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The Role of Broadband Usage and Telecommunications Competition in Driving Economic Growth and Labour Productivity: A Comparative Regional Analysis of MENA and Europe

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Abstract

This study compares the impact of using fixed and mobile broadband services and competition in the telecommunications sector on economic growth and labour productivity across 20 countries in Europe and the MENA (Middle East and North Africa) region from 2015 to 2021. Broadband usage is measured by the amount of data consumed, while sector competition is assessed using the ICT regulatory tracker index. Two econometric models were employed and applied to two samples: Group A (European countries) and Group B (MENA countries). The results show that broadband use has positive and significant impacts on economic growth and labour productivity in the two groups, but the effect in the European countries was higher. However, the study also finds that competition in the telecommunications sector produces divergent results between the two groups. The study recommends adopting policies to enhance the deployment and affordability of fixed and mobile broadband usage and services. Additionally, since competition serves as a catalyst for broadband usage, enhancing competition in the telecommunications sector is also advised.

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Introduction

The telecommunications sector is considered an essential sector since it provides the necessary infrastructure for key economic sectors such as education, health, trade, industry, agriculture, and various services. These sectors increasingly depend on information technology and telecommunications services to perform their functions, thereby increasing their economic value added (Kelly, Tyler, and Crawford-Brown 2016). Both individuals and institutions rely on mobile and fixed broadband services to exchange data via the Internet, contributing to overall productivity enhancement.

To facilitate technological progress, countries have adopted policies to enhance competition in broadband services and encourage the development and usage of broadband networks. As a result, around 64% of the world's population used the Internet in 2021, up from only 40% in 2015 (ITU 2023a).

Telecommunications services are vital in supporting other economic sectors. The main channel between telecommunication usage and economic growth and productivity is its effect on knowledge and technological progress, as explained by the Solow growth model, or by enhancing the efficiency of capital, as described by endogenous growth theory (Matalqah and Warad 2017a). Advances in broadband speed enable faster data transmission, supporting the creation of new services like cloud computing and artificial intelligence applications. These improvements also enhance production flexibility and efficiency, creating new markets like entertainment, online gaming, and IPTV, which in turn foster new consumption patterns in society.

Furthermore, the widespread deployment of telecommunications networks supports the development of e-commerce channels, digital commerce, and the Internet of Things. Telecommunications services impact productivity by creating new products to be used in production processes or by enhancing labour knowledge (Shaaban 2023). Investments in the telecommunication sector support the diffusion of broadband services, which is reflected in other sectors' productivity (Castaldo, Fiorini, and Maggi 2017).

Given the increase in fixed and mobile broadband usage in recent years, this study examines the impact of broadband telecommunication services and competition on economic growth and labour productivity in selected countries from the MENA (Middle East and North Africa) region and Europe.

The remainder of this paper is organised as follows: first, we present the theoretical framework and the literature review on the impact of broadband usage on economic growth and labour productivity. This is followed by the methodology and an econometrics analysis, then the empirical results and discussion. Finally, the paper concludes with policy recommendations.

Theoretical framework and literature review

Communication is a process of transmitting information (data) between two or more parties through verbal, written, or electronic means. According to the International Telecommunications Regulations (ITRs) adopted by the International Telecommunication Union (ITU), telecommunications is defined as the process of "any transmission, emission or reception of signs, signals, writing, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems" (ITU 2012). The media consists of the telecommunication networks that link the communicating parties through wired – referred to as fixed telecommunications networks – or through wireless connections, known as mobile telecommunications networks.

With technological progress, fixed and mobile networks transmit data between communication parties. The main focus of this advancement is the speed of transmission, with high-speed networks known as broadband networks and the services known as either fixed or mobile broadband. According to the ITU, a service is considered broadband if the download speed exceeds 256 Kbps in either fixed or mobile networks (ITU 2020). An example of fixed broadband service is ADSL (asymmetric digital subscription line), which provides speeds up to 100 Mbps (Telecommunications Regulatory Commission 2011). Fibre optic technology provides speeds up to 1 Gbps and is expected to reach 100 Gbps by 2040 (Ofcom 2023). In the mobile domain, 3G technologies offer speeds up to 14.4 Mbps, 4G up to nearly 100 Mbps, and 5G up to 20 Gbps, are of which are considered broadband services (ETSI n.d.; GSMA n.d.).

Broadband is the main pillar of digital economy services, enhancing productivity and serving as one of the main tools to achieve sustainable economic development (Badran 2020), as well as improving labour productivity by facilitating labour communications and increasing job satisfaction (Jaumotte et al. 2023).

Many studies have assessed the economic impact of information and communication technologies (ICT) either by evaluating the direct impact on economic growth and labour productivity or by proxying these effects by using the concept of inclusive growth (Kireyev and Chen 2017). For example, Chatterjee (2020) examined 41 countries from 2004–2015 and found that mobile penetration, Internet usage, fixed telephony penetration, and ICT imports have a positive and significant impact on economic growth. Similar results were found by Behera and Narayan (2023).

Meanwhile, in an international study covering 201 countries from 2020 to 2022, Zhang (2022) found that mobile broadband penetration has a positive impact on economic growth while fixed broadband penetration does not, likely because mobile broadband is used more than fixed broadband. Mayer, Madden, and Wu's (2019) study of 29 OECD countries during the first quarter of 2008 to the fourth quarter of 2012 found that broadband speed affects economic growth, while the penetration and the years since broadband appeared in countries do not.

The impact of broadband speed on economic growth in urban and rural areas in 28 EU countries was analysed by de Clercq, D'Haese, and Buysse (2023), who found that speeds above 30 Mbps have a positive impact on economic growth. However, while speeds above 100 Mbps do not have an impact

in urban areas, they have a negative impact in rural areas. In the Arabic region, using a cointegration test from 2000–2019 (Boualaka and Kabir 2021), found that fixed and mobile broadband affected economic growth in Algeria. Menad and Zinedine (2022) found that mobile penetration and internet usage affected economic growth between 2020 and 2022 in eight Arab countries. Similar results were found in Jordan (Almajali 2023) and in the Gulf region (Pradhan et al. 2017; Kacham and Mouloud 2020; Nasreddin and Al-Bishr 2023; Shaaban 2023; Warrad 2024).

To study the impact of telecommunications services on labour productivity, Skorupińska (2017) analysed data from 21 European countries between 1993 and 2011. She found that Internet users have a positive and significant impact on labour productivity. However, when measuring this impact during the sub-periods of 1993–1999 and 2008–2011, no impact was detected. The first period reflects the starting period for the Internet, while the second period reflects the global financial crisis. Meanwhile, in a study on China from 2001 to 2018, Wu and Yu (2022) observed that industries using ICT experienced increased labour productivity. Conversely, Hsieh and Goel's (2019) study on 28 OECD countries found that internet penetration does not affect labour productivity, attributing this result to labour using the Internet primarily for browsing and entertainment. Further, Lefophane and Kalaba (2022) examined ten sectors in South Africa from 2009 to 2014. They found a mixed impact for telecommunications usage: sectors with intensive telecommunications use showed a positive impact on labour productivity, while other sectors had a negative but statistically insignificant impact.

The government's role is to adopt and implement competition policies to facilitate market transactions and ensure information symmetry through antitrust laws, market liberalisation, and mergers and acquisitions regulation (Lowe and Held 2005). In the telecommunications sector, competition reduces prices and provides better quality, diverse products, and innovation (Szczepański 2019).

Romano's (2015) study on the impact of competition enforcement on economic growth in 138 countries between 2009 and 2013 found a positive impact of competition enforcement on economic growth. Man (2015) studied the impact of competition in economic sectors on economic growth in 187 countries between 1988 and 2007 and found that competition in the financial sector contributes to growth, but competition in other sectors had no impact. Próchniak (2018) examined the impact of market competition on GDP per capita in 28 EU countries from 1997 to 2015 and found that a competitive market, measured by low levels of regulation, depends on the country's level of capitalism. He found that in advanced capitalist countries, competition has a positive impact on GDP per capita. Sekkat (2009) assessed competition levels by measuring markup on productivity in some Arab countries and found mixed results depending on the individual country context.

Methodologies and the models

To assess the economic impacts of broadband use and the level of competition in the telecommunications market, balanced panel data covering the period 2015–2021 was used. The study examined two groups of countries: ten European countries (designated as group A) and ten MENA

countries (designated as group B). The list of countries and the number of observations are presented in Table 1. The rationale for choosing these countries was to enable a comparative analysis of MENA and European countries, as both groups generally follow a similar regulatory approach to the telecommunications markets. This approach, particularly in European Union countries, emphasises policies aimed at (1) fostering competition and market liberalisation and (2) ensuring rapid and widespread broadband deployments across populations and geographic areas to minimise the digital divide.

Table 1. List of European and MENA countries used in the study sample

Group A: European countries		Group B: MENA countries	
	Country		Country
1	Albania	1	Algeria
2	Croatia	2	Bahrain
3	Greece	3	Egypt
4	Hungary	4	Jordan
5	Latvia	5	Kuwait
6	Portugal	6	Oman
7	Romania	7	Qatar
8	Serbia	8	Saudi Arabia
9	Slovakia	9	Tunis
10	Turkey	10	UAE

Source: author's elaboration.

Econometrics models were used to estimate the impacts. To enable comparison between regions, the models were estimated separately for each group. The first model, represented in Equation 1, was used to assess the impact of broadband usage and the level of competition in the telecommunications market on economic growth. This model is a modification of the Solow–Swan growth model, following the approach of (Matalqah and Warad 2017b) and other studies.

Model 1 (logarithmic form):

$$L_n Y_{it} = L_n A_{it} + \alpha_0 L_n K_{it} + \alpha_1 L_n L_{it} + \alpha_2 L_n BB_{it} + \alpha_3 L_n COMP_{it} + \mu_i \cdot \quad (1)$$

The variables are defined as follows: Y_{it} is the dependent variable reflecting real Gross Domestic Product (in US dollars) for country i at time t, K is real gross capital formation, L is the labour force, BB is broadband usage measured by data volume in exabytes, $Comp$ represents the level of telecommunications market competition, measured by the ICT regulatory tracker, $L_n \alpha$ includes other input factors, α_i denotes country-specific coefficients to be estimated, and μ is the error term.

The second model shown in equation 2 was used to assess the impact on labour productivity. The second equation will be based on equation *1* after transforming it to productivity by dividing the variables by L as follows:

Model 2 (logarithmic form):

$$L_n PROD_{it} = \gamma_0 + \gamma_1 L_n\, k_{it} / l + \gamma_2 L_n\, BB_{it} / l + \gamma_3 L_n\, Comp_{it} + \omega_{it}, \quad (2)$$

where the model variables are defined as follows: Prod: (dependent variable) reflects labour productivity measured by dividing the GDP on the labour force in country *i* in time *t*, *K*/*L*: Real gross capital formation divided by labour force in country *i* in time *t*, *Bb*/*l*: broadband usage per labour force in the country *i* in time *t*, *Comp*: level of telecom market competition measured by ICT regulatory tracker in country *i* in time *t*, γ_i: coefficients that will be estimated, ω: error term.

The data used was extracted from different sources and mainly taken from the World Bank Development database (World Bank 2023), the International Telecommunications Union Database (ITU 2023b), and ICT regulatory trackers issued by the ITU (2023).

Table 2. Variables and their data sources

Variable	Description	Data source
Y	Real Gross Domestic Product in $	World Bank development database
K	Real Gross Capital formation in $	World Bank development database
L	Gross Labour Force	World Bank development database
Bb	The volume of broadband data used in exabytes	World Telecommunication/ICT Indicators Database
comp	Countries' score in ICT regulatory trackers	International Telecommunication Union (ITU)-ICT Regulatory Tracker
k/L	Gross capital formation to labour force	Researchers' calculations
BB/L	Broadband data used per labour force	Researchers' calculations
PROD	GDP to the labour force	Researchers' calculations

Source: author's elaboration.

The method to estimate the models followed a panel data estimation approach. First, a unit root test was conducted to assess the stationarity of the data. Then, the pooled model, fixed effects model and random effects model were estimated for all models and assessed based on the Lagrange multiplier test and Hausman test for both groups to determine the best estimation method for both groups. Additionally, to ensure the most consistent estimation, the models were tested for multicollinearity, autocorrelation, heteroscedasticity, and cross-sectional dependence.

Empirical analysis

Checking the stationarity of variables is necessary before estimating the models and to avoid spurious regression. Based on the Levin, Lin, and Chu test for panel data, a unit root test was conducted. The null hypothesis is that a unit root exists, while the alternative hypothesis is that the unit root does not exist (Yousef and Warrad 2020). The result of this test for all variables in each group is shown in Table 3.

Table 3. Unit root panel data test for all variables

		Unit root test for group A (European countries)		Unit root test for Group B (MENA countries)	
		First Difference Prob	Level Prob	First Difference Prob	Level Prob
Common variable	BB	0.999	0.00	0.00	0.959
	COMP	0.973	0.00	–	0.0000
Model 1 – Economic growth	Y	0.00	–	–	0.04
	K	0.99	0.00	–	0.05
	L	0.25	0.00	0.00	0.185
Model 2 – Productivity	PROD	1	0.003	–	0.00
	k/L	0.998	0.00	0.00	0.192
	BB/L	0.99	0.004	–	0.00

Source: calculated using EViews.

The test result shows that some variables are stationary at the level I(0), while the majority are non-stationary but become stationary at the first difference I(1). To test for multicollinearity (i.e., correlation among the model's independent variables), a variance inflation factor (VIF) test was used for each model and each sample (Maddala 1992). The results indicate that multicollinearity is not present since the VIF values for all models are below 10, as shown in Table 4.

Table 4. Variance inflation factors test

Model 1 – Economic growth		
	Group A (European countries)	Group B (MENA countries)
BB	4.34	1.82
Comp	2.24	1.14
k	3.44	3.45
l	2.45	3.12
Model 2 – Productivity		
	Group A (European countries)	Group B (MENA countries)
Comp	1.8	1.48
kL	1.34	1.15
BBL	2.28	1.49

Source: calculated using EViews.

Ordinary least squares (OLS) estimation is not valid since all models exhibit autocorrelation, as indicated by the Breusch-Pagan Test, and heteroscedasticity, according to the Breusch-Pagan-Godfrey Test. Pooled data estimation, which analyses data without considering the effect of cross-sectional or time effects (Al-Qudah and Fasoukh 2018), was performed for all models. However, the results of the Breusch-Pagan Lagrange multiplier (LM) test,

presented in Table 5, do not support the use of pooled data estimation. Specifically, the p-values for all models are below 5%, indicating the presence of cross-sectional and time effects.

Table 5. Breusch-Pagan Lagrange multiplier test

Model	Test	Group A (European countries)			Group B (MENA countries)		
		Cross section	Time	Both	Cross section	Time	Both
Model 1 – Economic growth	Breusch-Pagan statistic	47.41	8.73	56.14	112.6	0.005	112.6
	P-value	0.000	0.003	0.000	0.000	0.939	0.000
Model 2 – Productivity	Breusch-Pagan statistic	45.4	4.07	7.64	159.48	1.517	161
	P-value	0.000	0.000	0.000	0.000	0.210	0.000

Source: calculated using EViews.

Such differences may be captured by fixed-effect models, which consider the time and cross-sectional differences in the intercept (Alsoukhni and Alshyab 2019), or by random-effects models, which also consider the difference as a random coefficient and capture it through composite error terms (Gujarati and Porter 2009).

The impact of broadband usage and market competition on economic growth was estimated using Equation 1 (Model 1) for each group. Table 6 shows the results for both fixed and random effect models, along with the Hausman test results to decide between them. The null hypothesis for the Hausman test is that the random effects model is suitable for estimation, and since the p-value is below 5%, the fixed-effects model is considered the more valid estimation method for both groups A and B.

Table 6. Estimated effects of broadband usage and market competition on economic growth

	Group A (European countries)				Group B (MENA countries)			
Model 1	Fixed effects	Prob	Random effects	Prob	Fixed effects	Prob	Random effects	Prob
Constant	14.15	0.0214	13.25	0.00	12.76	0.00	15.89	0.00
LN (K)	0.115	0.024	0.013	0.40	0.47	0.00	0.148	0.00
LN(L)	0.139	0.0209	0.819	0.00	0.08	0.00	0.428	0.00
LN(BB)	0.783	0.00	0.076	0.00	0.43	0.00	0.045	0.00
LN(COMP)	1.24	0.29	–0.189	0.506	–0.07	0.54	–0.124	0.00
R-square	0.95		0.59		0.95		0.56	
F-statistic	123.59		23.76		162.4		20	
DW	0.23		0.59		0.33		0.59	
Hausman test	chi-statistic	87.81	Prob	0.00	chi-statistic	70.96	Prob	0.00

Source: calculated using EViews.

Equation 2 (Model 2) was used to estimate the effect on labour productivity. Table 7 shows the results of both fixed-effects and random-effects models for both groups, with the Hausman test indicating that the fixed-effects estimation is valid for groups A and B.

Table 7. Estimation results of the effect of broadband usage and competition level on labour productivity

	Group A (European countries)				Group B (MENA countries)			
Model 2	Fixed effect	Prob	Random effect	Prob	Fixed effect	Prob	Random effect	Prob
Constant	11.86	0.02	11.97	0.00	9.12	0.00	8.826	0.00
LN (KL)	0.1358	0.002	0.0198	0.23	0.232	0.00	0.274	0.00
LN(BB)	0.745	0.00	0.078	0.00	0.02	0.02	0.023	0.01
LN(COMP)	1.72	0.09	−0.219	0.46	−0.154	0.00	−0.163	0.00
R-square	0.9		0.39		0.99		0.42	
F-statistic	61.6		14.37		1020		16.06	
DW	0.2169		0.505		0.75		0.62	
Hausman test	Chi -statistic	95.406	Prob	0.00	chi-statistic	12.67	Prob	0.00

Source: calculated using EViews.

Although the Hausman test helps to choose between fixed-effects and random-effects models, the selected model was further tested for residual cross-sectional dependence. The Breusch-Pagan LM test was used for this purpose, with the null hypothesis stating that there is no cross-sectional dependence (Al-Hassanein 2023). Table 8 shows the results of this test, which indicate that all the chosen models suffer from residual cross-sectional dependence, as the p-values are below 5%, leading to the rejection of the null hypotheses. Accordingly, the chosen models must be adjusted to address this issue. A common approach to handling cross-sectional dependence is to use the Generalised Least Squares (GLS) method.

Table 8. Results of the cross-sectional dependence test for Groups A and B

Residual cross-section dependence test				
Model	Group A (European countries)		Group B (MENA countries)	
	Breusch–Pagan LM statistic	P-value	Breusch–Pagan LM statistic	P-value
Model 1 – Economic growth	121.02	0	68.52	0.01
Model 2 – Productivity	119.878	0	102.4	0

Source: calculated using EViews.

Tables 9 and 10 show the estimation for the models using the GLS method. To ensure the consistency of the new estimation, Table 11 reports the residual cross-sectional dependence test results, showing that all models are free from cross-sectional dependence.

Table 9. GLS estimations for model 1 – Effect on economic growth

	Group A (European countries)		Group B (MENA countries)	
Model	GLS fixed effects	Prob	GLS fixed effects	Prob
Constant	13.66	0.00	12.41	0.00
LN (K)	0.116	0.00	0.385	0.00
LN(L)	0.215	0.00	0.252	0.00
LN(BB)	0.71	0.00	0.272	0.00
LN(COMP)	1.1	0.00	–0.06	0.19
R-square	0.93		0.91	
F-statistic	87		63	
DW	1.94		1.31	

Source: calculated using EViews.

The results in Table 11 show that broadband usage has a significant and positive impact on economic growth in each group. Specifically, a 1% increase in broadband usage leads to a 0.71% increase in economic growth in European countries and a 0.27% increase in MENA countries. These findings are consistent with several studies in this area, including global analyses such as Mayer, Madden, and Wu (2019), Chatterjee (2020), and de Clercq, D'Haese, and Buysse (2023), as well as studies of specific Arab countries, including Pradhan et al. (2017), Nasreddin and Al-Bishr (2023), Shaaban (2023), and Warrad (2024).

Table 10. GLS estimations for model 2 – Effect on labour productivity

	Group A (European countries)		Group B (MENA countries)	
Model	GLS Fixed effect	Prob	GLS fixed effect	Prob
Constant	12.05	0.00	9.3	0.00
LN (KL)	0.13	0.00	0.462	0.00
LN(BB)	0.67	0.00	0.139	0.00
LN(COMP)	1.4	0.00	–0.025	0.00
R-square	0.87		0.69	
F-statistic	47.76		15	
DW	1.95		1.75	

Source: calculated using EViews.

The effect of competition level on economic growth is positive and significant in European countries, where a 1% increase in competition, measured by improvements in the ICT regulatory tracker, leads to a 1.1% increase in economic growth. In contrast, competition level does not have an impact in MENA countries. This discrepancy may be explained by differences in the maturity of competition between the two regions, with European countries exhibiting more advanced levels. The results for European countries are consistent with Romano (2015) and Rodríguez-Castelán et al. (2022), while the results for the MENA region align with Man

(2015). Capital and labour conform to economic theory and positively and significantly impact economic growth.

Table 12 shows that labour productivity is also positively affected by broadband usage in both groups. The impact is significant, with a 1% increase in broadband usage leading to a 0.67% increase in labour productivity in European countries and a 0.139% increase in MENA countries. These results align with previous studies (Skorupińska 2017; Lefophane and Kalaba 2022; Wu and Yu 2022).

The impact of competition level in telecommunications on labour productivity differs between regions. In European countries, competition has a significant and positive impact, where a 1% increase in competition leads to a 1.4% increase in labour productivity. In contrast, in MENA countries, it has negative and significant impacts, with a 0.025% decrease in labour productivity for every 1% increase in competition. These contrasting results may reflect differences in the competitiveness and regulatory environments of the two regions. Similar contradictory findings across countries were also found by Sekkat (2009). Capital productivity aligns with economic theory and positively and significantly impacts labour productivity.

Table 11. Residual cross-section test after GLS estimation for all models

Residual cross-section dependence test for GLS Models				
Model	Group A: European countries		Group B: MENA Countries	
	Breusch–Pagan LM statistic	P-value	Breusch–Pagan LM statistic	P-value
Model 1: economic growth	28.58	0.97	43.62	0.53
Model 2: Productivity	20.054	0.96	41.94	0.6

Source: calculated using EViews.

Discussion

Based on the results, both fixed and mobile broadband usage have a significant and positive impact on economic growth. Our findings show that broadband usage in Europe has a larger impact than in MENA countries. The main implication of these findings is that governments should consider promoting broadband usage as a tool to enhance economic conditions. This could be achieved through the digital transformation of economic activities or advancing towards a digital economy by adopting upgraded mobile and fixed broadband networks that support higher speeds (Castaldo, Fiorini, and Maggi 2017).

Regarding labour productivity, the findings support the positive impact of fixed and mobile broadband usage in both groups, with a stronger effect in European countries. This suggests the need to focus on developing digital skills within the labour force.

The positive impact of competition level in the telecommunications sector on economic growth in the European countries highlights the importance of protecting competition. Although there is no impact in the MENA countries, fostering competition is still very important because it is a tool

to make fixed and broadband services affordable for all types of citizens and reduce the digital divide. The significant negative impact of telecommunications market competition on labour productivity in MENA countries suggests that the governments of these countries should facilitate the adoption of new technologies that increase labour productivity and encourage efficient market entry (Romano 2015). Additionally, it is important to maintain a balanced level of competition across all economic sectors since the expected gain from competition on economic growth and labour productivity requires an equivalent level of competition among all sectors.

Conclusions and recommendations

The study aligns with several studies that support the positive impact of using broadband on economic growth and labour productivity, comparing these results between MENA and European countries. Accordingly, the study recommends increasing broadband usage, which can be done by considering both the supply and demand side measures.

On the demand side, MENA countries should work on affordability by adopting different policies like universal service obligations, opening the market to new entrants like mobile virtual network operators (MVNOs) in mobile services, and facilitating market entry for Internet service providers based on the legacy network.

With regards to the supply side, the study recommends policies that help service providers invest in the latest technologies, such as customs exemptions on network elements, state aid to build networks in underserved areas, fostering infrastructure sharing to reduce the cost of providing service, and efficient taxation on broadband service providers.

Although the impact of competition is inconclusive and ambiguous in both regions, in general, it is a catalyst for broadband usage. Therefore, policymakers should consider boosting competition in the telecommunications sector.

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Rola wykorzystania łączy szerokopasmowych i konkurencji w sektorze telekomunikacyjnym w stymulowaniu wzrostu gospodarczego i wydajności pracy: analiza porównawcza krajów MENA i Europy

W artykule porównano wpływ wykorzystania usług szerokopasmowego internetu stacjonarnego i mobilnego oraz konkurencji w sektorze telekomunikacyjnym na wzrost gospodarczy i wydajność pracy w 20 krajach Europy i regionu MENA (Bliski Wschód i Afryka Północna) w latach 2015–2021. Wykorzystanie łączy szerokopasmowych mierzy się ilością zużytych danych, natomiast konkurencję sektora ocenia się za pomocą wskaźnika regulacyjnego ICT. Użyto dwóch modeli ekonometrycznych i zastosowano je do dwóch grup badawczych: grupy A (kraje europejskie) i grupy B (kraje regionu MENA). Wyniki pokazują, że korzystanie z usług internetu szerokopasmowego ma pozytywny i znaczący wpływ na wzrost gospodarczy i wydajność pracy w obu grupach, ale wpływ ten był większy w krajach europejskich. Jednak w badaniu stwierdzono również, że konkurencja w sektorze telekomunikacyjnym w obu grupach jest różna. Opracowanie wskazuje na konieczność przyjęcia polityki mającej na celu zwiększenie dostępności i przystępności cenowej usług szerokopasmowego internetu stacjonarnego i mobilnego. Ponadto, ponieważ konkurencja stanowi katalizator wykorzystania szerokopasmowego internetu, zaleca się również zwiększenie jej w sektorze telekomunikacyjnym.

Słowa kluczowe: wzrost gospodarczy, wydajność pracy, szerokopasmowy internet, konkurencja