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The Level of Sustainability and Digitalization of Small and Medium-sized Enterprises in Slovakia

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Abstract: The article focuses on small and medium-sized enterprises (SMEs), their barriers and successes, associated with the transition to a sustainable and digital economy before the COVID-19 pandemic. Emphasis is placed on comparing the level and identifying differences in the transition to digitalization and sustainability of SMEs in Slovakia with the Europe Union's (EU) average. The comparison of the level of SMEs in Slovakia and the EU average is focused on the barriers associated with the introduction of digitalization; approaches applied in the adoption of digital technologies; already applied types of digital technologies; measures taken in relation to environmental and social sustainability; the existence of a strategy to support becoming a sustainable business and barriers to sustainability. Based on the input data, which are drawn from a survey published by Flash Eurobarometer 486 (FL486), interesting findings and contrasts were reached between SMEs in Slovakia and the EU average.

Keywords: SMEs; Digitalization; Sustainability; Digital Technologies; EU

1. Introduction

The European Commission has presented six priorities for 2019-2024. As part of the priority, the European Green Agreement, in which it declares that it wants to be the first climate-neutral continent and to have a modern, resource-efficient economy. Another priority is "A Europe fit for the digital age" is the EU's digital strategy to empower people through a new generation of technologies. Another on the list of priorities is the "Economy that works for the people", which promises to create a more attractive investment environment and ensure growth that creates quality jobs, especially for young people and small businesses. The next priority "A stronger Europe in the world" will strengthen its voice in the world by promoting multilateralism and a rules-based international order. Promoting the European way of life places an obligation to protect the rule of law if it is to stand up for the EU's justice and fundamental values. The new impetus for European democracy explains the need to give Europeans a greater say and to protect democracy from external influences such as misinformation and hate speech on the Internet (Ursula von der Leyen, 2019). All these priorities are coherent and mutually beneficial to support Europe's double transition to digitization and sustainability. They also aim to address the challenges posed by the COVID-19 pandemic. The Recovery Plan for Europe (NextGenerationEU) adds resilience and argues that Europe will become a greener, more digital, more resilient, and responsive Europe to current and future challenges following the COVID-19 pandemic (European Commission, 2020).

Following on from the latest annual report on European SMEs 2020/2021, Interreg Europe argues that the report identifies two main challenges for the transition to a smart and green economy:

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1. Compared to 2015, the share of SMEs offering green products or services has not increased. About one-third of the EU27 does not have specialized schemes to support SMEs' adaptation to energy and environmental regulations.

2. Training, skills, digitization, and innovation remain key issues for SMEs in most Member States of EU. Lack of adequate access to technical skills or highly qualified staff is a commonly identified challenge. The proportion of employed people with ICT expertise has even decreased since 2015 and ICT skills in staff training are not progressing rapidly (Interreg Europe, 2021).

The analysis of Slovakia's approaches to small and medium-sized enterprises and performance in the double transition (digital and sustainability) was based primarily on data provided by FL486 published in September 2020. It is a survey that focuses on the obstacles and challenges that SMEs in Europe face in terms of growth, the transition to more sustainable business models and the digitization of their operations (European Commission, 2020). It covers all 27 EU countries (and 12 non-EU countries/territories) and this survey was realized from 19 February 2020 to 5 May 2020 (before the outbreak of COVID-19). The COVID-19 pandemic has undoubtedly brought major disruptions and challenges to SMEs and their path to digitization and sustainability so that the data date mainly to the period before COVID-19.

2. Literature Review

The unstoppable flow of new digital technologies to the market has led companies to digitalization and digital transformation of their enterprises. Digitalization imagines the strategic importance of top management in the form of a critical agenda (Bharadwaj et al., 2013) (Singh & Hess, 2017). Digitalization is marked as the beginning of the use of new digital technologies to make significant business improvements in markets such as improving the customer experience or streamlining operations (Paavola et al., 2017). This interpretation refers to digitalization as a process that considers the present and the future of how digital technologies affect business models. Other authors have interpreted digitalization as an evolutionary process, where digital capabilities and technologies create some value by stimulating customer experiences, business models and business processes (Morakanyane, et al., 2017). According to Li et al. in 2018 stated that digitalization in terms of the impact of information technology on enterprise and its adjustment with business with SMEs. Based on Legner et al. study from 2017, defined digitization as a change ordered by the IT sector. Based on these different definitions, it is obvious that digitalization and digital transformation are not the only steps that lead to the improvement of specific functions in enterprises, but rather a process that brings substantial changes and ultimately leads to the creation of further opportunities for improvement. Moreover, digitalization and digital transformation are not a process that is focused only on enterprise, but it is mainly a phenomenon that is the trigger for change in society and industry (Vial, 2019).

Small and medium-sized enterprises (SMEs) in the EU, which account for more than 99% of businesses, which according to statistics employ around two in three people and generate more than half the value-added (Table 1), are considered as the backbone of the European economy. Therefore, they are at the heart of the EU's transition to a sustainable and digital economy, which is essential for Europe's competitiveness and prosperity, economic and technological sovereignty. As part of this, the SME strategy for a sustainable and digital Europe aims to significantly increase the number of SMEs engaged in sustainable business practices, as well as the number of SMEs using digital technologies (European Commission, 2020). Table no. 1 shows the number of SMEs in two representations, namely the average of the European Union (EU27) and Slovakia (SK) (EISMEA, 2021).

In the case of a green agreement, the digital switchover becomes essential for achieving the adaptation objectives (European Commission, 2021). Smart and sustainable concepts cannot be replaced. Today, the political world is expected to contribute to the transformation of digitalization into sustainable evolution (Wallace et al., 2020). According to the literature on sustainability, there are several scientific opinions or results that address the refined role of digitalization for sustainability. Due to the limited number of evaluations, there is a gap in research that needs to be filled. Solutions and methods based on digital technologies can be key in various areas of environmental sustainability as waste management, pollution control or sustainable transport and logistics (Buzási et al., 2021) (Feroz et al., 2021). Digitalization and digital transformation can have the potential to effectively support the Sustainable Development Goals (SDGs)

Table 1: SMEs Fact Sheets - Slovakia vs EU27; Source: EISMEA, 2021.

SMEs (0-249 persons employed)	*Enterprises*		*Persons employed*		*Value added*	
	Number	Share	Number	Share	EUR billion	Share
EU27	22,526,457	99.8 %	83,397,941	65.2 %	3,338	53.0 %
SK	489,630	99.9 %	1,175,639	72.3 %	22.7	58.2 %

(Alvarez-Risco et al., 2020). In addition, those new opportunities may have lower transaction costs (ElMassah & Mohieldin, 2020). Digitalization and digital transformation also have the potential to support the efforts of local and national governments to develop the socio-economic environment in a sustainable and resilient way. According to the literature review, we can say that there is adequate knowledge considering digitalization and sustainability linkages.

Digital Economy and Society Index (DESI) 2020, which represents the European benchmark in the field of digitization and already mentioned Flash Eurobarometer 486, are the possible tools in evaluating sustainability transition. Based on the above literature review, together with the annual reports of individual institutions, we compared surveys created in EU member states, specifically we focused on the representation of Slovakia and the EU average and compared them with each other.

3. Sustainability and digitalization of SMEs in Slovakia

The questions dealing with the transition of SMEs in the EU to sustainability and digital technologies, together with the corresponding answers given in FL486, are listed in Table no. 2 below. This part of the survey analyses each question from FL486, discusses the differences between SMEs in Slovakia (SMEs SK) and average of SMEs in EU27, and comes up with interesting findings and contrasts.

3.1. Q21 - If there is an obstacle to digitization in your business, which one is it?

The data in FL486 show that 62 % of SMEs in the EU27 have at least one barrier to digitalization, while in SK it is only 37 % of SMEs whose admit that digitalization is a challenge for them. Figure no. 1 further shows that the lack of financial resources for SK, within SMEs, is perceived as the main obstacle – 18 % of respondents. Compared to the average of SME representatives in the EU27 (23 %), Slovakia is 5 % better. The following are regulatory barriers, where the percentage of Slovak SMEs is 8 %, compared to 23 % SMEs of the EU27 average. If we look at the data for SMEs in SK, which show the lack of information technology infrastructure (8 %), e.g. such as high-speed internet, lack of skills including management (11 %), and internal resistance to change (6 %), we can deduce that there is a high contrast to the SMEs of EU27 average (19 %, 20 % and 17 %). We can also see big differences in the issue of IT security and uncertainty about future digital standards. While SMEs register 7 % and 6 % in the SK, compared to the EU27 average it is 20 %

Table 2: Selected questions from Flash Eurobarometer 486; Source: Flash Eurobarometer 486, 2020.

Question number	*Question*
Q21	Which of the following, if any, is a barrier to digitalization in your enterprise?
Q22	Please indicate which of the following options best describes your enterprise's approach to digital technologies?
Q23	Which of the following digital technologies, if any, has your enterprise adopted to date?
Q24	In terms of environmental and social sustainability, which of the following actions, if any, is your enterprise actively taking?
Q25	Do you have a strategy or action plan to become a sustainable enterprise, i.e. combine long-term success and profitability with a positive impact on society and the environment?
Q26	Which of the following, if any, are currently preventing your enterprise from becoming sustainable, i.e. combining long-term success and profitability with a positive impact on society and the environment?

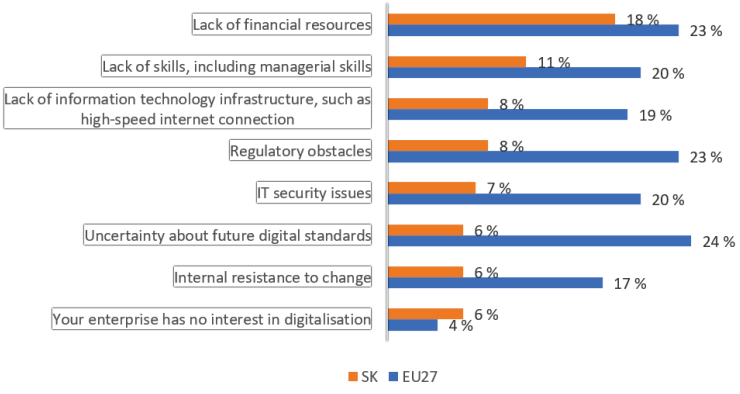

Figure 1: Barriers to digitization of SMEs (SK vs EU27), Source: Own research according to Eurobarometer 486, 2020.

and 24 %. Significant gaps only confirm the fact that these two issues appear to be the most problematic. Regarding the lack of interest in digitization, 6 % of SME respondents in the SK confirm this question, while compared to the EU27 average it is 4 %.

3.2. Q22 - Which of the following best describes your business's approach to digital technology?

The need for the introduction and improvement of digital technologies is mentioned by 76 % of SME respondents in the EU27, which is on average more than three quarters. Compared to SMEs SK, this is 71 % of SMEs, i.e. a percentage that is not so far from the EU27 SMEs average. If we are talking about the current approach (Figure no. 2), 39 % of SMEs SK have already adopted or plan to adopt basic digital technologies, while compared to the EU27 average it is slightly less (34 %). The graph further shows that 22 % of SK SMEs believe that they do not need to adopt any digital technologies, while the EU27 SMEs average is 18 %. The next level of question 22 was the introduction of advanced digital technologies. The first statement calls for the introduction of advanced digital technologies, but the company does not have the knowledge or skills or funding to adopt them. The difference between the average of EU27 SMEs (8 %) and SK SMEs (7 %) was minimal. Another statement describes the need for the introduction of advanced digital technologies in SMEs, which have already started to adopt them. Compared to the EU27 average (24 %), SK is slightly worse (20 %). It is between these above-mentioned approaches (on the one hand, recognizing the need for the importance of taking action and subsequently implementing them and on the other hand recognizing the need but lacking knowledge/ money) where there is a need to deploy advanced digital technologies and the company is currently considering, which will be adopted by them - as only 5 % of SK SMEs, compared to the EU27 average of SMEs (10 %), have overcome concerns related to money and knowledge and are significantly more actively involved in the digitization process.

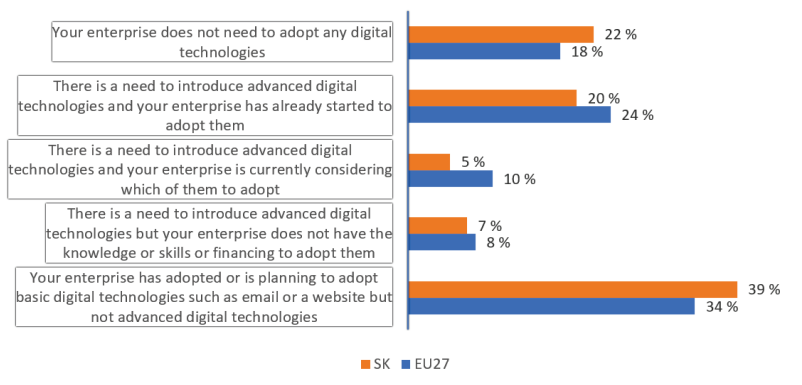

Figure 2: Approach of digital technologies in SMEs (SK vs EU27), Source: Own research according to Eurobarometer 486, 2020.

3.3. Q23 - Which of the following digital technologies (if any) have your company adopted so far?

Data from FL486 declare that, on average, 62 % of SMEs in Europe have adopted at least one digital technology, which is the same percentage as in question Q21, where the EU27 SMEs average report at least one digital barrier. Compared to SMEs SK, it is a bit less – 48 %. In Figure no. 3, it is obvious that cloud computing, whether in SMEs SK (28 %) or on average in the SMEs EU27 (43 %), leads the ranking in the category of accepted technologies. It is followed by high-speed infrastructure technology, representing the average of SMEs EU27 32 % and SMEs SK only 19 %. Furthermore, smart devices adopted by 18 % of SMEs SK and 21 % of the average SMEs EU27 are included. The analysis of big data shows 8% use in SMEs SK, which is almost similar to the SMEs EU27 average (10 %). Slightly lower scores are recorded by artificial intelligence, whose integration in SMEs SK is 5 % and the average of SMEs EU27 is 6 %, and robotics, which was on both sides (SMEs SK, average of SMEs EU27) represented by the same percentages (5 %). As for Blockchain, from Figure no. 3, it is clear that this digital technology is the least used in SMEs EU27 and in the SMEs SK (3 % and 1 %, respectively). In conclusion, 47 % of SMEs SK claim that they did not implement any of these digital technologies, while the EU27 SMEs average states 37 %.

3.4. Q24 - Regarding environmental and social sustainability, which of the following activities does your company actively receive?

By comparing active measures to adopt sustainability in SMEs in the EU27 and in the SK, we get 91 % and 84 % of SMEs (respectively) that have already taken these steps. As for the more specific measures in which SMEs are involved (Figure no. 4), it seems that in none of the mentioned measures, resp. steps, SK SMEs are not above the EU27 average (if we do not consider the percentage of unspecified measures 11 %). All the above measures of SK SMEs are therefore below the EU27 average. More than half of EU27 SMEs deal with the environmental dimension by recycling or reusing materials (61 %). If we talk about the representation of SK SMEs (54 %), then this statement came closest to the European average. This statement is followed by the development of sustainable products or services with a participation of 30 % on average SMEs EU27 and 17 % of SK SMEs. When it comes to assessing the impact of your company on the company and

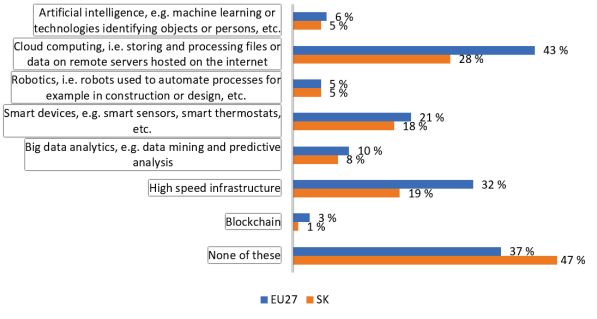

Figure 3: Adopted digital technologies of SMEs (SK vs EU27), Source: Own research according to Eurobarometer 486, 2020.

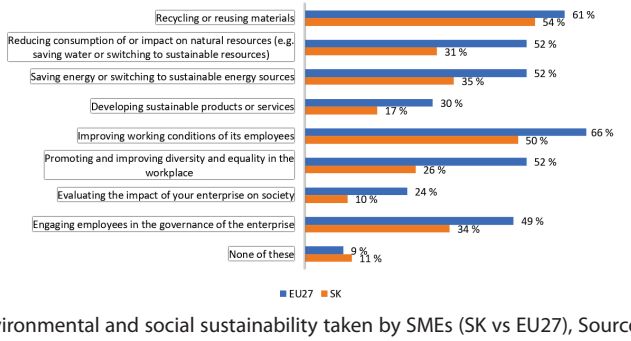

Figure 4: Steps towards environmental and social sustainability taken by SMEs (SK vs EU27), Source: Own research according to Eurobarometer 486, 2020.

the involvement of employees in the management of the company, SK SMEs represent 10 % and 34 %, compared to the EU27 average (24 % and 49 % respectively). If we talk about social sustainability measures in the form of improving the working conditions of employees, SK SMEs report 50 %, while the average SMEs EU27 is 66 %. When it comes to promoting and improving diversity and equality in the workplace, SK SMEs (26 %) account for half of average SMEs EU27 (52 %). In the case of saving energy or switching to sustainable energy sources and reducing consumption, the impact on natural resources, the EU27 average reports 52 % in both cases, while in SK SMEs it is 35 % and 31 % (respectively). Finally, question 24 mentions the percentage of the average of SMEs EU27 and SK SMEs that have not taken any of the above measures to improve sustainability in their enterprises.

3.5. Q25 - Regarding environmental and social sustainability, which of the following activities does your company actively receive?

The resulting 34 % of average SMEs EU27 say that they have a strategy or action plan to become sustainable businesses, while SMEs SK report 33 %. On the other hand, 58 % of SMEs of the average EU27 and 55 % of SMEs SK say unequivocally no. If we are being more specific, the approach to the sustainability of SK SMEs (Figure no. 5), in terms of "inapplicability" and "no, and not in the future", states 6 % and 25 %, which is a significant difference. Compared to the EU27 average, it is 4 % and 18 % (respectively). For an active approach, in various stages ("Yes, and it is in the process of its implementation" and "Yes, and it has already been implemented), SK SMEs report 14 % and 19 % (respectively). Compared to the EU27 average, this is 21 % and 13 %. Somewhere among these options is the option "No, but it may be considered in the future", which is a group of undecided respondents. SK SMEs state for 30 % and the average of SMEs EU27 state for 40 %.

3.6. Q26 - Which of the following (if any) are currently preventing your business from becoming sustainable, i.e. combining long-term success and profitability with a positive impact on society and the environment?

While 57 % of SK SMEs mention at least one barrier to sustainability, compared to the EU27 average it is 70 %. More specifically, Figure no. 6 defines the lack of consumer or customer demand as a major obstacle to the sustainability of SK SMEs (24 %) compared to the average SMEs EU27 (30 %). They are followed by a lack of financial resources, which report 22 % for SK SMEs and 27 % for average SMEs EU27. Lower percentages include shortcomings such as a lack of skills, including management skills, with 11 % for SK SMEs and 15 % for the average SMEs EU27. The other two options ("Lack of awareness of how to integrate sustainability into the business model of businesses" and "Not compatible with your current business model) indicate, for SK SMEs, the same percentage (9 %). In the next subcategory, 8 % of SMEs in the SK think that the adoption of sustainability would not be profitable, compared to the average of EU27 SMEs, which is 15%. "Lack of willingness among the management" confirms that SMEs in Slovakia are friendly to sustainability (3 %), compared to the EU27 SMEs average (7 %). Nevertheless, 33 % of SK SMEs answer "None of the above barriers", the EU27 SMEs average states 26 %.

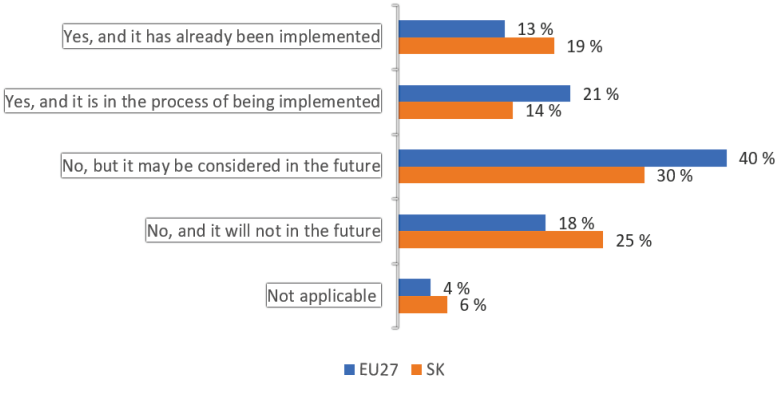

Figure 5: Approach to the sustainability of SMEs (SK vs EU27), Source: Own research according to Eurobarometer 486, 2020.

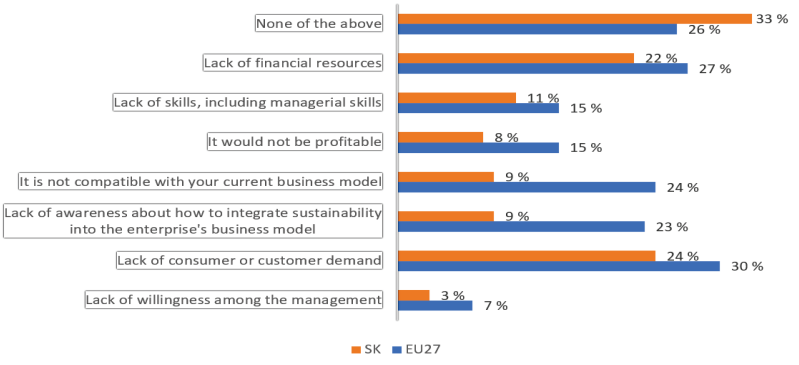

Figure 6: Barriers to SMEs sustainability (SK vs EU27), Source: Own research according to Eurobarometer 486, 2020.

4. Conclusions

If we compare this broader view with the results from FL486, it is possible that we will reveal a series of other problems and challenges associated with the perception of beliefs and attitudes leading to decision-making and behaviour that SK SMEs face. Of course, taking into account that sometimes SMEs are neither aware of nor even willing to accept this, when it comes to digitalization, some SMEs may not even be aware of the extent of gaps and skills, including managerial, or internal resistance to change. This problem may also partly explain why the proportion of companies claiming no interest in digitization is higher than the EU average, with the vast majority of SMEs not taking into account the issue of IT security and uncertainty about future digital standards. In such a case, the question of lack of financial resources (first place as a barrier to digitalization) may seem like a perfect excuse. If the said excuse is true, there may be much bigger problems in SK SMEs than they admit, and in the long run, inaction in connection with digitalization can be costly and ultimately loss-making (given the faster adoption of digitalization by competitors). On the other hand, the difference in the need to introduce digital technologies, compared to the EU27 SMEs average, is minimal, so the overall development of the integration of digital technologies in SK SMEs in the coming years may not take a negative turn.

If we talk about sustainability, the situation can be complicated, because sustainability in is not something that businesses (especially SMEs) usually consider to be their definition and provision of services, compared to digitalization, which is taken as a recognized need, whether on a personal basis or individual level. Although sustainability in SMEs is constantly increasing, real opportunities may be perceived as not worthy and expensive. Moreover, in the short term, the benefits are not so obvious. On the other hand, a careless approach to sustainability as something that allows or helps businesses to look better could ultimately lead to a boomerang effect that would thwart further efforts and cause mistrust. These general assumptions, together with the recent background of SK SMEs and latent eccentricities, suggest that the results of FL486 need to be read more comprehensively, in order to capture the visible points that define SMEs' approach to sustainability. More than half (57 %) of SK SMEs acknowledge at least one barrier to sustainability, which looks quite encouraging compared to the EU27 average of 70 %. While SK SMEs report the lack of financial resources as the main obstacle to digitalization, the lack of consumer or customer demand is a priority in the barriers to the sustainability of SMEs in the EU and at the same time in SK. Compared to this barrier and the question of financial resources, the remaining barriers to sustainability appear to be irrelevant. Surprisingly, SMEs seem to take a more strategic approach to sustainability than a strategic approach to digitalization, which would not be such a bad choice, given that digitalization means achieving economic, social and environmental sustainability.

Based on the analysis above and processed data, obtained from the Flash Eurobarometer 486 reports, carrying out the own objective analysis of digitization and sustainability would be the first logical step for each Slovak SME to be able to design their future approach to competition. This analysis, based on an understanding of digital technologies

and the pursuit of sustainability, can help the company to improve its performance, usability, but also the consequences of non-acceptance, respectively, implementation of these measures and technologies will enable SMEs to identify their strengths and weaknesses, as well as the threats and opportunities they face and, last but not least, to design an individually competitive strategy, taking into account their sustainability and digitalization profiles. SMEs in Slovakia seeking a double transition (green and digital) should also consider help providing by the European Commission, including access to information, networks, and finance. The further direction of the problem in the given area could take in the coming years to evaluate the real results of a specific study of individual requirements and barriers, the steps and approaches taken and at the same time their real success in the transition to the sustainable and digital economy during the COVID-19 pandemic.

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