046	0,853	2,263	0,955
	Total	2,122	0,898	2,249	0,924
Management software	in 1 year	2,464	0,881	2,444	0,984
	Between 1-5 years	2,556	1,162	2,646	1,124
	Between 6-10 years	2,775	1,085	2,707	1,078
	Over 10 years	3,193	1,021	3,070	1,033
	Total	2,941	1,092	2,773	1,085
Online communication interfaces	in 1 year	3,393	0,916	3,167	0,924
	Between 1-5 years	3,300	0,953	3,215	1,023
	Between 6-10 years	3,169	1,042	3,122	1,005
	Over 10 years	3,416	0,890	3,596	0,753
	Total	3,349	0,933	3,309	0,945
Automation systems	in 1 year	2,464	1,036	2,611	0,979
	Between 1-5 years	2,633	1,054	2,477	1,017
	Between 6-10 years	2,662	1,055	2,707	1,031
	Over 10 years	2,584	1,094	2,614	1,031
	Total	2,600	1,073	2,586	1,016

Source: Own research, 2023, N = 427 (Hungarian), N = 181 (Slovakian)

Table 3. Correlation of the frequency of use of digital tools with the market experience of the organisation in Hungary

		Sum of Squares	df	Mean Square	F	Sig.
Electronic payment facility (POS)	Between Groups	3,385	3	1,128	1,078	0,358
	Within Groups	442,582	423	1,046		
	Total	445,967	426			
Online booking, ordering, purchasing solution	Between Groups	6,996	3	2,332	2,384	0,069
	Within Groups	413,814	423	0,978		
	Total	420,810	426			
Digital /customer management software	Between Groups	7,298	3	2,433	2,344	0,072
	Within Groups	439,086	423	1,038		
	Total	446,384	426			
Modern energy optimisation (sensors, etc.)	Between Groups	8,913	3	2,971	2,756	0,042
	Within Groups	455,935	423	1,078		
	Total	464,848	426			
Mobile phone applications	Between Groups	7,377	3	2,459	3,290	0,021
	Within Groups	316,188	423	0,747		
	Total	323,564	426			
Augmented reality (AR)	Between Groups	0,841	3	0,280	0,386	0,763
	Within Groups	307,009	423	0,726		
	Total	307,850	426			
Virtual reality (VR)	Between Groups	0,597	3	0,199	0,312	0,817
	Within Groups	270,381	423	0,639		
	Total	270,979	426			
Chatbot	Between Groups	7,999	3	2,666	3,360	0,019
	Within Groups	335,669	423	0,794		
	Total	343,667	426			
Management software	Between Groups	36,846	3	12,282	11,038	0,000
	Within Groups	470,690	423	1,113		
	Total	507,536	426			
Online communication interfaces	Between Groups	3,637	3	1,212	1,396	0,243
	Within Groups	367,370	423	0,868		
	Total	371,007	426			
Automation systems	Between Groups	0,949	3	0,316	0,273	0,845
	Within Groups	489,571	423	1,157		
	Total	490,520	426			

Source: Own research, 2023, N = 427 (Hungarian)

The same analysis was also carried out for Slovakian businesses, where surprisingly even fewer assets were affected by the operational experience of the business. In their case, we found a correlation only for mobile phone applications and the use of online communication platforms.

Conclusions

Digitalisation is clearly the engine of change in the 21st century. Neither individuals nor businesses can be excluded from the digitalisation process. In our study, we set out to show the extent to which digital tools are used in the lives of Hungarian and Slovakian businesses. Despite the dominant process we are talking about, it is clear that businesses are reluctant to open up to new and innovative digital solutions. Although a high proportion of enterprises typically use these tools, their use is still limited to traditional tools. We also see a very heterogeneous picture between the opinions of Hungarian and Slovakian enterprises. While Hungarian enterprises tend to be more digitally mature, Slovakian enterprises show the opposite pattern, based on our sample. It can also be seen that Hungarian and Slovakian enterprises move together overall in terms of the adaptability and use of tools. It is the tools used in every day work and also for marketing purposes that are highly dominant, as shown by the average score above 3.0. It is almost unthinkable for businesses to operate without taking advantage of online communication solutions, using mobile phone applications or working with an online booking, ordering or purchasing solution. It is also evident that electronic payments are also important in our lives, with businesses in both countries giving this a score of nearly three integers.

Table 4. Frequency of use of digital tools in relation to the organisation's market experience in Slovakia

		Sum of Squares	df	Mean square	F	Sig.
Electronic payment facility (POS)	Between Groups	1,381	3	0,460	0,423	0,737
	Within Groups	192,696	177	1,089		
	Total	194,077	180			
Online booking, ordering, purchasing solution	Between Groups	0,198	3	0,066	0,063	0,979
	Within Groups	186,719	177	1,055		
	Total	186,917	180			
Digital /customer management software	Between Groups	0,090	3	0,030	0,025	0,995
	Within Groups	212,429	177	1,200		
	Total	212,519	180			
Modern energy optimisation (sensors, etc.)	Between Groups	2,916	3	0,972	0,946	0,420
	Within Groups	181,847	177	1,027		
	Total	184,762	180			
Mobile phone applications	Between Groups	9,444	3	3,148	3,473	0,017
	Within Groups	160,446	177	0,906		
	Total	169,890	180			
Augmented reality (AR)	Between Groups	1,405	3	0,468	0,671	0,571
	Within Groups	123,457	177	0,697		
	Total	124,862	180			
Virtual reality (VR)	Between Groups	2,783	3	0,928	1,308	0,273
	Within Groups	125,549	177	0,709		
	Total	128,331	180			
Chatbot	Between Groups	1,451	3	0,484	0,562	0,641
	Within Groups	152,362	177	0,861		
	Total	153,812	180			
Management software	Between Groups	8,200	3	2,733	2,377	0,072
	Within Groups	203,513	177	1,150		
	Total	211,713	180			
Online communication interfaces	Between Groups	7,080	3	2,360	2,720	0,046
	Within Groups	153,594	177	0,868		
	Total	160,674	180			
Automation systems	Between Groups	1,433	3	0,478	0,458	0,712
	Within Groups	184,490	177	1,042		
	Total	185,923	180			

Source: Own research, 2023, N = 181 (Slovakian)

The same can be said for transaction management software, and we also observed that the use of augmented reality and virtual reality and chatbots is still in its infancy for businesses in both countries. In this respect, Slovakian businesses are slightly ahead of Hungarian businesses, but it can also be seen that Hungarian businesses are leading the way in automation or energy optimisation. Overall, there is no significant correlation between the opinions of businesses in the two countries, but the detailed results are worth considering. To this end, there is a need to prepare for a more knowledge-intensive training for enterprises that can better equip them to meet the challenges of digitalisation by offering usable and applicable solutions.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPSTEM journal belongs to the authors.

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Author Information

János Varga

Óbuda University,
Keleti Károly Faculty of Business and Management
15-17. Tavaszmező Street, 1084 Budapest, Hungary
Contact e-mail: varga.janos@kgk.uni-obuda.hu

Ágnes Csiszárík-Kocsir

Óbuda University,
Keleti Károly Faculty of Business and Management
15-17. Tavaszmező Street, 1084 Budapest, Hungary

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