Araştırma Makalesi

Effects of Digitalization on Labour Markets: Digital Education

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Abstract
This study aims to explore the impact of digitalization on the education labor market. Additionally, it seeks to identify the skills and qualifications that individuals aiming to become education specialists or managers in the private sector should possess, and to foresee the future of the education sector. A qualitative method was employed in the research. Semi-structured interviews were conducted with 20 individuals working as education specialists or managers in the private sector. Content analysis was used to analyze the data. The results of the study indicate that digitalization has led to an increase in the competency levels of educators, their professional development, the emergence of new jobs, and the disappearance of some professions. It was also found that educators who lack digital competencies are at risk of unemployment. It is recommended that educators develop their educational content, methods, and competencies in a way that aligns with digital transformation.

Keywords: Digitalization, digital education, digital educators and trainers, labor markets, competence
JEL Classification Codes: J100: J10

Dijitalleşmenin Emek Piyasalarına Etkileri: Dijital Eğitim

Öz
Bu çalışma dijitalleşmenin eğitim emek piyasalarına etkilerini ortaya koymak amacıyla yapılmıştır. Aynı zamanda özel sektörde eğitim uzmanı veya yöneticisi olmayı hedefleyen bireylerin sahip olması gereken nitelikleri ortaya koymak ve eğitim sektörünün geleceğini öngörmek amaçlanmıştır. Araştırmada nitel yöntem kullanılmıştır. Özel sektörde eğitim uzmanı veya yöneticisi olarak çalışan 20 kişi ile yarı yapılandırılmış görüşme yapılmıştır. Verilerin analizinde içerik analizi yöntemi kullanılmıştır. Araştırmanın sonucunda dijitalleşmenin eğitmenlerin yetkinlik seviyelerinin artmasına, kendilerini geliştirmelerine, yeni işlerin ortaya çıkmasına, bazı mesleklerin ortadan kalkmasına neden olduğu tespit edilmiştir. Eğitmenlerin dijital yetkinliklere uyum sağlamadığında işsiz kalma ihtimali de tespit edilmiştir. Eğitmenlerin dijital dönüşüme ayak uyduracak şekilde eğitim içeriklerini, yöntemlerini, kendi yetkinliklerini bu sürece uyum sağlayacak şekilde geliştirmeleri önerilebilir.

Anahtar kelimeler: Dijitalleşme, dijital eğitim, dijital eğitimciler ve eğitmenler, emek piyasaları, yetkinlik
JEL Sınıflandırma Kodları: J100: J10

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1. Introduction

Rapid innovations in technological developments, especially Information and Communication Technology (ICT), the ICT revolution in the early 1990s, and the rapid spread and adoption of the Internet brought about a transformation in economies. Since the beginning of the 2000s, the use of devices in both the internet and information processing technologies has resulted in a number of results for businesses and individuals. In the last decade, the availability of the cloud has facilitated infrastructure and computing services, resulting in the growth of digital platforms in almost all industries (ILO, 2021a, p.34).

However, focusing on the dynamic future of the digitalized economy is expected to increase the success of companies. The development of human resources in this direction and its future applicability are likely to make a difference in terms of organizations. At the same time, how it prepares its employees for the digitalization trend is another essential factor in making this difference (Stein, 2015, p.2). Also, the digitizing economy is the emergence of new workforce risks and conflicts. The increase in differentiation and flexibility in the labor market, the emergence of new types of employment, labor relations, and labor recruitment methods result from this relationship (Fedorova, Koropets, and Gatti, 2019, p.2).

With digitalization shaping the rapid evolution of society and the integration of technological processes and artificial intelligence, the emergence of new professions has become a focal point. The social and technical skills that employees must possess are also evolving. Both educational institutions and organizations need to prepare the workforce to adapt to these changes. Furthermore, employees and employers need to embrace these changes and quickly adapt to acquire new knowledge, competencies, and qualifications. It is anticipated that individuals of working age will need to engage in lifelong learning, enhance their qualifications, and acquire new knowledge (Alexandrova and Glukhov, 2021, p.3).

This study was conducted to shed light on the impact of digitalization on labor markets. The research involved engaging in semi-structured interviews with twenty education specialists. The findings align with similar results in the existing literature on the effects of digitalization on labor markets.

While studies related to digitalization in education have been conducted with teachers, there is a gap in the literature regarding specialists or managers in expert or managerial positions working in training departments of companies or training consultancy firms in the private sector. This study aimed to highlight the qualifications necessary for individuals aspiring to be training specialists or managers in the private sector and to anticipate the future of the education sector. The theoretical contribution is to be one of the pioneering studies revealing the impact of digitalization on training activities in the private sector. The practical

contribution is to provide insights into the private sector training market and to make predictions for adaptations to future training activities.

2. Literature Review

2.1. Effects of Digitalization on Working Life

Digital platforms, whose importance is increasing with digital transformation, have also brought about changes in working models. As a matter of fact, in light of all these developments, flexible working models have gained importance. The COVID-19 process we live in has especially emphasized the importance of digitalization and caused its effects to spread rapidly.

During the COVID-19 pandemic, countries implemented strict containment measures. Curfews or measures to restrict people's non-essential economic and social activities can be evaluated in this context. On the other hand, public employment services started working from home, reducing their staff to protect their staff and customers. At the same time, digital technologies have become an essential tool in ensuring service continuity (ILO, 2020, p.1).

Digital technologies have significantly blurred the lines between physical and virtual distances in education. This necessitates the use of more scientific methods by teachers to address the diverse needs of their students, whether they are physically present in the classroom or learning remotely (Rosak-Szyrocka, 2024, p.54).

On the other hand, digitization has once again revealed its importance in school education with COVID-19. With COVID-19, school buildings worldwide have been forced to close, and education has been digitalized. COVID-19 has initiated an unprecedented acceleration in this context. Suddenly, the ongoing digital transformation has accelerated. This brought new challenges with it. In order to overcome these difficulties, there have been some developments in educational technology (Andersson and Mattsson, 2021, p.2).

Although digital transformation offers new opportunities, opportunities pose many challenges, especially in the labor market, requiring new technologies. Just as how and where people work changes, so do the qualifications and competencies they need to have. In addition, these technologies bring unequal working models and opportunities (Danielle, 2021, p.2).

Another effect of technological developments in labor markets is that they change doing business. As a matter of fact, full-time jobs in factories have become non-full-time jobs that can be done wherever technology allows, together with technological developments. Thanks to flexible working types, remote (from home) working, platform working, and the possibility of transferring technological

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information and communication, the job can be done outside the workplace thanks to the opportunity to work from a wide variety of places (Singapore Ministry of Manpower, 2021, p.1).

Organization and employee relations also change with ever-evolving technology. Disruptive changes in business models also have profound effects on the global labor market. The massive transformation in technological tools is impacting global industries significantly in job creation, job switching, increasing employee productivity, and growing the qualification gap. In this context, employment opportunities, qualification levels, and recruitment models needed in labor markets should be evaluated (Chopra and Bhilare, 2020, p.15).

Indeed, it is aimed at enabling the disadvantaged groups who cannot be included in the labor market to participate in the labor market with flexible working arrangements made possible by technological developments. In this context, with flexible working models, workers can participate in labor markets independently of time and place. Thanks to online talent platforms, a virtual market has emerged. The Internet has allowed more businesses to meet competitive suppliers around the global supply chain, enabling workers to take advantage of remote working and self-employment without leaving home. Work that used to be a physical task has now become a qualification; those with brainpower are more sought after than those with mechanical or physical ability (Singapore Ministry of Manpower, 2021, p.2).

With the rapid advancements in technology, some jobs are disappearing while new ones are emerging. The significance of robots, artificial intelligence, and digital transformation is growing in the business world, sparking concerns for those in specific roles. According to the OECD, 14% of jobs are at high risk of automation, and 32% face substantial changes. Undeniably, high-level mental qualifications are becoming more valuable in light of automation (OECD, 2019, p.3). Similarly, in Chile, automation presents a significant risk to semi-skilled or unskilled jobs. 69% of the workforce is expected to experience significant changes in their roles due to digital transformation, with some jobs potentially disappearing altogether (Didier, 2021, p.19). This effect can also bring about a decrease in wages and an increase in income equality (Zarifhonarvar, 2024, p.113).

In parallel with technological progress, the required skill levels for both traditional and modern occupations have undoubtedly evolved. The overall technical expertise needed to perform a specific job is on the rise. New quality standards and processes continually surface in nearly every task, adding more complexity (Lambert, 2016, p.13). On the other hand, when the countries' adaptation to technological advancements in the labour market is examined a clear disparity between the countries can be seen. Finland stands out as a leader in terms of the digital transformation in the European region, boasting the most skilled digital workforce. However, Romania, Bulgaria and Poland require significant development in this area (Crisan etc., 2023, p.16).

2.2. Digital Education and Competencies

The transformation of the labor market through digitization is reshaping the nature of work and the qualifications required for educators seeking employment. In addition to mastering technology, the ability to adapt to changing circumstances will be essential for job seekers in the future. Those without these skills may struggle to find employment, particularly in the digitally transformed education sector. Technological advancements are automating routine tasks in various industries, leading to the need to redefine existing and future roles. It is projected that the rate of technology-driven skill replacement will double over the next decade (Curnow, 2021, p.3). Additionally, over the next decade, digitalization is expected to increase profitability in connection with advanced robotic solutions and artificial intelligence. The use of robots is expected to not only surge in factories but also explode across various aspects of life (Hetmańczyk, 2023, p.9).

The management and utilization of artificial intelligence (AI), automation, and robotics will significantly influence the nature of work, the tasks people perform, and the skills they require. The direct and indirect impacts of technological change will inevitably transform a substantial portion of all jobs (ILO, 109, 2021b, p.23). The adoption of AI-based technologies in education, particularly in developing economies, has changed the demands within the sector. It is crucial to prioritize tailored digital competency programs (Francia et al., 2019, p.586). Nevertheless, ethical considerations are of utmost importance. Educators must have a solid grasp of AI principles and ensure the use of accurate data for ethical functioning. Effective control measures are vital to mitigate potential risks of bias and inequality (El-Awad, 2022, p.57).

In the rapidly digitizing education sector, the concept of digital literacy takes center stage. Terms like digital writing, digital skills, and IT proficiency are often used alongside them (McGarr & Mcdonagh, 2019, p.6). Digital literacy itself refers to an individual's ability to effectively use information and communication technologies to learn, perform complex tasks, and engage productively in digital environments (Lee, 2014, p.1). However, it goes beyond simply using computers - it necessitates the development of critical thinking, ethical values, and responsible online behavior (Anthonysamy, 2020, p. 134).

Beyond digital literacy, educators also require digital proficiency. This encompasses the knowledge and skills to leverage information technologies for personal and professional goals. It's important to remember that digital competencies extend beyond technical expertise, incorporating cognitive, social, and emotional aspects. Effective communication, critical evaluation of information, and media comprehension are all key (United Nations, 2018, p.4).

Another perspective on digital proficiency highlights its safe and responsible use for acquiring knowledge and developing professional skills. This approach

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underscores the importance of high-level critical thinking to manage information and communication effectively (Bashkireva et al., 2020, p. 4).

While research focused on equipping students with digital skills is prevalent, a gap exists regarding the necessary qualifications for educators in this evolving landscape. However, it's crucial for teachers working in digital environments to possess the required digital skills for both literacy education and seamless integration into their teaching processes. While expertise levels might vary across professions, teachers aiming to impart digital skills to students should ideally be proficient themselves.

The digital revolution is transforming the landscape of vocational education, demanding a new set of qualifications for future teachers. They must be armed with pedagogical expertise in challenging fields, deep content knowledge, and proficiency in educational technology tools while adhering to principles of honesty and discipline (Wagiran, 2019, p.395). This digital revolution, particularly as a transformative force in education, brings challenges that need to be addressed to ensure fair and effective implementation, such as unequal access to technology and the need for substantial teacher training in digital pedagogy (Bartulis, 2024, p. 2).

Thus for educators in digital schools, institutional infrastructure becomes critical. These demands foster development through dedicated resources for both the institution and its staff (Pettersson, 2018). Furthermore, promoting digital literacy within schools requires a multi-pronged approach, encompassing the creation of an IT strategy, staff development programs, enhancement of teaching tools, and comprehensive support systems (technical, professional, and moral) (UNESCO, 2011, p.7).

In the context of a globalized and increasingly digital world, possessing the right qualifications becomes pivotal for inclusive labor markets, driving innovation, productivity, and economic growth. This encompasses diverse skill sets, ranging from IT expertise and technical proficiencies to digital literacy for both workers and citizens, alongside crucial "social" IT skills like leadership, communication, and teamwork (OECD, 2016, p.1).

Investing in human capital is paramount to reaping the benefits of the digital world. Three essential qualifications are rising in demand: advanced cognitive skills for complex problem-solving, socio-behavioral skills for effective collaboration, and a high degree of adaptability. Equipping individuals with these skills requires a strong foundation in human capital development and a commitment to lifelong learning (World Development Report, 2019, p.3).

3. Methodology

This research was conducted using qualitative methods, which involve the collection and analysis of data related to the subject of study. It encompasses various empirical materials such as case studies, personal experiences, introspection, life histories, interviews, and observational, historical, interactive, and visual texts. These materials describe the routine and challenging moments and meanings in individuals' lives (Aspers and Corte, 2019, p.141).

The methodology employed in this study was phenomenological research design. Phenomenological research focuses on how individuals perceive the world by examining their behavior, statements, and actions (Umanailo, 2019, p.1). Verbal descriptions, expressions, and written texts are utilized to uncover individuals' perceptions and interpretations of the phenomenon (Kocabıyık, 2015, p.56).

3.1. Participants

The research conducted semi-structured interviews with twenty people working as education specialists and expert - managers in the field of education. Participants were selected by purposive sampling. While developing purposeful sampling, researchers use their unique knowledge or expertise in relation to a number of groups to choose subjects that represent this universe (Berg, 2021, p.15).

The sample group for the research was established using the convenient sampling method. Participants are individuals working as education specialists/managers in the human resources department of national or international companies or education consulting firms. Individuals working in the education sector, at least at the expert level, were interviewed.

3.2. Data Collection Tools

Qualitative research methods typically include interviews and observations, including case studies, surveys, and historical and document analysis. Qualitative research is the overarching term used to refer to theoretical perspective designs (Haradhan, 2018, p.23).

An interview is a set of techniques for generating data from individuals and groups using structured, semi-structured, or unstructured questionnaires. Generally, semi- or unstructured, open-ended, informal interviewing is preferred to provide greater flexibility and responsiveness to emerging themes for both interviewer and respondent (Jackson, Drummond, and Camara, 2007, p.22). A semi-structured interview form created by the researcher was used in the research.

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3.3. Data Analysis

The semi-structured interview form was presented for expert opinion, and after the necessary revisions, it was delivered to the participants via Google Forms, and people were also interviewed. There are five questions in the question form. The questions were answered between February 1 and February 28, 2022.

The data were analyzed using the content analysis method. Content analysis is a method based on collecting and categorizing similar data and expressions under the heading of concepts and themes and interpreting them in a way that readers can understand (Selçuk and Palancı, 2014, p.433).

Content analysis consists of the processes of coding the data obtained through interviews, observations, or documents, dividing them into categories and themes, and defining and interpreting the data. The acquired data was analyzed through the following steps: coding, creating categories and themes from the codes, organizing categories and themes, and identifying and interpreting findings (Eysenbach and Kohler, 2002, p.573).

Coding consistency with experts was ensured for the reliability of the study. In addition, interview questions are subject to experts' opinions.

4. Findings

The table in this study presents the characteristics of the participants. It indicates that 95% of the participants are employed in national organizations, while 5% work in international organizations. In terms of seniority, 85% of the participants have over 16 years of experience, 5% have 11-15 years of experience, and 10% have 1-10 years of experience. Furthermore, 60% of the participants are employed in organizations with 301 or more employees, 20% work in organizations with 101-300 employees, and 20% work in organizations with 10-100 employees.

Table 1: Characteristics of the Participants

Participants	Demographic Characteristic	Total		
			F	%
Company Structure	National Company	19		95
	International Company	1	20	5
Experience Duration	1-10 years	2		10
	11-15 years	1	20	5
	16 years and above	17		85
Number of Employees in the Company	10-100	4		20
	101-300	4	20	20
	301 and above	12		60

Source(s): Prepared by the Author

Table 2: The Effects of Digitalization on the Competency Levels of Trainers

Category	Theme	Total		
		F		
Use of Technology in Education	Ability to adapt to web technologies	4		
	Ability to develop educational content in accordance with remote synchronization	1	5	33
	Developing effective communication techniques	3		
Self Development	Keeping the interest alive in online education	3		
	Being energetic	1		
	Being a researcher	2	10	67
	Developing themselves / increasing their competencies	1		

Source(s): Prepared by the Author

Participants were asked about the effects of digitalization on the competence level of instructors, and their responses are presented in Table 2. The research participants were asked to provide insights on the impact of digitalization on the competence level of trainers. The answers were categorized into two groups. In the first category, which was technology use in education, 33% of the participants indicated that they were able to adapt to web technologies and create educational content that aligns with remote synchronization. Meanwhile, 67% of the participants mentioned that they were capable of developing effective communication techniques, maintaining their interest in online education, staying energetic, enhancing their competence, and engaging in self-development as well as research. The direct quotations of their responses to the question "What are the effects of digitalization on the competence level of trainers?" were as follows:

K2: There is a need to increase their knowledge of technical infrastructure; they also need to improve their practical communication competencies to keep the participant's attention on the subject and encourage participation.

K9: Since the trainer will have to compete in the digital environment, the level of qualification will improve.

K12: He needs to renew himself and have the competence to explain the subject's essence. It should redesign education in a way that tells a story or concrete examples in a way that preserves interest and interaction, even if it is remotely synchronous.

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Table 3: Effects of Digitalization in Education on Labor Markets

Category	Theme		Total	
			F	%
Wage effect	Higher pay	2	2	20
Impact on labor supply	Unemployment of those who do not develop themselves	2	9	40
	Increasing competencies	6		
	An increasing number of instructors	1		
Impact on the labor market	The emergence of new business	4	9	40
	The emergence of unmanned work	1		
	The disappearance of some professions	2		
	Workforce contraction	1		
	Lowering the age to start working life	1		

Source(s): Prepared by the Author

The participants were asked about the impact of digitalization in education on labor markets, and their responses are outlined in Table 3. The participants' answers to the question were categorized as follows: 20% indicated an increase in wages, 40% mentioned the impact on labor supply, including unemployment, skill enhancement, and an increase in trainers, and another 40% highlighted the emergence of new jobs, unmanned jobs, the disappearance of certain occupations, workforce reduction, and a lower age for entering the job market as effects on the labor market. " What are the effects of digitalization in education on labor markets?" The answers they gave to the question were expressed as follows by making direct quotations;

K5: Training started to be given from different channels without any cost; the number of LinkedIn, Instagram teams, and Zoom instructors suddenly increased, and competition brought the training prices down.

K11: The human population will decrease. Once the AI that writes code starts to do it better than humans (which it did), humans won't be needed either. AI will write it and produce it. Skynet will happen.

K18: The cost advantage causes the labor force to shrink.

Table 4: The Future of Digital Education

Category	Theme	Total		
			F	%
Transformation in education	Continue at great speed	12		
	Metaverse classes	4		
	The current situation will continue	2	21	80
	All training is online, except for non-compulsory courses.	2		
	Changing all learning habits	1		
Development of possibilities	Increasing the digital competencies of educators	1		
	Developing better quality methods and solutions	1	4	20
	Providing more educational opportunities	2		

Source(s): Prepared by the Author

Participants were asked about their predictions regarding digital education. Their responses are summarized in Table 4, which evaluates their answers in three categories. In the first category, 80% of the participants predicted that the transformation of education would continue rapidly, with the emergence of metaverse classes and a continuation of the current situation where almost all training is conducted online, except for non-compulsory courses. In the second category, 20% of the participants suggested that educators should enhance their digital competencies, develop higher-quality methods and solutions, and provide more training opportunities to improve educational outcomes. " What are your predictions of digital education?"

The answers they gave to the question were expressed as follows by making direct quotations;

K3: Although we think that face-to-face education will take up more percentage in general. I believe that the e-learning style will accelerate combining with face-to-face teaching.

K13: Digital education will become widespread with the development of new technologies and will draw a brand new roadmap to education life. It will always be a part of our lives for our educational needs, which will start from the pre-school period and will continue throughout life.

K18: It can provide the opportunity to receive more education positively.

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Table 5: The Effect of Covid -19 on Digitalization in Education

Category	Theme		Total	
			F	%
Positive Effects	Forced conversion	7		
	Obligation of people to adapt	1		
	The increasing importance and need for digitalization	6	25	93
	Questioning old-style methods	1		
	Acceleration	10		
Adverse Effects	The entry of digitalization into our lives without assimilation	1		
	The emergence of inequality in education	1	2	7

Source(s): Prepared by the Author

Participants were asked about the impact of COVID-19 on the digitization of education. Their responses are detailed in Table 5. Within Table 5, the participants' responses to the question "What is the effect of COVID-19 on digitalization in education?" were categorized. 93% of participants provided answers in the positive effects category, citing mandatory transformation, the necessity for people to adapt, the growing significance and demand for digitalization, as well as the questioning and acceleration of traditional methods. In the adverse effects category, 7% of participants highlighted that digitalization is entering our lives without proper assimilation and leading to inequalities in education. Some participants participating in the research were asked, "What is the effect of COVID-19 on digitalization in education?"

 The answers they gave to the question were expressed as follows by making direct quotations;

K2: While e-learning applications previously appealed to a relatively limited audience, a much faster transition was experienced in-classroom training with the pandemic, and the training was moved to the digital environment with the necessity of social distance rules. Their content is getting more prosperous, and digitalization is increasing.

K3: It has accelerated these processes on the basis of companies. Maybe reduce the next 5-10 years to 1-2 years.

K14: COVID-19 has inevitably directed all educational institutions to online platforms. This showed that under today's conditions, disruption of education is not

necessary within the current technological possibilities. All these situations have brought to light how vital digitalization in education is in today's conditions.

Table 6: Instructor Competencies of the Future

Category	Theme	Total		
			F	%
Technological competencies	Digitally educated	2		
	Being technology literate	3		
	Ability to write code	1	8	23
	Technical competence	2		
	Innovative	1		
	Researcher	1		
Personal competencies	Open to learning	5		
	Collaborative	2		
	Analytical - able to think in three dimensions	2		
	Develop themselves	6	27	77
	Focusing	2		
	Quick decision making	1		
	Open to innovation	2		
	Communication ability	1		
	Flexibility to adapt quickly	3		
	Active listening	1		

Source(s): Prepared by the Author

Participants were questioned about the desired trainer competencies for the future, and their responses are outlined in Table 6. The study categorized the responses into two groups. In terms of technological competencies, 23% of the participants highlighted the importance of being digitally educated, technology literate, and having skills such as coding and technical proficiency. The remaining 77% emphasized the significance of personal competencies, including qualities such as being an innovative researcher, open to learning, collaborative, and possessing analytical and three-dimensional thinking skills, as well as self-improvement, fast and effective decision-making, openness to innovation, strong communication abilities, flexibility, adaptability, and active listening. Additionally, some participants directly asked, "How should the trainers of the future be?" and their responses were documented as direct quotations.

K4: Instructors will need to be more tech literate. They will need to research new applications and incorporate them into their learning process. All trainers will need to develop themselves in a versatile way.

K5: being open to learning, accepting that the digital world is a part of life, constantly renewing oneself.

K10: By creating an employee profile that is open to learning and development and has easy and cheap access to information, one should acquire the ability to follow and adapt to changes and developments by creating a constant learning employee profile.

5. Discussion

The effects of digitization on labor markets are still uncertain, and there is much debate over the potential job losses resulting from new technologies. There is a possibility of polarization in the labor market and scenarios where qualifications need to be upgraded. However, the specific changes that will take place depend on various factors. In the medium term, it is likely that digital technologies will be limited in their spread and that their effects will start to become apparent (Kreinsen, 2016, p.10)

However, it is undeniable that digital technology will encourage change in the workforce. On the other hand, while qualified labor continues to be sought after in labor markets, there is also the possibility of less skilled jobs transitioning to automation (Larsson & Lindfred, 2020, p.290). The rise of robots in labor markets will lead to increased labor productivity, the creation of new job types, higher wages, and some jobs becoming more satisfying (Chinoracký & Čorejová, 2019, p.1000).

The education specialists and managers participating in the research expressed the impact of digitalization on educators' competencies as the ability to adapt to web technologies, develop educational content suitable for remote synchronization, enhance effective communication techniques, keep engagement high in online education, be energetic, continually develop themselves and increase their competencies, and be inquisitive. A quantitative analysis focusing particularly on educators in a study on the impact of digitalization in education revealed that demographic variables significantly influence the degree of adaptation to digitalization initiatives. It was found that educators with a younger demographic showed a high level of adaptation to digitalization processes (Radmard & Atik, 2019, p. 1357). Furthermore, Dyka et al.'s (2023, p. 202) study indicated that the digitalization of education primarily affects educators' communicative and methodological competencies, with a less pronounced impact on the development of teachers' creativity and critical thinking.

Education specialists and managers described the impacts of digitalization on labor markets in education as resulting in higher wages, unemployment for those unable to develop themselves, increased competencies, a rise in the number of educators, the emergence of new jobs, the introduction of jobs without human involvement, the disappearance of some professions, a contraction in the labor force, and a decrease in the age at which people enter the workforce.

Although there are not many studies on the effects of digitization on education labor markets, it can be said that digitization presents not only significant opportunities for economic growth and improving working conditions but also brings new skills. While cognitive skills continue to be crucial, there are signs of a rapid increase in non-cognitive skills (Morandini, 2020, p.2). The education specialists and managers participating in the research mostly shared the effects of digitization on labor markets as increases in competencies, the creation of new jobs, and the disappearance of some professions. In a study on the impact of digital technologies on education, it was found that digitization increases teachers' digital competence. A survey of the use of digital technologies in education revealed a positive impact on teachers' basic IT skills (Timotheou, Miliou, Dimitriadis, Sobrino, Giannoutsou, Cachia, Monés, and Ioannou, 2022, p.6703). Karaçay and Alpkan (2019, p.345) conducted a study on the impact of digital transformation on labor markets. They found that the rise of automation-based systems has increased the demand for workers with high-level innovative skills, while digital systems have displaced workers in routine-based professions. They argue that certain occupations have become obsolete, giving way to the emergence of new jobs and careers in advanced technology. On the other hand, another impact of digitization on labor markets is the increase in artificial intelligence. The possibility of artificial intelligence replacing teachers should also be considered, as it provides some opportunities, such as personalized learning, learning assistance, online testing, test evaluation programs, parent-teacher communication, teaching and troubleshooting robots, out-of-class teaching, easy administrative tasks, and easy access to study materials (Rajest, Regin, Ajitha, Paramasivan, Christabel, and Shynu, 2023, p.8).

Participants expressed their predictions for the future of digital education as follows: it will continue to progress rapidly, with the emergence of metaverse classrooms, the current situation will persist, all education except for non-mandatory courses will be conducted online, educators will increase their digital competencies, higher-quality methods and solutions will be developed, and more educational opportunities will be provided.

Similarly, the education specialists and managers participating in the research have expressed that the future of digital education will continue to evolve rapidly, with the emergence of metaverse classrooms, all education except for non-compulsory courses being online, changing all learning habits, and increasing digital competencies. Research also suggests that the importance of technology in school

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education will increase over the next few years, and education will move towards virtual environments (Rivera-Vargas, 2020, p.17). Furthermore, a study revealed that technological innovations will have a significant impact on teaching methodologies in the next five years, and online education will increase (Finger, 2014, p.4). In their recent study on the future of distance education and its alignment with the core principles of Turkish national education, Cöbek and Ünişen (2022, p.1597) surveyed educators with experience in distance learning. Their findings indicate that distance education will be essential in the coming years, supporting personalized learning, blended learning approaches, specialized instruction, and lifelong learning within the education system. Moreover, it is expected to bring about a shift in teacher qualifications.

Participants described the impact of COVID-19 on the digitalization of education as a forced transformation, the necessity for individuals to adapt, an increase in the importance and need for digitalization, questioning of old methods, acceleration, the integration of digitalization into our lives without full assimilation, and the emergence of inequality in education. They also emphasized COVID-19's influence on the digitalization of education in terms of forced transformation, acceleration, increased importance of digitalization, questioning of traditional methods, the necessity for adaptation, and the integration of digitalization into our lives without being fully internalized.

The participants further mentioned the impact of COVID-19 on digitization in education as compulsory transformation, acceleration, increased importance of digitization, questioning of old methods, adaptation, and its entry into our lives without being internalized. In a study conducted by Yilmaz and Toker (2022, p. 2713), it was found that the emergency distance education implemented during the COVID-19 pandemic had a positive impact on teachers' professional skill levels, specifically in terms of digital competencies. Research has also shown that the digital divide has emerged among different sectors, leading to limited access, losses in the education sector, increased student debts, decreased education resources, research limitations, loss of learning interest among students, weak digital skills, weak electricity, network problems, accessibility issues, inadequate facilities, and educational deficiencies (Onyema, Eucheria, Obafemi, Sen, Atonye, Sharma, and Alsayed, 2023, p.118). While the COVID period has led teachers to develop their teaching skills, improve themselves, enrich themselves with IT and new pedagogical techniques, and learn new teaching methods (Yaseen, Joshi, 2021, p.183-184).

Participants identified the future competencies of educators as being digitally literate, tech-savvy, capable of coding, technically skilled, focused, innovative, research-oriented, open to learning, collaborative, capable of analytical and three-dimensional thinking, able to develop themselves, capable of making quick and accurate decisions, open to innovation, possessing high communication skills,

flexible, adaptable, and effective listeners. According to research by Sadiku et al.,(2022, p.166) it has been identified that the traditional role of educators is changing, and they should not only be data collectors but also analysts, planners, collaborators, curriculum specialists, synthesizers, problem solvers, and researchers.

6. Conclusion

This comprehensive discussion outlines the significant impact of digitalization on educators' competencies, emphasizing the need for them to become technologically literate, adaptable to changing technological conditions, capable of coding, and proficient in digital education. It also highlights the expected enhancement of communication skills, openness to development, and innovation among educators. Looking forward, it appears that digital education will continue to expand rapidly, possibly including metaverse classrooms and increased online education. As a result of this digital transition, there is potential demand for developing content tailored to digital education modules and these new methods. COVID-19 is recognized for accelerating and necessitating digitalization in education, despite exacerbating educational inequalities for individuals with limited access to technological resources. It has underscored the necessity of digitalization in the education sector. Additionally, the diffusion of digital technologies across various sectors, including labor markets and education, has begun to manifest noticeable patterns, although their full implications are not yet fully defined. Research indicates that digitalization has led to higher wages in education labor markets, unemployment for educators unable to enhance their skills, an increase in the number of educators, the emergence of new jobs, jobs without human involvement, the disappearance of certain professions, a contraction in the workforce, and a decrease in the age of workforce entry. Furthermore, the study reveals that adapting to digitalization not only requires alignment with technological advancements and effective communication methodologies but also demands adaptation to dynamically evolving conditions in future educational paradigms. There is a possibility that educators who do not prioritize continuous professional development may face unemployment in the future, while those who proactively develop their skills and align with the qualifications rewarded by the future education market may secure competitive employment opportunities with higher salaries. It's important to note that this study is based on the perspectives of twenty individuals working as education specialists or managers in the private sector. Therefore, different perspectives and outcomes may arise when consulting with different individuals.

7. Suggestion

The impact of digitalization on the education sector is undeniable, influencing the content, scope, methods, and types of education. It's essential to ensure the integration of education and trainers into this transformative process. Moreover, the

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competencies required by trainers in the labor market appear to be evolving. Trainers and aspiring trainers must adapt their training content and methods to align with the digital transformation and enhance their competencies to navigate this shift effectively. It is imperative to align trainers in the private sector with the national education curriculum and the competencies demanded by the labor market. Plans and programs should be developed to balance labor supply and demand in the education sector. The hypothesis derived from this study suggests that digitization impacts the required levels of proficiency for individuals involved in the education sector. As a result, it is recommended that future educators enhance their competencies to acclimate to the digitized environment. This study can contribute to quantitative research that assesses variables such as age and gender. It is crucial to develop plans and programs to balance labor supply and demand in the education labor market while considering the competencies of future educators.

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