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# Study of ICT Skills in Belarus for the Textile Industry

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**Abstract.** The article is devoted to the study of ICT skills for the development of the textile industry in Belarus. The study revealed a high degree of consumer readiness for digital transformation in textile and clothing market. At the same time, the lack of digital skills among employees of the textile and clothing sector enterprises is holding back innovation and digital transformation. The main areas of influence of digitalization on labor demand and supply in the textile and clothing sector are determined. To improve the situation, investments in ICT skills training are needed.

## INTRODUCTION

ICT skills play a key role in the development of a modern economy, support innovation and enable the digital transformation of the economy [1, 2, 3]. ICT skills development is important not only for the ICT sector, that provides new software products, equipment and technologies for digital transformation. Traditional industries like the textile and clothing sector also need to develop ICT skills and competencies to reduce their costs, improve customer satisfaction and survive the digital age. The investments in staff development and training are at the present stage of economic development one of the most effective and far-sighted [4]. The objective of the study is to assess the readiness of the textile and clothing sector of Belarus for digital transformation through the ICT skills of the customers and employees.

## MATERIALS AND METHODS

The study of the indicators of the digital economy development in Belarus was conducted on the basis of data from National Statistical Committee of the Republic of Belarus (https://www.belstat.gov.by/). The readiness of the population for digital transformation was studied based on data on the access to the Internet for the population of different age groups and levels of education in Belarus fron the report on Information society in Belarus, 2019 (https://www.belstat.gov.by/upload/iblock/fac/facac4a309c011aab5f9ed856bd3da49.pdf ). The skills and trends for digital transformation in the textile and clothing sector was defined from the open Internet sources. The study used the method of comparative analysis, time series analysis, market research methods.

## RESULTS AND DISCUSSION

The Republic of Belarus has officially taken a course towards the digitalization of the economy, the main legal provisions of digital transformation are laid down in a number of regulatory documents: in the Decree of the President of the Republic of Belarus No. 8 of December 21, 2017 "On the development of the digital economy", in the Strategy

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for the development of informatization in the Republic of Belarus for 2016– 2022, approved at the meeting of the Presidium of the Council of Ministers dated 03.11.2015 No. 26, in the Strategy "Science and Technology": 2018-2040, approved by the Resolution of the Presidium of the National Academy of Sciences of Belarus No. 17.02.2018, etc. Based on international experience, National Statistical Committee of the Republic of Belarus has developed a system of national statistical indicators for the development of the digital economy, which includes five blocks of indicators - information and communication infrastructure, the use of information and communication technologies by the population and organizations, information infrastructure, digital transformation, the national ICT industry (45 indicators in total).

The contribution of the ICT sector to the economy of Belarus can be estimated by the increasing share of the ICT and IT industry in the country's GDP - in 2015 it amounted to 3,5% of Belarus' GDP, in 2019 – 6,6%. The National Statistical Committee of the Republic of Belarus has compiled a list of indicators "National statistical indicators of the development of the digital economy in the Republic of Belarus", selected indicators are shown in Table 1.

**TABLE 1.** Particular national statistical indicators of the digital economy development in belarus for 2015–2019.

| Indicators | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| Share of population aged 6-72 using the Internet, percent | 67,3 | 71,1 | 74,4 | 79,1 | 82,8 |
| Share of the population aged 6-72 using the Internet on a daily basis, percent | 45,2 | 48,5 | 54,3 | 62,6 | 68,5 |
| Number of ICT sector organizations | 4 536 | 3 962 | 4 492 | 4 996 | 5 202 |
| Share of employees in the ICT sector in the total number of employees of organizations, percent | 2,4 | 2,2 | 2,4 | 2,7 | 2,9 |
| The share of the volume of production (work, services) of the ICT sector organizations | 4,3 | 4,3 | 4,6 | 4,7 | 5,5 |
| Share of organizations using fixed broadband Internet access, percent | 88,6 | 89,4 | 96,7 | 96,7 | … |

Source: https://www.belstat.gov.by/

The dynamics of the indicators given in the table demonstrates both the expansion of the use of ICT in the daily life of the population and organizations, and the stable growth trends of the ICT sector in the economy.

The data from a sample survey of households by living standards indicate that for the period 2014-2018 there was an increase in the use of ICT by the population: 97,2% of households in the Republic of Belarus use cellular services, 73,5% use personal computers and 79,1% use the Internet services (Information Society in the Republic of Belarus, p. 80). For 2014-2018 the population's access to the Internet has expanded (Table 2).

**TABLE 2.** Access of the population of the republic of belarus to the internet, percent of the total population of the corresponding group

| Indicators | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|
| Internet users, percent | 63,6 | 67,3 | 71,1 | 74,4 | 79,1 |
| By age group | | | | | |
| 6-15 years old | 79,7 | 82,0 | 85,8 | 86,0 | 90,8 |
| 16-24 years old | 96,2 | 98,1 | 98,1 | 98,6 | 98,7 |
| 25-54 years old | 74,0 | 78,5 | 83,3 | 87,3 | 90,4 |
| 55-64 years old | 33,3 | 37,6 | 44,7 | 52,3 | 60,0 |
| 65-72 years old | 16,3 | 18,4 | 22,6 | 27,9 | 33,4 |
| By education level | | | | | |
| Higher, postgraduate | 82,3 | 84,2 | 86,7 | 89,2 | 91,7 |
| Specialized secondary | 59,9 | 64,7 | 69,5 | 73,6 | 78,2 |
| Vocational | 51,3 | 55,4 | 57,9 | 61,3 | 68,2 |
| Secondary | 47,5 | 51,4 | 54,5 | 58,7 | 62,1 |
| Basic, primary, no education | 73,8 | 68,6 | 75,7 | 83,1 | 86,1 |

Source: https://www.belstat.gov.by/

Thus, access to the Internet is expanding for the population of all age groups and all levels of education in Belarus. It should also be noted that the most active users of the Internet are young people and children as well as people with higher education.

The main place of access to the Internet is home devices: 95,4% of users access the Internet at home, 76,4% - anywhere through a cellular connection, 79,2% do it every day (Information society, p. 83-84). The main directions of using the Internet by users in Belarus are shown in figure 1.

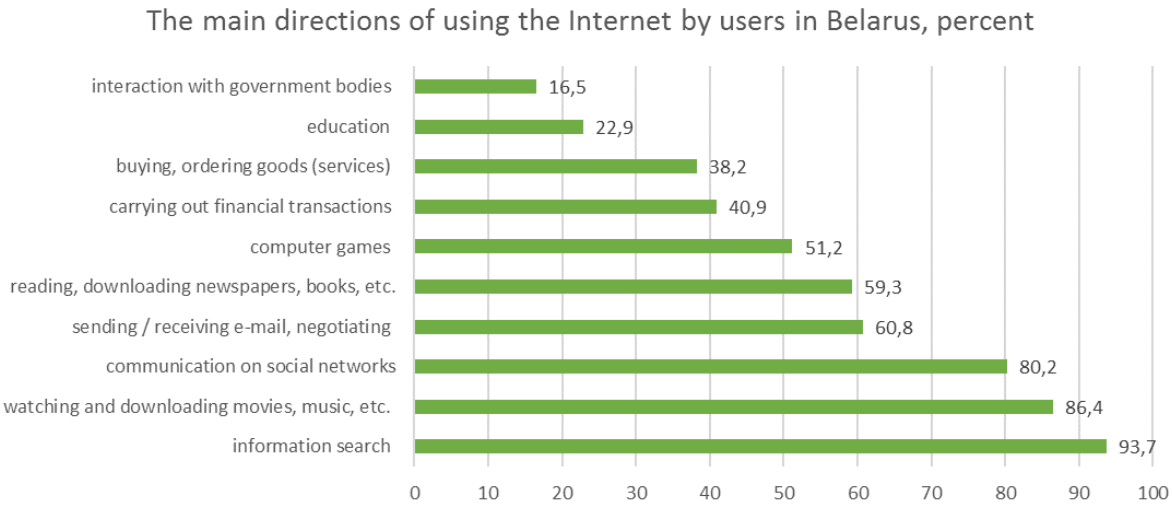


**FIGURE 1.** The main directions of using the internet by users in belarus

Source: Information Society, p. 85.

However, depending on age, the goals of accessing the Internet are different (Belarus in figures, 2020, p. 70): children and young people (under the age of 24) use the Internet to a greater extent to watch and download films, music, software, computer games and for educational purposes, while the adult population (25 years and older) - to search for information, communicate on social networks, use e-mail, purchase goods (services), carry out financial transactions and communicate with government bodies.

Wide access to the Internet of the population plays an important role in the digital transformation of the economy, since the population is not only the main consumer of goods and services, but also the labor force [5, 6, 7, 8]. At the same time, ICT skills are the key factor of the digitalization of the economy. The cost structure of organizations in the development, implementation and use of digital technology in Belarus in 2020 (figure 2) shows that the equipment and other organizations and specialists' services dominate in the cost structure. Costs of the employees training for the digital skills are only 0,2%. This is extremely small, especially for digital transformation in traditional sectors of the economy, where ICT skills are less developed than in the ICT sector.

The textile and clothing sector is a traditional industry and it's not ready to transform for Industry 4.0 directly. Nowadays the textile and clothing industry is facing global competition for mass customization to address dynamic customer demands. To enable the challenge from mass production to build-on-demand with small lot size and diversified product mixes, a solution to support traditional industries to adopt smart manufacturing and empower digital transformation is needed [9].

The main areas of influence of digitalization on labor demand in the textile and clothing sector are:

a) a change in the profile of the work performed, which significantly affects the structure of the necessary skills, and also leads to the new professions' emergence.
b) changing the tasks and characteristics of the workplace in the process of performing labor activities;
c) the need for new digital skills.

The directions of the influence of digitalization on the supply of the labor in the textile and clothing sector are:

a) expanding the supply of labor by involving older people and people with disabilities in economic activity (including remote forms of employment), who have the opportunity to participate in various mass online educational programs through the use of digital technologies;
b) expanding the availability of advanced training systems, as well as training and retraining of personnel through remote open educational programs, that, in turn, expands the supply of labor resources and improves their quality;
c) increasing the mobility of the labor force in the context of digitalization, including due to the fact that mobility is no longer tied to geographic location.

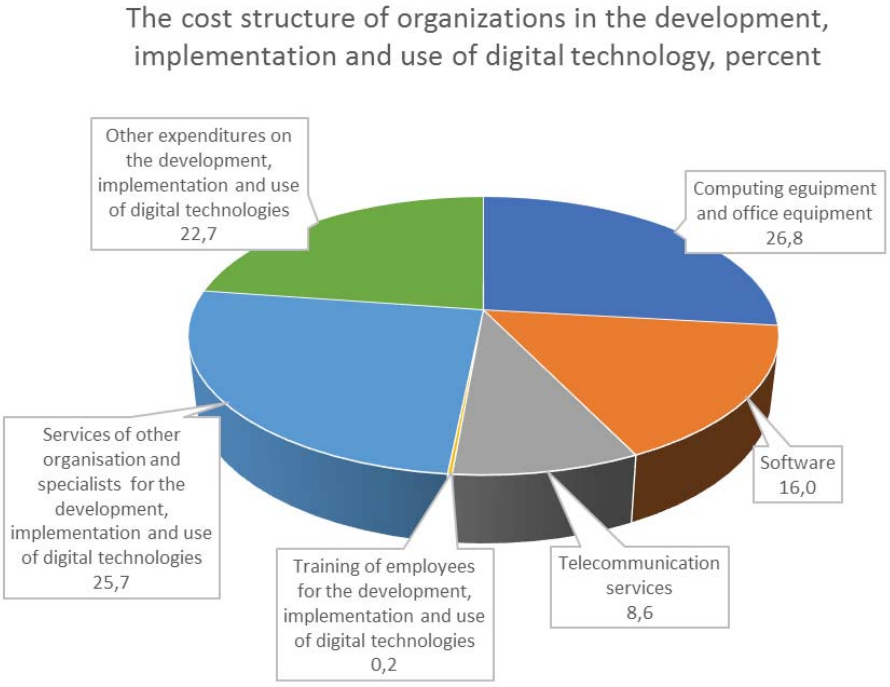


**FIGURE 2.** The cost structure of organizations in the development, implementation and use of digital technology in belarus in 2020

The virtualization of social and labor relations via using special online platforms, the main function of those is intermediary activities to agree on working conditions, the development of platform employment, electronic self-employment, including freelancing, telecommuting, crowd working influence the labor market in the conditions of the economy digitalization. A complete statistical measurement of these forms of employment in the textile and clothing sector has not yet been organized, but according to the available data and individual expert estimates, it can be concluded that they are widespread [9, 10, 11].

The system for predicting future skills has not yet been formed in textile and clothing sector, therefore textile and clothing enterprises need to increase the investment in human capital to acquire skills for digital transformation [12]. The development of ICT skills in textile and clothing enterprises will contribute to the early adoption of innovation and digital transformation in this sector.

## CONCLUSION

The Republic of Belarus has officially taken a course towards the digitalization of the economy. ICT skills play a key role in the development of innovation and digital transformation in the textile and clothing sector. The dynamics of the indicators given in the table demonstrates both the expansion of the use of ICT in the daily life of the population

and organizations, and the stable growth trends of the ICT sector in the economy. The access to the Internet is expanding for the population of all age groups and all levels of education in Belarus.

Wide access to the Internet of the population plays an important role in the digital transformation of the economy, since the population is not only the main consumer of goods and services, but also the labor force. To enable the challenge from mass production to build-on-demand with small lot size and diversified product mixes, a solution to support traditional industries to adopt smart manufacturing and empower digital transformation is needed.

The system for predicting future skills has not yet been formed in textile and clothing sector, therefore textile and clothing enterprises need to increase the investment in human capital to acquire skills for digital transformation. The development of ICT skills in textile and clothing enterprises will contribute to the early adoption of innovation and digital transformation in this sector.

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