

Infrastructure as a Determinant of the National Competitiveness

Alexandru STRATAN

Academy of Economic Studies of Moldova (Republic of Moldova)/

Dunarea de Jos University of Galati (Romania)

Email: alex_stratan@yahoo.com

ORCID ID: 0000-0001-7086-8604

Abstract

Cognizant of the instrumental role infrastructure plays in the underpinning of international competitiveness, Moldova's public custodians have been actively marshalling resources and investment into the augmentation of critical infrastructure components, particularly in the spheres of transportation and telecommunications. This empirical inquiry assumes a bifocal purpose: firstly, to delineate the prevailing contours of Moldova's international competitiveness, along with the attendant challenges; and secondly, to proffer a comprehensive assessment of the efficacy of the government's provisioning of infrastructure and ancillary services in catalyzing heightened competitiveness among commercial entities while expediting their internationalization endeavours. The methodological approach adopted for this study seamlessly interweaves quantitative and qualitative research methodologies, harnessing an amalgamation of national and international statistical data, scholarly research, official publications, and insights culled from a comprehensive business survey conducted in the year 2022. Preliminary findings emanating from this research endeavour cast light upon the Republic of Moldova's modest progress in its pursuit of heightened international competitiveness, underscoring concurrent governmental efforts to assist commercial enterprises in surmounting critical challenges that have impeded strides in productivity augmentation, competitive acumen, and crisis resilience.

Keywords: business resilience, competitiveness, infrastructure, trade

1 INTRODUCTION

Moldova faces challenges in enhancing the competitiveness of its exports at the regional level, despite efforts by policymakers to boost export activities. The country experiences a substantial trade deficit, leading to an imbalanced current account as it transitions to a market economy. Additionally, Moldova's limited share in global exports highlights competitiveness issues within its national economy. The Republic of Moldova has recognized the importance of strengthening export capabilities in its national public policy framework for economic development. The "National Strategy for Investment Attraction and Export Promotion 2016-2020" specifically targeted the increase in export value and diversification. Measuring progress toward the goals outlined in the "European Moldova 2030" National Development Strategy involves accelerating the growth of goods and services exports. However, given the poor quality of physical infrastructure in Moldova, addressing this issue has become a top priority in various strategic development policy documents. Physical infrastructure is crucial for supporting international business expansion and building a competitive and resilient economy. Empirical studies, such as those conducted by Ben Shepherd and John S. Wilson [1], suggest that improving road quality can substantially increase trade flows, as demonstrated in the case of Europe and Central Asia. Research by Rehman F., Noman A. and Ding Y. [2], has confirmed the positive long-term impact of various types of infrastructure

(transport, telecommunications, energy, and finance) on exports. Moreover, studies, including those by Donaubauer J., Glas A., Meyer B., and Nunnenkamp P. [3] indicate that infrastructure plays a significant role in reducing trade costs and positively influencing trade.

2 METHODOLOGY

The research evaluated export competitiveness by examining factors such as the current account and trade balance deficit to GDP, global market shares in exports, and changes in the technological structure of merchandise exports. National and international statistics were utilized to analyze key trends in international competitiveness. The study also investigated the impact of services offered by the Moldovan Government to enhance business competitiveness and facilitate internationalization, as well as the influence of existing infrastructure on business operations. This assessment focused on the year 2022, marked by an economic crisis resulting from the Russia-Ukrainian war and analyzed changes in business perception following the recession caused by the COVID-19 pandemic. Data from a business survey conducted in 2022 as part of the research project "Multidimensional Assessment and Development of the Entrepreneurial Ecosystem at the National and Regional Level in order to boost the SME sector in the Republic of Moldova" (project number 20.80009.0807.38) were used for this evaluation.

The methodology employed in the project, as detailed by Stratan et al. [4], involved a 5-point Likert-style scale to assess the impact of infrastructure components on entrepreneurship. The scale included categories such as "Significant obstacle," "Insignificant obstacle," "Not an obstacle," "Insignificant incentive (advantage)," and "Significant incentive (advantage)," assigned values from -2 to +2. The Coefficient of the entrepreneurial ecosystem's assessment (Kee) was calculated based on the respondents' ratings. The formula used for Kee calculation was $Kee = (-2) * \% \text{ significant obstacle} + (-1) * \% \text{ insignificant obstacle} + (+1) * \% \text{ insignificant advantage} + (+2) * \% \text{ significant advantage}$. The resulting Kee values could range from "-2" (indicating a unanimously significant negative impact) to "+2" (indicating a unanimous significant positive impact). Kee equaled "0" when positive and negative evaluations were equal, signifying a neutral impact on entrepreneurship development. The survey, involving 204 participants, was conducted from June to October 2022.

3 RESULTS

Moldova is currently undergoing a transitional phase in its economic growth, primarily relying on a consumption-driven model driven by imports. This contrasts with governmental attempts to shift towards a model based on exports and investments (Fig.1).

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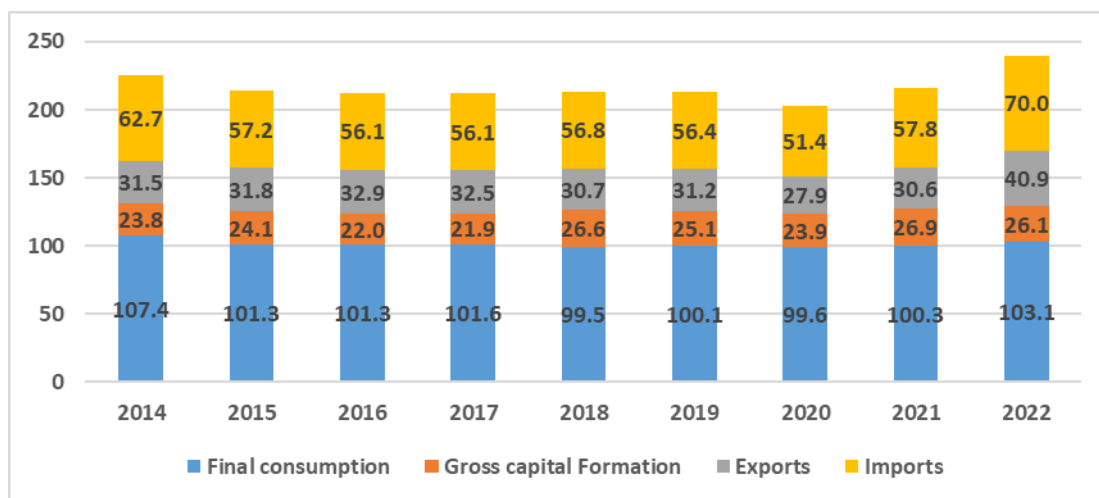


Figure 1. Moldova's consumption lead economic growth model

Source: Author's calculations based on National Bureau of Statistics data

The degree of economic openness, measured as the proportion of external trade to GDP, is notably lower compared to many Central European countries of similar size. In 2019 and 2021, it accounted for 88%, decreasing to 79% in 2020. Surprisingly, in 2022, it rose to 111%, driven by accelerated growth in both exports and imports, even as GDP experienced a 5.9% decline.

The Republic of Moldova has relatively small exports and imports of goods and services compared to Baltic countries with similar population and territory sizes. However, the trade balance faces a significant deficit due to the minimal coverage of merchandise imports by exports. This imbalance resulted in the highest merchandise trade deficit as a percentage of GDP in 2021-2022 since 2015. Consequently, the current account deficit in 2022 reached 2.3 billion USD or -15.7% of GDP (Fig.2), surpassing the current account balances of numerous Central and East European countries by a considerable margin.

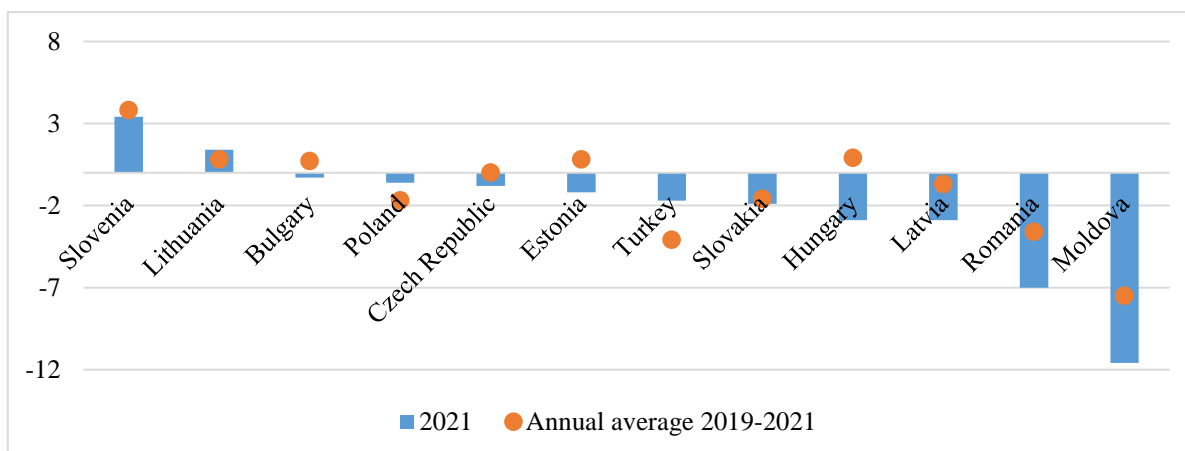


Figure 2. Moldova's current account deficit in regional perspective

Source: Author's calculations based on National Bureau of Statistics data

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The Russian–Ukrainian war in 2022 had a severe impact on the economy, but foreign trade experienced a notable boost due to various factors. Merchandise exports in 2022 reached 4335.1 million USD, marking a substantial increase of 37.9% compared to 2021, while imports totalled 9219.1 million USD, reflecting a 28.5% rise from the previous year. The surge in merchandise exports was primarily driven by increased re-exports to Ukraine and the export of agricultural products. This was influenced by a decline in Ukraine's external supply of oil seeds and cereals, along with a favourable harvest in 2021 [6]. Re-exports constituted 31.6% of total exports, exhibiting 1.9 times increase compared to 2021, contributing significantly to the overall export growth of 20.9%. Following the economic downturn caused by the COVID-19 pandemic in 2020, external trade experienced rapid growth. Additionally, trade in services also witnessed substantial expansion in 2022, with exports rising by 39% and imports by 18% compared to 2021, amounting to 2275 million USD and 1371 million USD, respectively. The combined exports and imports of merchandise and services during 2020-2022 surpassed the average growth rate recorded in 2015-2019 by nearly four times. The acceleration in external trade was propelled by an increase in both trade volumes and unit values, as the conflict in Ukraine led to sharp increases in global commodity prices [5].

Infrastructure plays a crucial role in facilitating private business investment, innovation, and productivity. It supports and reduces the costs associated with the movement of people, goods, and services both within and between economies. The Global Economic Forum highlights that road infrastructure is fundamental for competitiveness in developing nations, and recent crises have underscored the importance of technological infrastructure in enhancing the resilience and international competitiveness of economies.

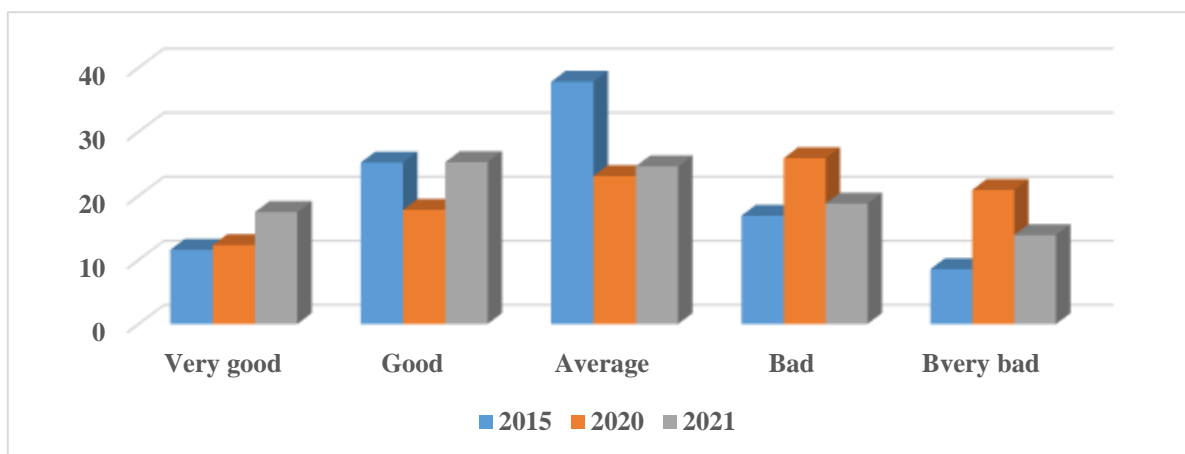


Figure 3. Quality of Moldovan road transport infrastructure

Source: State Road Agency Report 2021

Moldova possesses an extensive public road network spanning 9488 km, alongside 1151 km of widely used railway lines. It boasts an operational international airport, two internationally significant inland waterways classified as category E, and the strategically positioned Giurgiulesti port, offering direct access to both international water routes and the Black Sea. Situated at the confluence of the Danube and Prut rivers, the Giurgiulesti port serves as Moldova's sole commercial gateway to international waters. Notably, in 2022, over 99.7% of merchandise transportation occurred via land routes. Road transport dominates international shipping, constituting approximately 77.1% of total exports in 2022—a decline from the 90%

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reported in 2020. The Russia-Ukraine conflict prompted a surge in transshipments through the Giurgiulesti port in 2022 [7].

The quality of road transport infrastructure remains unsatisfactory. According to the Report on the distribution of the means of the road fund for national public roads for the year 2020, 46.8% of the national public roads are of bad or very bad quality, and 23% in a mediocre condition (Figure 3). Accordingly, less than 1/3 of these are in good or very good condition. Compared to 2015, there is a considerable decrease in the share of good or even mediocre roads due to the increase in bad and very bad quality roads. Therefore, almost 70% of the national road infrastructure has expired.

Moldovan authorities have actively implemented various policy measures to establish a robust public infrastructure aimed at enhancing both the inclusivity of the population and the country's competitiveness. This goal aligns with the National Development Strategy European Moldova 2030. Decision-makers have specifically prioritized the improvement of road quality and, more recently, the enhancement of ICT infrastructure. Creating an effective regulatory and institutional framework, along with developing infrastructure in the ICT sector, is crucial for companies to adapt to global and regional economic shifts, enabling them to capitalize on existing opportunities and bolster their competitiveness in the global market. Additionally, fostering social and economic inclusiveness among the population is imperative.

In recent years, the Republic of Moldova has shown positive trends in advancing its telecommunications infrastructure, as evidenced by the rise in the E-Government Index (EGDI) score from 0.19332 in 2010 to 0.57600 in 2022. This progress has propelled Moldova into the category of countries with advanced ICT infrastructure. However, when considering its competitive standing at the regional level, Moldova's score for the quality of telecommunication infrastructure falls below the European average (0.8392) and even lags behind the Eastern European average (0.7825). This score is notably lower compared to other components of the index, such as the Online Services Index (0.7380) and the Human Capital Index (0.8613) (UN E-Government Knowledge Database 2022).

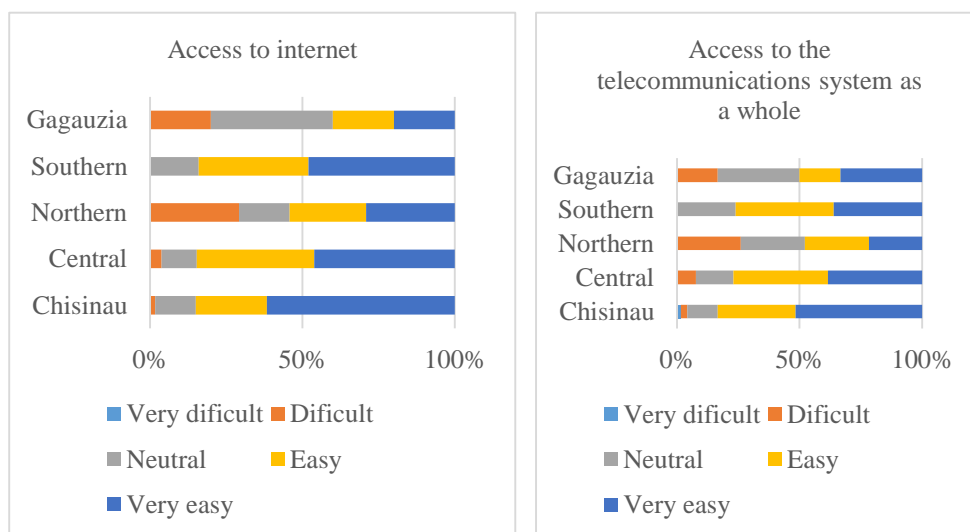


Figure 4. Impact of telecommunications system and internet access on

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business development in the regions of the country

Source: State Road Agency Report 2021

In the Republic of Moldova, telecommunications infrastructure stands out as the most advanced facet of physical infrastructure, surpassing the state of roads (Figure 4). Approximately 80% of respondents in Chisinau and the Centre region find accessing the telecommunications system to be either easy or very easy. When it comes to internet access, this percentage exceeds 80%. In the Northern region and Gagauzia, while half of the surveyed entrepreneurs perceive access to the telecommunication system as easy or very easy, 17% in Gagauzia and 26% in the Northern region encounter difficulties, particularly in internet access. These observations highlight that although Moldova has made significant strides in telecommunications infrastructure development, the accessibility is not uniform across all regions. The farther businesses are situated from Chisinau, the more challenging it becomes to access telecommunications facilities. Despite regional disparities, more than half of the surveyed enterprises (51%) acknowledge improvements in the overall telecommunications system, with 53.9% citing enhanced internet access. Conversely, 10% of respondents believe the situation has worsened, while 70% perceive no change since 2019.

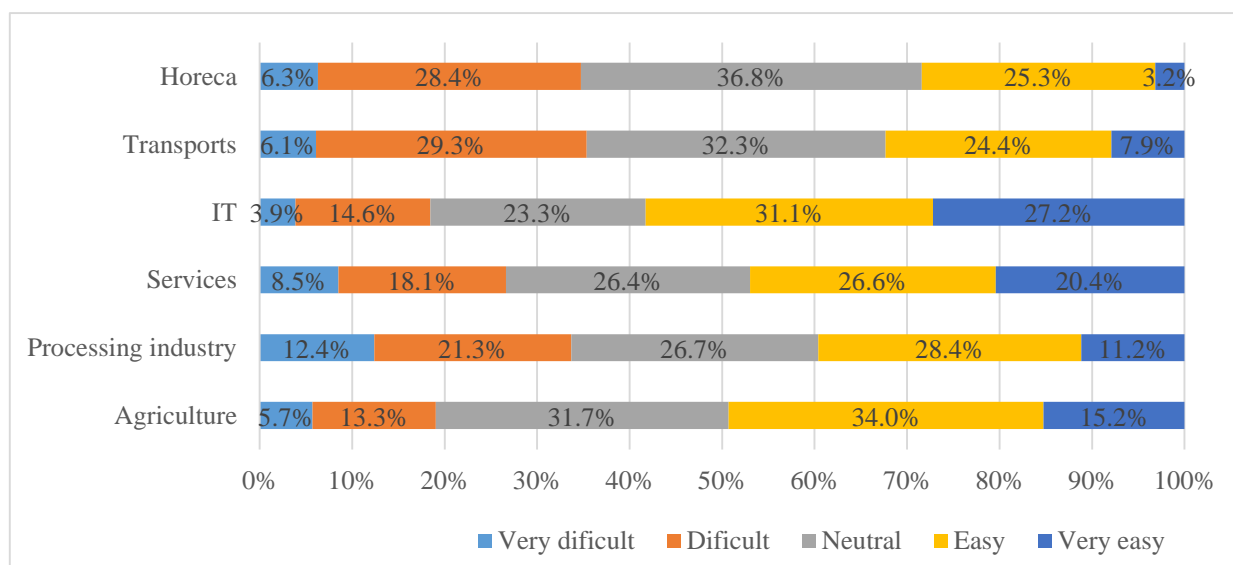


Figure 5. Impact of infrastructure on business development according to its economic activity

Source: Author's calculations

From a sectoral point of view, the most affected by the quality of the infrastructure are Transport and Horeca, with the Kee index constituting -0.01 and correspondingly, -0.09 in 2022 for the given component of the entrepreneurial ecosystem (Figure 5). About 35% of the respondents active in the given fields consider it very difficult or difficult to access the physical infrastructure. Transport services are highly dependent on the quality of the country's roads, which influences delivery terms and costs. Or bad roads mean higher costs. At the same time, HORECA services that are in the process of development in recent years and are expanding throughout the country, being an alternative activity for the rural

population, traditionally trained in agricultural activities or located largely outside the labor market require easy, low-cost access to all the analyzed infrastructure components: roads and telecommunications. These are followed by the processing industry in which about 1/3 of the respondents consider infrastructure as a factor that negatively or very negatively influences their business - an important constraint in the process of diversification and industrialization of the national economy, which is based to a considerable extent on agriculture.

4 CONCLUSIONS

Irrespective of the geographical location of entrepreneurs, including those operating in Chisinau and the central region of the country, the issue of substandard road quality persists as a prevalent and pressing concern. Notably, businesses in regions other than the North and Gagauzia are disproportionately affected by the inadequate condition of roads within their respective areas. Contrastingly, companies in the North and Gagauzia experience a more pronounced negative impact from the poor state of local roads. A substantial 31.4% of respondents assert that road quality deteriorated in 2022 compared to the previous year, surpassing the 47.6% who reported no perceived change, and those who observed a positive change in this regard were considerably fewer.

The telecommunications infrastructure emerges as the most advanced facet of physical infrastructure, a conclusion supported by Moldova's international rankings and entrepreneurs' opinions. More than half of those surveyed acknowledge enhancements in telecommunications system development, IT technologies (51%), and internet access (53.9%), with only a negligible percentage perceiving a decline. Despite visible progress in telecommunications infrastructure, accessibility remains disparate across regions, diminishing as entrepreneurs distance themselves from Chisinau.

Despite public authorities' efforts to fortify businesses during crises, one-third of respondents find accessing support services for crisis management and business insolvency challenging, while an additional 33.7% find it difficult. Consequently, two-thirds of surveyed companies encounter difficulties accessing crucial support services. In 2022, multiple business support services received negative assessments in terms of the Entrepreneurial Ecosystem Coefficient. Notably, services related to innovation acquisition, export promotion, business incubation, and staff recruitment and assessment faced critical evaluations. Apart from staff recruitment and assessment services, a higher proportion of entrepreneurs perceived improvement rather than deterioration in access to these services compared to 2021.

Enhancing public infrastructure and ensuring regional accessibility is imperative for bolstering business resilience, promoting export competitiveness, and fostering socio-economic inclusion. Public authorities must exert additional efforts to scrutinize and appraise the impact of recent policies aimed at enhancing business resilience, adjusting them according to actual business needs, and ensuring equitable access for entrepreneurs to the benefits of implemented actions. Strengthening the institutional framework is essential to broaden entrepreneurs' access to currently less accessible services, including innovation procurement, export promotion, and business incubation. Medium-term public policy priorities should focus on employment policies to augment entrepreneurs' access to a skilled labor force matching market demands.

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