DIGITAL TECHNOLOGIES AND LABOUR MARKET DEVELOPMENT IN THE REPUBLIC OF ARMENIA

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Abstract
Digitalization and pandemic affected labour markets worldwide reducing the number of job vacancies and increasing unemployment. Simultaneously, the surveys show that the adoption of new technologies accelerated the process of job openings for high-skilled workers. Job portal surveys that took place in Armenia showed that a considerable part of job vacancies is concentrated in information technologies sector of economy. The aim of this article is to evaluate the impact of digitalization on the labour market infrastructure and related human resources management functions in the Republic of Armenia (RA). Besides, authors have tried to reveal more common competences related to so called "soft skills" which are more important and required by the employers.
Some labour market indicators are considered in the article, as well as government policy in the IT sector which is a declared priority for the economic development.
Based on the analysis conclusions are made which allow decreasing quantitative and qualitative mismatch between the labour supply and demand. At the same time, the observation of job descriptions and job announcements in Armenia during research period has shown that some "soft skills" like communication skills, being a team player and team ethics, organizational skills, negotiation and analytical skills are the most required.
Keywords: digital technologies, labour market, human resources, unemployment, information technologies

1. INTRODUCTION

The COVID-19 pandemic and the global lockdown have significantly affected spheres in the field of human resource management such as labor organization, recruitment, adaptation, staff motivation, socio-psychological working conditions, mental health of workers, etc. The most dangerous consequences of Covid-19 pandemic affected labour markets worldwide causing an increase of the unemployment rates. According to the forecasts, the global unemployment in 2022 will reach 207mln. (ILO, 2022). At the same time, the pandemic accelerated the adoption of new technologies attracting high-skilled workers from the other sectors of economy.

The results of WEF survey showed that by 2025 85 million jobs can be automated while additional 97 million new jobs will be created due to changes in work distribution between humans and machines (World Economic Forum, Future of jobs, 2020). During the next five years, the reskilling of workers will be required as more that 80% of employers are intended to digitalize working processes with almost half of employees working remotely.

The technological changes promoted displacement of nearly 2.6 million jobs in the USA during the last decade. The list of displaced jobs included computer operators, administrative assistants, clerks, payroll clerks and others.

The latest transformations of labour market determine anticipating and analysis of the upcoming changes in the structure of labour demand, general and professional skills. Also digitalization heavily affected the labour market infrastructure including job recruitment and human resources development services which means that effective management instruments for human resources are demanded.

The aim of this article is to evaluate impact of digitalization on the labour market infrastructure and to reveal the main competences of human resources which are most important for employers in the Republic of Armenia (RA). The article will first consider some indicators of labour market, and then will concentrate on

development of information technologies and its impact on labour market and some human resources management issues. Based on the analysis, recommendations on labour market policy will be provided.

2. LITERATURE REVIEW

Nowadays, it is obvious that on one hand, the pandemic and its negative consequences, and on the other hand, rapid changes in the field of technology and science make representatives of both large organizations and SMEs think about how to improve the efficiency of managing their own human resources. In this context, it is also necessary to take into account modern realities, which can be characterized by a fashionable managerial abbreviation (VUCA - volatility, uncertainty, complexity, ambiguity) (Bennett and Lemoine, 2014). Digital economy is the source of competitiveness in the 21-st century. Knowledge-creating company is considered to be a successful one. As a result of the fourth digital revolution, capital and energy were substituted by information and knowledge.

The development of science and technology has a dual impact on the economy. On the one hand, all researchers agree that progress in scientific research and its application in the process of technological development leads to economic growth and improvement of the economic structure in the long run. At the same time, on the other hand, in the short term, such structural changes in the economy threaten unemployment and lead to a decline in well-being. Internationally, the share of jobs at risk from automation varies by country and region. In general, Northern Europe, North America and New Zealand are less at risk in terms of job automation, while countries in Eastern and Southern Europe face a much higher risk of job automation. According to research held by Chinoratsky and Corejova, countries with high unemployment rates have a higher risk of job automation. Vice versa, the lower the unemployment rate, the lower the risk of job automation (Chinoracky and Corejova, 2019).

However it is difficult to evaluate all the effects of digitalization on the labour market. The restructuring of labour markets leads to job polarization when the share of middle-skill jobs declines mainly because of reduced number of younger workers entering middle-skill jobs and high risk of automation of these jobs (OECD Employment Outlook 2020). It particularly relates to graduates from vocational education and training which means that VET systems should be improved along with changes in the skills demand. So, there is a relatively common view on expected shrinking of the middle-class.

Meanwhile a number of authors as Decryse question the emergence of digital globalized labour market with millions of digital slaves (Degryse, 2016). Their concerns relate to destruction of national labour markets with established regulations on social contributions, taxes and social rights. New types of digital employment can be flexible but at the same time can be stressful and without frontiers (Valsamis, 2016).

Different studies show that upcoming job losses depend on the development of ICT indicators, and relatively high level of digitalization leads to lower risk of threatening the jobs as in Nordic countries and the UK.

It is obvious that the further digitalization of the economy leads to new modern approaches to human resources management. A digital system for efficient HR management will improve the skills of the employees (Tawbe M., 2021).

From this point of view, human resources management (HRM) specialists need to innovate (Armstrong, 2014). Currently the electronic human resources management system (E-HRM) can include resource planning software, HR service centers, manager and employee portals and web applications (Vashishth M., 2014)). Moreover, new technologies improve performance of human resources management shifting from personnel management to strategic management (Yuvarag S., Suganthiya M, 2021).

And one of HRM innovation means is electronic recruitment which is effective and less costly compared to any other method of recruitment (Dessler G., 2020). However, the online recruitment has two limitations: first, it may exclude older applicants, and second, the Internet overloading.

According to the European Center for Development of Vocational Training, the online job vacancy (OJV) portals have rich potential for labour market and skills analysis (EU, 2019). Specifically. due to OJV data it is possible to reveal skills demand, adjust human resources policies.

According to the research organized by Deloitte, the key competences that lead to higher performance in all industries are firstly, collaboration skills, then creative and analytical expertise (2022 Global Marketing Trends, Deloitte insights, 2022).

At the same time, "soft skills" (communicative, leadership, conflict resolution, time management, decision making, etc.) are sometimes even more important than "hard skills" (professional skills and knowledge, IT literacy, foreign language proficiency, writing skills, etc.). This was justified even more than hundred years ago by the research organized in 1918 by Carnegie Foundation and Stanford Research Center. According to this research, 85% of success on workplace is ensured by well-developed soft skills, while only 15% of employee career is provided by "hard skills" or technical knowledge (National Soft Skills Association, 2015). Though huge development and rethinking of almost every area of people life has accrued during the last hundred years, soft skills are still very important.

If some authors state that soft skills are sometimes the same as interpersonal, transferrable or people skills (Vasanthakumari S., 2019), others consider soft skills as wider ones (Robles, M.M., 2012). According to a research held in 2012, the core 10 soft skills were integrity, communication, courtesy, responsibility, social skills, positive attitude, professionalism, flexibility, teamwork, and work ethic. Although in the above mentioned study all soft skills were vital for success, and the most important ones were communication, integrity and courtesy (Robles, M.M., 2012).

The next interesting trend is rethinking of leadership competences as one of the most important soft skills. One of the latest trends in HRM is the concept of a kinetic leader versus a potential leader. While the potential leader is more concentrated on planning and strategic decision making, kinetic leader is more dynamic, innovative, risky and agile. Kinetic leader inspires and motivates people, contributes to changes and growth on workplace, their enthusiasm can be transferred from one person to another, just like the kinetic energy in physics (Ryan Partners, 2015).

Simultaneously, the next important trend in the field of human resource management can be considered a concept of sustainability. Sustainable development of human resources can lead to a broader development of the organization and society. Simplified, sustainable development can be formulated as "the development of one which leads to the development of all". Investments in the development of human resources affect three aspects: individual, organizational and social. There should be distinguished two aspects of sustainability; first, it refers to the concept of management, second – to the result of management. Both aspects are mainly connected to the following spheres of HRM (Gutterman, 2020):

- Leadership and change management;
- Training and development of employees;
- Social responsibility and ethics;
- Teamwork and collaboration;
- Diversity on work place;
- Talent management.

3. METHODOLOGY AND RESEARCH METHODS

The main tasks of the research are related to the evaluation of the digitalization impact on the labour market, its infrastructure and related human resources management functions. The solution of these tasks is implemented through application of comparative and logical analysis. In order to study current structure of the job demand the survey of the online job services was conducted including all 11 career centers except for specialized banking and IT job services. The survey was conducted during January and February 2022. The list of online job services covered particularly careercenter.am, job.am, staff.am, myjob.am, jobup.am, hr.am, worknet.am, jobfinder.am, jobspider.am, list.am and full.am. In order to analyze common competences required by the employers, more than eight hundred job descriptions and job announcements have been observed. Taking into account that "soft skills" are getting more and more important and that they are sometimes more decisive for recruitment than the professional skills or qualifications authors mainly concentrated on "interpersonal" or "soft skills in this research. The observation of main employer

requirements allowed underlining fourteen most demanded skills" and top five skills which are the most important ones for most of recruiters.

At the same time, the secondary data were used from number of sources including National Statistical Committee of RA database and international reports (International Labour Organization, World Bank, etc.).

4. LABOUR MARKET ANALYSIS

According to ILO estimates (World Employment and Social Outlook – Trends: Executive Summary, 2021) in 2020 the employment decreased by 144 million as a result of pandemic worsening the situation at the global labour market related to the shortages of qualified labour force. Employment reduction also affected global labour income promoting poverty growth. According to the forecast of ILO, global unemployment rate is expected to be higher than in 2019 at least till 2023 (World Employment and Social Outlook – Trends, 2022).

As the sample survey by State Statistical Committee of the Republic of Armenia (RA) (Figure 1) shows the labour market situation in the Republic of Armenia also was affected by COVID-19 pandemic and war consequences. During the last years, the employment continued to decrease while the unemployment rate didn't improve essentially.
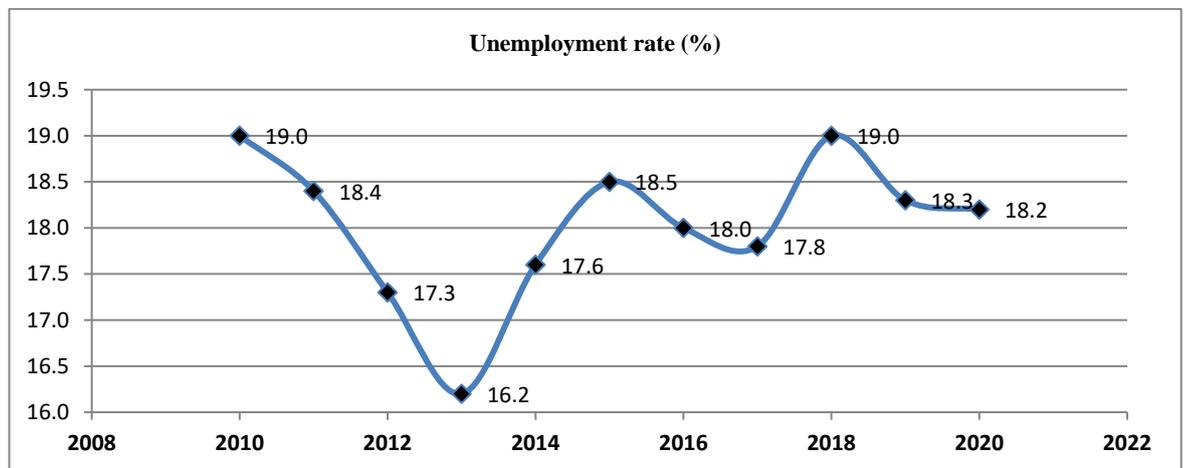

FIGURE1 - UNEMPLOYMENT RATE DYNAMICS IN 2010-2020 IN THE RA (% OF LABOUR FORCE)
Source: www.armstat.am

Data show that the unemployment in Armenia can be comparable to the indicators of Greece (16.3%), Spain (15.5%), Montenegro (17.9%) and North Macedonia (16.4%) while the average unemployment indicator in EU countries is more than twice lower (ec.europa.eu/Eurostat/). So, the reduction of youth and long-term unemployment in some EU countries remains a priority.
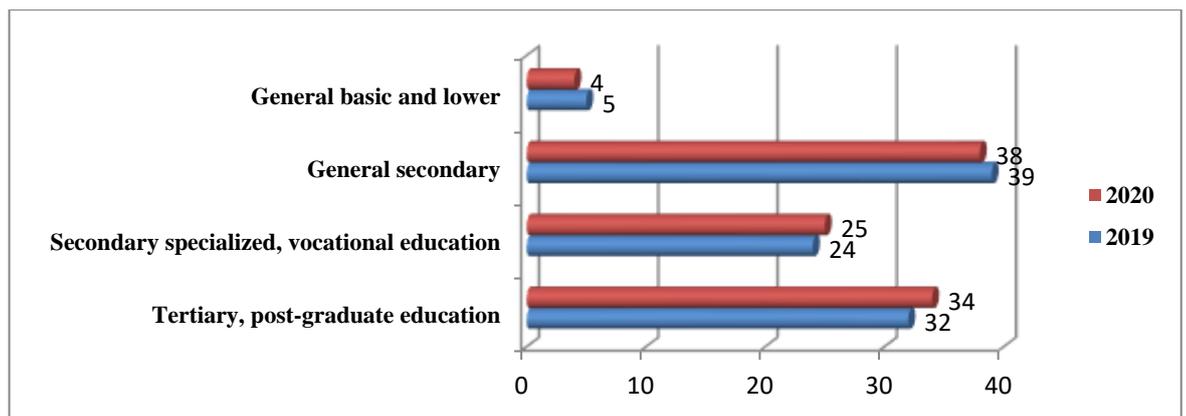

FIGURE 2 - EMPLOYED PERSONS BY THE LEVEL OF EDUCATION 2019-2020 (%)
Source: www.armstat.am

Despite decreasing employment rate by 1.1 percentage points, however, the structure of the employed by educational attainment has improved due to increased share of the employed with tertiary and post-graduate education and vocational education (Figure 2).

Since 2000 the government of the RA declared the information technologies as the priority sector for the economy development. Reforms and a number of measures are implemented and directed towards the improvement of the business and investment environment, tax privileges including zero percent profit tax rate and 10% income tax rate for the IT startup companies. As a result, the number of the employed in ICT sector during a decade (2008-2018) increased almost four times (EIF.am). IT growth rate significantly exceeds GDP growth rate (Melkumyan A., Grigoryan E., 2019). Simultaneously, Armenia can still be considered as a comparatively low-cost location for the outsourcing of software development (EIF report, 2018). Since 2010 also the www.e-gov.am electronic management portal was introduced to unify all the electronic management tools and databases used by government. According to the indicators shown in Table 1, Armenia has a better position in terms of establishing and operating business than OECD countries in average: starting business and its registration takes 4.5 days, cost of starting a business as a percentage of income per capita is 0.9% and total tax rate is only 18.5% of profit, while this indicator in OECD countries amounts more than 40 %.

TABLE 1. KEY INDICATORS TO ESTABLISH AND OPERATE BUSINESS IN ARMENIA (2018)

	Armenia	OECD countries
Starting and registering business (days)	4.5	8.6
Starting a business (cost - % of income per capita)	0.9	3.2
Total tax rate (% profit)	18.5	40.7

Source: Armenia ICT sector 2018, State of Industry report, EIF, 2018.

These figures indicate the competitiveness of Armenia in global markets and prove its attractiveness as a business starting destination. This is also true related to IT sphere companies which develop rapidly through the last decade. Most of Armenian IT companies (approximately 95%) are founded during the years of 2000 to 2018, but despite this their contribution to GDP is more than 5 % (Parsyan, 2021).

Above all the success of firms in the digital age depends on workers with ICT skills and problem solving skills which are vital during the work (OECD digital economy outlook, 2020).

The impact directions of digitalization on labour market and human resources management comprise:
- Online gig-economy and online recruitment, crowdsourcing, online training (E-learning);
- Knowledge management systems including electronic management and databases.

Online gig-economy is a virtual labour market for short-term job agreements between the employers and individual freelancers. It comprises business and delivery services, health care.

The online job services or portals are currently the most popular technologies for job placing in Armenia. They use recruitment software and artificial intelligence.

The survey of the online job services showed that almost one-third of all the jobs were provided by information technologies companies (Table 2).

Particularly, the demand for software developers makes up the main part of IT job demand. However, there is also a a growing trend for high-skilled specialists in quality assurance (QA), IT project management and UI/UX graphic design.

The information technologies sector, finance and healthcare are among the most common globally oriented sectors of economy.

In the structure of labour demand the comparatively high shares of jobs are registered in services (25.4%) including sales, logistics and transportation, restaurants and food service. Simultaneously, the finances, banking and accounting field shows stability in jobs reaching almost 20% of the total number of registered job positions.

It is worth noting the increasing role of marketing, advertising and public relations as well as health services and human resources management in restoring and development of the economy.

TABLE 2. STRUCTURE OF JOBS BY MAIN FIELDS AND JOB CENTERS (JANUARY 2022, % OF TOTAL)

	IT	Finances	Marketing	Service	Health	HRM	total
careercent.am	36,2	37,9	17,2	0	5,2	3,4	100
job.am	23,8	14,1	28,2	21,0	3,3	9,7	100
staff.am	39,8	25,4	11,2	19,0	0	4,6	100
myjob.am	75,7	12,1	7,5	0	0	4,7	100
HR.am	36,1	12,4	12,4	30,2	7,1	1,8	100
worknet.am	25,2	18,5	18,4	29,3	0,0	8,7	100
jobspider.am	3,3	38,3	4,9	49,2	4,4	0	100
jobfinder.am	18,6	61,4	10,0	2,9	0,0	7,1	100
full.am	26,7	26,7	27,5	0,0	19,1	0	100
list.am	18,1	0,0	15,9	50,7	0,0	15,2	100
Total (% of all the job vacancies by main fields)	29,0	19,9	16,5	25,4	2,3	6,9	100

Source: Data are based on the results of online job centers survey.

Along with online job portals, the other sources of information are available as public employment services (PES). The analysis shows that currently the role of public employment services portal in Armenia decreased compared to other online job portals especially among young and middle-aged people. The reason is the structure of job vacancies where the low-skilled jobs prevail. For instance, according to the research of job vacancies by Public employment service in 2019, the overwhelming majority of jobs are concentrated in services, but also comprise workers including non-qualified workers (www.employment.am, 2019).

The comparative analysis during last decade reveals dramatically decreased role of newspapers in the vacancy market.   The issue is that such newspapers mainly recommended low-skilled jobs (more than 90%) which are not attractive for qualified young professionals (Unemployment and wage inequality in RA, Amberd, 2014).

5. ANALYSIS OF COMPETENCES IN LABOUR MARKET

It should be noted that in the future, both the quality of work and life will change, combining remote and full-time forms of work, adapting working conditions to modern economic, technological and social requirements (Przytuła et al., 2020). The employers now prefer multi-skilled employees with general, professional and computer skills. Under such conditions, a revision of key competencies and requirements for personnel will be vital. This will be a result of either the digitalization and globalization, or the pandemic and current economic issues. Interpersonal communication skills and so-called "soft skills" will become more important and significant (Rockwood, 2021). The analysis of main requirements that are important for most employers in the Republic of Armenia allowed to highlight the followings:

- Data analysis, analytical skills;
- Presentation skills;
- Communication and negotiation skills;
- Being a team player, team ethics;
- Conflict management;
- Client orientation;
- Sense of responsibility;
- Creativity;
- Stress management and multitasking;
- Organizational skills and time management;
- Problem solving and decision making skills.

At the same time, top five most demanded skills are: communication skills, being a team player and team ethics, organizational skills, negotiation skills and analytical skills. Future skills will also cover critical thinking and analysis, technology use and development, self-management and leadership.

Along with „hard skills", „soft skills" should receive appropriate attention and should take their rightful place in training programs for specialists at various levels. In this regard, cooperation between universities and other educational institutions and employers is of particular importance.

6. CONCLUSIONS

According to a number of international reports as World Bank report (2020) during the coming decades the structure of labour demand will be dramatically changed due to use of new technologies including artificial intelligence and robotics, 3D printing. There are estimates on even 50% reduction of current occupations which will be replaced by new ones closely related to high technologies. These expected changes may be threatful especially for the young workers and low-skilled workers. However, actually the changes can reduce expenditures related to production and services promoting development of low and lower middle-incomes countries.

From this point of view it is important to analyze changes in the structure of labour demand during the last time trying to reveal necessary changes in the structure of career competences in the nearest future. As the Joint Employment Report by EC (Joint Employment Report 2018) shows the gap in employment rates between low-skilled and high-skilled employees reaches more than 30 percentage points.

It is doubtless that high-skilled jobs are stable while low and middle-skilled jobs are more exposed to reduction. So, highly-skilled young employees with higher education are much more competitive at the labour market.

The impact of COVID-19 on the labour demand can be observed through some changes in the labour demand regarding particularly to soft skills. Such skills as labour flexibility, adaptation to changes and detail-oriented independent thinking are now higher appreciated by employers (Labour market of the RA, report, staff.am 2022). Besides, the virtual labour market recorded further growth. According to some estimates digital labour platforms in 2019 globally generated at least 52 billion USD and 70% of it was concentrated in the USA and China (World Employment and Social Outlook - Trends 2021, ILO, p.3).

Significant challenges for labour market and human resource management after COVID-19 are and will be:

- Changes in both the workplace and the content of the work;
- Application of more advanced technologies for recruitment, selection and personnel;
- Revision of the critical staff benefits with a focus on mechanisms to improve mental health and well-being;
- Revision of the competencies of managers and employees through the training of personnel.

Despite high share of IT job vacancies there is a mismatch between the labour supply and demand.

The measures to stabilize labour market and avoid further worsening of the situation can include:
- Acceleration of the reskilling and development digitalization;
- Increasing efficiency of the online recruitment portals;
- Promoting remote work;
- Promoting an inclusive digital society, including out of labour force people, women, elderly and disabled persons;
- increasing the effectiveness of implemented active labour market programmes;
- strengthening cluster relationships between the companies and universities, colleges;
- Vocational education and training (VET) systems adaptation to technological changes.

The current labour market trends analysis has revealed that further development of human resources in IT sphere, professional growth and career satisfaction of employees, as a rule, will increase the efficiency and

labor productivity. Hence, the development of human resources should be one of the priorities of the organization.

As a conclusion, it can be noted that all the main trends in the field of labour market and human resource management are due to the following factors:

- Development of modern information technologies;
- Ubiquitous application of innovation and creativity;
- Global health and safety issues;
- Rethinking the basic requirements and competencies for the workforce;
- Application of the concept of sustainable development;
- Closer collaboration between employers, educational institutions and public authorities within clusters and ecosystems.

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