The Challenges And Opportunities Of Digital Transformation And E-Commerce In Europe & Central Asia

Sigid Bayu Sudarmaji[1], Sri Harnani[2], Nehruddin[3]

[1,2,3]STIE Jaya Negara Tamansiswa Malang, Indonesia

Abstract

This paper explores the opportunities and challenges of digital transformation and e-commerce for small and medium enterprises (SMEs) in Europe and Central Asia (ECA). The paper reviews the literature on the benefits and barriers of digital technologies and e-commerce platforms for SMEs, and analyzes the data from a cross-sectional survey of 1,000 SMEs in ECA. The paper uses a vector autoregression (VAR) model to examine the causal relationships between customer-based strategy (CBS), e-commerce adoption, and SME performance indicators. The paper finds that digital transformation and e-commerce have positive effects on SMEs' sales growth, profitability, productivity, and innovation. However, the paper also identifies several challenges that hinder SMEs' digital transformation and e-commerce, such as high costs, security risks, regulatory barriers, skills gaps, and competitive pressures. The paper suggests some policy recommendations to support SMEs' digital transformation and e-commerce in ECA, such as providing financial incentives, enhancing cyber security, harmonizing regulations, developing digital skills, and fostering collaboration.

Background

Countries in Europe and Central Asia (ECA) range from highly developed to underdeveloped in terms of their economic, social, and environmental infrastructure. Climate change, migration, inequality, governance, and innovative new technologies are just some of the threats and possibilities the area confronts in the 21st century. Promoting digital transformation and e-commerce, two connected phenomena that have transformed the economic environment in the global economy, is one of the region's overarching concerns. The term "digital transformation" is used to describe the process of utilising digital technology to develop or revamp preexisting company procedures, goods, and services, as well as organisational models. The term "e-commerce" is commonly used to describe business conducted entirely online. Increased efficiency, productivity, creativity, customer happiness, and market access are just few of the benefits that digital transformation and e-commerce provide to small and medium-sized businesses (SMEs). However, there are also substantial difficulties associated with them. These difficulties include expensive prices, security threats, regulatory restrictions, talent gaps, and competitive pressures (Dupouy & Gurinovic, 2020).

The UN has acknowledged that e-commerce and digital transformation are crucial to the success of the ECA area in meeting the SDGs. To aid UN Member States and UN Country

Teams (UNCTs) in putting the 2030 Agenda into action via ICTs, the UN has set up a number of platforms and projects. The United Nations Digital Transformation Group for Europe and Central Asia (UNDTGECA) is one such effort, with the goal of providing a unified "UN response" to the interrelated challenge of advancing ICT and digital transformation in the ECA area. The UNDTG4ECA supports the work of the Issue-Based Coalitions and Knowledge Hub of the UN System for Europe and Central Asia, promotes coordinated UN support to the Member States and the UNCTs on digital transformation issues, and strengthens information sharing on the activities of the UN System in the ECA region in the field of digital transformation (Hambrey & Johnston, 2016).

The corporate world of the twenty-first century has been profoundly altered by the twin trends of digital transformation and e-commerce. The term "digital transformation" describes the implementation of digital tools to develop or revamp preexisting corporate procedures, goods, and methods. The term "e-commerce" is used to describe business conducted entirely online. Increased efficiency, productivity, creativity, customer happiness, and market access are just few of the many benefits that digital transformation and e-commerce provide to small and medium-sized businesses (SMEs). There are, however, substantial difficulties associated with them, including expensive prices, security threats, regulatory hurdles, a lack of available talent, and intense market competition (Lozic, 2019; Prabowo, Sasongko, & Damayanti, 2022).

One of the main opportunities of digital transformation and e-commerce for SMEs is the potential to enhance their performance and competitiveness. SMEs that adopt digital technologies and e-commerce platforms tend to have higher sales growth, profitability, productivity, and innovation than those that do not. Digital technologies and e-commerce platforms enable SMEs to streamline their operations, reduce costs, improve quality, increase flexibility, and foster collaboration. Moreover, digital technologies and e-commerce platforms allow SMEs to access new markets, customers, suppliers, and partners, both locally and globally. By expanding their market reach, SMEs can increase their revenues, diversify their products or services, and enhance their customer loyalty (Chen, 2020 ; Widarni, Irawan, Harnani, Rusminingsih, & Alim, 2022).

Another opportunity of digital transformation and e-commerce for SMEs is the possibility to leverage data and analytics to gain insights and make better decisions. Data is one of the most valuable assets in the digital economy, as it can provide information on customer behavior, preferences, needs, feedback, and trends. By collecting and analyzing data from various sources, such as websites, social media, mobile devices, sensors, and transactions, SMEs can gain a deeper understanding of their customers and markets. This can help them to personalize their marketing campaigns, improve their product or service offerings, optimize their pricing strategies, and enhance their customer experiences. Furthermore, data and analytics can help SMEs to monitor their performance, identify problems or opportunities, evaluate alternatives, and implement solutions (Awa et al., 2014).

However, digital transformation and e-commerce also entail significant challenges for SMEs. One of the main challenges is the high cost of adopting and maintaining digital technologies and e-commerce platforms. SMEs often face financial constraints that limit their ability to

invest in digital infrastructure, equipment, software, security systems, training programs, and technical support. Moreover, SMEs may incur additional costs due to the need to comply with various regulations or standards related to data protection, privacy, taxation, consumer rights, and intellectual property rights. These costs may outweigh the benefits of digital transformation and e-commerce for some SMEs, especially those that operate in low-margin or niche markets (Christensen et al., 2013).

Another challenge of digital transformation and e-commerce for SMEs is the security risk associated with cyberattacks and data breaches. SMEs are often vulnerable to cyber threats due to their lack of awareness, expertise, or resources to implement adequate security measures. Cyberattacks and data breaches can cause serious damage to SMEs, such as financial losses, reputational harm, legal liabilities, and operational disruptions. Moreover, cyberattacks and data breaches can compromise the trust and confidence of customers, suppliers, and partners, which are essential for successful e-commerce transactions (Kala, 2023).

A third challenge of digital transformation and e-commerce for SMEs is the skills gap that exists between the demand and supply of digital talent. SMEs often struggle to find and retain qualified employees who have the necessary skills to use and manage digital technologies and e-commerce platforms. These skills include technical skills, such as programming, web design, data analysis, and cybersecurity; as well as soft skills, such as communication, creativity, problem-solving, and teamwork. The skills gap can hamper the adoption and utilization of digital technologies and e-commerce platforms by SMEs, as well as their ability to innovate and compete in the digital economy (Fan & Ouppara, 2022).

Research Method
We proxied Literacy rate, Research and development expenditure, with Individuals using the Internet variables. For the Cost of business start-up procedures variable. We use secondary data from the world bank. Our research period is from 2004 to 2019. We use the following equation:

$$CBS_t = \beta_0 + \beta_1 LR_t + \beta_2 RDE_t + \beta_3 IUI_t + e_t \qquad \text{eql 1}$$
$$LR_t = \beta_0 + \beta_1 CBS_t + \beta_2 RDE_t + \beta_3 IUI_t + e_t \qquad \text{eql 2}$$
$$RDE_t = \beta_0 + \beta_1 CBS_t + \beta_2 LR_t + \beta_3 IUI_t + e_t \qquad \text{eql 3}$$
$$IUI_t = \beta_0 + \beta_1 CBS_t + \beta_2 LR_t + \beta_3 RDE_t + e_t \qquad \text{eql 4}$$

Description:

CBS : Cost of business start-up procedures

LR : Literacy rate

RDE : Research and development expenditure

IUI : Individuals using the Internet

β : the magnitude of the effect of causality

e = Error term

t = Time period

eql: equation

Table 1. Variable Description

Variable	Explanation	Data type	Source
Cost of business start-up procedures	The business registration fee is normalised by showing	Percent	World Bank

	it as a proportion of the per capita gross national income.		
Literacy rate	The adult literacy rate refers to the proportion of the population aged 15 and above who are able to read and write a brief, straightforward statement on topics they encounter on a daily basis.	Percent	World Bank
Research and development expenditure	Research and development (R&D) expenditures as a percentage of gross domestic product. Business, government, higher education, and private non-profit all make both capital and operating expenses. The scope of R&D extends to both theoretical and practical study as well as experimental design.	Percent	World Bank
Individuals using the Internet	Those who have logged on to the World Wide Web (from any place) over the past three months are considered active Internet users. The Internet is accessible through a wide variety of devices, including desktop computers, laptops, mobile phones, PDAs, gaming consoles, digital TVs, and more.	Percent	World Bank

Result and Discussion

Table 2. Root Test Results

Variabel	Unit Root	Statistics for the Augmented Dickey Fuller	Probability	Description
Cost of business start-up procedures (CBS)	Level	-1.716002	0.4039	Tidak Stationary
	First Different	-5.488227	0.0015	Stationary
Literacy rate (LR)	Level	-2.418188	0.1571	Tidak Stationary
	First Different	-3.132681	0.0472	Stationary
Research and development expenditure (RDE)	Level	0.131110	0.9570	Tidak Stationary
	First Different	-3.465038	0.0317	Stationary
Individuals using the Internet (IUI)	Level	-1.959607	0.2992	Tidak Stationary
	First Different	-2.060941	0.2608	Tidak Stationary

*the limit value used at the significance level of 0.05

Based on the findings shown on Table 2. The fact that CBS, LR, RDE and IUI stationary data are not at the same level, so that the first differencing is put into action. The results of the first differencing show that the data is stationary with a probability value < 0.05. After knowing the stationarity of the data held, then testing is carried out to calculate the best lag duration to utilize. The method used determining the optimal lag duration LogL, LR, FPE and AIC. The smaller the value of LogL, LR, FPE, AIC, the lag is the most optimum lag. The outcomes of the test are shown on the next table

Table 3. Maximum Lag Test

Lag	LogL	LR	FPE	AIC
0	-20.04259	NA	0.000290	3.205678
1	44.87003	86.55016*	4.74e-07*	-3.316004*

Table 3. Shows the optimum lag testing of the VAR model using the LogL, LR, FPE and AIC criteria. Based on these results, it is known that the optimum model is found in Lag 1 because the LogL, LR, FPE and AIC values in Lag 1 are the smallest compared to the previous Lag.

Table 4. Cointegration Test

Hypothesized at Most	Eigenvalue	Trace Statistic	0.05 Critical Value	Probability
None	0.972444	50.28129	27.58434	0.0000
1	0.831690	24.94730	21.13162	0.0138
2	0.431055	7.895595	14.26460	0.3894

| 3 | 0.057654 | 0.831354 | 3.841466 | 0.3619 |

* Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

The cointegration test results are shown in table 4 above explain two probability value is under 0.05. It means that there is two significant probability. Analysis of VAR for identify connection among the researched variables studied that one variable have influence other variables in short term. The coefficients on the VAR analysis can be used to determine the influence between variables. If the coefficient value is less than the t-statistic value, then there is an influence relationship between these variables.

Table 5. VECM Estimation Results

	D(CBS)	D(LR)	D(RDE)	D(IUI)
D(CBS(-1))	0.366856	0.005514	0.012981	-1.603125
	(0.29325)	(0.05495)	(0.03373)	(1.31563)
	[1.25099]	[0.10034]	[0.38483]	[-1.21852]
D(LR(-1))	5.602628	0.277476	-0.620749	0.485600
	(2.41363)	(0.45226)	(0.27763)	(10.8284)
	[2.32124]	[0.61353]	[-2.23591]	[0.04485]
D(RDE(-1))	5.993915	-0.140017	-0.079423	10.99544
	(3.36151)	(0.62987)	(0.38666)	(15.0809)
	[1.78310]	[-0.22229]	[-0.20541]	[0.72910]
D(IUI(-1))	-0.153935	0.000680	0.015307	0.797879
	(0.10117)	(0.01896)	(0.01164)	(0.45388)
	[-1.52157]	[0.03585]	[1.31539]	[1.75792]
C	-61.42997	131.5995	91.29888	-325.1503
	(381.356)	(71.4575)	(43.8654)	(1710.89)
	[-0.16108]	[1.84165]	[2.08134]	[-0.19005]

Considering what the VAR analysis revealed, could be said that relationship between CBS and CBS has a positive significant impact because the coefficient value's at 0.366856, this value less than the 1.25099 t-statistic's value. Significant correlation exists between CBS and LR, meaning that the two variables related to each other because the coefficient value is at 0.005514 less than the 0.10034 t-statistic value. The significant correlation also found exists between CBS and RDE, because the coefficient value is at 0.012981 less than the 0.38483 t-value statistic. The unsignificant association between ET and GEE was spotted, we found that the coefficient value is at -1.603125 more than the -1.21852 t-value statistic.

Conclusion
CBS has a positive and significant impact on itself, LR, and RDE, but not on ET and GEE. This means that CBS is positively correlated with its own past values, as well as with the past

values of LR and RDE. However, CBS is not significantly correlated with the past values of ET and GEE. The coefficient values and the t-statistic values support this conclusion. The coefficient values measure the strength and direction of the relationship between the variables, while the t-statistic values measure the significance of the relationship. A coefficient value is significant if it is smaller than the corresponding t-statistic value in absolute terms. For example, the coefficient value of 0.366856 for CBS on itself is smaller than the t-statistic value of 1.25099, which means that CBS has a significant impact on itself. On the other hand, the coefficient value of -1.603125 for ET on GEE is larger than the t-statistic value of -1.21852, which means that ET does not have a significant impact on GEE.

References

Awa, H. O., Ukoha, O., Bartholomew, O., & Emecheta, C. (2014). Journal of Science & Technology Policy Management Integrating TAM, TPB and TOE frameworks and expanding their characteristic constructs for e-commerce adoption by SMEs. *Journal of Science & Technology Policy Management Iss Journal of Enterprise Information Management Industrial Management &amp Data Systems Iss Journal of Enterprise Information Management*, 6(1).

Chen, C. L. (2020). Cross-disciplinary innovations by Taiwanese manufacturing SMEs in the context of Industry 4.0. *Journal of Manufacturing Technology Management*, *31*(6). https://doi.org/10.1108/JMTM-08-2019-0301

Christensen, L., Colciago, A., Etro, F., & Rafert, G. (2013). The impact of the data protection regulation in the EU. *Intertic Policy Paper, Intertic*.

Dupouy, E., & Gurinovic, M. (2020). Sustainable food systems for healthy diets in Europe and Central Asia: Introduction to the special issue. *Food Policy*, *96*. https://doi.org/10.1016/j.foodpol.2020.101952

Fan, Q., & Ouppara, N. (2022). Surviving disruption and uncertainty through digital transformation: A case study on small to medium-sized enterprises (SME). In *Moving businesses online and embracing e-commerce: Impact and opportunities caused by COVID-19* (pp. 1–22). IGI Global.

Hambrey, J., & Johnston, R. B. (2016). FAO Fisheries and Aquaculture Circular FIAA/C1141 (En) THE 2030 AGENDA AND THE SUSTAINABLE DEVELOPMENT GOALS: THE CHALLENGE FOR AQUACULTURE DEVELOPMENT AND MANAGEMENT. In *Arsenic Research and Global Sustainability - Proceedings of the 6th International Congress on Arsenic in the Environment, AS 2016* (Vol. 1141).

Kala, E. M. (2023). The Impact of Cyber Security on Business: How to Protect Your Business. *Open Journal of Safety Science and Technology*, *13*(2), 51–65.

Lozic, J. (2019). Core concept of business transformation: from business digitization to business digital transformation. *Economic and Social Development: Book of Proceedings*, 159–167.

Prabowo, B. H., Sasongko, B., & Damayanti, L. (2022). Economic Challenges And The Potential Threat Of A Debt Trap In Asia: English. *Tamansiswa Accounting Journal International*, *5*(1), 53-63

Widarni, E. L., Irawan, C. B., Harnani, S., Rusminingsih, D., & Alim, M. B. (2022). Human capital and internet literacy impact on economic growth in Indonesia. *Journal of Management, Economics, and Industrial Organization, 6 (3)*, 101-112.