The Impact of Governance and Digital Competitiveness on Agriculture Sectors Amid Global Uncertainty

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Abstract

In the last five years, the world has faced several events that have driven global uncertainty, namely pandemics and geopolitical events. Governments in various countries determine strategic policies to face global uncertainty. Governance has a crucial role in dealing with economic conditions amidst uncertainty. On the other hand, digital developments since the pandemic have also increased, which is expected to have positive externalities for society and the government in making economic decisions under uncertainty. This research examines the impact of governance and digital competitiveness on economic performance. This research uses secondary data from IMD publications for 2019–2023, covering a total of 58 countries. The data were analyzed using panel data regression. The research results show that there are disparities in digital competitiveness and governance in the group of countries with GDPs of more than $20,000 and less than $20,000, respectively. This difference leads to differences in economic performance between the two groups of countries. The governance dimension that affects macroeconomic performance is government governance, while for the agricultural sector it is business governance. The digital competitiveness dimension that worsens macroeconomic performance is future readiness, while for the agricultural sector it is the digital technology dimension. In a period of global uncertainty, infrastructure variables can drive economic performance, but on the other hand, they actually reduce the share of the agricultural sector. The more flexible anticipatory business behavior (due to more complete information) in the face of global uncertainty restrains the motivation for business expansion, which ultimately reduces economic performance. This research recommends to the government the importance of developing a strategy for handling future readiness and digital technology to support economic and agriculture stimulus policies in conditions of global uncertainty.

Keywords

Digital, technology, economic, government, agriculture.

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Introduction

The COVID-19 pandemic has increased reliance on technology and digital communications, accelerated remote work and e-commerce trends, caused disruption to traditional news media and increased misinformation, expanded online education and virtual events, and raised concerns over privacy and cyber security (Lu et al., 2023). One of the biggest developments affecting society and industry at a time when firms and nations are coping with the fallout from COVID-19 is digitalization (Hornungová and Petrová, 2023). Thus, the pandemic has changed the behavior of society and businesspeople in making decisions based on the massive amount of information received. When countries in the world experienced a post-pandemic economic recovery in 2021, geopolitical events, especially the Russia-Ukraine war in early 2022, threatened the global economy. Geopolitical risk causes natural resource prices to be more sensitive to geopolitical uncertainty (Khurshid et al., 2024). Based on a counterfactual scenario, the GDP decrease seen in EME nations during the 2008–2009 crisis would have been lessened by about 2% if there had been no uncertainty shocks (Miescu, 2023). Geopolitical risks cause a sharp decline in economic growth (Jiao et al., 2022) and agriculture sectors. The Russian and Ukraine war has caused disruption to the global agricultural supply chain (Aizenman et al., 2024). The findings of Polat et al. (2023) show the dynamic interlinkages between geopolitical stress and agricultural commodity market. Higher geopolitical risk causes stock price falls to occur more frequently, but companies that are more involved in ESG governance practices are more resistant to the adverse impacts of geopolitical risk (Fiorillo et al., 2024). Apart from geopolitical factors, the COVID-19 crisis has also led to a worsening of the agricultural system (Blazy et al., 2021).

Governance is an important variable in this global uncertainty. A country with an abundance of resources but not supported by efficient resource management institutions is unable to manage them optimally. Entele (2021) examines why countries rich in natural resources have not shown the same economic growth due to institutional performance, which, in several groups of countries, confirms the existence of a resource curse and an institutional curse. The findings of Pazouki and Zhu (2022) show that an increase in oil dependence volatility in democratic countries causes an increase in government spending, but vice versa in non-democratic countries, where government spending in response to oil dependence volatility fluctuates between positive and negative depending on its quality, political institutions; the more visible democratic attributes, the greater the spending. However, it is the volatility of oil revenues and poor government response to volatility that drives the resource curse paradox, not the abundance of oil revenues (El-Anshasy et al., 2017).

The potential to escape the resource curse exists if a country can develop human resources, adopt ICT services, and build quality institutions. Weak public and private institutions, as one of the inefficiencies, can also weaken economic performance. Palei (2015) shows that institutions have a significant effect on global competitiveness. Poor institutions encourage the proliferation of inefficiencies and high-cost economies, such as corruption. Khodapanah et al. (2022) found an inverted U relationship between GDP and corruption in Asian countries where, in the early stages of economic development, economic activities expanded but there were no institutional changes; therefore, at this stage, along with As economic development increases, corruption also increases. Enhancements in the quality of institutions in the domains of law, rules, and regulations frequently follow further economic progress. These establishments will boost output while decreasing corruption.

The findings of Abilda et al. (2024) show that corporate governance is an important key for companies in the agricultural sector in facing difficulties during the Covid-19 pandemic. Strict corporate governance mechanisms have a beneficial influence on cost and total efficiency (Agyapong and Xusheng, 2024). This cost efficiency will ultimately drive aggregate economic performance. Findings of Palei (2015) show that labor market efficiency has a significant effect on national competitiveness, while goods market efficiency is not significant. On the other hand, good governance will increase business resilience to geopolitical risks. The findings of Fiorillo et al. (2024) show that companies can mitigate the impact of geopolitics through ESG governance, where companies that are more involved in ESG practices are more resistant to the negative impact of geopolitical risks on the risk of falling stock prices.Governance that adopts information technology also has a positive impact on the economy. Studies for a sample of 103 countries in the period 2003–2018 show that e-government development is a positive determining factor for a country to achieve sustainable development, especially in developing and transition countries (Castro and Lopes, 2022).

Decision-making under conditions of uncertainty requires symmetric information to avoid inappropriate decisions. The use of ICT is very helpful for business people in making business decisions. ICT has a positive impact on financial capital, human capital, physical capital, social capital and natural capital (Sarkar et al., 2022). Bussy and Zheng (2023) research regarding the pressure of geopolitical risks for multinational companies in making investments shows that good governance mitigates the negative impact of perceived risk and geopolitical uncertainty, while symmetric information strengthens this negative impact by reducing investment motivation to avoid risk.

The use of ICT services in countries experiencing crises or rich in resources optimizes economic performance. In the case of the European Union for the period 1995–2019, there was a positive effect of ICT investment on total employment (Santos et al., 2023). Oikonomou et al. (2023) found that in regions where companies adopted more IT before the pandemic, unemployment rates increased less in response to social distancing, and IT protected all individuals, regardless of gender and race, except those with the lowest levels of education. Meanwhile, at the industry level, research by Ma et al. (2024) shows that there is an inverted U-shaped relationship between the digital economy and industrial agglomeration. Study of Mascagni et al. (2021) found that ICT can increase tax compliance, where tax revenues increase by at least 12% for income tax and 48% for VAT.

Previous research shows that conditions of global uncertainty are avoided through the availability of governance and information. However, previous studies have placed governance and information variables interacting with geopolitical instability, as in research by Bussy and Zheng (2023). Several previous studies placed global instability as an exogenous variable as per research Khurshid et al. (2024); Adra et al. (2023); Wang et al. (2022); and Ali et al. (2023). Meanwhile, studies examining the impact of ICT on economic performance show inconsistent results in boosting the economy, especially during the COVID-19 period. This paper estimates the influence of governance and digital information on agriculture sectors in a period of global uncertainty due to the pandemic and geopolitics. This study differs from previous ones because uncertainty is not included in the estimates. This article also differentiates between digital as part of human capital, technology, and company adaptation in driving economic performance in times of global uncertainty. The research results will reveal forms of digital competitiveness that need to be considered in efforts to encourage the benefits of digital progress as well as support government and business governance to improve economic performance and value-added agriculture.

Materials and methods

The research uses secondary data resulting from the publication of the IMD digital competitiveness and world economic competitiveness report for the 2019–2023 period and World Bank. Based on data availability, the estimated number of countries is 58. According to the IMD, digital variables have three dimensions: knowledge, technology, and future readiness. Governance data consists of two dimensions: government and private institutions. Government efficiency serves as a proxy for government governance, while corporate efficiency serves as a proxy for private governance.

The data were analyzed using comparison test analysis and panel data analysis. Comparison test analysis is applied to test differences in groups of countries based on IMD World Competitiveness in 2023, namely GDP greater than $20,000 (hereinafter referred to as higher GDP in this study) and the group of countries with GDP less than $20,000 (hereinafter referred to as lower GDP). There are 38 countries with a higher GDP and 20 countries with a lower GDP. Before the comparison test was applied, a Kolmogorov-Smirnov normality test was carried out with a $p > 0.05$.

The comparison test is applied to all variables for each year estimated using the Statistical Package for the Social Sciences data processing. Testing the influence of digital and institutional competitiveness on economic performance uses panel data regression. The first model of panel data analysis is presented as equation (1). The economic performance equation (Ec) in Model 1 is influenced by digital competitiveness (Dc), infrastructure (Inf), and governance (government efficiency, *Ge*, and business efficiency, *Be*). The coefficient α01 is the constant of model 1, $b_{11},\ldots, b_{14}$ is the variable coefficient of model 1, and e_1 is the error term of the model. The symbol *i* is the country, which is estimated to consist of 58 countries, and *t* is the estimation period of 2019–2023.

$$Ec_{1it} = \alpha_{01} + b_{11}Ge_{it} + b_{12}Be_{\mathrm{it}} + b_{13}Inf_{it} + b_{14}Dc_{it} + e_{1it} \quad (1)$$

Equation (2) describes the factors that influence economic performance, where digital competitiveness is derived into 3 variables, namely: knowledge (*Kn*), digital technology (*Dt*), and future readiness (*Fr*). The coefficient α_{02} is a constant of model 2; $b_{21},..,b_{26}$ are the variable coefficients of model 2, and e_2 is the error term of the model.

$$Ec_{2it} = \alpha_{02} + b_{21}Ge_{it} + b_{22}Be_{it} + b_{23}Inf_{it} + b_{24}Kn_{it} + b_{25}Dt_{it} + b_{26}Fr_{it} + e2_{it} \quad (2)$$

Equations (3) present the influence of digital competitiveness and governance on the share of the agricultural sector on GDP (SA).

$$SA_{it} = \alpha_{04} + b_3Ge_{it} + b_{32}Be_{it} + b33Inf_{it} + b_{34}Kn_{it} + b_{35}Dt_{it} + b_{36}Fr_{it} + e3_{\mathrm{it}} \quad (3)$$

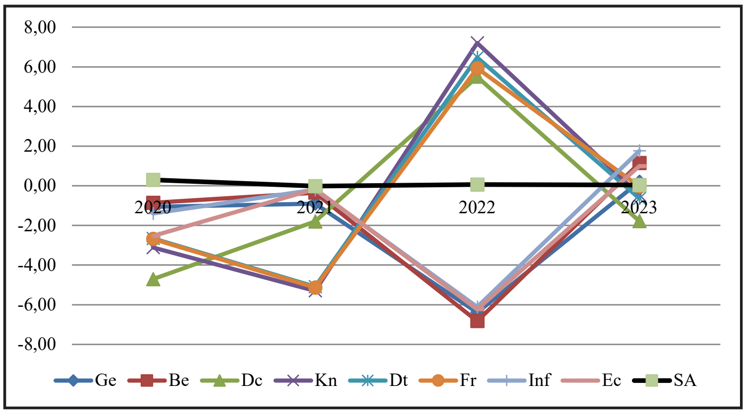
Model estimation (1) and (2) use balanced panel for 58 countries for the period 2019-2023. Based on complete data, model estimation (3) is conducted for 57 countries using unbalanced panel data. The panel data model estimation stage begins with selecting the best model. The Chow test is used to select the best model between the Common Effect Model (CEM) and the Fixed Effect Model (FEM). If the probability (prob.) in cross-section $F < 0.05$, then the best model for estimating panel data is FEM, and vice versa, if prob. > 0.05, the best model is CEM. The Hausman test is used to select the best model between the Random Effect Model (REM) and the Fixed Effect Model (FEM). If the probability (prob.) in the random cross-section is <0.05, then the best model for estimating panel data is FEM, and vice versa, if prob. >0.05, the best model is REM. To select the best model between the Random Effect Model (REM) and the Common Effect Model (CEM), the Lagrange

Multiplier (LM) Test is used. If the Breusch-Pagan probability is <0.05, then the best model for estimating panel data is REM, and vice versa, if prob. >0.05, the best model is CEM. The CEM and FEM models are OLS, followed by testing the classical model assumptions. On the other hand, the REM estimation model is a GLS estimate; no classical assumption tests are carried out.

Results and discussion

Figure 1 presents changes in variables (compared to the previous year): governance, digital competitiveness, infrastructure, economic performance, and agricultural value added. All of the estimated variables showed negative changes throughout the pandemic-induced economic recovery period in 2021, with the digital knowledge and future readiness variables experiencing the steepest fall. In 2022, when there is global uncertainty due to geopolitics, digital competitiveness and its dimensions show positive changes, but governance, infrastructure, and economic performance variables experience a deep decline. The opposite condition shows that in 2023, economic performance, governance, and infrastructure will experience positive changes. However, digital competitiveness and its dimensions are experiencing negative changes. However, Figure 1 shows that the average share of the agricultural sector continued to decrease during the estimation period.

Figure 2 presents governance variables measured by government and business efficiency and economic performance by country group. In the group of countries with higher GDP (Figure 2a), the development of government efficiency has a downward trend for the entire estimated period, while business efficiency declines in 2022 and increases in 2023. Economic performance shows a downward trend for the first three years, with the highest decline in 2022. This implies that the pandemic has worsened the economies of countries with higher GDP, which reached their peak at the beginning of geopolitical uncertainty in 2022.



Source: Authors

Figure 1: Changes in governance, digital competitiveness, infrastructure, economic performance, and share of agriculture in 2020-2023.

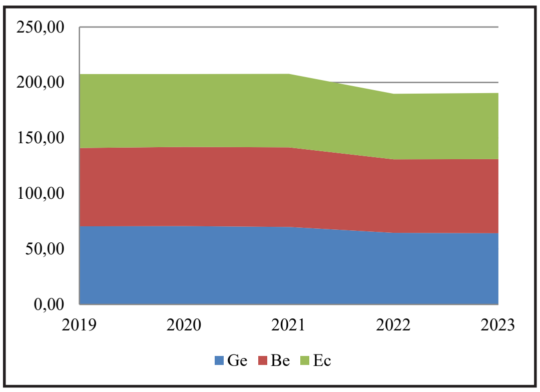


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Figure 2a: Government efficiency, business efficiency, and economic performance in the group of countries with a higher GDP.

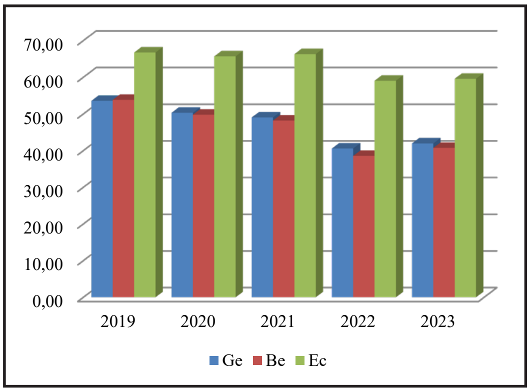

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Figure 2b: Government efficiency, business efficiency, and economic performance in the group of countries with a lower GDP.

The lower GDP group (Figure 2b) shows that the pandemic has worsened economic performance but recovered in 2021, decreased again during global uncertainty due to geopolitics in 2022, and adjusted in 2023. This pattern of movement in economic performance in the lower GDP group seems to be in line with developments in governance, which have a downward trend from 2020 to 2022 and an increase in 2023.

Figure 3 presents the development of economic performance and digital competitiveness of the two groups of countries studied: countries with a higher GDP (Figure 3a) and a lower GDP (Figure 3b). Figure 3 presents the relationship in the opposite direction between digital competitiveness and economic performance. In the higher GDP group, it shows that the relationship in the opposite direction occurs for the entire research period,

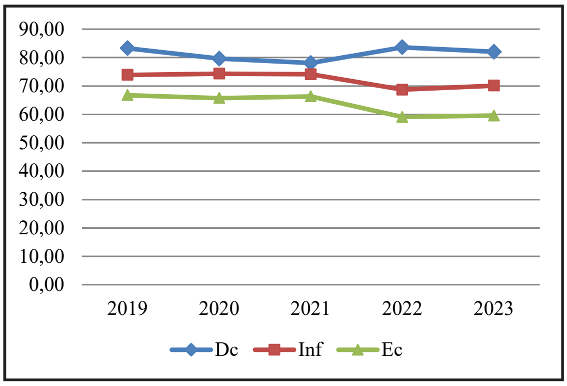

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Figure 3a: Digital competitiveness, infrastructure and economic performance for countries with a higher GDP.

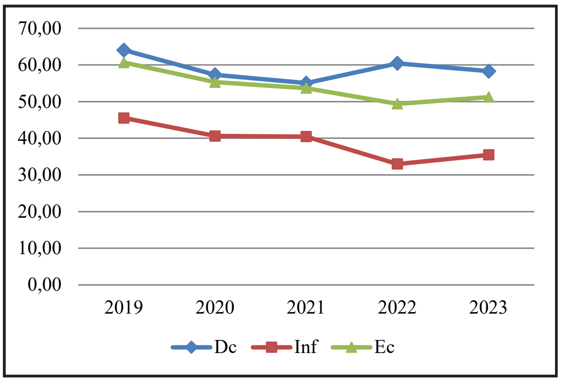

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Figure 3b: Digital competitiveness, infrastructure and economic performance for countries with a lower GDP.

Variable		2019	2020	2021	2022	2023
Dc	Mean Difference	-19.215	-22.321	-23.053	-23.205	-23.741
	t	-6.858	-6.899	-6.855	-7.555	-7.376
	Sig.	.000	.000	.000	.000	.000
Kn	Mean Difference	-18.380	-19.844	-21.913	-23.067	-23.591
	t	-6.183	-5.831	-6.477	-7.636	-7.271
	Sig.	.000	.000	.000	.000	.000
Dt	Mean Difference	-18.110	-21.679	-22.771	-22.678	-23.077
	t	-6.119	-6.502	-6.377	-6.447	-6.233
	Sig.	.000	.000	.000	.000	.000
Fr	Mean Difference	-21.203	-25.439	-25.968	-23.680	-24.520
	t	-6.853	-6.682	-6.722	-6.760	-6.888
	Sig.	.000	.000	.000	.000	.000
Ge	Mean Difference	-16.852	-20.196	-20.787	-23.975	-22.147
	t	-4.308	-4.637	-4.792	-5.642	-5.149
	Sig.	.000	.000	.000	.000	.000
Be	Mean Difference	-16.609	-21.486	-23.389	-27.693	-26.095
	t	-3.620	-4.377	-4.650	-5.334	-4.529
	Sig.	.001	.000	.000	.000	.000
Inf	Mean Difference	-28.372	-33.725	-33.667	-35.710	-34.624
	t	-8.300	-8.875	-8.922	-9.520	-8.807
	Sig.	.000	.000	.000	.000	.000
Ec	Mean Difference	-6.068	-10.413	-12.649	-9.662	-8.329
	t	-1.948	-3.519	-4.060	-3.301	-2.702
	Sig.	.056	.001	.000	.002	.009

Source: Authors

Table 1: Comparison test between groups of countries with lower and higher GDP.

while in the group with lower GDP, the relationship in the opposite direction occurs in 2021–2023. On the other hand, both the higher and lower GDP groups have infrastructure development that is in line with the development of economic performance. In the group of countries with higher GDP, digital competitiveness reached its highest point at the beginning of conditions of geopolitical uncertainty and decreased again in 2023. In the group of countries with lower GDP, the highest point of digital competitiveness occurred in the period before the pandemic, in 2019. The data presented in Figures 3a and 3b illustrates the discrepancy in digital and infrastructure competitiveness among the nations in this group. Countries with lower GDP are also associated with lower digital and infrastructure competitiveness indices as well as worse economic competition, as demonstrated by the comparison test between countries with lower and higher GDP, as presented in Table 1.

The comparison test results, as presented in Table 1, show significant differences in all variables and estimation years. All estimated variables have a negative mean difference in the group of countries with lower GDP. The difference in digital competitiveness continues to increase during the estimation period, which is in line with the increase in the knowledge gap. Digital technology in general is experiencing an increasing trend, except in 2022, as is future readiness. The difference in government efficiency will increase in 2020–2022 and decrease again in 2023, which is in line with the gap in business efficiency. Meanwhile, infrastructure inequality decreased in 2021 and 2023. Differences in economic performance between groups of countries increased on average in 2020 and 2021, until they decreased again in 2022 and 2023.

The selection of the best panel data regression model is presented in Table 2. The Chow Test results for Model 1 show that, at cross-section F 0.000 < 0.05, the correct model between CEM and FEM is FEM. Hausman Test Model 1 shows a random cross-section probability value of 0.071>0.05, where the best model between FEM and REM is REM. The LM Test results for Model 1 show the Breusch-Pagan (Both) probability of 0.000 <0.05, thus the best model for Model 1 is REM. Research Model 2 shows that the best model for estimating panel data is REM, and the best model for estimating research Model 3 is FEM. Based on the Glejser test, the research model contains symptoms of heteroscedasticity, and testing cross-section dependence shows the probability of Pesaran CD < 0.05. Estimation of Model 3 was carried out with Cross-section seemingly unrelated regressions (SUR) .

The research findings shown in Table 3 reveal that the business efficiency variable is not significant in Model 1, but infrastructure, digital competitiveness, and government efficiency variables have a significant impact on economic performance. An increase of 1 percentage point in government efficiency will increase 0.230 percentage points of economic performance, and an increase of 1 percentage point in infrastructure will increase 0.359 percentage points of economic performance. The research results show that a 1 percentage point increase in digital competitiveness reduces economic performance by 0.207 percentage points. In Model 1, the factor that has the highest elasticity in influencing economic performance is the infrastructure variable.

The results of the research data estimation for Model 2 show that the business efficiency variable still has no significant effect on economic performance, while the government efficiency and infrastructure variables have a significant effect. In Model 2, digital competitiveness is described in three variables: knowledge, digital technology, and future readiness. The estimation results of Model 2 show that of these 3 variables, only the future readiness variable is significant at alpha 0.10. An increase of 1 percentage point in future readiness will reduce economic performance by 0.146.

No	Testing	Criteria	Model 1	Model 2	Model 3
1	Chow Test	Cross-section F	12.592	12.686	56.209
		Prob.	0.000	0.000	0.000
2	Hausman Test	Cross-section random	8.633	9.34	20.693
		Prob.	0.071	0.155	0.002
3	LM Test	Breusch-Pagan (Both)	269.976	271.436	-
		Prob.	0.000	0.000	
	Best Model		REM	REM	FEM

Source: Authors

Table 2: Panel data model selection.

Variable	Model 1	Model 2	Model 3
C	37.963	35.805	5.697
	(8.453)	(8.657)	(17.331)
	0.000***	0.000***	0.000***
Ge	0.230	0.230	0.000008
	(3.101)	(3.076)	(0.065)
	0.002***	0.002***	0.948
Be	0.027	0.058	0.005
	(0.395)	(0.804)	(1.942)
	0.693	0.422	0.053*
Inf	0.359	0.349	-0.024
	(4.837)	(4.643)	(-4.408)
	0.000***	0.000***	0.000**
Dc	-0.207		
	(-2.676)	-	-
	0.008***		
Kn		0.097	0.003
		(0.995)	(0.960)
		0.320	0.338
Dt		-0.1611	-0.016
		(-1.644)	(-3.840)
		0.101	0.000***
Fr		-0.146	-0.002
		(-1.651)	(-0.960)
		0.099*	0.337
S.E. of regression	5.341	5.305	0.585
F-statistic	31.085	21.325	749.528
Prob(F-statistic)	0.000***	0.000***	0.000***

Note: *** p <0.01, ** p <0.05, * p <0.1.

Source: Authors

Table 3: Estimation results.

On the other hand, in Model 3, the business efficiency variable is significant positive effect, whereas infrastructure has a negative effect. An increase of 1 percentage in business efficiency will increase 0.005 percentage points of share in agriculture, and an increase of 1 percentage in infrastructure will decrease 0.024 percentage points of share in agriculture. In addition, model 3 shows that the digital competitiveness dimension that plays a role in agriculture is digital technology with coefficient -0.016. An increase of 1 percentage in digital technology will decrease 0.024 percentage points of share in agriculture. The comparison regression coefficients between Models 2 and 3 show lower coefficient in Model 3. This implies a greater role of digital competitiveness for other economic sectors compared to the agricultural sector.

According to the research findings, countries with a higher GDP have higher digital competitiveness than those with a lower GDP. This finding is in line with Lu et al. (2023), who found that per capita income drives informational globalization. The research results show that government governance manifested through government efficiency will encourage economic performance. This research is in line with previous research, as with the findings of Ayana et al. (2024). A larger government will be detrimental to economic growth (Nirola and Sahu, 2019). The quality of governance broadly and positively facilitates economic performance (Adedeji et al., 2024). A study by Qureshi et al. (2021) found that economic growth and corruption have a positive bidirectional relationship for developing countries and a negative unidirectional relationship for developed countries.

The research results show that infrastructure will encourage economic performance. This research is in line with research by Mao et al. (2024), which shows that transportation and financial infrastructure influence trade. Infrastructure is a factor that stimulates economic development, although in some cases, infrastructure investment can pose a direct threat to project-affected communities Kadyraliev et al. (2022). Zhang and Cheng (2023) findings show that transportation infrastructure has a positive effect on the economy in the long term of development, but in the short term, it has a negative impact. Transport infrastructure opens up the potential for regional transit traffic and promotes connectivity between Central Asian countries that lack land and shipping routes (Japarov et al., 2022). This connectivity will ultimately encourage trade between countries and increase GDP. Pokharel et al. (2021) study shows that transportation facilitates urbanization, and higher urbanization leads to higher regional GDP per capita. The research results of Yusufu et al. (2023) show that communication infrastructure encourages an increase in manufacturing industry exports. Numerous academics have also come to other conclusions that corroborate the beneficial impact of infrastructure on the economy, including Sun and Kauzen (2023); Palei (2015); Rehman et al. (2020); Tsaurai and Ndou (2019); and Yu and Luu (2022).

IMD defines digital competitiveness as consisting of three dimensions: knowledge, technology, and future readiness. The knowledge dimension consists of talent, training, education, and scientific concentration. The technology dimension consists of three indicators, namely: regulatory framework, capital, and technological framework, while the future readiness dimension consists of three indicators: adaptive attitudes, business agility, and IT integration. The research results show that digital competitiveness reduces economic performance. Research model 2, which describes these three dimensions as variables, shows that digital technology and knowledge variables have no significant influence on economic performance. The results of Park and Choi (2019) show that digital technology innovation capabilities take time to show their impact on economic growth. The future readiness variable harms economic performance. The findings of Leibrecht et al. (2023) for the case of OECD and EU countries show that increasing automation is positively related to unemployment in countries that have weak worker collective bargaining. On the other hand, Zhang and Qu (2024) shows that the digital economy has a negative impact on the consumption of poor people and subsistence households, mainly by exacerbating the uncertainty they face in the labor market (higher risk of unemployment and uncertainty in expected income) and inequality in the distribution of wealth.

On the other hand, the negative relationship between economic performance and digital competitiveness is very visible during the pandemic period and after, as presented in Figures 1a and 1b. Srisathan and Naruetharadhol (2022) found that people struggled to transform their digital behavior during the COVID-19 pandemic. This pandemic not only leads to increased use of technological tools but also affects various organizational aspects, such as employee attitudes towards technology and organizational culture towards innovation. Increased digital transformation has proven to be beneficial to companies affected by the pandemic. As a result, this pandemic has affected the spirit of innovation and accelerated the pace of digital transformation (Moser-Plautz and Schmidthuber, 2023). The COVID-19 pandemic has encouraged people to work from home. This encourages increased demand for telecommunications services and, on the other hand, reduces demand for the transportation sector, thereby increasing unemployment. Mack et al. (2021) findings show that workers in the transportation sector are 20.6% more likely to be unemployed due to the pandemic than workers in non-transportation industries. Figure 1 shows changes in research variable data, showing that during global uncertainty in 2021–2022, there was an increase in digital competitiveness, followed by a decline in economic performance. Effective information, when paired with digital competitiveness—particularly future readiness —will lower corporate actors' incentives to invest, which will lower overall economic performance. This is in line with research by Bussy and Zheng (2023) regarding the pressure of geopolitical risks for multinational companies, showing that good information motivates multinational companies to avoid geopolitical risks by reducing investment, but foreign investment in the form of technology is still being increased because it is more resistant to geopolitical risks. After all, intangible assets are more easily transferred across national borders.

The business efficiency variable has a positive effect on agriculture share. The business efficiency variable has a positive effect on the share of agriculture. Macro business efficiency drives the rapid development of the agricultural sector more than others. Business governance that drives competitive and efficient markets strengthens the agricultural sector. The achievement of high corporate efficiency in the banking sector, for example, actually provides incentives to contribute to the agricultural sector in uncertainty. Digital technologies play a critical role in empowering resilience through farm-scale operations, industrial transformation, and technological advancement (Quan et al., 2024). Digital agricultural technologies in food crop production have an impact of up to 60% reduction in fertilizer use and an 80% reduction in pesticide use with Variable Rate Technology (VRT). VRT also shows a 62% increase in crop yields, and robotic systems or intelligent machines can reduce labor energy by up to 97% and diesel consumption by up to 50% (Papadopoulos et al., 2024). However, research findings show that digital technology and infrastructure have a negative impact on agricultural share.

In a global uncertainty period, the government is required to make decisions to save the economy by utilizing finances for macroeconomic recovery. Research findings show that the governance implemented by the government is able to improve the macro economy but not for the agricultural sector. This is due to the lack of focus on governance for this sector. Research findings of Boughton et al. (2021) show that the rural sector only received a very small allocation from the government's initial fiscal response to mitigate the economic impact of COVID-19.

Conclusion

Digital competitiveness can reduce economic performance, while government governance and infrastructure will boost economic performance. The negative impact of digital competitiveness, which reduces economic performance, lies in the future readiness dimension. Future readiness is a company's ability to anticipate and adapt to external changes, both in terms of adaptive attitudes, business agility, and IT integration. The anticipatory behavior of businesses in global uncertainty that occurs when they have better information appears to reduce economic performance. The behavior of business actors in facing uncertainty reduces motivation to expand their business. Business efficiency drives the share of the agricultural sector, but infrastructure has a negative effect on the agricultural sector. Digital technology worsens agricultural sector during global uncertainty period.

The author recommends that future researchers study the behavior of business actors in facing geopolitical uncertainty in making business decisions that have an impact on the aggregate economy. The author also recommends how these governance and digital variables interact to drive the country's economy in a period of global uncertainty. This research also recommends for policymakers how to develop a digitalization policy strategy, especially for future readiness, which strengthens government and private governance to support economic stimulus policies in conditions of global uncertainty.

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