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Investigating the Effectiveness of Digitalisation
on SMEs Performance: The case of Western Balkans

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Abstract

This study aims to assess the level of digitalisation of Small and Medium Enterprises (SMEs) and its influence on the economic performance of SMEs in Western Balkan countries. We use panel data from Enterprise Surveys (ES) for the years 2018 to 2020 to address the study topic. The European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB), and the World Bank Group (WBG) collaborated on the survey. The selected countries are Albania, Bosnia and Herzegovina, North Macedonia, Kosovo, and Montenegro. The questionnaire helps us comprehend the challenges faced by businesses in the private sector. The performance of SMEs is the dependent variable used in the empirical analysis. Sales and labour productivity are the variables used in our article to assess the performance of the organisation. The vector of independent variables, on the other hand, consists of information about the enterprise's age, size, ownership structure, legal status, accessibility to formal banking services, and ownership by gender. Moreover, we will concentrate on the ES questions below to estimate the degree of digitisation of SMEs: (1) Does the establishment have its own website? (2) Started or increased business activity online? (3) Started or increased remote work arrangement for its workforce? Preliminary empirical research results have shed light on the positive effect of digitalisation on firms' performance. However, the magnitude and statistical significance are different among the countries included in the sample.

Keywords: firm performance; digitalisation; innovation; entrepreneurship.

JEL Classification: L25, L26, J23, L21.

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1. Introduction

With the development of the first computers, there has been a process known as "digital transformation." These inventions enabled the need to adopt innovative perspectives and insights from international actors in business and society.

Some firms have quickly adopted new technology to make better their operational and strategic goals, while others have lagged due to outdated business models, rigid organisational structures, and a lack of an innovative mindset.

The effects of internal management models and service digitisation will drive firm growth to a turning point. The recent COVID-19 outbreak turned out to be the driver for society's overall search for new channels for sharing expertise, goods, services, etc. That led to the emphasis being placed on new viewpoints, including how to incorporate a new understanding into their sustainability business strategies in addition to how to survive the present situation. The society was not prepared to face these new demands because the pandemic was an unpredictable situation. The companies encountered difficulties since the adoption of new technology was a quick process; staff were shown the new tools one day and required to use them the next. As a result, there was a significant amount of pressure on everyone in the circumstance. Even before the epidemic, there was pressure, but it took time for people to accept and be aware of the benefits that digitisation provides.

Numerous researchers have examined and investigated the effect that digitalisation has on performance and productivity at both the micro and macro levels in their studies. Our study focuses on the Western Balkans because their total measurements have not yet been discovered. Although having a large impact on the economy of the region, the majority of the businesses in this area are organised as SME. Even though there are fewer businesses here than in other parts of Europe, it is still crucial to look at how much digitalisation is being adopted and what impact it is having, especially because some of the neighbour countries have made some steps toward becoming EU members.

2. Problem Statement

Small enterprises are the foundation of the Western Balkan economies and serve as a bridge for their economic convergence and path toward EU membership, according to the annual Report from the Western Balkans Enterprise Development and Innovation Facility (WB EDIF) for the year 2022. Between 60 % and 80 % of the region's working population is employed by small and medium-sized enterprises (SMEs), which is more than is average for the EU.

During the pandemic, SMEs counted 99.8 % of all enterprises and 81.9 % of the working population in Albania. Most SMEs were in the tourism and food services, as well as trade sectors, and were hit hardest during this period (European Commission, 2021).The 102,405 micro, small, and medium-sized enterprises in Albania constituted 99.8 % of all enterprises in the country's economy in 2020. The trade sector anticipates the greatest growth in SMEs' activity throughout 2020 (39 %), followed by the recently created categories

of accommodation and dining (16.4 %) and transportation, information, and communication (8 %). (INSTAT, 2022).

In Bosnia and Herzegovina, the categorisation of SMEs differs throughout the economy. The 31 726 SMEs in Bosnia and Herzegovina constituted 99.46 % of all enterprises in the country's economy in 2020. SMEs accounted for 63.14 % of business sector employment in 2020. (Statistical offices of the FBiH and the RS, 2021). Employment size is the only principle to classify SMEs for Kosovo. In Kosovo, there were 91.9 % microenterprises, 6.8 % small, 0.15 % medium-sized businesses, and only 0.66 % large businesses in 2020. SME employment expanded well as, comprising nearly 75.5 % of all employment in the economy. (Kosovo Statistics Office). In Montenegro is used the standard definition of SMEs by employee size, but differ on the other criteria concerning annual income and assets. With 48 % of all SMEs in the economy concentrated in the distributive trade sector, which includes wholesale, retail, and the repair of cars and motorcycles, this sector has experienced the largest decrease in business activity since 2017.

In 2020, 99.3 % of North Macedonian enterprises were micro and small companies, 0.6 % were medium-sized enterprises, and only 0.1 % were large enterprises (MAKStat, 2021). Micro, small, and medium-sized firms (MSMEs) employed 74 % of North Macedonia's formal workforce in 2020 and produced around 68 % of the sector's overall value (MAKStat, 2021).

Almost all the countries refer to the same way how they classify SME, conform EU standards with any exception due to accounting indicators like turnover and asset size.

2.1 Digitalisation and Performance

The process of organisational transformation through the adoption of digital technologies is known as "digitalisation" (Sebastian et al. 2017; Vial 2019). This refers to internal management tools, digital platforms, and digital infrastructure that support the internal performance evaluation and decision-making.

The seven categories of digital technologies are social, mobile, big data, cloud computing, Internet of Things (IoT), platform development, and AI-related technologies (Sturgeon 2019). Digital technologies are a combination of computerised information and communication technologies (Sebastian et al. 2017; Vial 2019). In this context, digitalisation or digital integration of enterprises can help firms gain and sustain competitive advantages by improving their organisational flexibility and resilience (Briel et al. 2018). In case of restricted or crises situation, such as the COVID-19, many enterprises gain competitive advantage due to their attitude and speed of adopting new technologies.

Another way how digitalisation fosters enterprises` performance relates to the way the resources are managed and how quick does the enterprise respond to the issues raised due to day-to-day operations. Digitalisation allows companies to increase operation efficiency, to broaden their innovation efforts, and to better allocate their resources (Manyika et al., 2015).

The concept of enterprise performance is an economic and accounting indicator. Enterprise performance can be explored in two dimensions; first on output maximisation and second to input minimisation perspective. In this context, performance indicators that are oriented to output maximisation refer to net sales, market share, ROA or ROE, revenue, net profit, etc., while according to input control and minimisation usually are used cost control indicators. Hence is there any effect or relative relationship between digitalisation integration and enterprise performance? Many studies focus on finding any significant relationship.

According to Bughin et al. (2017), digital intelligence is positively correlated with financial performance. This means that a higher score of digital intelligence has a positive impact on revenue, EBIT, and company growth after controlling for industry, company size, and location. The digital transformation of SMEs lies in leveraging new technologies to ensure the scalability and elasticity demanded by costumers. Our study tries to give a new insight to what happened to SMEs in Western Balkans during 2018-2020, a tough period from specific country's perspective, and followed then by the COVID-19.

3. Research Methods

We used panel data from the Enterprise Survey (ES) from 2018 to 2020 to investigate the relationship between digitisation and performance. The European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB), and the World Bank Group participated in the survey (WBG).

The selected countries are five of the Western Balkan Countries: Albania, Bosnia and Herzegovina, Montenegro, Kosovo, and North Macedonia. The dataset's questions enable us to comprehend the challenges faced by businesses in the private sector. Data is collected based on company experiences and how companies evaluate their operational environment. In Table 1 we summarise some descriptive statistics to observe the variation in the sample.

Table 1. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Labour productivity	1520	2.239	1.444	0	7.722
Sales growth	1520	15.375	2.977	6.215	24.061
Small	1520	.435	.496	0	1
Medium	1520	.334	.472	0	1
Foreign	1520	.105	.307	0	1
Female	1520	.985	.122	0	1
Exporter	1520	.322	.467	0	1
Age	1520	19.836	14.395	2	205
Manufacturing	1520	.372	.483	0	1
Service	1520	.264	.441	0	1
Sole proprietorship	1520	.336	.473	0	1
Partnership	1520	.42	.494	0	1
Website	1520	.753	.431	0	1

Source: Authors calculations.

In our paper, the enterprise performance is measured in terms of sales, employees' productivity to catch operational and accounting indicators. On the other hand, the vector of independent variables is composed of enterprise characteristics such as enterprise age, size, ownership structure, legal status, access to formal banking services, and gender ownership.

Moreover, to capture the digitalisation level of SMEs, we will focus on the following ES questions: (1) Does the establishment have its own website? (2) Started or increased business activity online? (3) Started or increased remote work arrangement for its workforce?

To identify the level of digitalisation and its level of contribution to enterprise performance, we use the following model:

$$Y_i = \beta_0 + \beta_1 Digitalization_i = \pi r^2 + \gamma X_i + \mu_i \qquad (1)$$

where:

Y_i – is one of the elements of an enterprise's performance that is measured by worker productivity and sales growth;

Digitalisation$_i$ – determines whether a website has been adopted and whether there are any online sales;

X_i – is the vector of variables including the size, age, status, foreign ownership, location, exporter, and female ownership.

In both cases, a country dummy variable was also included to catch any differences between countries under analysis.

5. Findings

According to the responses of the enterprises in different countries regarding website creation and online sales across the Balkans, we see from the data that by Bosnia and Hercegovina leads the line. At the end there are Albania and Montenegro with the lowest level of website presence of enterprises. To understand factors affecting the digitalisation of enterprises in the Western Balkan countries, we run logistic regressions on the fact if establishment have a website. The regression is carried out independently for each country.

First, the regression was performed for Albania. The website creation is significant due to the size of the enterprise if it is an exporter and due to ownership. So, even though the significance is low, medium enterprises are oriented to have a website compared to small enterprises. The fact that the enterprises in Albania export, leads them to have a website in order to expose their activity and have a wide range of customers. The fact that the enterprise operates domestically or internationally, makes the difference. The most significant variable that affects the fact of having a website relates to the ownership. The enterprises that have mainly foreign ownership are more oriented to have a website (Table 2).

Table 2. Logistic regression for Albania

Website	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Age	.01	.013	0.75	.451	-.016	.037	
Manufacturing	-.144	.293	-0.49	.623	-.718	.43	
Services	.129	.279	0.46	.644	-.418	.677	
Small	.205	.295	0.70	.487	-.373	.784	
Medium	.5	.3	1.67	.096	-.088	1.088	*
Exporter	-.47	.279	-1.68	.093	-1.017	.078	*
Female	.077	.288	0.27	.789	-.487	.641	
Foreign	-.846	.399	-2.12	.034	-1.628	-.063	**
Finance	.017	.235	0.07	.941	-.442	.477	
Constant	.202	.381	0.53	.596	-.544	.949	
Mean dependent var		0.597	SD dependent var			0.491	
Pseudo r-squared		0.040	Number of obs			377	
Chi-square		20.226	Prob> chi2			0.017	
Akaike crit. (AIC)		508.182	Bayesian crit. (BIC)			547.505	
*** p<.01, ** p<.05, * p<.1							

Source: STATA Output.

The factors that affect having a website in Bosnia and Herzegovina are size and access to external financial resources. Unlike Albania, small enterprises tend to have a website. Also, the enterprises that use external resources to finance their activity are more engaged to have a website. Other factors are insignificant (Table 3).

Table 3. Logistic regression for Bosnia & Herzegovina

Website	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Age	.003	.01	0.27	.783	-.016	.021	
Manufacturing	-.055	.373	-0.15	.883	-.786	.676	
Services	-.145	.312	-0.47	.642	-.756	.466	
Small	-1.078	.343	-3.14	.002	-1.75	-.405	***
Medium	-.434	.361	-1.20	.23	-1.142	.274	
Exporter	.588	.36	1.63	.102	-.117	1.293	
Female	-.305	.323	-0.94	.346	-.939	.329	
Foreign	-.315	.379	-0.83	.406	-1.059	.428	
Finance	.517	.281	1.84	.066	-.033	1.068	*
Constant	1.479	.445	3.32	.001	.606	2.352	***
Mean dependent var		0.754	SD dependent var			0.431	
Pseudo r-squared		0.065	Number of obs			362	
Chi-square		26.355	Prob> chi2			0.002	
Akaike crit. (AIC)		397.446	Bayesian crit. (BIC)			436.363	
*** p<.01, ** p<.05, * p<.1							

Source: STATA Output.

For Kosovo, the only factor that affects the enterprises to have a website is the size. Small enterprises are more eager to have a website than medium ones. Other factors are insignificant (Table 4).

Table 4. Logistic regression for Kosovo

Website	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Age	.015	.014	1.07	.284	-.012	.041	
Manufacturing	.268	.295	0.91	.363	-.31	.846	
Services	0	.	.	.	.	.	
Small	-2.206	1.05	-2.10	.036	-4.264	-.148	**
Medium	-1.942	1.058	-1.84	.066	-4.014	.131	*
Exporter	-.036	.367	-0.10	.922	-.756	.684	
Female	-1.1	.697	-1.58	.115	-2.465	.266	
Foreign	-.035	.865	-0.04	.968	-1.729	1.66	
Finance	-.28	.291	-0.96	.337	-.851	.292	
Constant	2.757	1.087	2.54	.011	.626	4.887	**
Mean dependent var		0.727	SD dependent var			0.446	
Pseudo r-squared		0.045	Number of obs			271	
Chi-square		14.376	Prob> chi2			0.072	
Akaike crit. (AIC)		321.389	Bayesian crit. (BIC)			353.808	
*** p<.01, ** p<.05, * p<.1							

Source: STATA Output.

The regression results for Montenegro are more complex. Having a website is heavily affected by the size, operating in the domestic or international market, and the gender of the owner. Enterprises of small and medium size, that operate internationally, thus export in international markets and have a female owner tend to have a website. The significance of the factors mentioned is high in all the cases.

Table 5. Logistic regression for Montenegro

Website	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Age	.023	.016	1.42	.154	-.009	.055	
Manufacturing	-.142	.432	-0.33	.743	-.989	.705	
Services	0	.	.	.	.	.	
Small	-3.006	.724	-4.15	0	-4.424	-1.587	***
Medium	-1.775	.734	-2.42	.016	-3.213	-.337	**
Exporter	1.267	.638	1.99	.047	.017	2.517	**
Female	-1.523	.637	-2.39	.017	-2.771	-.275	**
Foreign	1.038	.849	1.22	.222	-.627	2.702	
Finance	.383	.448	0.85	.393	-.496	1.262	
Constant	1.8	.76	2.37	.018	.31	3.29	**
Mean dependent var		0.580	SD dependent var			0.495	
Pseudo r-squared		0.275	Number of obs			150	
Chi-square		56.156	Prob> chi2			0.000	
Akaike crit. (AIC)		165.931	Bayesian crit. (BIC)			193.027	
*** p<.01, ** p<.05, * p<.1							

Source: STATA Output.

Compared to other countries, we see that enterprises that operate in North Macedonia differ in industry they operate, the size, and access to finance. So, enterprises that offer services are more engaged to have a website rather than manufacturing ones despite the size small or medium. Even small or medium enterprises have a website at a high significance. And last, access to external financial resources is significantly related to having a website (Table 6).

Table 6. Logistic regression for North Macedonia

Website	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Age	.043	.013	3.34	.001	.018	.068	***
Manufacturing	.292	.313	0.93	.35	-.321	.904	
Services	.832	.307	2.71	.007	.231	1.434	***
Small	-1.12	.377	-2.97	.003	-1.858	-.382	***
Medium	-1.12	.381	-2.94	.003	-1.866	-.374	***
Exporter	.547	.348	1.57	.116	-.135	1.23	
Female	-.436	.304	-1.43	.151	-1.032	.16	
Foreign	-.186	.565	-0.33	.741	-1.294	.921	
Finance	.619	.256	2.42	.016	.117	1.121	**
Constant	.102	.469	0.22	.828	-.818	1.022	
Mean dependent var		0.672	SD dependent var			0.470	
Pseudo r-squared		0.124	Number of obs			360	
Chi-square		56.704	Prob> chi2			0.000	
Akaike crit. (AIC)		418.764	Bayesian crit. (BIC)			457.625	
*** p<.01, ** p<.05, * p<.1							

Source: STATA Output.

As we can notice from the coefficients in the tables above generally small enterprises have lower propensity to adopt website in their business activity, and this result is statistically significant in the case of all Balkan countries except for Albania. Female ownership of firms tends to lower the probability of being digital only in the case of Montenegro. The use of external financial resources, exporter, and foreign firm increases the probability of digitalisation of enterprises. The factor that does not affect neither of the enterprises in the countries listed is age.

Table 7. Regression results on performance using dummy variable for countries.

Firm performance	Sales growth (1)	Labour productivity (2)
Online sales	.0148**	.0038*
Website	.00012	.00001
Manufacturing	-.0705	.0265
Service	.0032**	.00103**
Size	.1626***	.0344***
Age	-.1984***	-.0031**
Foreign	.00008	.0033**
Legal status	-.00251	-.0907
Exporter	.0030*	.0166**
Female	-.07674	-.0729

Firm performance	Sales growth (1)	Labour productivity (2)
Country dummy	Yes	Yes
Constant	1.705	.495
Nr. of observations	1520	1520
R squared	.3143	.4207

Source: STATA output.

$$Sales\ growth_i = \beta_0 + .0148 Online\ sales_i + \gamma X_i + \mu_i \qquad (\,2\,)$$

$$Labor\ productivity_i = \beta_0 + .0038 Online\ sales_i + \gamma X_i + \mu_i \quad (\,3\,)$$

Empirical results show that enterprises adopting online sales exhibit higher labour productivity and sales growth than others. The results are statistically significant, but the magnitude tends to be low. The size of the firms matters when it comes to adoption of the digitalisation: the larger the firm, the more likely to have a propensity towards the online business activity. Enterprises that are involved in export activities are more likely to spend in the digitalisation to maintain their global market relationship. Manufacturing sector enterprises are less likely to have sales growth or labour productivity changes if compared to the services-sector enterprises. Moreover, younger, and foreign enterprises are more likely to adopt digitalisation in their business activities. However further investigation is needed to evaluate if a time lag may exist in the adoption of online activities and its impact on productivity of firms.

6. Conclusions

This study gives an opportunity to better understand the behaviour of the SME toward shifting their activity from traditional activities to online. Digital platforms helped much in this direction, even though not all SME show the same attitude to the change. Serbia and BiH showed the same attitude to adopting digital platforms higher than other countries due to their common economic and politics profile. Albania and Montenegro are the lowest of the list, even though in Albania recently there are many opportunities presented by Albanian government, the EU and NGO that emphasise and give floor to many startups and SME to further be engaged in new technologies. In our opinion, the results of the study showed that economic programs implemented by governments affected and fostered the adaption of new technologies by SME. Many governments shifted their public services toward e-governance platforms, where enterprises can provide public services online.

Second, we conclude that manufacturing enterprises do not gain advantage in aspect of sales growth or labour productivity, which means that new policies should be adapted to the specific industries SMEs operate in, as well as the business functions that are subject to transformation, as challenges and changes vary by sector/function. Third, there should be more evidence, comparable data, specific industry studies, and business cases to inform all relevant actors, i.e., SMEs themselves, of course investors, insurers, service providers, business associations, business partners, online platforms, which are major enablers of

digitalisation and potentially key source of data and evidence on the SME digital transformation. The study is based on a survey, but as we mentioned, it would be a great help if the analysis will be performed on industry basis. Further research is required to determine whether the adoption of digitalisation has a lagged performance effect because our study's use of cross-sectional data has limitations.

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