



This Project is co-funded by  
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# **TECHNICAL ASSISTANCE FOR PROMOTING DECENT FUTURE OF WORK APPROACH WITH A FOCUS ON GENDER EQUALITY**

**(EuropeAid/140341/IH/SER/TR)**

**TURKEY**

## **QUANTITATIVE DESK RESEARCH REPORT INFORMATION AND COMMUNICATION SECTOR**



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## LIST OF ABBREVIATIONS

Abbreviation	Meaning
BTK	BTK Information and Communication Technologies Authority
GDP	Gross domestic product
GNP	Gross national income
ICT	Information and Communication Technology
ILO	International Labour Organisation
ISKUR	Turkish Employment Agency
IT	Information Technology
NUJ	National Union of Journalists
OECD	Organisation of Economic Cooperation and Development
SMEs	Small- and medium-sized entrepreneurs
TBD	Informatics Association of Turkey
TUBISAD	Informatics Industry Association
UK	United Kingdom

## 1. EXECUTIVE SUMMARY

In the 11<sup>th</sup> Turkey Development Plan (2019 – 2023), the Information and Communication Technologies have an important role. The main Objective is: Increasing productivity and competitiveness in the economy through development and use of information and communication technologies, thereby transformation of business processes is the main objective.

According to the OECD (2017), technological progress is one of the mega-trends that has the potential to transform work. Although automation, AI, and digital technologies could result in some job losses, gains in productivity, increased investment, and the growth of the service economy could lead to the creation of as many as 3.1 million jobs by 2030. Only 2 percent of occupations in Turkey are completely automatable, whereas about 60 percent of jobs have at least 30 percent automatable activities.

World Bank and ILO suggests that upskilling and reskilling initiatives will play a key role in talent transformation. To ensure Turkey's talent transformation, 21.1 million workers will need to improve their skills, leveraging technology while remaining employed in their current jobs. Changes in occupations and work activities are also related to the level of education required to perform jobs. It seems that human workers are not displaced by digital technology but there is a real change of job tasks. There's an important role to be played by the companies/employers and employees in the negotiations considering the need to evaluate the standard employment relationship and the value of jobs in this new digitalisation era. Public institutions must also be integrally involved through smart policies to raise productivity levels and ensure sustainable, inclusive economic growth. Public institutions can support the development and deployment of automation and AI technologies through investment in basic and applied research and through building digital infrastructure.

The media and communications industries have undergone significant change in the past two decades, marked by rapid growth in employment opportunities in the sector and dizzying shifts in the structure of the labour market and in work organization. These industries play a crucial role in meeting society's need for information, entertainment, and communication. Employment in these industries has grown during the last years (except during 2020), and draws on the creativity, skills, professionalism and dedication of businesses and workers; however, the sector has a long tradition of insecure work, characterized by unclear contractual arrangements and questions over the employment status of its workforce. The Turkey Development Plan includes a chapter on "Information and Communication Technologies". The main goal is: "Increasing productivity and competitiveness in the economy through development and use of information and communication technologies, thereby transformation of business processes is the main objective". The overall media sector contributes to job creation and growth with a turnover exceeding 3% of GDP.

The media cover many subsectors that employ more than 1 per cent of the workforce, providing entertainment and information services to the entire population and has had a high share of atypical workers (employment relationships that do not conform to the standard model of full-time, regular, open-ended employment with a single employer, with fixed hours, a regular income, pension entitlements and protection against ill-health and unemployment) Atypical workers in the media and culture industries often do not benefit from the same protection as employees, such as unemployment benefit, pensions, maternity leave and sick pay; they may be excluded because of their independent or self-employed status.

The changes related to Information and communication means new jobs, particularly for young people, women and PWDs. About the education related to employment, the point is the inclusion of people in the sector giving them new competences with technology centres with specific trainers and courses in such a wide area, but also the organisation of a lifelong learning to support the permanent changes in the sector.



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Women play an important role in the media, although they still face discrimination and lower pay. Women are often in “non-standard” employment relationships, while men are disproportionately represented in standard employment relationships.

Related to Internet and Communication, specific new skills will be required as Internet research, new applications for page layout and design, multimedia and new media skills, coordination between different media projects, and operation of remotely controlled equipment and e-commerce applications. New skills in cybersecurity will be needed, for instance to examine a company's security setup from a holistic view, including threat modelling, specifications, implementation, testing, and vulnerability assessment. They also understand security issues associated with operating systems, networking, and virtualization software.

## 2. INTRODUCTION

This Sector includes all the Research on Information and Communication. Information includes an Analysis on Informatics and Automation and Media is included in Communication.

In the Turkey Development Plan (2019 – 2023), the Information and Communication Technologies have an important role. The main Objective is: Increasing productivity and competitiveness in the economy through development and use of information and communication technologies, thereby transformation of business processes is the main objective.

To achieve this objective there are many policies and measures in the Plan to improve the infrastructure, to add domestic value added in the ICT sector through public procurements and provisions incorporated into the authorization contracts signed by the government with private operators, to impulse a regulatory framework and an incentive mechanisms to develop data centre sector, and cooperation initiatives will be taken for the provision of cloud services with the countries having intensive trade relations with Turkey. The Plan affirms that the disparities in internet access and usage among different income, region, gender, and age groups will be reduced. The measures included in the Plan are in line with some international studies that affirms that in the next decade, automation, AI, and digital technologies, along with complementary investments, have the potential to create 3.1 million net new jobs, considering the economic impact and societal changes the technology will bring. By 2030, with the impact of automation and digitization, 7.6 million jobs could be lost, and 8.9 million new jobs could be created, a net gain of 1.3 million jobs. In addition, 1.8 million jobs that currently do not exist could be created, many of them in technology related sectors. To enable this change, 21.1 million people in the Turkish workforce will need to improve their skills by leveraging technology while remaining employed in their current jobs. Automation and digitization are expected to affect 7.6 million employees through significant reskilling and job displacements. In addition, 7.7 million new employees who will join the workforce will need to be equipped with the latest skills required. To ensure the success of Turkey's talent transformation, a common focal point and collective, concerted action are needed. It is critical that all stakeholders, including businesses, associations, public institutions, educational institutions, and individuals, take the required actions. (McKinsey, 2020)

According to the OECD (2017), technological progress is one of the mega-trends that has the potential to transform work. Indeed a 'Digital Revolution' is said to be underway, defined as "a general acceleration in the pace of technical change in the economy" (Eurofound 2018a: 1). Although the language used to describe the new digital technologies-as-practice varies (e.g. computerisation, robotisation, artificial intelligence, advanced automation, Uberisation, gig work), three 'vectors' of change have been suggested: digitally-enabled machines with artificial intelligence (AI); the digitalisation of processes enabling enhanced possibilities of processing, storage and communication of information; and the use of digital networks to coordinate economic transactions with algorithms through platforms (Eurofound 2018a; World Economic Forum [WEF] 2017).

In first place, according to a Study of the World Bank (2013), **Informatics** is a technology set for information processing, storage, retrieval, and transmission. Over the past 25 years, sustained technological change in the informatics sector has had an economy-wide impact on productivity growth, raising the information-intensity of private sector and government activities. In advanced economies, informatics now accounts for 5-6% of GNP, and by 1995 will be the single largest industrial sector. Policies that foster the supply, diffusion and efficient application of informatics have therefore become central to long run growth potential and to international competitiveness. However, not all consequences of informatics are guaranteed to be welfare-enhancing. Rather, informatics also poses new threats to civil liberties, creates significant costs of social and institutional adjustment, and is likely to have far-reaching implications for systems of governance. Hence, the interest of governments around the world in understanding the implications of informatics for social and economic progress, and in harnessing its benefits for national development. Cross-country indicators suggest that Turkey is behind in the markets for computer hardware and especially software; modernizing the framework for the communications





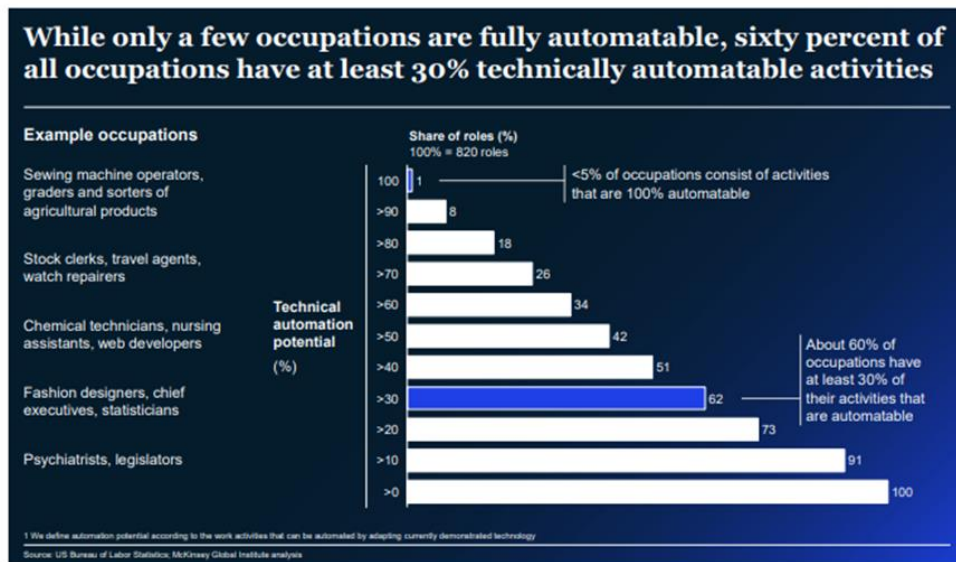
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sector; creating the human resources essential for an information-based economy; and developing a vigorous private information industry. Longer term growth and international competitiveness will depend on measures that the government takes to correct these deficits, and to mobilize private sector resources for productive use and supply of informatics.

**Automation<sup>1</sup>** can be defined as the use of automatic equipment, such as machines or robots, to reduce or eliminate the need for human intervention in a process. Since the invention of the steam engine, automation has led to improved working conditions and better quality of life for many people around the world. Rapid technological developments have the potential to take this even further, given that machines can now perform big data analysis, detect criminals, and drive cars. Machines outperform humans in activities such as data collection and data sourcing, route optimization, and fraud detection. Moreover, through techniques like machine learning and neural networks, AI can accomplish tasks that were previously thought to require human judgment.

In the next figure we can see that while only a few occupations are fully automatable, sixty percent of all occupations have at least 30% technically automatable activities.

Figure No. 1. Automation on diverse activities



Source: McKinsey Global Institute

In 2017, GDP for Turkey was \$851.6 billion, and the IT market was worth \$11.3 billion<sup>2</sup>. Focus on automation and the need for productivity growth is important for Turkey, which is already ranks low among OECD countries in labour productivity, with \$38.10 of GDP output per hour worked in 2017. That is 21 percent lower than the OECD average, \$48.10, and 42 percent below the United States, \$64.20.13.

<sup>1</sup> Automation has two sides: it can boost productivity growth to sustain current standards of living, and it can transform certain jobs. Such changes have been common throughout history. For example, one-third of the new jobs created in the United States in the past 25 years did not even exist 25 years ago. But a study of the French economy showed that from 1996 to 2011, the internet created 2.4 jobs for every job it destroyed. Humans play a crucial role in designing, building, and scaling new technologies, something that automation cannot take away.

<sup>2</sup> World Development Indicators, World Bank (2018) The impact of automation, AI, and digital technologies varies by country. While technological advances happen everywhere, different regions of the world are at different stages of the digitization and automation journey. China and the United States are presumably in the lead in share of digital technology and automation in the economy. World Bank estimates that the United States has captured 18 percent of its potential from digital technologies, compared to 12 percent for the European Union (EU) overall. This figure varies among other European countries, ranging from 10 percent in Germany to 17 percent in the United Kingdom

Last year's important stakeholders of the sector as the Informatics Industry Association (TUBISAD) and the Information and Communication Technologies Authority (BTK) stated that the Informatics sector is in a central position that affect the development of the other sectors and have a multiplier effect on the economy. They declared that **digital transformation** is going to be effective in value-added products, mobile products and in any product that concerns human lives in any point of the technology. So, both software developers or service providers and hardware suppliers are going to play a crucial role. Other actors as TBD (Informatics Association of Turkey) have declared that Turkey needs to produce technology, because a society which is able to use technology improves the quality of life. For that it is necessary a public administration that can use resources effectively and efficiently and qualified human resources.

During the pandemic, the IT sector suffered the decrease in investments and slowdown in services. Small- and medium-sized entrepreneurs (SMEs) will be the most battered in the ICT sector, like in other fields.

Secondly, the media and communications industries have undergone significant change in the past two decades, marked by rapid growth in employment opportunities in the sector and dizzying shifts in the structure of the labour market and in work organization – both within employment relationships and through commercial contracts – and by the positive and negative consequences of information and communications technologies (ICTs) on employment relationships and on business and work. These industries play a crucial role in meeting society's need for information, entertainment, and communication. Employment in these industries has grown during the last years (except during 2020), and draws on the creativity, skills, professionalism and dedication of businesses and workers; however, the sector has a long tradition of insecure work, characterized by unclear contractual arrangements and questions over the employment status of its workforce.

The last ILO tripartite meeting for this sector concluded: There is a trend towards freelance, self-employed, or informal economy work. This can mean that such [media and communication] workers can no longer depend on legislative provisions on social security, even in countries where social security has good coverage, and are included as part of the atypical workers.

### 3. Economic Data

Automation, AI, and digital technologies already play a prominent role in our lives and will be even more influential in the future. The Kinsey Report shows that, at a global scale, adoption of current automation, AI, and digital technologies can affect 50 percent of the world economy. This is equivalent to 1.2 billion employees and \$14.6 trillion in wages. In this respect, we see varying levels of impact in different sectors. For example, education technology is broadening access to courses, providing more memorable and effective instruction. The best-performing education systems offer teachers ongoing training so they can keep up with the latest digital solutions and techniques. In healthcare services, artificial intelligence can potentially diagnose some diseases better than physicians.

Although automation, AI, and digital technologies could result in some job losses, gains in productivity, increased investment, and the growth of the service economy could lead to the creation of as many as 3.1 million jobs by 2030. **Only 2 percent of occupations in Turkey are completely automatable, whereas about 60 percent of jobs have at least 30 percent automatable activities.**<sup>3</sup>The tasks most susceptible to automation are predictable physical activities and data collection and processing activities. Duties that require human interaction, people management, and expertise are less susceptible to automation. Automation, AI, and digital technologies are expected to transform numerous jobs in many sectors and to create new ones. Overall, 2030 baseline employment in Turkey is estimated to be about 33.3 million. With the impact of automation and digitization, 7.6 million jobs could potentially be lost by 2030. Some studies estimates that 8.9 million new jobs could be created by 2030 for a net gain of 1.3 million jobs.

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<sup>3</sup> This is a vital point for the future of work. It is needed to start thinking about what happens to people when 30% of their jobs disappear to automation. E.g. more leisure time; changing/flexible pay rates; more participation in the gig economy?

Impacts on productivity and economic growth as well as societal changes driven by digitization are expected to accompany this job growth. In addition, it is estimated that 1.8 million jobs could be created in occupations that currently do not exist, particularly in technology-related sectors. (For example, the creation of new roles such as digital service designers, sustainable energy experts, cybersecurity specialists, and AI-assisted healthcare technicians)

According to some studies that take a sectoral view, the job increases will manifest most strongly in service sectors—retail sales and service, healthcare services and care providers, food and beverage, and accommodation. Occupation groups reflect similar trends. The number of jobs that require customer interaction and the number of care providers will increase. We expect 30 percent growth in the retail sales and service industry workforce. Healthcare services and care providers are expected to grow by 40 percent<sup>4</sup>, and the food and beverage and accommodation sectors are expected to grow by 20 percent.

As many interviews published during the last 5 years, all relevant stakeholders of the sector think that they should collaborate on a broad range of Future of Work initiatives to make Turkey's talent transformation happen. To achieve this goal, it is needed a strategic workforce planning and a preparation for talent transformation and new working models (more flexible and efficient working models), the creation of centres of development and technology (where the role played by Public institutions will be especially important) and the application of accelerating mechanisms and incentives. The strategy of Turkish Employment Agency (ISKUR) is to intend mitigating the impact of automation and digital transformation on supply-demand with a project of digital transformation. This project includes **Turkey' Technology Development Bases: Techno cities. The project** was established for the purpose of producing value-added products and bringing dynamism into the technology of Turkey, increasing in number with the cooperation of university industry. It is aimed to increase the grants and incentives to 4 billion dollars to the Techno cities that have exported 4 billion dollars to date.<sup>5</sup>

With the Technology Development Zones, where universities, which are the centres of innovative information production in innovation, meet with industrial organizations, the transformation of academically produced information into commercial products, completion of incubation periods of technology-oriented start-up firms, encouraging the development of firms with grants and supports, and other firms and synergy for the national economy are aimed. Turkey, which has a brief history compared to other countries in terms of technology, aims to be the epicentre of innovative technology in the region. Techno-cities that develop medium-high and high-tech products are used in universities or organized industrial zones; develops products in software, informatics, machinery-equipment, energy, electronics, chemical and defence sectors.<sup>6</sup>

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<sup>4</sup> Based on the studies of population people is going to live longer for the improvement on health

<sup>5</sup> The Ministry of Science, Industry and Technology, which has increased its initiatives and investments to increase the number of techno-cities referred as technology development zones, aims to increase the number of techno-cities from 84 to 105 in 2023, the number of patents to 2 500, and grant and incentive supports to at least \$ 4 billion. Turkey's international competitiveness will increase with Technocities, and besides the use of technology and the transfer of technology, Turkey is expected to be the country with R & D and innovation, developing technology in the ecosystem, exporting.

<sup>6</sup> **The Best Technocities:** METU Technopolis, ITU Ari Techno city and Cyberpark are among the most successful technology development zones established to be prepared for the revolutionary developments that technology will bring. Techno cities, which contribute to Turkey's competitiveness and technology, are also supported by political power to create integrated ecosystems for the country's industrialization policy, technology, and innovation. It is known that ITU Ari Technocity has the 2nd best incubation centre in Europe and the 3rd best incubator centre in the world.

In the past, while most companies preferred to invest in technology development zones to receive more tax incentives, now, companies are setting up businesses in technology development zones to take advantage of the enriched environment, research and development consultancy, technology transfer, and close collaboration with universities.

It is known that the working conditions created in Techno city also affect the profitability, success, and happiness of the employees. Turkey's technology development zones are visited by both foreign and domestic investors, by this, they develop their customer portfolio and provide establishment of new cooperation. The highest expectation of the companies in this regard, is getting into international markets. These centres teach how to commercialize an idea and compete in international markets. Companies are also being helped to open an incubation centre in the US Silicon Valley.

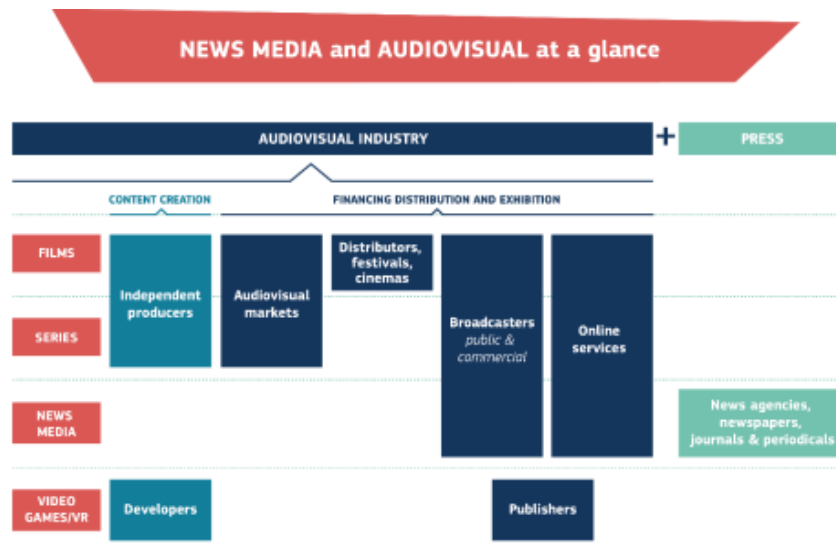


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Secondly, Europe’s news media and audio-visual sectors have been critical in keeping citizens informed and entertained during the Covid-19 pandemic. The demand for fact-checked information and news has substantially increased, while films, series or videogames have been the main source of entertainment during the months of lockdown. A free, diverse, and dynamic media environment is key to strengthening open and democratic societies and nurturing Europe’s cultural diversity. Europe is an artistic and cultural powerhouse. Harnessing the potential of the European Single Market to nurture cultural diversity will benefit the media, audio-visual and the wider cultural sector altogether.

The media sector covers a variety of businesses that produce and distribute content, that share synergies, and whose value is based on intellectual property. The sector is largely composed by SMEs, although some bigger media companies have enough scale to incorporate media activities across sectors and along the value chain. The overall media sector contributes to job creation and growth with a turnover exceeding 3% of GDP. This Communication focuses on the news media sector (including printed and online press, radio, and audio-visual services) and audio-visual entertainment – cinema, TV, radio, and video streaming as well as video games and innovative formats, such as virtual reality experiences. This is a good definition of the sector.

Figure 1. News Media and Audio-visual



Source: European Commission

On Information and Communication, TUIK has shared some data on “**Information and Communication Technology (ICT) Usage Survey on Households and Individuals, 2020**”<sup>7</sup> that shows the importance of the “Internet society” in Turkey.

#### Internet usage of individuals was 79.0%

Internet usage of individuals aged 16-74 was 79.0% in 2020. This proportion was 75.3% in the previous year. When internet usage proportion is analysed by sex; it was observed that this proportion was 84.7% for males and 73.3% for females.

#### Proportion of households with Internet access has reached 90.7%

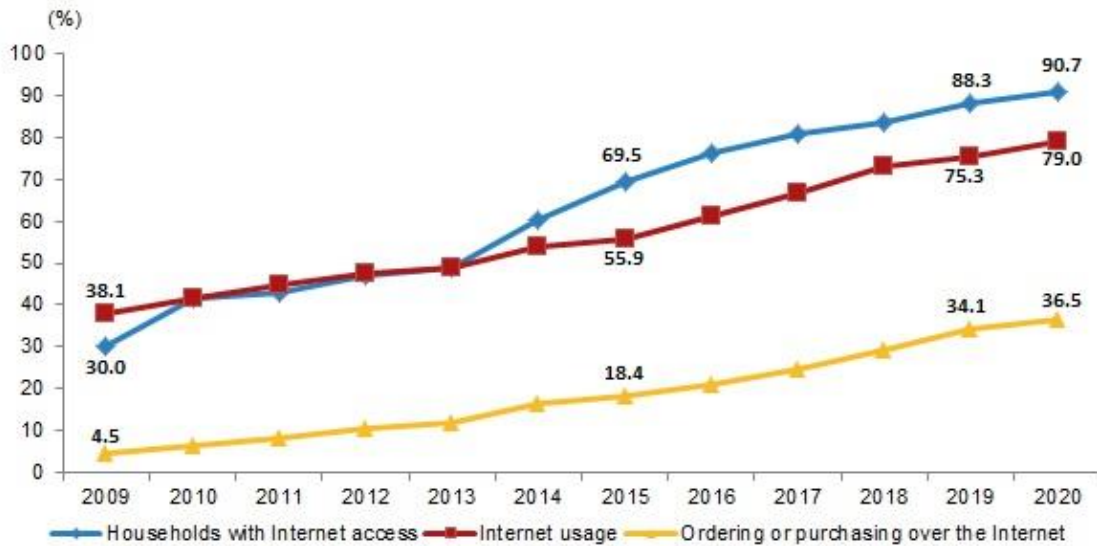
<sup>7</sup> Available at: [https://data.tuik.gov.tr/Bulten/Index?p=Survey-on-Information-and-Communication-Technology-\(ICT\)-Usage-in-Households-and-by-Individuals-2020-33679](https://data.tuik.gov.tr/Bulten/Index?p=Survey-on-Information-and-Communication-Technology-(ICT)-Usage-in-Households-and-by-Individuals-2020-33679)



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It was observed that 90.7% of the households had access to the Internet from home. This proportion was 88.3% in the previous year.

**Figure 2. Basic household ICT usage indicators, 2009-2020**



**89.9% of households had broadband Internet connection**

The proportion of households that access the Internet with broadband connection was 89.9% in 2020. In terms of broadband connection types, while 50.8% of households used fixed broadband connection (ADSL, cable, optic fibre, etc.), 86.9% of households used mobile broadband connection to access the Internet. The proportion of households with broadband internet access was 87.9% in the previous year.

**The proportion of using e-government services was 51.5%**

The proportion of individuals using the Internet in the twelve-month period between April 2019 and March 2020 for interaction with public authorities and activities for personal purposes was 51.5% among individuals aged 16-74. This proportion was 51.2% in the same period of the previous year. Among the purposes of using e-government services, obtaining information from websites ranked first with 48.7%.

**The proportion of ordering or purchasing products online was 36.5%**

The proportion of individuals aged 16-74 who ordered or purchased goods or services for personal use over the Internet was 36.5% in the twelve-month period covering April 2019 and March 2020. This proportion was observed as 34.1% in the same period of the previous year.

The proportion of ordering or purchasing goods or services over the Internet by sex was 40.2% for males and 32.7% for females. This proportion was observed as 38.3% and 29.9%, respectively, in the same period of the previous year.

**Clothes, shoes, or accessories were purchased with 60.9% at most**

60.9% of individuals who ordered or purchased goods or services online purchased clothes, shoes, or accessories. This was followed by printed books, magazines, or newspapers with 26.1%, deliveries from restaurants, fast-food chains, catering service with 22.5%, cosmetics, beauty, or wellness products with 21.1%, cleaning products or personal hygiene products with 17.6%. materials and furniture, home accessories or gardening products with 17.0%.

Most ordered or purchased product groups on the Internet by males; clothes, shoes, or accessories with 54.2%, deliveries from restaurants, fast-food chains, catering service with 24.1% and printed books,



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magazines, or newspapers with 22.5%, while by females; clothes, shoes or accessories with 68.5%, cosmetics, beauty or wellness products with 31.5% and printed books, magazines or newspapers with 30.2%.

We believe that another important data is the **Use of Information and Communication Technology (ICT) by Enterprises, 2020**<sup>8</sup>. In this sense, we include:

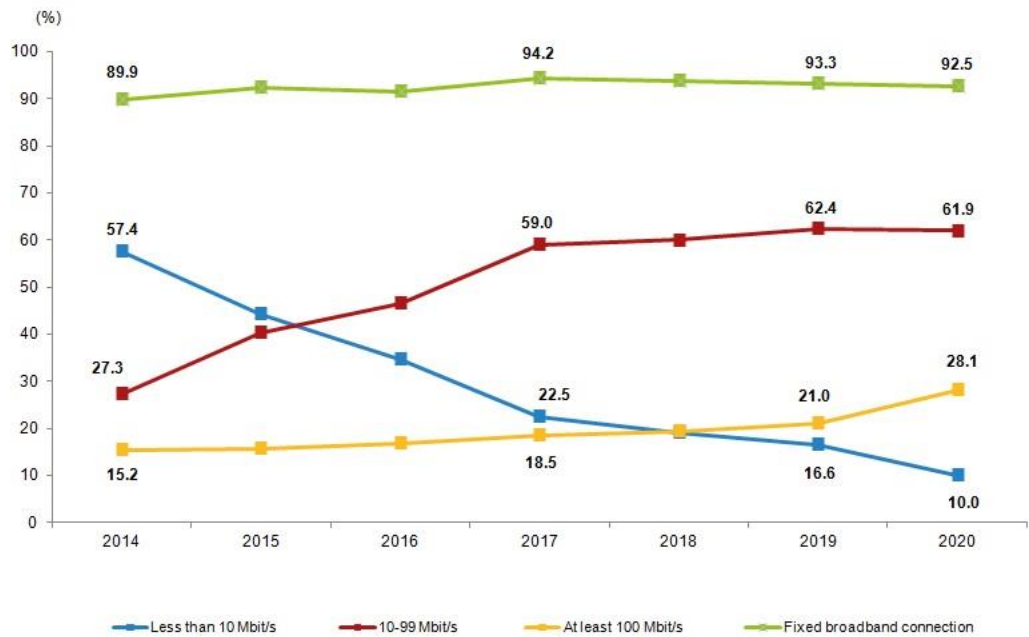
- **The proportion of enterprises with Internet access was 94.9%**

According to the survey results, 94.9% of the enterprises having 10 or more employees used the Internet in 2020. Across all size classes, it was 94.2% for the enterprises with 10-49 employees, 97.8% for 50-249 employees and 99.4% for 250 and more employees.

- **92.5% of enterprises used fixed broadband connection**

- In 2020, 92.5% of enterprises used fixed broadband connection to access the Internet. Considering the maximum contracted download speed of enterprises with fixed broadband Internet access, it was determined that 10.0% of enterprises used Internet connection with below 10 Mbit/s, 61.9% of enterprises used with 10-99 Mbit/s and 28.1% of enterprises used with at least 100 Mbit/s.

**Figure 3. Fixed broadband connection usage and maximum contracted download speed, 2014-2020**



- **53.7% of enterprises had their own website**

- 53.7% of the enterprises having 10 or more employees had their own website in 2020. The proportion was 2.2 points higher than previous year. The highest website ownership proportion was 89.2% in enterprises with 250 or more employees. It was followed by the enterprises with 50-249 employees with 74.1% and the enterprises with 10-49 persons employees with 49.2%.
- **Most preferred e-sales platform of enterprises was their own website or mobile application**  
In 2019, the enterprises having 10 or more employees engaged in e-commerce were mostly preferred their own website or mobile application as a platform for e-sales with 77.1%. 55.7% of

<sup>8</sup> The information was available at: <https://turkstatweb.tuik.gov.tr/PreHaberBultenleri.do?id=33677>



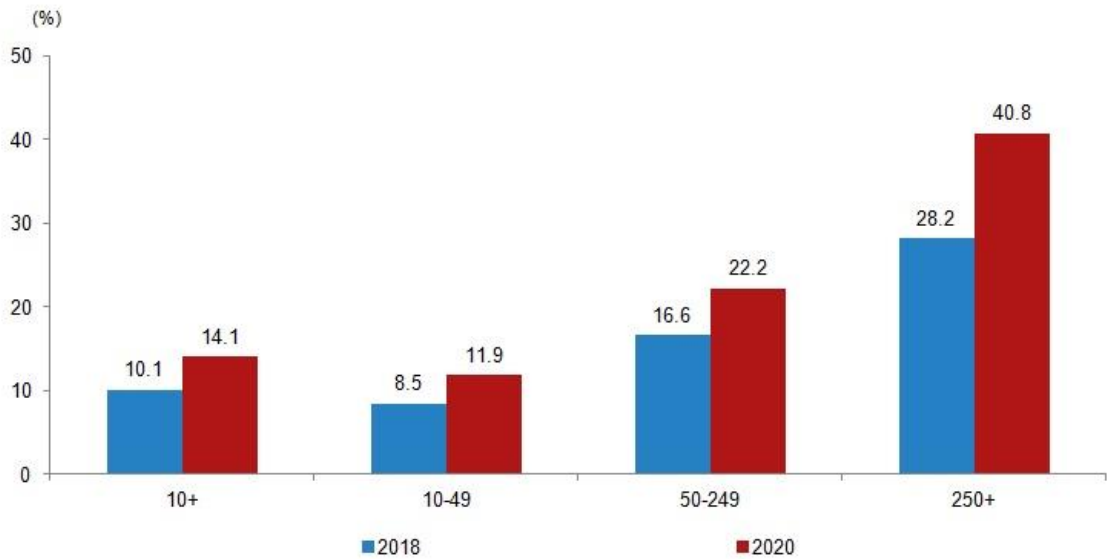
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them made sales through online stores and marketplaces where different enterprises could sell.

#### 40.8% of the enterprises with 250 or more employees used cloud computing services

- 14.1% of the enterprises having 10 or more employees reported that they used cloud computing services in 2020. This proportion was 10.1% in 2018. The proportion of using cloud computing services for the enterprises having 250 or more employees was 40.8%. This proportion was followed by 22.2% for the enterprises with 50-249 employees and 11.9% for the enterprises with 10-49 employees.

Figure 4. Proportion of cloud computing services usage, 2018, 2020



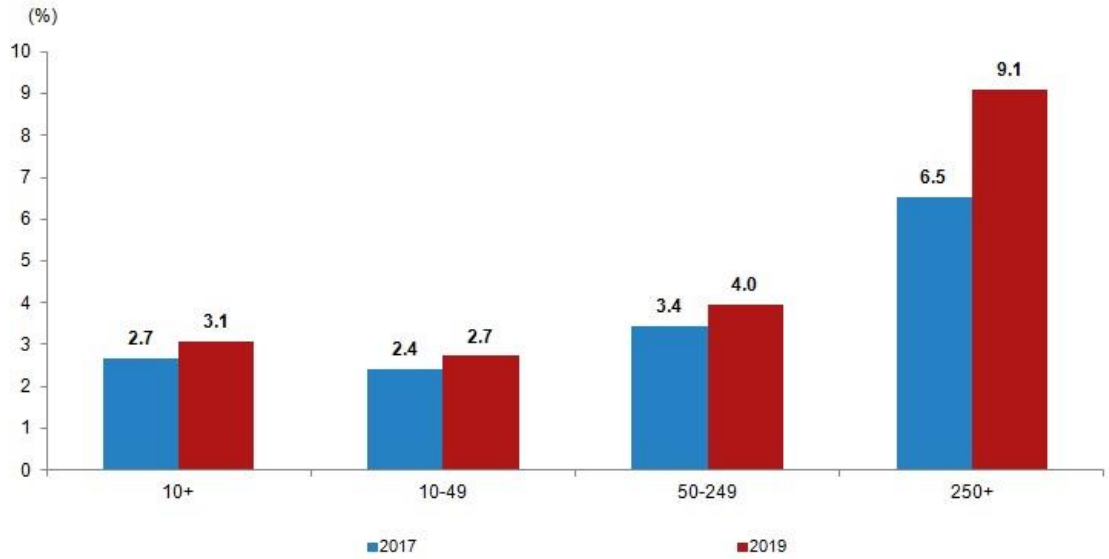
#### 3.1% of enterprises used 3D printing

- 3.1% of the enterprises having 10 or more employees stated that they used their own 3D printers or 3D printers provided by other enterprises in 2019. When the enterprises using 3D printers by size group are examined; it was calculated that 2.7% of enterprises with 10-49 employees, 4.0% of enterprises with 50-249 employees and 9.1% of enterprises with 250 or more employees used 3D printing.

Figure 5. The proportion of 3D printing usage, 2017, 2019



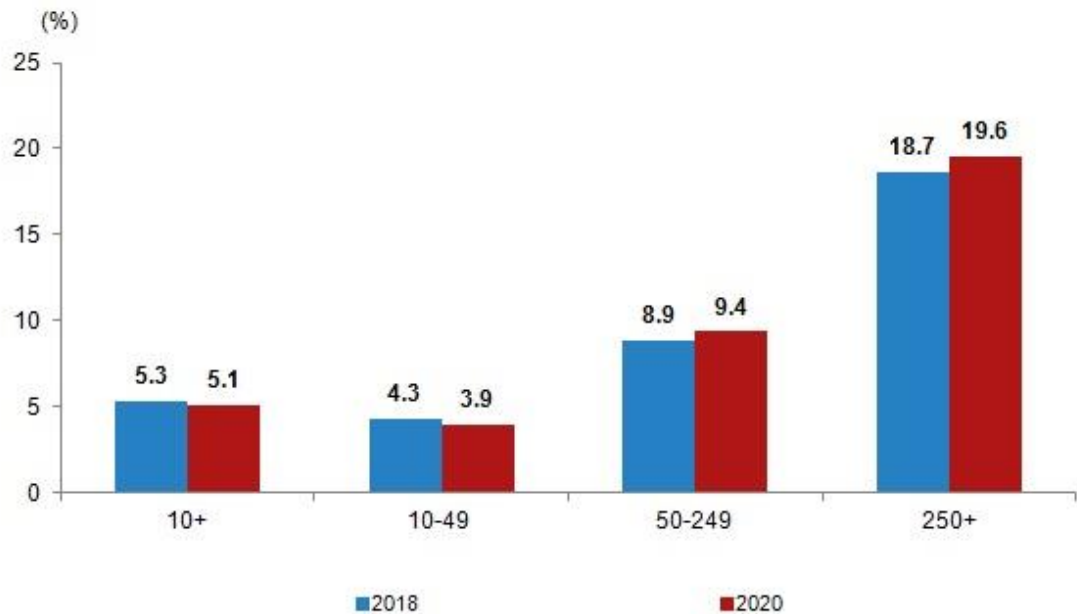
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**Proportion of the enterprises using robot technology was 5.1%**

- 5.1% of the enterprises having 10 or more employees stated that they used industrial robots or service robots in 2020. When the proportion of robot technology usage is examined by size groups; it was observed that 3.9% of the enterprises with 10-49 employees, 9.4% of the enterprises with 50-249 employees and 19.6% of the enterprises with 250 or more employees used robot technology.

**Figure 6. The proportion of enterprises using robotics, 2018, 2020**



According to the Turkey 2019 Report of the European Commission, The EU supports the smooth functioning of the internal market for electronic communications, electronic commerce, and audio-visual media services. The rules protect consumers and support universal availability of modern services. Turkey has some level of preparation in information society and media. There has been backsliding in this sector.



Another inconvenience is excessive taxation and costs for operators and consumers of information and communications technologies.

In addition to addressing the shortcomings set out below, in the coming year Turkey should in particular:

- improve the independence of the regulatory authorities for telecommunications and media and their board members and amend the Internet Law in line with the Venice Commission's recommendations
- align the universal service, authorisation arrangements, market access and rights of way in electronic communications with the EU acquis
- complete the release of 700 MHz from broadcasting services of mobile broadband
- take steps to strengthen the public broadcaster and to finalise the digital switchover process.

Comparatively with Mobile broadband penetration increased significantly to 73.1% in the second quarter of 2018, though it is still below the OECD average of 102.4%. The fixed broadband penetration rate is 15.7% compared to the OECD average of 30.4%. Within 2 years of implementation, the number of 4.5G subscribers reached 68 million.

Concerning information society services, the proportion of people using e-government increased from 42% to 45.6%. In the area of audio-visual policy, there has been no progress in alignment with the acquis.

In March 2018, the Parliament approved a bill, granting Radio and Television Supreme Council RTÜK the authority to regulate online content. In January 2019, the Supporting, Evaluation and Classification of Cinema Films Law was published in the Official Gazette. According to the Law, cinema films that are locally produced or imported will be evaluated and classified before they are made available for commercial circulation and screening. Following the changeover to the executive presidency, a presidential decree published in July 2018, affiliated the Turkish Radio and Television Corporation (TRT) with the Presidential Communication Authority and RTÜK with the Ministry of Culture and Tourism. As for the media regulator, public consultations with media service providers continued. RTÜK's decisions are available online.

The impact of COVID-19 in European media face severe liquidity issues, while unemployment has increased, and many media professionals and journalists – particularly those who are subject to precarious employment conditions or are freelancers – have found themselves with no income. The situation is similar globally and in Turkey.

We share the experience of the EU in the area:

- In parallel, the crisis has accelerated major trends long in motion in digital technology. Online platforms have strengthened their market position, launched new services, and attracted new audiences during the lockdowns. New online social media platforms – largely based on audio-visual content – have also hit records in downloads, particularly among young users. The ambition of this Communication is to accelerate the recovery, transformation, and resilience of the media industry. It is necessary to tackle the structural challenges facing the audio-visual and news media industries. In the news media sector, traditional media have struggled to adapt to an online market in which most advertising revenues go to global online platforms. With the onset of COVID-19, advertisers have reduced their overall advertising spending in a context of economic uncertainties, further challenging the sector's sustainability and potentially affecting citizens' access to pluralistic and independent sources of information. In the audio-visual sector, the greatest challenge is market fragmentation.
- The EU has recently modernised its regulatory framework with the revised Audio-visual Media Services Directive (AVMSD) and Copyright reform following broad debates on how best to secure free expression in all its facets. This Communication builds on this modern set of rules and proposes further steps, combining investment with other policy actions, to help the media sector face the crisis and become more competitive thereafter. Accordingly, this Communication is built around three themes: a) Recover: what the Commission plans to do to help audio-visual and media companies to weather the current storm and provide liquidity and financial support; b)



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Transform: address structural issues by helping industry face the twin transitions of climate change and digitisation, in the context of fierce global competition; c) Enable and empower: setting the conditions allowing more innovation in the sector, whilst ensuring a true level-playing field, and empowering citizens to access content more easily and take informed decisions. The economic recovery and competitiveness of the media sector is a precondition for a healthy, independent, and pluralistic media environment.

- Another important tendency is the need that “Unleashing innovation through a European media data space and encouraging new business models” → Create a media data space to support media companies in sharing data and developing innovative solutions to become more innovative and competitive European media companies should be empowered to make better decisions and deploy more advanced solutions based on insights gleaned from data. The Commission proposes to bring this about by fostering the creation of a European “media data space”. This initiative builds on the European Data Strategy and will be carried out in full respect of data protection legislation. Data spaces can change the way in which creators, producers, and distributors collaborate. They host relevant media data such as content, audience data and content meta-data as well as other types of data on users’ behaviours that might be useful to create content better tailored to consumer needs and distribute it more efficiently. The media data space initiative, financed through the Horizon Europe and Digital Europe Programmes (DEP), will support press publishers, broadcasters, other media companies and technology providers in the creation of a data space dedicated to media applications. DEP will help the deployment of the data infrastructure and define a data interoperability strategy. In line with the European Data Strategy and the new horizontal data governance initiative, it will also integrate state-of the art tools and services needed for the management and processing of the data, define the conditions for sharing and using the data, including IP, data protection privacy, and competition rules. The initiative will be set out considering the inputs of the broad stakeholder community.

#### 4. EMPLOYMENT

To analyse the employment in the sector, the Study presented in 2020 for McKinsey is an important source. They started identifying automation potential for each occupation by detailed activities



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Figure No. 2: Automation potential for each occupation by detailed activities

ILLUSTRATIVE

McKinsey Global Institute workforce skills model

**Skills level**

- Not affected by technology
- Partially affected by technology
- Fully automatable by technology

Occupations	Activities	Skills requirement	Automation potential with current technologies	
Customer service agent	<p><b>Answer questions about products and services</b></p> <hr/> <p>Welcome customers and visitors</p> <hr/> <p>Ensure control of products and services</p> <hr/> <p>Reporting of work activities and sales/ services</p> <hr/> <p>Understand customer needs</p> <hr/> <p>Create marketing strategy</p>	Sensory perception	Sensory perception	Partially affected by technology
		Recognizing known patterns and categories	Recognizing known patterns and categories	Fully automatable by technology
			Generating novel patterns and categories	Not affected by technology
		Logical reasoning and problem solving	Logical reasoning and problem solving	Not affected by technology
			Optimizing and planning	Fully automatable by technology
		Creativity	Creativity	Not affected by technology
			Information retrieval	Fully automatable by technology
		Coordination with multiple agents	Coordination with multiple agents	Not affected by technology
			Output articulation and presentation	Partially affected by technology
		Natural language processing	Natural language generation	Partially affected by technology
		Social skills	Understanding natural language	Not affected by technology
			Social and emotional sensing	Not affected by technology
			Social and emotional reasoning	Not affected by technology
			Social and emotional output	Not affected by technology
		Physical skills	Fine motor skills and dexterity	Partially affected by technology
			Gross motor skills	Fully automatable by technology
			Navigation	Fully automatable by technology
Mobility	Partially affected by technology			

Source: McKinsey Global



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The core of their study is that 50 percent of working hours in Turkey could be automated by adapting existing technologies. This figure is equivalent to the work of a staggering 16.6 million people—out of a projected workforce of 33.3 million—in 2030. However, merely possessing automation potential does not mean that it will be realized; adoption depends on how quickly technology diffuses through all sectors of an economy and how effective companies are in reorganizing workflows.

Like Turkey, most developing countries have larger shares of their labour forces in highly automatable sectors, such as manufacturing and agriculture, than in other sectors (World Bank, 2020). By contrast, larger shares of the labour force in developed countries are in the service, healthcare, and public sectors. Even though automation potential for work activities is considerable, most occupations in Turkey are only partially automatable. Just 2 percent of all occupations are completely automatable, while 60 percent of jobs have at least 30 percent automatable activities. Occupations with large percentages of repetitive work activities have a higher share of automatable activities, whereas occupations that involve more interaction, communication, and expertise have lower shares of automatable activities.<sup>9</sup>

Manufacturing, mining, and agriculture have the highest automation potential, at 65 percent, 61 percent, and 56 percent, respectively. (This is to be expected since predictable physical activities dominate the occupations in these sectors). The construction sector also requires a lot of physical activities, but those activities are more unpredictable, so automation potential is lower compared with the top three sectors. Conversely, educational services and information have the lowest automation potential, at 21 percent.

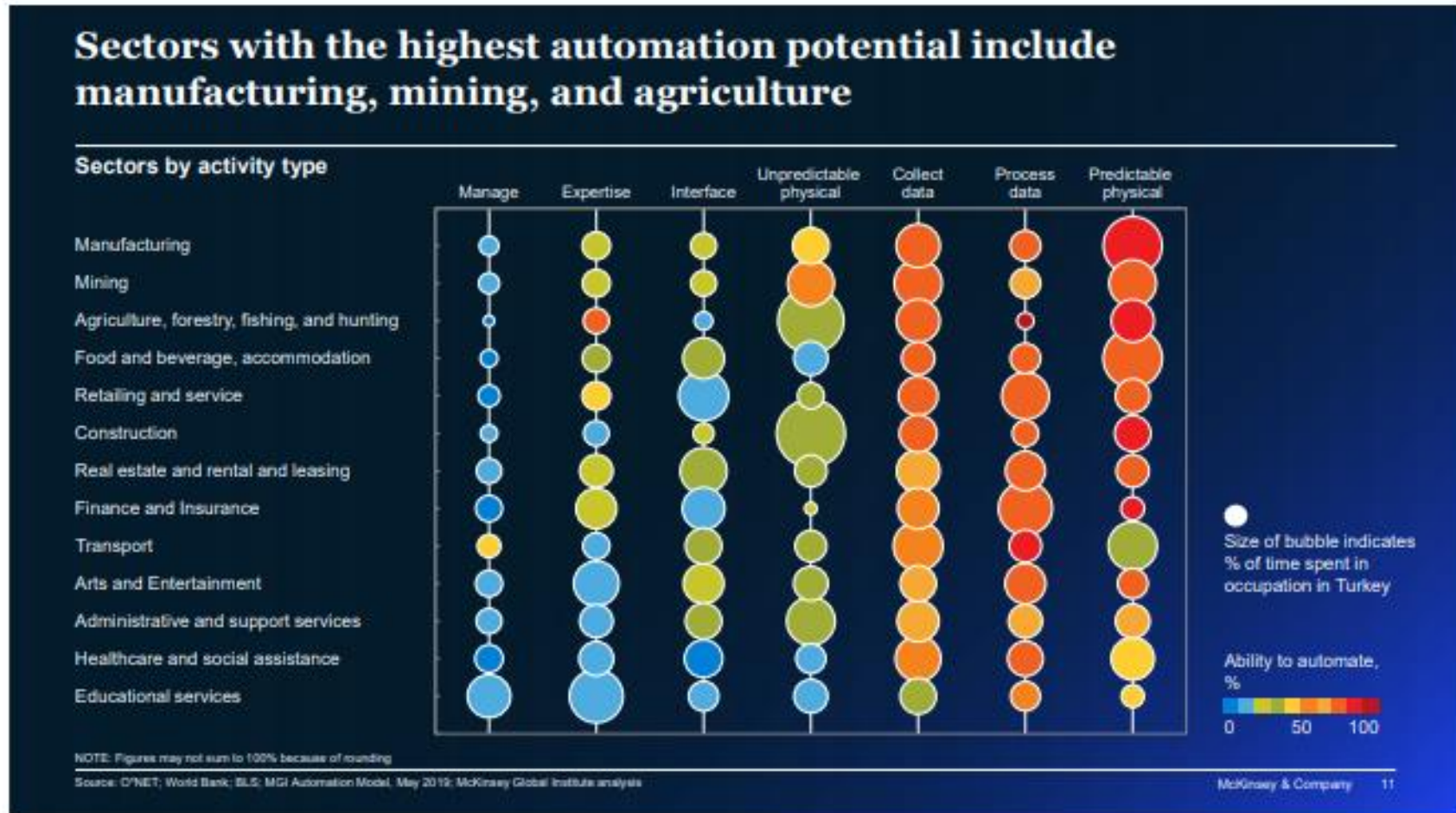
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<sup>9</sup> According to the World Bank, activities most susceptible to automation include predictable physical activities as well as data collection and processing. These categories make up about half of all working hours in Turkey, and they all have automation potential greater than 65 percent. Activities that require human interaction and managing people are less susceptible to automation, showing automation potential of less than 25 percent.



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Figure No. 3: Sectors with the highest automation potential



Source: McKinsey Global



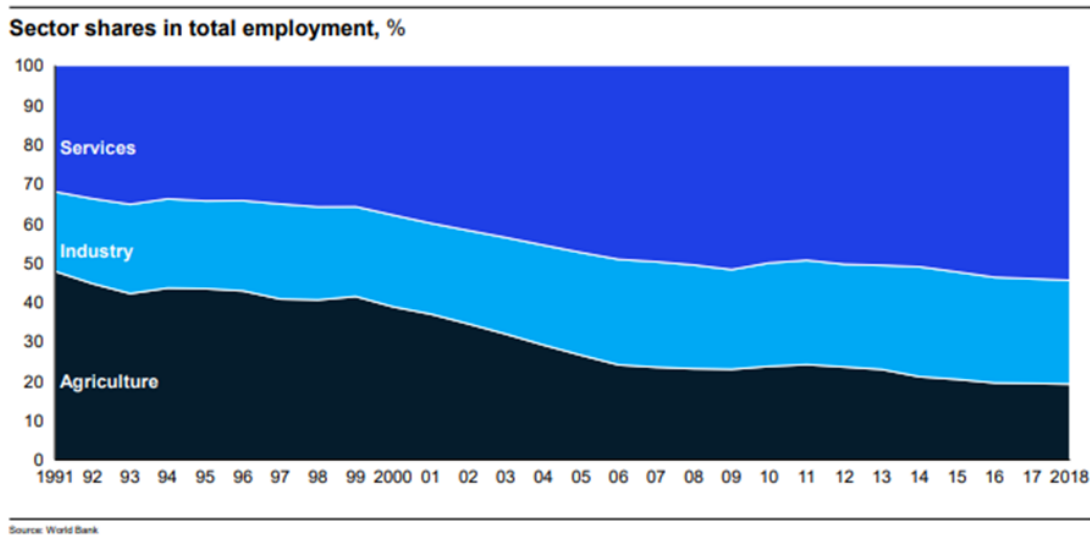
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Manufacturing and agriculture head the list of sectors with the greatest automation potential in terms of full-time equivalents (FTE), followed by the retail sales and service sectors. While mining also demonstrates a high potential for automatable activities, its FTE automation potential is lower because the sector employs relatively few workers. Sectors that require extensive interaction and particular expertise, such as arts and entertainment, are at the lower end of the list.

As we mentioned before, Turkey has a technical automation potential of 50 percent, yet this does not mean that half of all work activities can be automated by 2030. Automation adoption depends on several factors as Technical feasibility, cost of developing, the labour market dynamics, economic benefits, and regulatory and social acceptance.

Reflecting on the sectors in Turkey, World bank data shows that since 1991, agriculture's share of total employment has dropped from 48 to 19 percent, while the service sector's share has risen from 32 to 54 percent. Despite these changes, the labour force participation rate did not experience big shifts, and total employment increased from 18 to 29 million. This suggests that the Turkish labour force can successfully adapt to structural changes.

**Figure No. 4: Employment per sectors in Turkey**



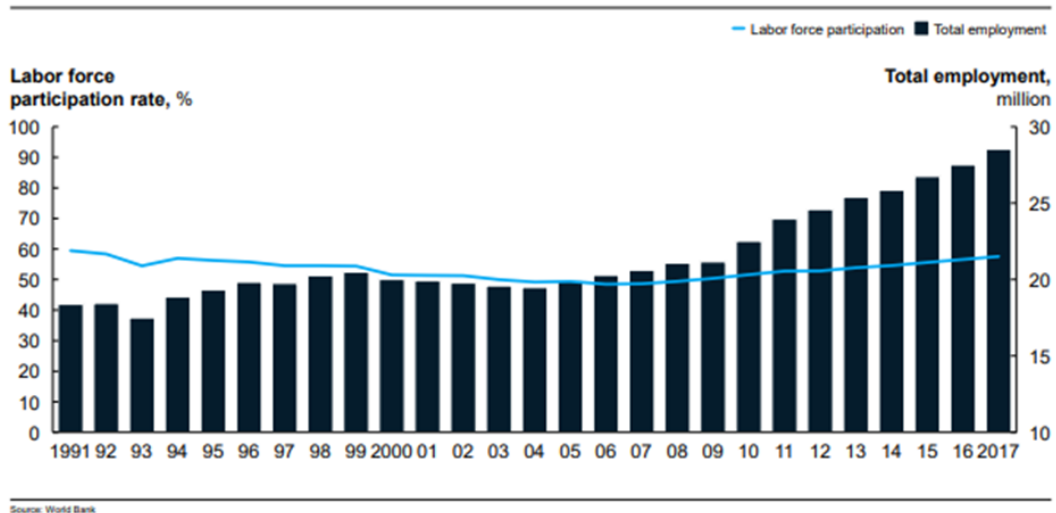
Source: World Bank

Source: World Bank



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**Figure No. 5: Labour Force participation**



Source: World Bank

Although automation and digitization could potentially result in some job losses, they are also expected to create new jobs and positively affect other economic forces. For instance, new technologies could boost the economy by raising productivity, thereby increasing demand for labour. More economic growth could enable additional investment in areas such as infrastructure and could generate new jobs, especially in developed economies. Furthermore, greater economic growth could stimulate increased consumption and demand for newer services. (World Bank, McKinsey Global)

Automation, AI, and digital technologies are expected to transform numerous jobs in many sectors and to create new ones. Overall, 2030 baseline employment in Turkey is estimated to be about 33.3 million. With the impact of automation and digitization, 7.6 million jobs could potentially be lost by 2030. McKinsey estimates that 8.9 million new jobs could be created by 2030 for a net gain of 1.3 million jobs.

It is important also to consider that Media covers many subsectors, including mass media, such as the internet, television, newspapers, magazines, books, film, and radio; publishing, producing, and distributing audio-visual content. The broader media, culture, graphical sector also includes video games, print and electronic publishing and the printing industries. The main occupations in the media include journalists, editors, writers, agents, designers, and photographers. In many countries, these subsectors employ more than 1 per cent of the workforce, providing entertainment and information services to the entire population. In the European Union (EU) alone, more than 2.3 million people are employed in publishing activities, video and television programme production activities and programming, broadcasting, and information service activities, and approximately 1.2 million people work in printing and media reproduction. Although a majority of these are full-time employees, atypical forms of work continue to gain in importance. Furthermore, the EU live performance sector employs almost 1 million people, up to half of whom have self-employed status. The structure of media has changed, with less government funding, greater emphasis on enterprise development, more independent production, and less emphasis on large studios. Over recent decades, technological developments have strongly affected



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work in this sector, with labour-intensive work using many employees often giving way to technologically advanced work with fewer employees, and more part-time work and teleworking. Competition between media and culture enterprises, styles and formats has influenced business prospects and has had an impact on the numbers of jobs created or cut. The pace of change should be just as rapid in the next few years, as further developments in digital technology are adopted. News, books, and other print media will increasingly be accessed electronically, the internet will become ever faster, and the boom in social media further promotes user-generated content competing with or complementing professionally produced material.

The media have long had a high share of atypical workers, and success and commercial rewards in these industries often depend on talent, human creativity, and specialized, highly skilled work. It is thus unsurprising that employment relationships have developed somewhat differently from those in manufacturing sectors or finance, for example. Worldwide, these industries are characterized by atypical work – employment relationships that do not conform to the standard model of full-time, regular, open-ended employment with a single employer, with fixed hours, a regular income, pension entitlements and protection against ill-health and unemployment. In the media and culture industries, many different forms of non-standard employment relationships have expanded during the past decades, notably: part-time, casual, and fixed-term contracts; temporary agency work; self-employment (including through “umbrella companies” that deal with invoicing, taxes, social protection and so on, for freelancers); homework; and telework. Atypical workers in the media and culture industries often do not benefit from the same protection as employees, such as unemployment benefit, pensions, maternity leave and sick pay; they may be excluded because of their independent or self-employed status. In some cases, taking on self-employed status may be a positive choice for media wishing to develop their own enterprise, while in others it could be a negative necessity to avoid unemployment. Self-employed journalists’ workers have a long tradition of unionization in many countries, but they often lack coverage by collective agreements and are usually not considered to be employees. Unclear, ambiguous, or disguised employment relationships can arise in these industries. In many cases, work is performed under conditions giving rise to genuine doubts about the existence of an employment relationship (such as casual or seasonal work in the media and culture industries) while in other workers are not treated as employees, to disguise their legal status.

The changes related to Information and communication means new jobs, particularly for young people. But also implies an important opportunity for PwDs. The sector can contribute to enable and accelerate the social and economic inclusion of persons with disabilities.

A new kind of jobs has appeared years ago: the **crowdsourcing**<sup>10</sup>. It could be considered as part of the sector of Informatics and Automation, but many international organisations and authors refers the activity related to Information - Communication (As a general concept, the notion of compiling information from a “crowd” - that is to say, the public at large- into a larger whole practice). Today, a wide variety of tasks are supported by digital labour platforms. Some of the digital labour platforms are web-based, giving tasks either to the crowd (micro tasking or content-based creative tasks) or directly to individuals using a freelance marketplace (for example, Upwork). In addition, there is also location- and app-based work; most of these tasks are given to individuals (e.g., transportation, delivery, and household services) with few given to the crowd (e.g., local micro tasking).

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<sup>10</sup> Coined in 2005 by Wired magazine writer Jeff Howe, “crowdsourcing” refers to: “The act of taking a job once performed by a designated agent (an employee, freelancer or a separate firm) and outsourcing it to an undefined, generally large group of people through the form of an open call, which usually takes place over the Internet” (Howe, quoted in Safire, 2009; see also Howe, 2006). As a combination of the words “crowd” and “outsourcing” suggest, the word’s origins directly refer to the economic motivations for businesses’ use of crowdsourcing – cheaper, on-demand labour. Groups of workers that span multiple time zones offer businesses the possibility of completing projects at any time of day or night, and large numbers of workers mean that tasks can be accomplished quickly. Leveraging the power of “the crowd”, a business can access thousands of workers who can, for example, process large sets of data in a relatively short time period, with no further obligation by the business to those workers.

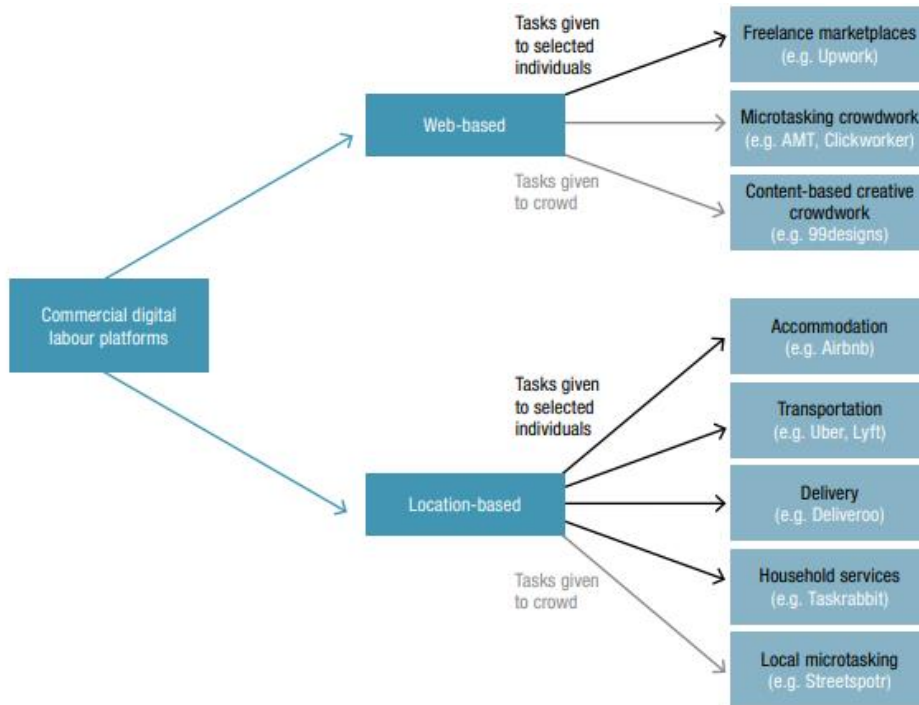




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An example was provided in the next Figure:

**Figure 7. Categorization of digital labour platforms**



Source: Adapted from Schmidt (2017).

Estimating the size of the workforce engaged in microtask platforms – or in the gig economy more generally – is difficult. Although several platforms share statistics of how many registered participants they have, this does not necessarily reflect the active workforce. However, the phenomenon is clearly non-negligible and recent efforts to map the size of the online gig economy show that the online labour market grew by 25.5 per cent between July 2016 and June 2017 (Lehdonvirta, 2017).<sup>11</sup>

About the Employment arrangements of these workers, the ILO warns that despite advertising language that offers a “workforce” to potential task requesters, or their very name (such as Micro workers), platforms generally do not recognize microtask workers as employees in the traditional sense. Instead, almost all platforms require workers to accept classification as self-employed persons, or independent contractors. Some of them, do not even classify them as workers of any kind, instead describing workers only as “participants” in research projects who receive “rewards” rather than payment for work performed. Therefore, microtask workers have had to contest this classification to access labour protections and benefits. In many countries, the legal classification of gig workers is still being debated, with companies classifying their workers as “independent contractors” while labour advocates have been lobbying for them to be classified as “employees”, which would

<sup>11</sup> Measuring the size of the gig workforce is difficult because of the different definitions of what constitutes “gig work”; limitations in the methods used to collect data via household surveys versus information from business establishments; and differing legal definitions of workers under tax, workplace, and other public policies. In their book, *The Gig Economy*, Woodcock and Graham outline four pathways worker-friendly futures for the gig economy: increased transparency, better regulation, stronger collective organisation of workers, and platforms run as cooperatives or public infrastructures



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legally require companies to provide the full suite of employee benefits (time-and-a-half for overtime, paid sick time, employer-provided health care, bargaining rights, and unemployment insurance - among others).<sup>12</sup>

## 5. EDUCATION RELATED TO EMPLOYMENT

According to World Bank and ILO upskilling and reskilling initiatives will play a key role in talent transformation. To ensure Turkey's talent transformation, 21.1 million workers will need to improve their skills, leveraging technology while remaining employed in their current jobs. In addition, automation and digitization are expected to have an increased impact on 7.6 million employees who will experience significant reskilling and job displacements. Within this group, 5.6 million people are expected to change roles by upskilling and 2.0 million are expected to gain new skills to be able to work in different sectors or in different occupations. It will be critical to equip 7.7 million new employees with required skills as they join the workforce. (McKinsey Global). The workforce will need to acquire stronger social skills and advanced technological skills. Workplace skills of the future fall into five categories: physical and manual, basic cognitive, higher cognitive, social, and emotional, and technological. In most sectors in Turkey, the greatest increase in time spent on work activities that require certain abilities is expected to be for technological and social skills. By contrast, since activities such as data entry and equipment operation are more susceptible to automation, the demand for basic cognitive skills and physical skills could decrease in most sectors. In 2030, if the anticipated talent transformation can be ensured, the greatest change is expected to be in technological skills, with a rate of 63 percent. While social skills are expected to increase by 22 percent and higher cognitive skills by 7 percent, basic cognitive skills and physical skills are forecast to decrease by 10 and 8 percent, respectively

Changes in occupations and work activities are also related to the level of education required to perform jobs (ILO).

A recent survey found that about 55 percent of respondents expected that social or technological skills will have more importance because of automation. This shows how important it is for every Turkish worker to learn at least basic digital skills, such as daily applications of technology and computer literacy. Social skills could uniformly increase, with entrepreneurship and interpersonal skills dominating. Creativity is projected to represent a big increase in hours worked. Basic cognitive skills, especially data input and processing, and physical and manual skills, especially equipment operation, are projected to decrease the most. This is expected. In the previous sections, we showed that predictable physical activities and data collection and processing activities are highly automatable.

Given the changes that technology is bringing to the media, lifelong training approaches are increasingly important, thus employers and workers have a direct interest in ensuring that adequate training is available. The success of an enterprise depends on the skills and knowledge of its workers. While freelance media and culture workers are largely responsible for ensuring that they have the training and skills they need, some examples exist of unions helping freelance members obtain professional training. An Organisation for Economic Co-operation and Development (OECD) report noted that: "Fostering the skills of journalists who increasingly have to be multimedia journalists is central to maintaining a high-quality news environment .... News organisations must invest heavily in the creation of a versatile workforce. The role of the universities teaching of journalism, namely entrepreneurial journalism) in the new media ecosystem is also large and growing." The

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<sup>12</sup> In 2020, the voters in California approved Proposition 22, which created a third worker classification whereby gig-worker-drivers are classified as contractors, but get some benefits (minimum wage, mileage reimbursement, and others.)



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National Union of Journalists (NUJ) of the United Kingdom (UK) and Ireland has claimed that “there is a real gap between what journalists are expected to do and the training they are receiving for carrying it out”.

*Gender aspects:* Women play an important role in the media, although they still face discrimination and lower pay. Some audio-visual occupations remain largely the preserve of men while others (such as those relating to make-up, costumes, and hair) are dominated by women. Women are often in “non-standard” employment relationships, while men are disproportionately represented in standard employment relationships. In 2010, less than 40 per cent of audio-visual sector employees were women, a share that was lower than the average share of female employment in the whole EU (45.5 per cent).

May be more women than men are studying journalism, that more graduates are entering the profession as freelancers, or that women who lose their staff posts are more likely to go freelance while men would consider leaving the industry; or it could be due to other reasons. The Framework of Actions on Gender Equality agreed on by the EU Audio-visual Sectoral Social Dialogue Committee in 2019 (and which also addresses issues such as gender portrayal in the media, gender roles at work, equal pay and equality in decision-making) states: It is critical when considering working arrangements which support the reconciliation of work and family life that these can be taken up on a voluntary basis by both women and men, and are designed in a way that does not undermine their long-term participation and position on the labour market. Some of the practices aiming at creating a better work–life balance may have adverse effects on the careers of women. Indeed, surveys show that flexible working practices are more used by women than men. In many cases, this has resulted in, inter alia, career stagnation, a pay-gap, and lower pensions.

Related to Internet and Communication, specific new skills will be required as Internet research, new applications for page layout and design, multimedia and new media skills, coordination between different media projects, and operation of remotely controlled equipment and e-commerce applications.

New skills in **cybersecurity** will be needed, for instance to examine a company's security setup from a holistic view, including threat modelling, specifications, implementation, testing, and vulnerability assessment. They also understand security issues associated with operating systems, networking, and virtualization software.

## 6. ANALYSIS OF THE SECTOR

Debates about the future of work broadly defined are dominated by, firstly, fears of the coming of the clever robots to take away the jobs (or paid work) – what we term the digitalisation of production – and, secondly, fears that employment will disappear to be replaced by on-demand freelancing and gig work brokered by platform companies – what we term the digitalisation of work. Experience and emerging current evidence suggest that some jobs will disappear, others, yet unknown, will be created and others that currently exist will be reconfigured.

The OECD identified (OECD 2018) several policies to be considered:

- a) It seems that human workers are not displaced by digital technology but there is a real change of job tasks. Digitalisation of Future is only just emerging on the work and employment outcomes of AI and advanced automation, the early indications are that this normalisation might develop. This process of normalization might be compounded depending upon the outcome of current legal and statistician deliberations about employment statuses.
- b) There’s an important role to be played by the companies/employers and employees in the negotiations considering the need to evaluate the standard employment relationship and the value of jobs in this new digitalisation era. As one of the four pillars of the employment and work environment, companies must embrace automation, AI, and digital technologies. They should pursue full-scale transformations



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that would enable them to realize the totality of automation benefits. Automation and digital technologies will bring significant changes to most occupations. But it presents new possibilities for the workers unions and employees for their personal development (to identify the areas, and to participate of career development programs)

- c) Public institutions must also be integrally involved through smart policies to raise productivity levels and ensure sustainable, inclusive economic growth. Public institutions can support the development and deployment of automation and AI technologies through investment in basic and applied research and through building digital infrastructure.
- d) Accelerating mechanisms and incentives through job centres for acquisition of transferable new technological skills. ISKUR (Turkish Employment Agency) programs intended to mitigate the disruptive impact of automation and digital transformation on supply-demand balance in the employment market (maybe they should be revised and implemented). Automation and digital transformation are expected to affect different aspects of employment, such as working hours and the need for flexible working conditions.
- e) Creating lifelong learning opportunities, the education system needs to build the mind-set of “learning to learn” —willingness to continuously adopt new skills and tackle new challenges. This helps promote critical thinking, problem solving, and lifelong learning, a project in which local governments can assume a key role. Local governments can assume a key role to access a higher number of people in order to support lifelong learning.

In Turkey we need a specific and better education on the sector and seizing the future opportunities. The sector also shows the impact of AI, etc. on other things – like traditional ways of shopping/working/etc. –

This is a cross-cutting sector that try to provide more jobs with different skills, but it is also an essential ingredient to other forms of industry and life.

Communication is more diverse than ever before. The mainstream introduction of the internet in the early 1990s brought new and exciting communication methods, including using digital media to share your message more quickly and across greater distances. Social media channels and streaming video services became popular platforms for delivery and discussion of digital content; smartphones enabled brands to reach consumers regardless of their location. These advances in technology have impacted traditional communication jobs, paving the way for digital media as a major influence on businesses and brands in creating relationships with their customers. The result is new job titles and a new landscape for what communication looks like.

The future of media is continuing to turn to digital media for entertainment, news, and business, which translates to major opportunities for businesses. As the audience for online media grows, so do the number of platforms, and more consumers than ever flock to sources born on the web. For businesses, maintaining an online presence that allows them to effectively communicate with their audience is critical.

Workers should not be misclassified as self-employed if they are employees in practice. Most platform workers are required to “agree” that they are self-employed or “independent contractors”, not employees. But some platforms control when and where workers work, penalize them for declining jobs, and set non-negotiable prices and quality standards.



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## 7. INFORMATICS AND AUTOMATION SECTOR FACTSHEET

QUANTITATIVE AND QUALITATIVE DATA	
<b>BASELINE</b>	<ul style="list-style-type: none"> <li>• Informatics accounts for 5-6% of GNP In 2017, GDP for Turkey was \$851.6 billion, and the IT market was worth \$11.3 billion.</li> <li>• The IT market was worth \$11.3 billion<sup>13</sup>. Focus on automation and the need for productivity growth is important for Turkey, which is already ranks low among OECD countries in labour productivity, with \$38.10 of GDP output per hour worked in 2017. That is 21 percent lower than the OECD average, \$48.10, and 42 percent below the United States, \$64.20.13.</li> <li>• Informatics sector is in a central position that affect the development of the other sectors and have a multiplier effect on the economy.</li> <li>• During the pandemic, the IT sector suffered the decrease in investments and slowdown in services. Small- and medium-sized entrepreneurs (SMEs) will be the most battered in the ICT sector, like in other fields.</li> <li>• In the Turkey Development Plan (2019 – 2023), the Information and Communication Technologies have an important role. The main Objective is: Increasing productivity and competitiveness in the economy through development and use of information and communication technologies, thereby transformation of business processes is the main objective.</li> <li>• Employment in these industries has grown during the last years (except during 2020), and draws on the creativity, skills, professionalism and dedication of businesses and workers; however, the sector has a long tradition of insecure work (Atypical work) characterized by unclear contractual arrangements and questions over the employment status of its workforce.</li> <li>• The overall media sector contributes to job creation and growth with a turnover exceeding 3% of GDP.</li> <li>• The media cover many subsectors that employ more than 1 per cent of the workforce, providing entertainment and information services to the entire population and has had a high share of atypical workers (employment relationships that do not conform to the standard model of full-time, regular, open-ended employment with a single employer, with fixed hours, a regular income, pension entitlements and protection against ill-health and unemployment) Atypical workers in the media and culture industries often do not benefit from the same protection as employees, such as unemployment benefit, pensions, maternity leave and sick pay; they may be excluded because of their independent or self-employed status.</li> <li>• About the Use of Information and Communication Technology (ICT) by Enterprises, 2020: The proportion of enterprises with Internet access was 94.9%; 92.5% of enterprises used fixed broadband connection; 53.7% of enterprises had their own websites.</li> </ul>

<sup>13</sup> World Development Indicators, World Bank (2018) The impact of automation, AI, and digital technologies varies by country. While technological advances happen everywhere, different regions of the world are at different stages of the digitization and automation journey. China and the United States are presumably in the lead in share of digital technology and automation in the economy. World Bank estimates that the United States has captured 18 percent of its potential from digital technologies, compared to 12 percent for the European Union (EU) overall. This figure varies among other European countries, ranging from 10 percent in Germany to 17 percent in the United Kingdom



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	<ul style="list-style-type: none"> <li>• Turkey has good level of preparation in information society and media, but there a high taxation and costs for operators and consumers of information and communications technologies.</li> <li>• The media cover many subsectors, including mass media, such as the internet, television, newspapers, magazines, books, film, and radio; publishing, producing, and distributing audio-visual content. The broader media, culture, graphical sector also includes video games, print and electronic publishing and the printing industries. The main occupations in the media include journalists, editors, writers, agents, designers, and photographers. In many countries, these subsectors employ more than 1 per cent of the workforce, providing entertainment and information services to the entire population.</li> <li>• The structure of media has changed, with less government funding, greater emphasis on enterprise development, more independent production, and less emphasis on large studios.</li> <li>• The changes related to Information and communication means new jobs, particularly for young people. But also implies an important opportunity for PwDs. The sector can contribute to enable and accelerate the social and economic inclusion of persons with disabilities.</li> </ul>
<p><b>POTENTIAL</b></p>	<ul style="list-style-type: none"> <li>• Only 2 percent of occupations in Turkey are completely automatable, whereas about 60 percent of jobs have at least 30 percent automatable activities. The tasks most susceptible to automation are predictable physical activities and data collection and processing activities. Duties that require human interaction, people management, and expertise are less susceptible to automation.</li> <li>• Overall, 2030 baseline employment in Turkey is estimated to be about 33.3 million. With the impact of automation and digitization, 7.6 million jobs could potentially be lost by 2030.</li> <li>• Upskilling and reskilling initiatives will play a key role in talent transformation. To ensure Turkey’s talent transformation, 21.1 million workers will need to improve their skills, leveraging technology while remaining employed in their current jobs. -In addition, automation and digitisation are expected to have an increased impact on 7.6 million employees who will experience significant reskilling and job displacements.</li> <li>• Within this group, 5.6 million people are expected to change roles by upskilling and 2.0 million are expected to gain new skills to be able to work in different sectors or in different occupations. Cross-country indicators suggest that Turkey is behind in the markets for computer hardware and especially software; modernizing the framework for the communications sector; creating the human resources essential for an information-based economy; and developing a vigorous private information industry.</li> <li>• Informatics sector is in a central position that affect the development of the other sectors and have a multiplier effect on the economy.</li> <li>• In the Turkey Development Plan, the Information and Communication Technologies have an important role. The main Objective is: Increasing productivity and competitiveness in the economy through development and use of information and communication technologies, thereby transformation of business processes is the main objective.</li> </ul>



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- A 'Digital Revolution' is said to be underway, defined as "a general acceleration in the pace of technical change in the economy" (Eurofound 2018a: 1). Although the language used to describe the new digital technologies-as-practice varies (e.g. computerisation, robotisation, artificial intelligence, advanced automation, Uberisation, gig work), three 'vectors' of change have been suggested: digitally-enabled machines with artificial intelligence (AI); the digitalisation of processes enabling enhanced possibilities of processing, storage and communication of information; and the use of digital networks to coordinate economic transactions with algorithms through platforms.
- It seems that human workers are not displaced by digital technology but there is a real change of job tasks.
- There is an important role to be played by the companies/employers and employees in the negotiations considering the need to evaluate the standard employment relationship and the value of jobs in this new digitalisation era.
- Automation and digitalisation are expected to have an increased impact on 7.6 million employees who will experience significant reskilling and job displacements. Within this group, 5.6 million people are expected to change roles by upskilling and 2.0 million are expected to gain new skills to be able to work in different sectors or in different occupations.
- Creating lifelong learning opportunities, the education system needs to build the mind-set of "learning to learn"—willingness to continuously adopt new skills and tackle new challenges. This helps promote critical thinking, problem solving, and lifelong learning, a project in which local governments can assume a key role. Local governments can assume a key role to access a higher number of people to support lifelong learning.
- The Turkey Development Plan includes a chapter on "Information and Communication Technologies". The main goal is: "Increasing productivity and competitiveness in the economy through development and use of information and communication technologies, thereby transformation of business processes is the main objective".
- The changes related to Information and communication means new jobs, particularly for young people, women and PWDs. About the education related to employment, the point is the inclusion of people in the sector giving them new competences with technology centres with specific trainers and courses in such a wide area, but also the organisation of a lifelong learning to support the permanent changes in the sector.
- Women play an important role in the media, although they still face discrimination and lower pay. Women are often in "non-standard" employment relationships, while men are disproportionately represented in standard employment relationships.
- Related to Internet and Communication, specific new skills will be required as Internet research, new applications for page layout and design, multimedia and new media skills, coordination between different media



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	<p>projects, and operation of remotely controlled equipment and e-commerce applications.</p> <ul style="list-style-type: none"> <li>• A specific and better education on the sector is needed (The sector also shows the impact of AI, etc.).</li> <li>• This is a cross-cutting sector that try to provide more jobs with different skills, but it is also an essential ingredient to other forms of industry and life.</li> <li>• Communication is more diverse than ever before. These advances in technology have impacted traditional communication jobs, paving the way for digital media as a major influence on businesses and brands in creating relationships with their customers. The result is new job titles and a new landscape for what communication looks like.</li> <li>• The future of media is continuing to turn to digital media for entertainment, news, and business, which translates to major opportunities for businesses. As the audience for online media grows, so do the number of platforms, and more consumers than ever flock to sources born on the web. For businesses, maintaining an online presence that allows them to effectively communicate with their audience is critical.</li> <li>• Digital media continues to evolve as new tools emerge, consumers make new demands, and the quality and accessibility of the technologies improve. The rise of mobile video, virtual reality (VR), augmented reality (AR), and the more refined use of data analytics will all influence the future of digital media.</li> <li>• There will be a need for new jobs in the sector, but they must necessarily be accompanied by training but also by new working conditions (particularly in digital labour platforms).</li> </ul>
<p><b>SKILLS</b></p>	<ul style="list-style-type: none"> <li>• . Upskilling and reskilling initiatives will play a key role in talent transformation.</li> <li>• 21.1 million workers will need to improve their skills, leveraging technology while remaining employed in their current jobs.</li> <li>• It will be critical to equip 7.7 million new employees with required skills as they join the workforce.</li> <li>• The workforce will need to acquire stronger social skills and advanced technological skills. (Workplace skills of the future fall into five categories: physical and manual, basic cognitive, higher cognitive, social, and emotional, and technological).</li> <li>• In 2030, if the anticipated talent transformation can be ensured, the greatest change is expected to be in technological skills, with a rate of 63 percent. While social skills are expected to increase by 22 percent and higher cognitive skills by 7 percent, basic cognitive skills and physical skills are forecast to decrease by 10 and 8 percent, respectively.</li> <li>• Basic cognitive skills, especially data input and processing, and physical and manual skills, especially equipment operation, are projected to decrease the most. It seems that human workers are not displaced by digital technology but there is a real change of job tasks. Digitalisation of Future is only just emerging on the work and employment outcomes of AI and advanced automation, the early indications are that this normalisation might develop. This process of normalization might be compounded depending upon the outcome of current legal and statistician deliberations about employment statuses.</li> </ul>





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	<ul style="list-style-type: none"> <li>Given the changes that technology is bringing to the media, lifelong training approaches are increasingly important, thus employers and workers have a direct interest in ensuring that adequate training is available.</li> <li>Related to Internet and Communication, specific new skills will be required as Internet research, new applications for page layout and design, multimedia and new media skills, coordination between different media projects, and operation of remotely controlled equipment and e-commerce applications.</li> <li>New skills in cybersecurity will be needed, for instance to examine a company's security setup from a holistic view, including threat modelling, specifications, implementation, testing, and vulnerability assessment. They also understand security issues associated with operating systems, networking, and virtualisation software.</li> </ul>
<p><b>AREAS FOR POSSIBLE POLICY INTERVENTION</b></p>	<ul style="list-style-type: none"> <li>These two subsectors have a close relationship with the new digitalisation area. Both sectors offer new possibilities of employment and improvement (e.g., contracts of Atypical Workers). Companies/employers and employees have an important role in the negotiations considering the need to evaluate the standard employment relationship and the value of jobs in this new digitalisation era. About the potential and skills needed: Companies/employers and employees have an important role in the negotiations considering the need to evaluate the standard employment relationship and the value of jobs in this new digitalisation era.</li> </ul>



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## 8. BIBLIOGRAPHY

### a. Resources

- Appelbaum, E. (2012). Reducing Inequality and Insecurity: Rethinking Labour and Employment Policy for the 21st Century. *Work and Occupations*, 39(4), 311–320.
- Arntz, M., Gregory, T. & Zierahn, U. (2016). The risk of automation for jobs in OECD countries: a comparative analysis. OECD Social, Employment and Migration Working Paper No.189. Paris: OECD.
- Bulut, Ç. K. (2020). The Political Economy of Media in Turkey: An Infrastructural Analysis. In *Handbook of Research on the Political Economy of Communications and Media* (pp. 181-205). IGI Global.
- Christensen, C. (2007). Concentration of ownership, the fall of unions and government legislation in Turkey. *Global Media and Communication*, 3(2), 179-199.
- Christensen, M. (2013). Turkey, the Middle East & the Media | Trans National Media Flows: Some Key Questions and Debates. *International Journal of Communication*, 7, 19.
- Davies, R. (2015). Industry 4.0 Digitalisation for productivity and growth, Briefing, European Parliamentary Research Service. [http://www.europarl.europa.eu/RegData/etudes/BRIE/2015/568337/EPRS\\_BRI\(2015\)568337\\_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/BRIE/2015/568337/EPRS_BRI(2015)568337_EN.pdf)
- Dekker, B., & Okano-Heijmans, M. (2020). Europe's Digital Decade?. *Navigating the global battle for digital supremacy*, Clingendael Institute, 13.
- Eurofound (2018a). Automation, digitalisation, and platforms: Implications for work and employment. Luxembourg: Publications Office of the European Union.
- Eurofound (2018b). Does employment status matter for job quality? Luxembourg: Publications Office of the European Union.
- Eurofound (2018c). Non-standard forms of employment: Recent trends and prospects. Luxembourg: Publications Office of the European Union.
- European Commission (2019) Future developments in Vocational Education and Training in Europe JRC Working Papers Series on Labour, Education and Technology available at: <https://ec.europa.eu/jrc/sites/jrcsh/files/jrc117691.pdf>
- European Commission (2020) Europe's Media in the Digital Decade: An Action Plan to Support Recovery and Transformation, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, available at: <https://ec.europa.eu/transparency/regdoc/rep/1/2020/EN/COM-2020-784-F1-EN-MAIN-PART-1.PDF>
- European Commission (2020) Turkey Report 2019, available at: <https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/20190529-turkey-report.pdf>
- European Commission 01/2020 - [Do robots really destroy jobs? Evidence from Europe](#)
- European Commission 02/2019 - [How computerisation is transforming jobs: Evidence from Eurofound's European Working Conditions Survey](#)
- European Commission 02/2020 - [Measuring the occupational impact of AI: tasks, Cognitive abilities and AI benchmarks](#)
- European Commission 03/2019 - [The impact of Technological innovation on the Future of Work](#)
- European Commission 04/2020 - [A Taxonomy of Tasks for Assessing the Impact of New Technologies on Work](#)
- European Commission 05/2019 - [The Digitalisation of Future Work and Employment. Possible impact and policy responses](#)
- European Commission 05/2020 - [Teleworkability and the COVID-19 crisis: a new digital divide?](#)



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- European Commission 06/2020 - [The labour market impact of robotisation in Europe](#)
- European Commission 08/2019 - [The impacts of robots on labour productivity](#)
- European Commission 11/2020 - [Telework, work organisation and job quality during the COVID-19 crisis - A qualitative study](#)
- European Commission 12/2020 - [Productive integration, economic recession and employment in Europe: an assessment based on vertically integrated sectors](#)
- ILO (2014) Employment relationships in the media and culture industries, available on: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_dialogue/---sector/documents/publication/wcms\\_240701.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/publication/wcms_240701.pdf)
- ILO (2018) Digital labour platforms and the future of work Towards decent work in the online world, available at: [http://wtf.tw/text/digital\\_labour\\_platforms\\_and\\_the\\_future\\_of\\_work.pdf](http://wtf.tw/text/digital_labour_platforms_and_the_future_of_work.pdf)
- International Labour Organization [ILO] (2017). The Future of Work We Want: A global dialogue. Geneva: ILO.
- Iosifidis, P. (2011). Media and Communications Policy in the European Union. In *Global Media and Communication Policy* (pp. 143-165). Palgrave Macmillan, London.
- Kaya, R., & Çakmur, B. (2010). Politics and the mass media in Turkey. *Turkish Studies*, 11(4), 521-537.
- Köseleli, B. B. (2017). The Usage Of New Media In Cultural Diplomacy: A Case Of Turkey. *European Journal of Multidisciplinary Studies*, 2(6), 115-120.
- McKinsey and Company, Turkey's Talent Transformation in the Digital Era January 2020. Available at: [https://www.mckinsey.com/tr/~/\\_media/mckinsey/locations/europe%20and%20middle%20east/turkey/our%20insights/future%20of%20work%20turkey/future-of-work-mckinsey-turkey-full-report.pdf](https://www.mckinsey.com/tr/~/_media/mckinsey/locations/europe%20and%20middle%20east/turkey/our%20insights/future%20of%20work%20turkey/future-of-work-mckinsey-turkey-full-report.pdf)
- McKinsey Global Institute, December 2017. Jobs lost, jobs gained: Workforce transitions in a time of automation
- Naughton, J. (2018). Magical thinking about machine learning won't bring the reality of AI any closer. Observer. 5 August. <http://www.theguardian.com/commentisfree/2018/aug/05/magicalthinking-about-machine-learning-will-not-bring-artificial-intelligence-any-closer>
- OECD (2017). Future of Work and Skills. Paper presented at the 2nd meeting of the G20 Employment Working Group.
- OECD (2018a). Online work in OECD countries. Policy Brief on the Future of Work. Paris: OECD.
- OECD (2018b). Putting faces on the jobs at risk of automation. Policy Brief on the Future of Work. Paris: OECD.
- OECD (2018c). Job creation and local economic development 2018: preparing for the future of work. Paris: OECD.
- OECD Employment Outlook 2019: The future of work, OECD, April 2019.
- Ohmae, K. (1990). The Borderless World. London: Harper Collins
- Tasente, T. (2019). Social Media Communication in the European Administration. Case study: European Commission. *Acta Universitatis Danubius. Communicatio*, 13(2), 118-129.
- Turkish Confederation of Employer Associations (TİSK) Future of Work survey of 150 senior executives and labor union representatives, October 2019
- Turkish Confederation of Employer Associations (TİSK) Future of Work survey of 150 senior executives and labor union representatives, October 2019.
- White, A. (2012). *The digital labour challenge: Work in the age of new media*. ILO. Available at: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_dialogue/---sector/documents/publication/wcms\\_241457.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/publication/wcms_241457.pdf)



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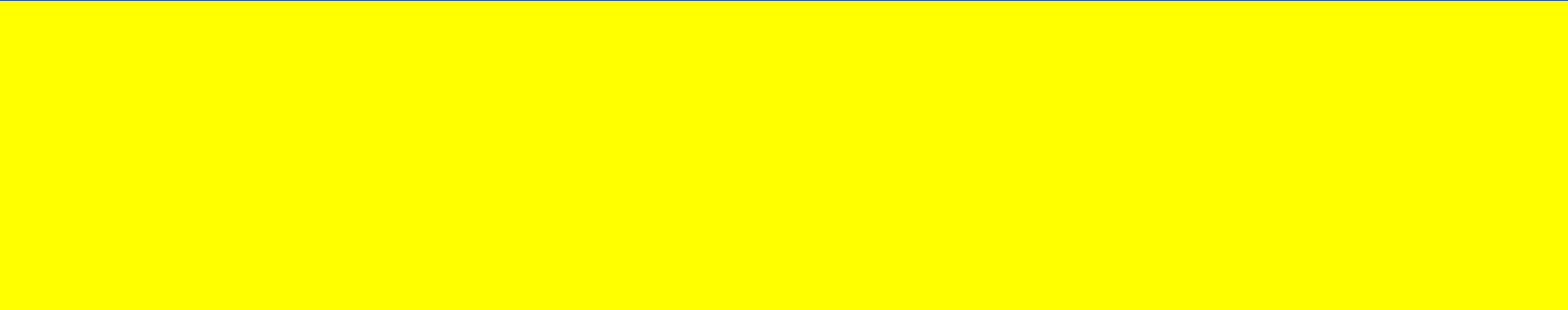
- World Bank (2013) Turkey Informatics and Economic Modernization, Washington

**b. Web sites:**

- [www.tubisad.org.tr](http://www.tubisad.org.tr)
- [www.tbd.org.tr](http://www.tbd.org.tr)
- [www.tuik.org.tr](http://www.tuik.org.tr)
- [www.sanayi.gov.tr](http://www.sanayi.gov.tr)
- [www.iskur.org.tr](http://www.iskur.org.tr)
- <https://www.iletisim.gov.tr/english>
- <https://www.uab.gov.tr/>
- <https://www.invest.gov.tr/en/pages/home-page.aspx>
- [https://www.sbb.gov.tr/wp-content/uploads/2020/06/Eleventh\\_Development\\_Plan-2019-2023.pdf](https://www.sbb.gov.tr/wp-content/uploads/2020/06/Eleventh_Development_Plan-2019-2023.pdf)
- For an overview of the audiovisual sector in the context of COVID-19 consult:  
<https://rm.coe.int/irisplus-2020-2-the-european-audiovisual-industry-in-the-time-of-covi/16809f9a46>



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