

# EXPLORING MOLDOVAN EDUCATIONAL OFFERINGS AND PREDICTING COMPETENCES IN INTELLIGENT SPECIALIZATION DOMAINS: A COMPREHENSIVE STUDY

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**Abstract.** This paper examines the challenges hindering the alignment of skills with labor market demands in Moldova. Two main issues are identified: first, the educational system's inability to respond adequately to labor market needs, resulting in a significant disparity between required skills and those produced by educational programs. This disconnect may stem from outdated curriculum, inadequately trained specialists lacking updated knowledge, and skills relevant to contemporary industries. Second, there exists a weak strategic collaboration between key stakeholders, notably between companies and educational institutions. Insufficient collaboration hampers efforts to identify skills gaps and tailor educational offerings to meet industry requirements. The repercussions of these challenges are profound, as the shortage of qualified personnel impedes enterprise performance and necessitates the curtailment of development plans and production indicators for many employers. Addressing these issues requires concerted efforts to bridge the gap between education and industry and foster stronger partnerships between stakeholders to ensure a more responsive and effective labor market.

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**Keywords:** educational offer, competences, intelligent specialization, Moldova.

## **Introduction**

In recent decades, the problem of matching between candidates and available jobs has become more and more present. This discrepancy between the requirements of employers and the skills of job seekers generates significant gaps between the number of people available for employment and the number of vacant positions. According to research by Flisi and his collaborators (2017), this phenomenon can be attributed to several factors, including increased global competition, changes in skills caused by technological progress, increasing educational levels of the workforce and an aging population.

Studies at the European level have also highlighted that migration can amplify these discrepancies. For example, young people with higher education who migrate to other countries for work opportunities may experience difficulties in finding positions relevant to their specialization, according to the conclusions of Landolt and Thieme (2018).

Economic theory emphasizes the existence of these discrepancies in the context of structural unemployment, which results from the mismatch between demand and supply in the labor market segments. This unemployment is largely attributed to the fact that labor supply does not adjust to market demand, according to studies by Benjamin et al (2005).

Since the 90s, the need for active labor market policies (ALMP) has been recognized,

which would strengthen the link between social protection and employment, according to the reports of the Organization for Economic Cooperation and Development (OECD, 2006). These policies are essential to counter gaps between labor supply and demand and to promote greater cohesion between the labor market and social protection systems.

In an ever-evolving world, adaptability is essential for economic and social success. Thus, it is imperative to develop and implement policies and programs that support the continuous training and reskilling of the workforce to meet the changing demands of the labor market.

The negative effects of the mismatch between labor demand and supply are not long in making themselves felt and can have significant consequences for the individual and the labor market as a whole. When people are forced to work in fields different from the ones they wanted or in which they completed their studies, various negative impacts can be registered, according to research:

- ✓ Decreased work productivity and, by implication, lower wages: When employees work in an area that does not correspond to their training or their professional interests, their performance can be affected, which can lead to lower productivity and, in some cases, the latter, at lower wages. Studies such as those by Chevalier (2003), Béduwé and Giret (2011), and Romero et al. (2017) support this conclusion.

- ✓ Increased staff turnover in the labor market: The mismatch between demand and supply can lead to increased instability in the labor market, with employees frequently changing jobs to find more suitable positions. Studies such as those by Allen and van der Velden (2001) and Wolbers (2003) have highlighted this phenomenon.

- ✓ Decreased job satisfaction: When people work in fields they are not passionate about or that do not match their training, their level of job satisfaction can drop significantly. This can have a negative impact on their motivation and commitment to the workplace. Studies such as those by Belfield and Harris (2002) and Bender and Heywood (2006) have identified this link.

- ✓ Increase in workplace accidents: The mismatch between labor demand and supply can lead to people being employed in positions for which they are not properly trained, which can increase the risk of workplace accidents and incidents. Studies such as those conducted by Premji and Smith (2013) have revealed this association.

These negative effects underline the importance of matching labor supply and demand and the need for appropriate strategies and policies to ensure that individual skills and interests align with labor market needs.

Currently, in the Republic of Moldova, the educational and professional training landscape is defined by the presence of three main types of education providers, which comprise a total of 89 institutions. These institutions are essential for training and developing the skills of the country's youth. In the academic year 2021/2022, these institutions were attended by approximately 442.4 thousand pupils and students, reflecting a variety of education levels and professional training programs.

These 89 educational institutions represent a vital environment for the future training of the workforce in the Republic of Moldova. They cover a wide spectrum of educational and vocational training areas, from general education to higher education and technical training programs.

By involving more than 442.4 thousand pupils and students, these institutions contribute to the preparation of a qualified workforce adapted to the requirements of the labor market in Moldova and abroad. They play a crucial role in ensuring the country's economic development and prosperity by providing the necessary skills and knowledge to meet the

challenges and opportunities in contemporary society.

At the same time, these educational institutions are an integral part of the process of modernization and innovation of the educational and professional training system in the Republic of Moldova, contributing to strengthening the adaptability and competitiveness of the workforce in the face of technological and social changes.

Currently, in the Republic of Moldova, the educational and professional training landscape stands out for the diversity of the institutions involved in the educational process. Vocational education and training institutions, especially centers of excellence, have shown significant potential and are recognized for their orientation towards the dissemination of technology and innovation in a more pronounced way than universities.

Vocational schools and centers of excellence are distinguished by their approach to learning by doing and their progressive emphasis on educational aspects. These institutions are actively involved in working with small and medium-sized enterprises (SMEs) and potential employers to ensure a more effective integration of graduates into the labor market. Through their collaborative initiatives, they contribute to the development of skills relevant to the labor market and improve the adaptability of graduates to the changing demands of the economy.

However, the education system, especially the technical vocational one, faces challenges in terms of innovation, growth and competitiveness. It remains predominantly focused on the provision of formal education programmes, and the lack of drive for innovation may limit its ability to respond to current labor market needs and challenges.

It is important that the education system is constantly evolving and adopts a more dynamic approach to strengthen its position in the regional innovation systems. Promoting innovation and modern pedagogical approaches, together with greater collaboration between educational institutions and the business environment, could contribute to increased competitiveness and the adaptability of the workforce to the ever-changing market demands.

#### **Educational offer in ICT sector**

In the Republic of Moldova, education and vocational training in the field of information and communication technologies is provided by a diverse range of educational institutions. These include universities, colleges, vocational schools and centers of excellence, which play a vital role in preparing the future workforce in this crucial field for the country's economic and technological development.

Universities are an important pillar of the educational system, offering bachelor's and master's programs in the field of information and communication technologies. These programs cover a wide range of subjects, from computer science and software engineering to computer networking and cyber security. Universities also offer research and development opportunities for students interested in exploring new technologies and applications in the field.

Colleges and vocational schools complete the educational landscape, offering technical and practical training programs in the field of information technology. These institutions are focused on providing practical and practical skills relevant to the job market, preparing students to work as IT technicians, network administrators or software developers in various industries.

Centers of Excellence are the pinnacle of IT and communications education and training. These institutions specialize in offering advanced learning and development programs that focus on cutting-edge technology, research and innovation. They often work closely with industry and technology organizations to ensure their programs remain relevant and up-to-date.

## **Higher education in the Republic of Moldova**

Currently, in the Republic of Moldova, there are a total of 13 public higher education institutions and 8 private institutions providing higher education programs. These institutions represent the pillars of higher education in the country and play an essential role in training the future workforce and promoting research and innovation in various fields.

Public institutions of higher education offer a wide range of bachelor's and master's programs in various fields, including social sciences, natural sciences, engineering, medicine, arts and humanities. They are funded and managed by the government of the Republic of Moldova and are accessible to a large number of students.

In addition to these, private institutions of higher education bring additional diversity to the educational landscape of the country. These institutions also offer a variety of academic and professional programs tailored to the specific needs of students and the demands of the labor market. They often promote an innovative and flexible approach to the educational process and are recognized for being in step with international trends in education and research.

Both types of institutions contribute to diversifying and enriching the offer of higher education in the Republic of Moldova, offering students varied options to pursue their passions and academic interests. In addition, they play a crucial role in developing the country's human capital and preparing graduates to become active and contributing members of Moldovan society and economy.

According to the Admission Plan for general fields of study for the academic year 2022-2023, with funding from the state budget, for higher undergraduate studies (cycle I) and integrated higher studies, the field of information and communication technologies (ICT) has benefited from a total of 690 places. This figure reflects the interest and priority given by the state to the training of qualified personnel in this crucial field for the economic and technological development of the Republic of Moldova.

The analysis of the Admission Plan highlights the fact that the ICT field occupies the third place in the list of state priorities in terms of the training of highly qualified personnel. Education sciences tops this list with 1274 seats, followed by engineering and engineering activities with 761 seats available. This suggests that the field of ICT is recognized as having significant importance in the context of the socio-economic development of the country and that there is an increased need for well-trained specialists in this field.

The generous offer of study places in the field of ICT reflects the efforts of the authorities to promote and support the development of technological and digital skills among young people in the Republic of Moldova. It also represents the opportunity for students to prepare for careers in a field with high demand in the labor market, both domestically and internationally. By investing in ICT education and training, the Republic of Moldova aims to strengthen its position in the global economy and increase its competitiveness in the digital age.

In recent years, the field of information and communication technologies (ICT) in the Republic of Moldova has registered a significant increase in the number of graduates of post-secondary technical vocational education. Between 2016 and 2022, the number of specialists trained in vocational schools, colleges and centers of excellence has registered an impressive growth, estimated at around 30%. This trend reflects the increased interest of young people in careers in the technological field and the efforts of the authorities to promote and develop education in this strategic sector.

Higher education institutions have also contributed to the training of ICT specialists, with an annual number of approximately 600 graduates. This number has remained relatively

constant over the past 5 years, reflecting the stability and continuity of training and education efforts in this area.

The constant increase in the number of graduates from post-secondary technical vocational education and higher education institutions highlights the importance and relevance of this sector for the labor market in the Republic of Moldova. Graduates are prepared to address the various challenges and opportunities in the technological field, contributing to the innovation, development and competitiveness of the IT industry and the economy as a whole.

This increase in the number of ICT specialists also represents an opportunity to strengthen the position of the Republic of Moldova in the global technological landscape and to attract investments and business opportunities in the IT sector. By training a skilled and adaptable workforce, the Republic of Moldova can strengthen its role as a regional hub for innovation and technology.

Apart from the formal education offered by educational institutions, there are other ways of training in the field of information and communication technologies (ICT) which are offered by employers or by some commercial organizations. These professional training courses, which are conducted for a fee and last several months, have become a popular option for those interested in quickly developing their skills in this field and entering the job market in a short time.

Although there is no comprehensive and detailed information on the extent and number of offers in this field, several institutions are known to offer such courses in the Republic of Moldova. Among them are Link Academy, IT-Lab and Step IT Academy Moldova, which are recognized for the quality and relevance of the training they offer.

These training programs emerged mainly in response to the increased demand from employers for well-trained ICT specialists. Many candidates applying for vacancies in this field lacked the necessary knowledge and skills to meet the job requirements. Therefore, the need arose to provide additional training and skill development opportunities for potential employees.

These courses often focus on the practical and technical skills needed to work in the ICT industry, as well as the soft skills needed to succeed in a professional environment. They provide a fast and efficient route for those interested in starting or advancing their careers in this dynamic and ever-evolving field. Through these training programs, employees can improve their employment prospects and prepare for the changing demands of the ICT labor market.

It is important to emphasize that the National Employment Agency of the Republic of Moldova annually conducts a short-term labor market forecast, with the aim of anticipating the future demands of the labor market and reducing the gap between the training offered by educational institutions and the needs of economic agents.

Through this forecast, the agency aims to identify trends and changes in the labor market, including the evolving demands of employers, the availability of jobs and the skills needed to fill them. This assessment of the labor market contributes to the development of effective policies and programs to respond to the real needs of the labor force and to facilitate the integration of people into the labor field.

By anticipating the demands of the labor market, the agency can provide educational and vocational advice and guidance to young people and adults so that they can more effectively direct their learning and training efforts to areas of higher demand in the labor market. It also allows educational institutions to adjust their study programs and offer courses and specializations that meet the current and future demands of employers.

Through this labor market forecasting activity, the National Employment Agency demonstrates its commitment to the promotion of a qualified and adaptable workforce that contributes to the economic and social development of the Republic of Moldova. This proactive and needs-oriented approach to the labor market is crucial for ensuring a harmony between labor supply and demand in the country.

### **Skills required on the labor market**

Small and medium-sized enterprises (SMEs) represent the main engine of the economy of the Republic of Moldova, covering an impressive proportion of 98.4% of all enterprises in the country. These SMEs are drivers of economic growth and job creation, and their staff skills needs are of crucial importance for the sustainable development of the national economy.

Statistical data reveal the fact that in the field of information and communication technologies (ICT) in the Republic of Moldova there are a total of 2,900 small and medium enterprises, which employ no less than 15,300 people. These figures underline the significant demand for specialists with information and communication skills in the country's labor market.

It is obvious that SMEs in the Republic of Moldova depend to a large extent on skilled ICT personnel to achieve their goals and remain competitive in the global market. For this reason, it is essential to emphasize the development and improvement of the educational offer in this field, in order to respond to the real demands of the labor market.

Providing adequate and up-to-date ICT training is essential not only to meet the demands of today's employers, but also to prepare the next generation of technology professionals. Investing in the quality of ICT education can contribute to increasing the skills level of the workforce, to innovation and to the development of the IT sector, which will have a positive impact on the economic growth and competitiveness of the Republic of Moldova in the global context.

### **Conclusions**

The main problems that make it difficult to align skills with the requirements of the labor market in our country are: 1. the educational system does not respond to the demand on the labor market. There is a large gap between the needs of the labor market and the skills produced by the education system. The causes of this gap could be outdated educational programs, insufficiently trained specialists who do not have new knowledge in the fields. 2. weak strategic collaboration between key actors

Companies collaborate poorly with educational institutions to identify skills gaps and facilitate education.

In conclusion, we can say that the lack of qualified personnel represents an obstacle in the development of the performance of enterprises. They also mentioned that, from discussions with employers, they found out that more and more of them had to reduce their development plans and production indicators for the reason that they do not have the necessary staff.

### **List of sources used**

1. Bédoué, Catherine and Giret, Jean-François, (2011), Mismatch of vocational graduates: what penalty on French labour market, Post-Print, HAL. URL: <https://EconPapers.repec.org/RePEc:hal:journl:halshs-00738007>.

2. Flisi S., Goglio V. et al. (2017). Measuring Occupational Mismatch: Overeducation and Overskill in Europe – Evidence from PIAAC. Social Indicators Research, 131, 1211-1249. URL: <https://doi.org/10.1007/s11205-016-1292-7>.

3. Landolt S., Thieme S. (2018) Highly skilled migrants entering the labour market: Experiences and strategies in the contested field of overqualification and skills mismatch, *Geoforum*, Volume 90, 2018, p. 36-44, ISSN 0016-7185. URL: <https://doi.org/10.1016/j.geoforum.2018.01.009>.

4. Naveh-Benjamin M., Craik F. I. M., Guez J., Kreuger S. (2005). Divided Attention in Younger and Older Adults: Effects of Strategy and Relatedness on Memory Performance and Secondary Task Costs. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 31(3), 520–537. URL: <https://doi.org/10.1037/0278-7393.31.3.520>.

5. OECD (2006). ANNUAL REPORT ON SUSTAINABLE DEVELOPMENT WORK IN THE OECD. URL: <https://www.oecd.org/greengrowth/38392143.pdf>.