

Moldova's transition to a productive market economy with the help of IT sector and the road to EU accession

Leonard Artur Horvath^{1,*}, Bianca Padurean², Ioan Claudiu Padurean², Iulia Maria Tanescu³

¹ Faculty of Economic Sciences and Business Management, Babes-Bolyai University, 400084 Cluj-Napoca, Romania

² Moldova State University, MD-2001 Chisinau, Republic of Moldova

³ Department of History, Iuliu Maniu High School, 410104 Oradea, Romania

* **Corresponding author:** Leonard Artur Horvath, leonard.horvath@econ.ubbcluj.ro

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Abstract: The Republic of Moldova is a state with a small, but dynamic economy and which, with the help of competitiveness in the IT industry, is looking for a place on the economic market in the Eastern European region. The research approaches this topic from an economic, historical, but also geopolitical point of view. This analysis of economic data and figures from the last period, combined with government policies and that of the National Bank of Moldova, means that in the near future the software economic area of Moldova will become an important regional player in this part of Europe.

Keywords: economy; Moldova; industry; IT; geopolitical

1. Introduction

In the current research, we proposed to analyze the economic evolution of the state of Moldova from the point of view of the steps it took as a result of the new technologies in the IT industry in the geopolitical context of this former Soviet state, which today is one of the countries candidates to join the European Union. I made an analysis with the existing data from the market of the last years, but also from the point of view of the literature review.

The economy of the Republic of Moldova is becoming more and more a knowledge economy, thanks to the IT&C sector. The development of the economy is atypical. Most countries in the region have shifted from a largely agricultural to an industrial-agricultural economy, and after the fall of communism there was a considerable development of the tertiary sector, which includes services and the digital industry. The IT&C sector now accounts for 8.3 percent of Moldova's GDP, with the prospect of growing even more in the near future as a result of public policies adopted by the Chisinau government to boost the sector.

2. Materials and methods

2.1. Literature review

The Republic of Moldova has one of the smallest economies in Europe with incomes of the population which are below the European Union average. It is currently one of the poorest countries in Europe. The Republic of Moldova has made significant progress since the last economic crisis in 2008 in reducing poverty, but it also had certain economic sectors which managed to be slightly competitive at regional or European level. According to the Global Competitiveness Index which

measures and analyzes the economies of more than 140 states and has as a benchmark productivity and political factor determined in the economic area, shows that the Republic of Moldova ranked 86th in 2019, and has now climbed this global ranking or other economic indicators as an emerging economy (Global Competitiveness Index 4.0, 2019). Most entrepreneurs recognize that technology, IT and digital are an opportunity for development and competitiveness of economic sectors worldwide and in Moldova (Ślusarzyk, 2018). The digitalization of companies and the economic environment puts pressure on the state sector that is lagging behind with technology, but also obliges the economic environment to become a competitive and emerging one in production, on the Eastern European market. Even if through digitalization we can say that we are in a new concept of industrial revolution of production with the help of IT software and industrial robots (Okano, 2021), in order to maintain competitiveness, rapid steps towards the digitalization era of industry need to be implemented, and also going in this direction the entrepreneurship and economic environment in Moldova are.

This era of digital transformation of the Moldovan economy, with the help of the IT sector comes with dislocations and changes in the labor market, in the employment strategy, but also in new revenue creation strategies, applying a flexible management model that opposes competition, thus quickly satisfying the changing requirements of the world economy. With the help of the IT sector there is a process of repositioning a business in the economic market in the process of tracking from the supply of raw materials to the distribution of the product to the final customer. The use of IT software in design, production, marketing, sale, presentation and data-driven management model (Schallmo, 2018), makes the economy and the sectors that choose to implant digitalization gain ground in competition with other companies, but also enter new markets as a result of the increasing access of buyers to the internet network.

This research highlights the importance of digitalization and IT development in Moldova, which is a supporting factor in production and supports the fact that companies must implement the latest technology (Wang, 2016).

Digital transformation adopts disruptive technologies to increase productivity, value creation and social well-being (Duarte, 2018). Ulas (2019) identified several factors that accelerate the digital transformation, including, globalization, technological advancement and innovation, e-commerce and social networks. The digital transformation process requires companies to transform each day and be concerned with elements such as customers, business models, new technologies, agile methods and innovations (Okano, 2021).

Economic and digital researchers assert on the basis of data analyzes that there are four areas where IT technologies have the most significant impact: investment, revenue growth, employment and productivity (Russmann, 2015). The implementation and development of the IT sector in Moldova has and will have a significant impact on companies, on the workforce, but also on companies providing new production systems.

According to Leão de Miranda (2021), the term competitiveness has historically been used to report companies and nations in terms of costs. Looking at this concept of competitiveness, most experts agree that it is an extremely complex and multifaceted phenomenon in various economic sectors, as is the competition between

companies, the assessment of which requires an analysis of the results achieved in various areas of the economic sector. The idea of competitiveness arises in the economic sphere with the theory of trade (Smith, 1937). In the same theoretical system is Porter (2012), who identifies in his exposures four stages of the competitiveness of the national economy, corresponding to the four main factors of its development: factors of production, investment, innovation and wealth. If we look at these factors, the first three stages are characterized by an increase in the competitiveness of a country's economy.

In another view, such as that of Krugman (1994), he looks at the competitiveness of the country based on David Ricardo's classical theory—with what he defines in the theory of superiority. According to Krugman (1994), in a true market economy only companies make production, trade and compete with each other to conquer new economic sectors. Thus, trade relations allow companies to develop a division of labor and thus allow the growth of the economies of all countries.

- Looking at the concept of the country's competitiveness (Rakauskienė, 2013), three approaches are distinguished:
- The country's competitiveness is a successful foreign trade of the country;
- The country's competitiveness is the country's productivity;
- The country's competitiveness is the capacity to ensure the well-being of the country's population.

Esser's model of systemic competitiveness (2007) is suitable for analyzing the competitiveness of an economy or an economic sector of a state. According to this model, we can analyze the competitiveness of the country which consists of several levels:

- Meta-economic level: socio-cultural factors; value system; political-economic influence of the country; ability to formulate strategies and policies;
- Meza economic level: infrastructure policy, educational policy, industrial policy, environmental policy, regional policy, import and export policy;
- Macroeconomic level: budgetary policy, monetary policy, fiscal policy, competition policy, trade policy.
- Microeconomic level: management competence, company strategy.

All these analyzes, theories in the economic field or various statistics of certain financial or governmental institutions will give us an economic perspective related to the competitiveness of IT field for the economic sector in the Republic of Moldova.

2.2. Geopolitics and historical heritage have burdened economic development

The Republic of Moldova is about to switch from a mostly agrarian economy directly to one of knowledge due to specific historical conditions. During the Soviet period, most industrial investment was concentrated in Transnistria, a region which is dominated by Russian and Ukrainian-speaking communities and where Romanian-speakers are a minority. Transnistria is a strip of land that historically was part of Ukraine. In 1924, it was included into the territory of an ephemeral and artificial Moldavian Autonomous Soviet Socialist Republic, which was part of the structure of Soviet Ukraine and was intended solely to perpetuate the territorial claims of the

Soviet Union over the territory of Bessarabia. Bessarabia is the former territory of the Principality of Moldavia, located between the Prut and the Dniester, occupied by the Tsarist Empire in 1812. Until 1918, this territory was occupied by Tsarist Russia, except for the three counties in the south of the territory. Cahul, Ismail and Bolgrad, covering almost 9000 square kilometers, were returned to Moldavia following the Crimean War in 1856. Moldova joined the Principality of Wallachia on 24 January 1859, and the new state adopted the name Romania by the June 1866 Constitution. The three counties in southern Bessarabia belonged to Romania until 1878. Through the international treaties of San Stefano and Berlin in 1878, which ended the Russo-Romanian-Turkish War, named in the Romanian historiography *The War of Independence*, Romania was forced to cede this territory to Russia, and in return received the region of Dobrogea. The whole of Bessarabia remained under Russian occupation until 27 March 1918, when the Council of the Country the Parliament of Chisinau, decided to unite with the Kingdom of Romania. Soviet Russia refused to recognize this union and constructed a non-reality nation which referred to Romania as a multinational imperialist state. The Moldavian Autonomous Soviet Socialist Republic had the role of legitimizing this nation. The republic functioned until June 1940, when the Soviet Union, allied with Nazi Germany, forced Romania to withdraw from Northern Bukovina and Bessarabia, which were annexed by the Soviets. Romania attempted to regain these territories in an offensive that began in June 1941, but was defeated by the end of the war, and the Romanian territories between Prut and Dniester returned to Soviet occupation in 1944. Joseph Stalin decided to try to annihilate the national identity of the Romanians in the occupied territories. He promoted the idea of a Moldavian nation and dismantled Bessarabia. Northern Bukovina and southern Bessarabia were incorporated into the region of Soviet Ukraine, and a strip of territory east of the Dniester River was joined to the new Moldavian Soviet Socialist Republic, where it created an economic zone based on agricultural and wine production. In order to keep a more effective control over Moldova, a mainly agricultural economy has been preserved in the Bessarabia region (today's Moldova) and industrial investments have been concentrated in Transnistria.

On 27 August 1991, this Soviet Moldavian Republic proclaimed independence. After a short time, it seemed that the Republic of Moldova will move towards reunification with Romania. However, the local and economic political class decided to go on the path of independence, and during all these years Moldova moved on either towards the economic zone of the European Union, either towards the economic zone of the Commonwealth of Independent States, which was under the influence zone of the Russian Federation. In the wake of geopolitical and economic events, following the dissolution of the Soviet Union, two regions, Transnistria and Gagauzia, declared their independence from Moldova. Gagauzia is inhabited by Russian speakers of Turkish origin, who use the ethnonym Gagauz. Gagauzia renounced its declaration of independence, in exchange for broad autonomy within the Republic of Moldova. In contrast, Transnistria, where the Soviet military had important military units, maintained its independence declaration. In the last months of 1991, there began to be armed confrontations between Moldovan police units and military units of Russian separatists in Transnistria, supported by the Russian army that had inherited control over the Soviet military technique and on bases such as the huge arms depot in

Cobasna. Officially, on 2 March 1992, a real war broke out on the Dniester between the Moldovan forces and the Transnistrian separatists supported by the Russian Federation. The separatists extended their control to the west of the Dniester by capturing the town of Tighina and the villages of Gasca and Chitcani. The separatists were able to keep control of these areas solely because of Russian support. On 2 April 1992, the commander of the Russian 14th Army, who occupied Transnistria, General Yuri Netkachev, addressed an ultimatum to the Moldovan troops, who asked them to move 15 km from Tighina. In May 1992, Russian tank units joined the separatists, but the Moldovan troops were able to resist the attacks and start the counteroffensive. In June 1992, most of the city of Tighina had returned to Moldavia. The war ended on 21 July 1992, when the presidents of Russia, Boris Yeltsin, and Moldova, Mircea Snegur, signed a ceasefire agreement. Moldova remained without any control over Transnistria, which became a real black hole on the economic map of Europe.

As a result of this agreement, a frozen conflict perpetuated on the Dniester. Russia has made a promise to pull its troops out of Transnistria at the OSCE Summit in Istanbul in 1999, but has not kept that promise. The frozen conflict showed signs of warming in the context of the war in Ukraine, which started on 24 February 2022.

In these conditions, in which the Transnistrian separatists controlled most of the Moldovan industry, as well as most of the energy resources, the Moldovan economy has developed slowly and with great difficulties since the 1990s. For a long time, Moldova remained a gray territory, which offered few opportunities to investors and which swung between the West and Russia. For a very long time, Western countries avoided upsetting Russia by encouraging the tendencies of the Republic of Moldova to move closer to the European Union. New concepts were invented and small budgets were allocated to finance the maintenance of the institutions of the Republic of Moldova, without, enough money for the development of this country or sufficient political support to solve the Transnistrian problem.

3. Results and discussion

3.1. New geopolitical premises for economic development

Things began to change only after the Russian aggression in 2014, which led to the illegal annexation of Crimea by Russia and the creation of so-called republics in eastern Ukraine. The Russian aggression forced the West out of the diplomatic comfort zone and to assume the reality that Russia has ceased to be a credible partner both diplomatically and economically of the market economies of the European Union.

- In these circumstances, the West began to encourage pro-European forces in Moldova and to encourage investors to open businesses in the Republic of Moldova. Some of the most effective mechanisms have been patented by the United States international development agency, USAID. Since 2014, after the problem with the Crimean Peninsula, other Western states have decided to invest more seriously in the development of Moldova, thus limiting the influence of Russian capital, as is the case with GIZ agency of the German government entering Moldova for the first time.
- Thus, the prerequisites for the accelerated transition of the Moldovan economy from an agrarian economy to one based on the tertiary sector and diversified to

the production area with the help of the IT sector appeared. Western support was doubled by the Moldovan authorities' efforts to stimulate the transformation of Moldova's economic DNA, the fight against corruption, the reform of the education system and the development of economic activities that produce high added value.

- An important step in an economic sector in Moldova was the adoption of a strategy involving the granting of a preferential tax regime to the IT industry. The source of inspiration was the tax facilities granted to the IT sector by the Armenian authorities. In 2017, the Government of Chisinau adopted the Decision with number 1114 of 20 December, which approved the functioning of Moldova IT Park. This is a state mechanism, whereby the Government of the Republic of Moldova grants a preferential tax regime to IT companies that sign up in a virtual park, that is, on an online platform. Basically, the companies thus registered pay a one-off tax of 7% of the turnover, which includes all taxes and taxes due to the state budget, as well as social insurance and health insurance budgets.

Another benefit is a preferential simplified visa regime for managers and specialists in the software manufacturing industry. This has created the premise that companies that do not find enough IT specialists in Moldova can recruit and bring them from other countries of the world, especially from other former Soviet republics, which have maintained partnership relations with Moldova. Such as Georgia, Armenia and Azerbaijan, but also the former Soviet republics of Central Asia. These visas also attracted many specialists from Russia in the IT economic sector, who took refuge outside Russia in the context of the war in Ukraine, who wanted to avoid recruitment organized by the Moscow authorities. Also, Ukrainian IT specialists fled to Moldova, who left the country in the first days of the war triggered by the Russian aggression of February 2022.

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3.3. Economic and political conditions for the IT sector

All these things have stimulated the flourishing of the IT sector in Moldova. Hubs that provide the necessary ecosystem have also appeared, such as Digital Park, officially inaugurated on 4 December 2019, following an investment made by the most important Moldovan private telecom group, Star Net. Another hub dedicated to innovation is Tekwill, which is the result of a public-private partnership materialized on the campus of the Technical University of Moldova.

In this context, Moldova has reached 2400 companies active in software and IT, which offer solutions in the field of digitalization of the economy in Moldova, but also in this part of Europe. Some of them are the result of international investments. Such would be Vivajo, a company with German capital, founded in Romania, which has expanded in the Republic of Moldova since 2016 and is currently in the process of enlargement in the Western Balkans. In Moldova, initially, Vivajo worked only in the Balti region, where it also developed a professional master's degree in partnership with Alecu Russo University in this city, and then expanded to Chisinau. Other examples of companies that have successfully expanded in the Republic of Moldova are AROBS Transylvania Software, which is the largest technology company listed on the Bucharest Stock Exchange or Axon Soft, which is to start hiring software and IT specialists from Moldova.

According to the statistics produced by the National Bank of Moldova in 2017, IT firms in this sector grew from 2200 to 3300 companies in the field of software production registered in the Republic of Moldova, in which 32,600 specialists are active (**Figure 1**). Their number is steadily increasing, while universities in the Republic of Moldova produce every year about 2000 specialists in the field. The growth rate of the total number of employees in the software production sector naturally increases every year by about 1000 people, but also because, annually, about 1000 IT specialists leave the Republic of Moldova to work in large IT corporations in Europe and the United States. More than half of them choose to settle in Romania. The reasons for which they choose Romania are the cultural identity, as well as the simplified process of granting Romanian citizenship to those who come from the territories of Bessarabia and Northern Bukovina, provinces that have a majority ethnic and Romanian culture population, but also because these provinces were formerly part of the Romanian state. Another factor is their easy integration into the labor and economic market of Romania as a member state of the European Union.

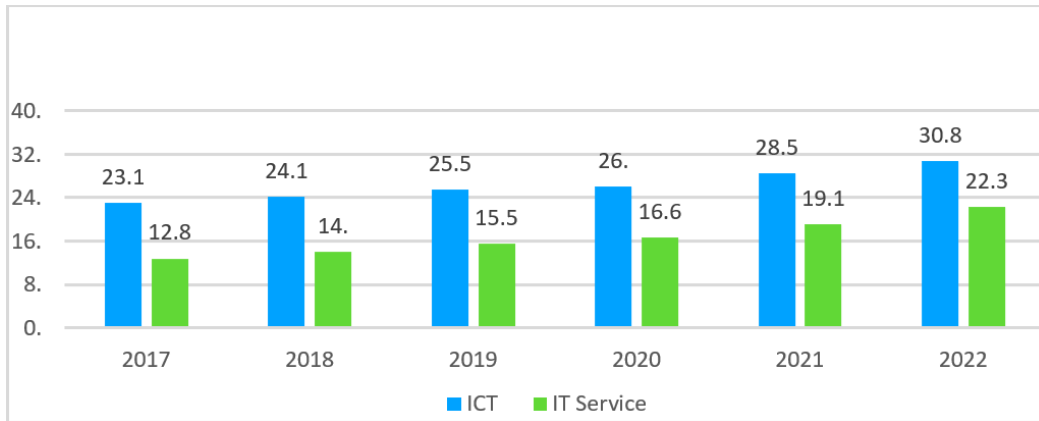


Figure 1. Evolution of ICT sector employees.

Source: Invest in Moldova/ National Bank of Moldova.

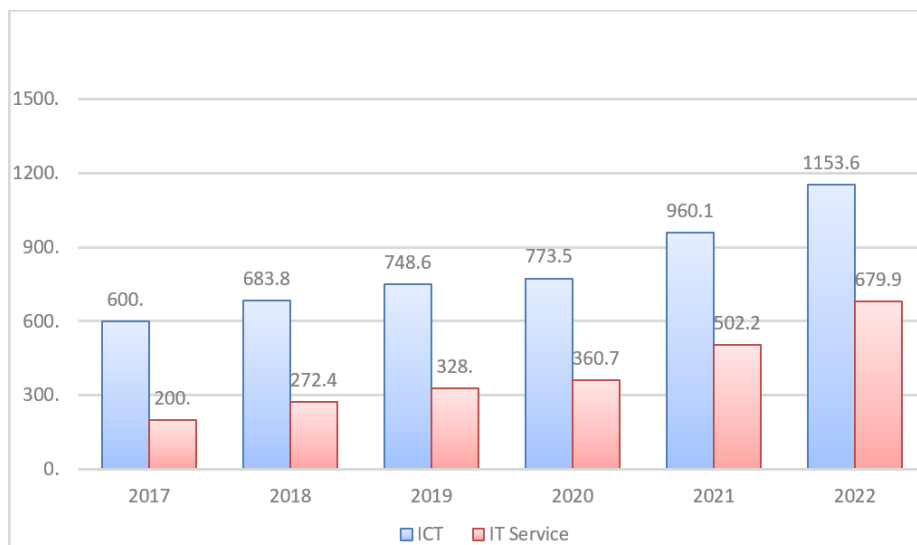


Figure 2. ICT sector sales evolution (M USD).

Source: Invest in Moldova/National Bank of Moldova.

According to the latest statistics of the Moldovan government, the number of IT specialists trained in Moldova and who choose to leave their country after graduation is slowly decreasing, while the incomes of those working in this field have constantly increased. Currently, the average salary received by an IT specialist from Moldova is 1585 euros per month, which is satisfactory given that the economic cost of living in the Republic of Moldova is significantly lower than in the countries of the European Union (**Figure 2**).

As a result of the investment in IT and the increase in its specialists, this economic sector has experienced a spectacular increase. Thus, between 2015 and 2020, the total revenues of companies in this field increased from \$125 million per year to \$426 million per year (**Figure 3**). In 2020, the IT sector generated 3.6% of the Gross Domestic Product of the Republic of Moldova, and the percentage has a tendency to increase. In 2020, for example, IT-generated revenues increased by more than USD 42 million compared to 2019 in the context of the COVID-19 crisis. It is also remarkable that in 2020, the volume of exports generated by the IT sector exceeded USD 303 million, i.e., more than the amount generated by exports of wine and other alcoholic beverages, while the wine sector was the main engine of Moldovan exports.

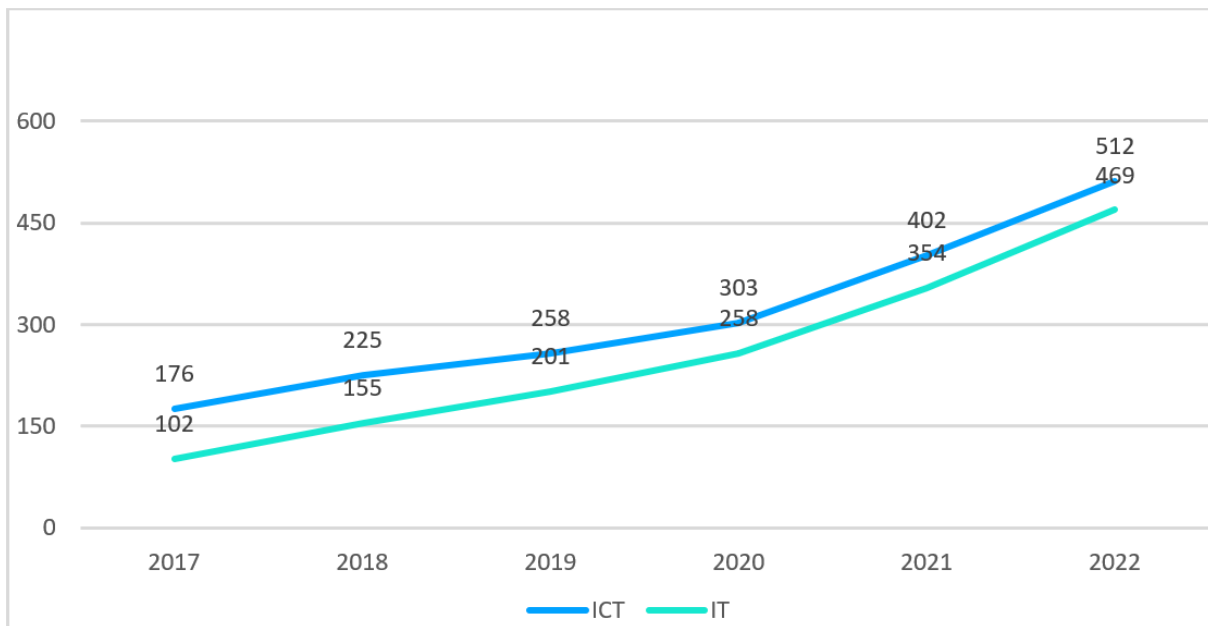


Figure 3. ICT sector exports evolution (M USD).

Source: Invest in Moldova/ National Bank of Moldova.

The trend of rapid and sharp growth of the IT sector is also found in the period 2020–2025, especially as the prospect of the Republic of Moldova joining the European Union increases the attractiveness for foreign investors. In practice, the Republic of Moldova submitted its application for accession to the European Union on 3 March 2022, and on 17 June 2022, the European Commission issued a positive opinion on this application. On 23 June 2022, the European Council granted the Republic of Moldova the status of candidate country. In November 2023, the European Commission issued a recommendation to open accession negotiations, and in December 2023, the leaders of the European Union Member States decided to open accession negotiations with the Republic of Moldova and invited the European

Council to adopt the negotiating framework. This has created the prerequisites for an even more consistent development of the IT sector in Moldova and the Moldovan economy in general.

“In its most recent conclusions, adopted in December 2023, the Council welcomed the substantial progress made by the Republic of Moldova in reaching the objectives underlying its status as a candidate country, in the context of the Russian war against Ukraine and the deployment of hybrid attacks against the Republic of Moldova itself. The Council also acknowledged that the Republic of Moldova has demonstrated a clear commitment to its reform process. Sustainable and tangible progress in reforms, particularly in the field of the rule of law, justice and fundamental rights, are of crucial importance for the Republic of Moldova in order to continue to progress towards accession.

The Council stressed the importance of continuing transformative economic reforms, sectoral cooperation and integration of the Republic of Moldova into the EU’s internal market in order to make further progress in reforms in the economic and financial sector. This should be done on the basis of the EU-Republic of Moldova Association Agreement and the Deep and Comprehensive Free Trade Agreement between the EU, Georgia, Republic of Moldova and Ukraine, respectively.” the European Council said in an official position.

Moldova now has clear prospects of joining the European Union. Accession negotiations started in June 2024, with the earliest prospect of accession in 2030. Until then, the Republic of Moldova has to meet a number of convergence criteria, including economic, and the IT sector is one of the most dynamic components of the Moldovan economy. It currently offers European-level salaries and has the potential to generate both incremental and disruptive innovation, even if Moldova does not yet have a unicorn company.

According to Moldovan law, in order to benefit from the 7% one-off tax, companies must officially register on a platform, Moldova Innovation and Technology Park (MITP). In the first quarter of 2024, this platform had 1746 active members, 8 percent more than in 2023, 88 percent of its software production was exported, had 21,763 employees, and the average salary was 47,312 Moldovan lei (approx. €2470).

Currently, only 12% of Moldova’s software production is destined for the domestic market. However, the Moldovan economy is largely digitalized. Three quarters of public services are available to businesses in digital format, and the government’s commitment is to reach 100 percent by 2030. The Chisinau authorities also want to invest more in the digital transformation of the economy. These are preconditions for the growth of Moldova’s domestic market for software.

In 2017, Moldova’s IT industry contributed €19 million to the national public budget. By 2023, this figure has grown to over €68 million, marking a more than three-fold increase just six years after the launch of MITP. The latest data shows that the total revenue of MITP residents exceeded €649 million, registering an increase of 31% compared to 2022. The IT sector has become an essential pillar of Moldova’s economy, gradually strengthening its role in national economic development.

To provide long-term clarity for residents and potential investors, at the end of 2023, the Moldovan government extended the MITP’s term of operation until 2037. This extension maintains the 7% flat tax and expands the list of eligible activities under

the e-park to include business services such as call centers and other labor supply functions.

MITP's simplified and de-bureaucratized model attracts investment, encourages business legalization and promotes formalized wage payments. It also encourages skilled Moldovan professionals to stay in the country, while attracting foreign managers and investors, facilitating the transfer of expertise and know-how. Although 4.4% of Moldova's workforce is already employed in the ICT sector—the second highest percentage in emerging Europe after Estonia—the demand for talent remains high. Today, almost 500 foreign nationals from 38 countries are part of this growing virtual community", stated government agency Invest Moldova.

4. European geopolitical and economic perspectives

The European Union is on the threshold of important steps. The European Parliament elections of 9 June 2024 generated a new European legislative forum, and from autumn 2024 there is a new European Commission, which includes a portfolio that will manage the European Union's enlargement. At present, this enlargement process concerns Moldova, the countries of the Western Balkans, Ukraine and Georgia. In addition to improving the political framework, the accession process also involves using European financial instruments that will stimulate Moldova's economic development. In the process of accession of the countries of Central and Eastern Europe, completed in 2004 and 2007 respectively, the European Union used seven such pre-accession financial instruments, such as PHARE, SAPARD, ISPA, SAMTID and other European funds. Similar instruments are expected to be used for Moldova. These European funds will help modernize Moldova's economy and the IT sector will be one of the beneficiaries of these financial allocations. Moreover, the transformation of the Moldovan economy towards convergence with that of the European Union will also increase the internal market and the demand for software products developed by Moldovan companies. An improvement in Moldova's overall performance in this area is expected. In terms of ICT development index, Moldova currently ranks 59th out of 175 state entities assessed. As for the global innovation index, Moldova ranks 64th out of 128 assessed states.

There are also encouraging technical prerequisites. The penetration rate of mobile and fixed telephone and Internet networks is currently 102.4%, relative to a written population of 3.55 million. In reality, however, the penetration rate is much higher, because about one million Moldovan citizens live abroad. In terms of access of the population to the fiber network, it is 98.2%. The download speed of the broadband internet network is among the highest in Europe: 93.5 Mbps.

In the future, the Republic of Moldova will be able to use European funds to stimulate scientific research in the field of technology, as well as technology transfer from academia to entrepreneurship, with the prospect of disruptive innovations. European funds could also be used to reduce regional disparities. Therefore, for the authorities in Chisinau, a major challenge will be to develop the capacity of universities outside Chisinau to deliver well-trained IT specialists and to create and develop ecosystems aimed at ensuring both the development of the IT sector and the emergence of innovative start-ups. There are signs that the authorities understand this.

In southern Moldova, the “EU4Moldova: Startup City Cahul”, which is successful so far, thanks to the European money invested in this project.

5. Conclusion

The economy of the Republic of Moldova is undergoing a substantial transformation. The tertiary sector, and in particular the IT industry, is among the beneficiaries of this transformation. Given that the Republic of Moldova has opened accession negotiations with the European Union and has set itself the optimistic objective of completing them by the end of 2030, there are premises for accelerating and deepening these transformations, especially as they will be stimulated by the European pre-accession funds. Developments are encouraged by deep reforms of the education system, especially in higher education, which have adapted the study curriculum to the needs of the labor market in this field. Another enabling factor is the stimulative fiscal framework, which, combined with the linguistic capabilities of Moldovan IT specialists, who can communicate with their colleagues from the former Soviet space, offers the prospect of attracting numerous and valuable human resources, from these former Soviet republics, who can work in software production in Moldova and provide solutions in the information technology area for fundamental areas of the economy such as productivity with software or digitalization of government services or key sectors of the Moldovan economy. This is why the IT sector has the prospect of increasing its share in Moldova’s GDP and increasing its salary level, as well as becoming a hub for the IT sector in this part of Europe with the enlargement of the European Union.

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References

- Arobs, <https://arobs.com/arobs-moldova/>, accessed on 28.11.2024
- Bogner A, Littig B, Menz W. (2009) Introduction: Interviews with experts - an introduction to a new methodological debate. PROOF (pp. 1-13) New York.
- Consiliul European, EU accession application of the Republic of Moldova, <https://www.consilium.europa.eu/ro/policies/moldova/#:~:text=Republica%20Moldova%20a%20depus%20o,deschise%20oficial%20%C3%AEn%20iunie%202024>, accessed on 26.12.2024.
- Consilium Europa <https://www.consilium.europa.eu/ro/policies/enlargement/moldova/>, accessed on 09.12.2024.
- Deutsche Gesellschaft fur International Zusammenarbite, <https://www.giz.de/en/worldwide/67751.html>, accessed on 08.12.2024.
- Deutsche Welle, <https://www.dw.com/ro/republica-moldova-la-30-de-ani-de-independen%C8%9B%C4%83/a-58998982>, accessed on 20.11.2024.
- Digital Park, <https://digitalpark.md/en>, accessed on 27.10.2024.
- Duarte, Carlos Henrique and Ebert, Christof. (2018) Digital transformation and software engineering/requirements. ResearchGate. DOI:10.1109/MS.2018.2801537

- Esser, K., Hillebrand, W., Messner, D. and Meyer-Stamer, J. (2008) Systemic competitiveness: a new challenge for business and the government. Highlights in a process of innovation, change and development. Special edition: Buenos Aires/Dortmund (pp. 21-26).
- Filó, C. (2007) 'Territorial competitiveness and human factors. International Conference of Territorial Intelligence, Huelva 2007 (CAENTI). (pages 323-336). <https://halshs.archives-ouvertes.fr/halshs-00516346/document>
- Hoellthaler, G., Braunreuther, S. and Reinhart, G. (2018) An approach to identifying migration potentials to a digitalized production system in SMEs from a Lean perspective. *Procedia CIRP*, 67, (pp. 522-527.)
<https://doi.org/10.1016/J.PROCIR.2017.12.255>
- Institute for Management Development (2022), <https://www.imd.org/centers/world-competitiveness-center/rankings/world-digital-competitiveness/>, accessed on 20.10.2024.
- Institute for Management Development (IMD), (2017), <https://www.imd.org/centers/world-competitiveness-centers/rankings/world-competitiveness/>, accessed on 18.10.2024.
- Invest in Moldova, <https://invest.gov.md/ro/sectors/ict-bpo>, accessed on 29.11.2024.
- Invest in Moldova, <https://invest.gov.md/wp-content/uploads/2024/08/ICT.pdf>, accessed on 22.11.2024.
- Invest Moldova, The IT sector of the Republic of Moldova - The new emerging digital destination in Eastern Europe, <https://invest.gov.md/sectorul-it-din-republica-moldova-noua-destinatie-digitala-emergenta-din-europa-de-est/>, accessed on 26.12.2024
- Kallioras A, Pliakas F, Diamantis I, Kallergis G. (2010) SWOT ANALYSIS in the management of groundwater resources of coastal aquifers: a case study from Greece. *Water Int*, 35(4), (pp. 425-441), 2010. doi:10.1080/02508060.2010.508929
- Kilimis P., Zou W., Lehmann M., Berger U. (2019) A survey on the digitalization of SMEs in Brandenburg, Germany, *IFAC-PapersOnLine*, No 52 (13), (pp. 2140-2145). doi:10.1016/j.ifacol.2019.11.522
- Krugman P. (1994). Competitiveness: a dangerous obsession. *Foreign Affairs*, vol. 73, no. 2 (Mar. - Apr., 1994), (pp. 28-44).
<https://doi.org/10.2307/20045917>
- Leo de Miranda. R, Iran dos Santos, L.F., Giancarlo Gomes. G, dos Santos Parisotto I.R. (2021) Influence on the global innovation of nations: a transversal analysis. *Independent Management and Production Journal (IJM&P)*. vol. 12 No. 4 ISSN: (pp. 2236-2699). DOI: 10.14807/ijmp.v12i4.1338
- Mainali B, Ngo H, Guo W, Pham T, Wang XC, Johnston A. (2011) SWOT ANALYSIS to help identify critical factors for the successful implementation of water reuse schemes. *Water treatment with desalination* 32(1-3) (pp.297-306), 2011. doi:10.5004/dwt.2011.2714
- Marinović I Matović (2017) The impact of the crisis on tourism development: evidence from the Republic of Serbia. *Second International Thematic Monograph - Thematic Works: Modern Management Tools and Economy of the Tourism Sector in the Current Era*, Belgrade, (pp. 628-644).
- Ministry of Economic Development and Digitization, IT Ecosystem and ICT Innovation Centres Network, <https://mded.gov.md/domains/information-technology-and-digitisation/information-technology-it/the-it-ecosystem/>, accessed on 27.12.2024
- Ministry of Economic Development and Digitization, The digital economy, <https://mded.gov.md/content/economia-digitala/>, accessed on 26.12.2024
- Moldova Innovation Technology Park, Report Quarter 1, 2024, https://mitp.md/p/public/files/Raport%20Q1%202024_final.pdf, accessed on 26.12.2024
- Okano, Marcelo T; Antunes, Samira N; Fernandes, Marcelo Eloy. *Independent Journal of Management and Production*; Sao Paulo Vol. 12, Iss. 4, (May/June 2021): 1139-1159.
- Porter, M. E. (1980). *Competitive strategy: techniques for analyzing the industries and competitors*. New York: free press.
- Porter, M. E., & Porter, ME (1990). The competitive advantage of nations. *The Harvard Business Review*. March-April.
- Radio Chisinau, <https://radiochisinau.md/expertii-din-republica-moldova-anexarea-crimeii-a-fost-primul-pas-deschis-de-acaparare-a-unui-teritoriu-care-nu-apartine-rusiei---194320.html>, accessed on 14.11.2024.
- Radio Europe Free Moldova, <https://moldova.europalibera.org/a/1927532.html>, accessed on 28.10.2024.
- Radio Europe Free Moldova, <https://moldova.europalibera.org/a/istoria-rass-moldoveneasc%C4%83-1924-1940-iv-contextul-apari%C8%9Biei-moldovenismului-sovietic-5/31105732.html>, accessed on 22.11.2024.
- Rakauskienė Giedrė, Tamošiūnienė Rima (2013). Factors that influence national identity. *Business: Theory and Practice* Issn 1648-0627 printed / Issn 1822-4202 online 2013 14(3), 177-187.

- Schallmo D., Williams C. and Boardman, L. Digital (2018). Transforming business models. Best practices, facilitators and roadmap, *International Journal of Innovation Management*, no.21(8): s.1740014.
- Ślusarzyk, B. (2018) Industry 4.0 - *Polish Journal of Management Studies*, vol. 17, no. 10, 232-248.
- Smith, A. (1937). *The Wealth Of Nations* [1776]. In: n/a.
- Statbank, <https://statbank.statistica.md/PxWeb/pxweb/ro/40%20Statistica%20economica/>, accessed on 18.11.2024.
- Tekwill, <https://tekwill.md/>, accessed on 17.11.2024.
- The state register of legal acts, https://www.legis.md/cautare/getResults?doc_id=111880&lang=ro, accessed on 26.11.2024.
- Truthfully, <https://www.veridica.ro/analize/30-de-ani-de-la-razboiul-din-transnistria-o-cronologie-a-luptelor-si-armistitiilor>, accessed on 21.10.2024.
- US Agency for International Development, <https://2017-2020.usaid.gov/ro/moldova/economic-growth>, accessed on 15.11.2024.
- Vivajo, <https://vivajo.com/>, accessed on 18.11.2024.
- World Economic Forum, *Global Competitiveness Index, 2019*,
http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf
- World Economic Forum, *The Global Competitiveness Report, 2017–2018*. <https://www.weforum.org/publications/the-global-competitiveness-report-2017-2018/>, accessed on 28.11.2024.
- World Economic Forum. (2017) *Global Competitiveness Report 2017-2018*.