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► Digital technologies and trade union revitalization in the Arab States region



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by Ghassan Dibeh

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► Abbreviations

AI	artificial intelligence
EGDI	E-Government Development Index
GCC	Gulf Cooperation Council
ICT	information and communications technology
NRI	Network Readiness Index
UNCTAD	United Nations Conference on Trade and Development



► Executive summary

As part of the “Trade unions in transformation: Actors for change” programme of the ILO Bureau for Workers’ Activities, several regional studies have been commissioned to review innovative practices and positive experiences related to trade union revitalization. This paper explores the role of digital technologies in this process in the Arab States region, focusing on Iraq, Jordan, Kuwait, Lebanon and Oman. It discusses successful and innovative practices with a view to identifying lessons that are relevant to trade unions in other countries and regions as well. In general, unions in Arab countries have so far not mounted a comprehensive response to the policy, institutional and organizational challenges presented by the “fourth industrial revolution”, including increased automation, the introduction of new technologies, the emergence of the platform economy and the organization of workers in the information and communications technology (ICT) sector. Similarly, these topics are only reflected to a limited extent in social dialogue and collective bargaining agreements in the region.

To set the stage, the paper first examines the technological readiness of the Arab States region by looking at various indicators, namely the inclusion of ICT and digital strategies in national development plans; the Network Readiness Index; the Business-to-Consumer Electronic Commerce Index developed by the United Nations Conference on Trade and Development; and the E-Government Development Index of the United Nations. One important finding is that there is a wide gap between Member States of the Gulf Cooperation Council (GCC) and non-GCC countries. In particular, the non-GCC countries, with the exception of Jordan, are lagging behind in technological readiness and, consequently, in the capacity to adopt new digital technologies.

The next chapter considers various aspects of the (potential) impact of digitalization on labour markets and inequality in the Arab States region. It specifically discusses the potential for automation of jobs in the region and how that would affect informalization of the labour market, the capital–labour split, skill bias and gender inequality. Based on the relative automatability of different sectors in the economy, the share of jobs at risk of automation ranges from around 40 per cent in Iraq to around 20 per cent in Kuwait. An issue of concern is that the skill bias effect inherent in the adoption of new technologies may increase wage disparities between groups of workers. In addition, there is a real threat of industrial and agricultural workers being displaced into the informal economy. New technologies may also exacerbate the relatively low labour share of income in the region and widen the existing gender divide.

Finally, the paper investigates the challenges and opportunities faced by trade unions as a result of digitalization. These challenges include advocacy of, and engagement in, public policies on automation and its impacts on the labour market; the incorporation of digitalization into social dialogue and collective bargaining processes; the organization of workers in the platform or gig economy and in the ICT sector; emerging issues related to “big data”; and the significant decent work deficits encountered by data workers. On the other hand, digitalization of the economy may also create opportunities for trade unions to advance their revitalization agendas. This paper addresses various dimensions of such revitalization, notably innovative practices for representing and servicing workers in the digital economy. These include successful advocacy efforts shaping the design of public policy on automation; the consideration of new technologies in social dialogue forums; the organization of gig workers and data labourers; organization in the ICT sector; and the use of new technologies in trade union activities and strategies.

▶ 1



► 1. Introduction

Digital technologies are reshaping the economies of countries around the world, as recognized during the discussions under the ILO “Future of Work” initiative launched in 2015, which culminated in the International Labour Conference’s adoption of the ILO Centenary Declaration for the Future of Work in June 2019 (ILO 2019a). The “fourth industrial revolution”, or “second machine age”,¹ which these new technologies have engendered, is seen by many as changing every aspect of the world of work, production and consumption. These changes have already prompted many observers to ask unsettling questions about the future of work as such technologies gain further ground. The potential impact of this revolution driven by robotics and artificial intelligence is reflected most vividly in notions about the replacement of human labour by robots or, more apocalyptically, the occurrence of a *technological singularity*, when machine intelligence would surpass human intelligence, as popularized by the technologist Ray Kurzweil. Despite such possibilities, the replacement of labour by machines is still a moot point, with valid arguments on both sides. A recent report casts doubt on the possibility – in the near future at least – of robots replacing millions of jobs in the United States of America (Autor, Mindell and Reynolds 2020). In this regard, Acemoglu and Restrepo (2019) argue that there is a false dichotomy in the debate on the effects of automation on work and employment: on the one hand, there are the “alarmists” who predict the end of work as a result of automation, and on the other, the economists who argue that, as with all previous technological breakthroughs and advancements, there is no cause for alarm, since new technologies may well generate greater demand for labour and higher wages. The authors envisage a more nuanced impact of technologies on employment and wages or inequality. Specifically, the “displacement effect” of automation, which may lead to lower employment, wages and labour share of national income, would be counterbalanced by the creation of new tasks, functions and activities leading to a more balanced growth (Acemoglu and Restrepo 2019).

Despite their implications for the future of work, artificial intelligence, robotics and the myriad other digital technologies will also have an impact on productivity, income and wealth inequality (Brynjolfsson and McAfee 2014). According to Ernst, Merola and Samaan (2018, 27), “the risks, rather than being on the side of job losses, are linked to further worsening income inequalities, both within and across countries.” This was reaffirmed in the most recent general discussion on inequalities and the world of work (ILO 2021a).

According to Brynjolfsson and McAfee (2014), technological progress in the era of digitalization is affecting inequality through three main channels: skill-biased technological change; differential returns to the owners of capital on the one hand, and to labour on the other; and “winner-takes-all” markets. In the first channel, the introduction of new technologies will lead to higher demand for skilled workers, as they are mostly skilled labour-augmenting technologies. This may increase the wages of skilled workers relative to their unskilled counterparts, widening the gap between these two groups of workers. The second channel has to do with the way that ownership of the new technologies (“Who will own the robots?”) determines their distributional impact (Rotman 2015). In particular, the gap between the owners of capital and labour in terms of incomes and wealth may increase further – a phenomenon also studied extensively by Piketty (2014).² The third channel works through the dominance acquired by the most successful players in global markets for the new technologies. Indeed, Brynjolfsson and McAfee

1 The “second machine age” is an epithet coined by Brynjolfsson and McAfee (2014) to refer to the period from the late 1940s onwards in which machines have been providing thinking power, in contrast to the “first machine age”, in which machines provided muscle power.

2 On the other hand, in UNCTAD (2019a) it is noted that “the two main drivers of value creation in the digital era? digital data and platformization” can be an opportunity in developing countries, where “current trends of wealth concentration could be replaced by trajectories leading to more equitable sharing of the gains from digitalization.” Moreover, various measures can be taken to mitigate the effects of robotization, such as a tax on robots, which would counter the trend towards the substitution of capital for labour – a trend that is currently incentivized to some extent by taxation systems that tax labour more than capital.

(2014) argue that the biggest changes caused by technological progress are due to the growing gap between “superstar” firms and everyone else.

With regard to employment, despite the general concerns about massive displacement of workers following the adoption of new technologies, the World Bank (2016) concluded that the share of jobs that could be lost to automation was likely to be higher in developing than in developed countries. Empirical estimates by the World Bank (2016) and the McKinsey Global Institute (2017) suggest that automation is negatively correlated with gross national income. In other words, the lower a country's gross national income, the more its economy is prone to automation. Moreover, vulnerability to automation is positively correlated with the share of employment in agriculture.³

However, developing countries can benefit from digitalization by adopting new approaches (Ernst, Merola and Samaan 2018; UNCTAD 2019a). In particular, as argued by Sachs (2019), the traditional growth model for developing countries, where labour-intensive technologies serve as the first step on the development ladder, is becoming obsolete because of robots and artificial intelligence potentially taking the place of workers in the production of commodities sought after by developed countries. Korinek and Stiglitz (2021) find that automation in developed countries may lead to the balance of trade turning against countries with labour-intensive technologies and those with abundant natural resources (which is relevant to the Arab States). Developing countries must therefore explore new digital-based development pathways that take into account the non-competitiveness of the traditional development model due to automation. This involves embracing new technologies, especially in sectors such as telecommunications and healthcare, but also in higher education, mid-tech services such as coding, the management of “big data” and e-government.

The changes in labour markets brought about by digitalization are having an impact on trade union activities. This paper focuses on how developments related to digital technologies are affecting union revitalization in the Arab States region. It is organized as follows: Chapter 2 provides an overview of the digital technology readiness of a selected set of Arab countries, namely Iraq, Jordan, Kuwait, Lebanon and Oman. Chapter 3 investigates digitalization and how it is impacting on labour markets and inequality in these five countries. Chapter 4 discusses the strategies adopted by trade unions in response to digitalization. The concluding chapter offers a number of lessons learned and sets out the way forward.

³ Building on the Lewis model of economic development and structural change, Schlogl and Sumner (2018) introduce a model of a dual economy to study the impact of automation. In particular, they divide the economy into an automation-prone sector consisting of jobs that are susceptible to automation, such as agriculture in developing countries, and an automation-resistant sector, such as services, that requires non-routine work and human interaction. In this model, the agricultural sector is the most susceptible to automation. As automation proceeds creating a “robot reserve army”, wages in that sector suffer and labour is transferred to other sectors in the economy, thereby leading to automation-induced structural change.

► 2



► 2. Digital technology readiness

This chapter considers various indicators of digital technology readiness in selected Arab States. The permeation of digital technologies is a gradual process that depends on a country's ability to absorb and implement such technologies in the various sectors of its economy. The various indicators used to gauge the preparedness of Arab State economies in the following sections are: the information technology "content" of national development plans; the Network Readiness Index; the Business-to-Consumer Electronic Commerce Index developed by the United Nations Conference on Trade and Development (UNCTAD); and the E-Government Development Index of the United Nations.

2.1. Investment in digital technologies under national development plans

A key indicator of digital technology readiness is the role accorded to promotion of the digital sector and information and communications technologies (ICTs) in national development plans and related official documents. Countries that include specific allocations for investment in digital technologies in their plans should be more susceptible to, or ready for, digitalization in the future. Based on a review of the development plans of Iraq, Jordan, Kuwait and Oman, table 1 (see Appendix 1 for this and all other tables) summarizes the status of such initiatives in these countries. It emerges that Kuwait and Oman both have a clear vision for the adoption of digital technologies; they are followed closely by Jordan, whereas Iraq's plan does not include a digitalization strategy.⁴

2.2. Network Readiness Index

In addition to support through national development plans, the ability of countries in the Arab States region to participate in the fourth industrial revolution depends on many other dimensions and factors as well. The Network Readiness Index (NRI) measures one such dimension and is based on four pillars: technology, people, governance and impact (Dutta and Lanvin 2020). Table 4 shows some of the indicators falling under each of these pillars.

- "Technology" (for the purposes of this paper) encompasses mobile tariffs, international internet bandwidth, the adoption of emerging technologies, investment in emerging technologies, spending on computer software, and robot density.
- "People" is measured by active mobile broadband subscriptions and the extent to which businesses in a country use digital tools.
- "Governance" covers cybersecurity, the regulatory environment for ICTs, e-commerce legislation, e-participation and socio-economic disparities in the use of digital payments.
- "Impact" is measured in terms of the share of mid- and high-tech industries in the total value added of manufacturing, the share of high-tech exports in the total volume of exports of manufactured goods, and prevalence of the gig economy.⁵

Table 2 shows the NRI ranking (out of 134 countries) of the selected Arab countries, except Iraq, for which relevant data is unavailable. A lower number indicates a better ranking.

Broadly speaking, the countries that are members of the Gulf Cooperation Council (GCC), that is, Kuwait and Oman, score better in almost all areas and pillars of the NRI, while Lebanon is the country that is least ready for digitalization according to that index. Tables 3 and 4 present the countries' ranking on selected

⁴ Lebanon has no official development plan.

⁵ More generally, the "impact" pillar is about measuring the impact of digital technologies on the economy, quality of life and achievement of the Sustainable Development Goals.

indicators under the main pillars.⁶ These show Lebanon to be the lowest-scoring country. It is followed by Jordan, which performs relatively better in the adoption of, and investment in, emerging technologies and in spending on computer software. Kuwait scores relatively well, except on cybersecurity, the adoption of emerging technologies, the ICT regulatory environment and high-tech exports. Similarly, Oman lags behind in spending on computer software, e-commerce legislation and high-tech exports.

2.3. Business-to-Consumer Electronic Commerce Index

Table 5 shows the ranking of the Arab countries on the UNCTAD Business-to-Consumer Electronic Commerce Index, together with the corresponding index values and those of selected regions. The index is calculated as the average of four indicators: percentage of adult population with an account at a financial institution or with a mobile money service provider; percentage of population using the internet; Postal Reliability Index (measured by the Universal Postal Union); and number of secure internet servers per 1 million people. As can be seen, Kuwait and Oman are ahead in the ranking and index values in comparison with Jordan, Lebanon and Iraq. The two GCC countries have higher index values than the averages for the world as a whole and Western Asia, but they are still below the average for developed countries. Finally, Lebanon's index value is approximately equal to the average for Western Asia, while those of Jordan and Iraq lie below that benchmark. The value for Iraq is in fact significantly lower, reflecting very limited potential for the development of e-commerce there.

2.4. E-Government Development Index

Table 6 presents the United Nations E-Government Development Index (EGDI) for the Arab countries. In addition, table 7 shows their scores on the E-Participation Index, developed by the United Nations Department of Economic and Social Affairs, which measures various aspects of citizens' participation in e-governance, specifically the use of online services to facilitate the provision of information by governments to citizens; interaction with stakeholders; and engagement in decision-making processes.

Again, the GCC countries are ahead of Iraq, Lebanon and Jordan as regards the use of digital technologies in public administration services. On the EGDI, Iraq, Lebanon and Jordan are ranked 143rd, 127th and 117th, respectively, out of 193 countries, while Kuwait and Oman occupy much higher ranks: 46th and 50th, respectively. Iraq and Lebanon are in the middle group of countries by EGDI value, Jordan is in the high EGDI group, and Kuwait and Oman belong to the very high EGDI group.

To help in further assessing quantitatively the status of e-government in these Arab countries, table 8 provides information on relevant indicators under the NRI (Dutta and Lanvin 2020). Again, we may observe the wide gap between GCC and non-GCC countries in government online services, although Jordan does outperform Kuwait in the government promotion of investment in emerging technologies. Lebanon remains the laggard in the region in relation to these measures.

The analysis of several indicators of digital readiness presented in the above sections thus points to a gap between GCC and non-GCC countries. In particular, the non-GCC countries, with the exception of Jordan, seem to have very few prospects for adopting the various technologies that are key to the second machine age. It is reasonable to conclude that this potential future digital divide between GCC and non-GCC countries can be generalized to other Arab countries not included in the sample. Moreover, it may be conjectured that digitalization in the Arab States region will start (or, in some cases, has already started) with the emergence of a platform economy in such fields as delivery, music, taxi services and rentals. This would be followed by the adoption of more advanced digital technologies, such as robots and artificial intelligence. That being said, the impact of these technologies on labour markets could well prove disruptive by generating, albeit gradually, increased income inequalities and unemployment.

⁶ See also section 2.4 on e-government.

► 3



► 3. Digitalization, labour markets and inequality

This chapter investigates the possible effects of digitalization on labour markets and inequality in the Arab States region. Specifically, it discusses the potential for the automation of jobs in the region and its implications as regards informalization of the labour market, the capital–labour split, skill bias and gender inequality.

3.1. Vulnerability of jobs to automation

In their seminal paper assessing the likelihood of automation of 702 occupations in the United States, Frey and Osborne (2013) found that around 47 per cent of jobs were at risk of automation. Developing countries have large agricultural sectors and, as mentioned in the introduction, the impact of automation in such economies may be more severe than in developed countries with their large industrial and service sectors.⁷ Accordingly, the World Bank (2016) estimates that the share of jobs that could be lost to automation is higher in developing countries, while empirical analysis by the McKinsey Global Institute (2017) suggests that automation is negatively correlated with gross national income. Assuming for the sake of simplicity that all jobs in industry and agriculture are automatable, while all those in services are not, table 9 displays the proportion of jobs that are at risk of automation in the Arab countries.⁸

From that table it can be seen that the share of jobs at risk of automation ranges from 41.0 per cent in Iraq to 23.8 per cent in Kuwait. It is worth mentioning that in Iraq and Lebanon, both countries with a high level of employment in agriculture, which is more prone to automation than industry, the overall risk of automation is higher than in Jordan, Kuwait and Oman, where agriculture accounts for a much smaller share of employment (ranging from 1.8 per cent to 4.0 per cent).

3.2. Increasing informality and wage disparities

In terms of the skills of workers who could be displaced by the new technologies, the jobs that are at higher risk are those that are routine, whether they involve cognitive or manual tasks, and that accordingly can be performed more easily by robots or artificial intelligence systems (Brynjolfsson and McAfee 2014). The labour displacement that is expected to occur in the industrial and agricultural sectors may expand the ranks of workers in the informal economy as routine workers migrate from formal sectors and join the informal labour force in the low-paying services sector.⁹ This migration of routine workers to low-paying service occupations coupled with increased demand for workers in highly skilled,

7 In the model proposed by Schlogl and Sumner (2018), the surplus labour that moves to the automation-resistant sector is absorbed by either manufacturing or services. If the manufacturing sector does not create enough demand for this surplus labour, “technological unemployment” will occur, leading to premature deindustrialization. At the same time, informality in the services sector will rise.

8 It should be noted that the Frey and Osborne (2013) model predicts the percentage of jobs that are at risk of automation, not the actual percentage that will be lost. In developing countries, where there is an abundance of low-cost labour, the actual number of jobs lost will depend on many factors or constraints, such as the relative cost of labour versus machines. Moreover, the net loss of employment to automation depends on job creation in other or new sectors spawned by the new technologies. A study of the potential impact of artificial intelligence on jobs in 29 countries finds that the proportion of jobs at high risk of automation by the early 2030s ranges from around 25 per cent in some East Asian and Nordic countries to over 40 per cent in Eastern European countries (PwC 2018). However, the authors point out (PwC 2018, 2) that “other analysis we have done suggests that any job losses from automation are likely to be broadly offset in the long run by new jobs created as a result of the larger and wealthier economy made possible by these new technologies. We do not believe, contrary to some predictions, that automation will lead to mass technological unemployment by the 2030s any more than it has done in the decades since the digital revolution began.”

9 Data on the informal labour force is available only for Jordan and Lebanon.

non-routine occupations, such as engineers and computer experts, may well cause wage disparities to increase (Frey 2019).

3.3. Capital–labour inequality

Digital technologies are expected to have an impact on capital–labour inequality by altering the shares of capital and labour in national income. As capital replaces labour in the production process through the adoption of such technologies, the share of income accruing to capital will increase (Piketty 2014; Korinek and Stiglitz 2019; Moll, Rachel and Restrepo 2021).¹⁰ This effect is likely to exacerbate the already relatively large capital–labour split in the Arab States region as shown in table 10. A low labour share indicates that the owners of capital, who derive their income from profits, interest, rents and dividends, control most of the wealth generated.

3.4. Gender inequality

The proliferation of new technologies is also expected to impact on gender inequality in the Arab States region. A report by the Organisation for Economic Co-operation and Development shows that the gender divide in digital technologies is pervasive in advanced economies in areas such as ICTs, especially software development, and in venture capital investment, entrepreneurship and start-ups (OECD 2018).

Table 11 presents the Global Gender Gap Index for the five countries under study. As suggested by their very low ranking, the gender divide is significant in the Arab States, which makes it all the more important to improve access to digital technologies in the region and harness the potential of such technologies to reduce gender inequalities. For example, in Lebanon the labour force participation for women is very low, standing at 26 per cent. In addition, firms with women as senior managers or in which women are the majority owners are a rarity. Women are discriminated against in inheritance laws and access to land assets. In terms of education and skills in areas of relevance to digital technologies, women lag considerably behind men in educational attainment in science, technology, engineering and mathematics (STEM) subjects (with a sub-index of around 0.6) and in ICTs (with a sub-index of around 0.3) (WEF 2020).¹¹

¹⁰ In this respect, the distributional impact of such technological change via an increase in the use of capital depends on the elasticity of substitution between capital and labour, σ . If $\sigma > 1$, the substitution of capital for labour will increase the share of capital in national income. Given the scarcity of data, it is not possible to obtain a meaningful estimate of σ for the Arab States region.

¹¹ For both the Global Gender Gap Index and its sub-indices, a value of 0 indicates absolute imparity and a value of 1 absolute parity.

► 4



► 4. Digital technologies and strategies for trade union revitalization

In the preceding chapters the potential for digitalization and the associated risks in the Arab States region were assessed from the perspective of the region's digital readiness and the likely impact of digitalization on labour markets. At this juncture, the potential threat posed by digitalization is low since in the Arab countries these new technologies, such as artificial intelligence (AI) and robotization, will take longer to become integrated into production processes in industry, agriculture and services, and consequently to have a significant impact on employment and inequality. However, one phenomenon associated with digitalization that is already taking hold in the Arab States region is the rise of the platform economy. In this emerging sector, the threat is evident in terms of a greater likelihood of precarious work and increased informalization and inequality. Despite differences in the speed at which different forms of digitalization are being introduced across the region and divergent experiences (for example, between GCC and non-GCC countries), it is imperative for trade unions in all the Arab countries to develop strategies in response to digitalization, both at the macro and micro levels, and to engage early on in national debates, plans and policies related to digitalization.

In this chapter, we investigate how digitalization of the economy presents multiple challenges for trade unions, notably as regards engagement in public policy discussions on automation; addressing digitalization in social dialogue and collective bargaining; organizing workers in the gig or platform economy; organizing workers in the ICT sector; and certain challenges posed by big data. On the other hand, digitalization may also open up opportunities for trade unions to harness digital technologies in advancing their revitalization agendas.

4.1. Engagement in public policy discussions on automation

In some Arab countries, especially the GCC countries, digitalization of the economy is being promoted by governments in national plans and visions, as noted in Chapter 2. These countries are therefore more likely to be amenable to public policy discussions on digitalization and its effects on labour markets, inequality and employment. Nevertheless, trade unions in all Arab countries should engage in, or even spearhead, public discussions and social dialogue on the role of digital technologies in new economic development paradigms and their impact on workers and workers' organizations. In this respect, the debate on automation places great emphasis on the importance of developing public policies aimed at promoting new technologies with positive labour market impacts. Korinek (2021) advocates the steering of technological progress towards technologies that create jobs, rather than replacing them. In addition, he argues that the main threat to labour in the future is not a jobless economy where workers lose their jobs as a result of automation, but the way in which the labour-saving nature of new technologies can reduce real wages and drive income inequalities.

Trade unions must therefore engage in public policy debates on automation early on and call for policies that foster complementarity between labour and new technologies. Korinek and Stiglitz (2020) describe specific policies, including fiscal measures, that can help to make technological progress more desirable from the perspective of workers. In addition, trade unions in countries with low-skilled manufacturing sectors that export to advanced economies can advocate policies designed to protect workers in such industries, since labour-saving innovations in developing economies may otherwise hurt the incomes of those workers (Korinek and Stiglitz 2021).

4.2. Digitalization and social dialogue

Social dialogue between governments, employers and workers plays a key role in managing the labour market impacts of digitalization. This is no less true of the Arab States region, where these issues are relatively new and have not been discussed so extensively in social dialogue at various levels, from the national to the firm level. Mexi (2019) gives several examples of social dialogue and collective bargaining in the platform economy, mostly at the sectoral and company levels, drawn mainly from Europe, the United States and Australia. One of these examples is an agreement in Denmark between the trade union HK (National Union of Commercial and Clerical Employees) and Voocali, a tech start-up that developed a platform providing interpretation services. The agreement addresses the employment relationship of the platform workers, training and social protection. Significantly, Rodriguez Contreras (2021) points out that the use of collective bargaining to address the impact of digitalization is more frequent in certain sectors, such as the financial sector. In sectors where more mature technologies such as robotics are widely used, collective bargaining agreements are often well established. For instance, in manufacturing, such agreements cover a wide range of issues, including wages, skills policies and working conditions. Trade unions can and should have a say in the types of technologies that are adopted by their members' employers, with the focus being on maximizing positive impacts for workers.¹² De Stefano and Taes (2021) cite the example of a recent agreement between the Spanish Government and the social partners on workers' rights vis-à-vis algorithmic management that is meant to ensure greater transparency and "help to mitigate the risk of unfair and discriminatory algorithmic decision-making". In this regard, De Stefano (2018) argues that collective bargaining should address the challenges faced by workers as a result of the increased use of AI algorithms and "big data" to manage and monitor workers through people analytics and electronic performance monitoring systems.¹³ In addition, "the involvement of workers' representatives can also prove particularly beneficial to the aim of governing other implications of new technologies at the workplace" (De Stefano 2018). Trade unions can ensure that issues related to automation are covered by collective bargaining agreements. Indeed, Green (2019) argues that such agreements are the right place to include clauses on workers' adaptation to the new technologies through retraining and reskilling programmes aimed at enabling humans to work alongside the new machinery in automated workplaces. Moreover, collective agreements must lay down limits to the AI-enabled surveillance of workers and seek to improve transparency in AI-based decision-making processes, including transparency regarding how outcomes are produced by such systems (De Stefano 2018).

¹² In a study of a small sample of firms in Norway and United Kingdom, Lloyd and Payne (2019) found that in some instances, workers and unions were consulted on, or were directly involved in, decisions to introduce AI systems and robotics in the workplace. In particular, they singled out one Norwegian company which stood out for "worker engagement in technological change", noting how "[p]roject groups' are set up, involving a manager, technician, engineer, union rep, safety rep and operative, which visit robotic manufacturers and choose and assist with implementation." (Lloyd and Payne 2019, 17).

¹³ Quackenboss and Meisburg (2020) note how "[i]n some workplaces, individual productivity reportedly is tracked by robots that deliver warnings and termination decisions accordingly, without human input."

4.3. Organization of gig workers and “data labourers”

One of the major sectors of the new digital economy is the platform economy, which has grown exponentially worldwide since 2010 (ILO 2021b). In the Arab States region, the platform economy is expected to make inroads well before the widespread introduction of robots and AI systems in productive or service activities. It is therefore imperative that trade unions take this emerging phenomenon into consideration when addressing the challenges of digitalization. This section focuses on five aspects that deserve particular attention.

First, the platform economy involves new management practices (ILO 2021b). The idea that “AI is the boss” manifests itself in the use of performance rating systems, which subjects workers to the risk of “discrimination, inaccurate ratings, unjustified sanctions and even unfair dismissal” (TUC 2021).

A second important aspect is the employment relationship between digital platforms and workers. Platform workers are often referred to as “independent contractors”, “independent third-party providers” or other similar terms that deny the existence of an employment relationship, thereby absolving platforms from compliance with labour legislation on remuneration, working hours and other matters (ILO 2021b). However, the classification of workers in the platform economy has been addressed increasingly in a number of countries worldwide, often following legal action by trade unions.

Third, data ownership in the platform economy is a highly contentious topic. An additional challenge is the use of data on workers for surveillance purposes. Some existing regulations – for example, the European Union’s General Data Protection Regulation – provide workers with a range of rights over their data, thereby ensuring greater transparency and enabling them to access data that they may need so as to engage in collective bargaining (ILO 2021b).

Fourth, the routine work involved and the segmentation of tasks allow platform companies to design work processes according to Taylorist principles. In platform economies, an extreme form of Taylorism is applied, where microtasks are allocated to thousands of crowdworkers managed by algorithms (Ettlinger 2017).

Finally, given the nature of work in the gig economy, especially in cloud work, it is difficult for trade unions to organize workers, who are competing with one another and do not necessarily share the same workspaces or work experiences. However, Jin, Kominers and Shroff (2021) point out that what they refer to as “decentralized collective action” is on the rise in the content creator and gig economies. Such collective action is often more bottom-up and diffuse compared with the traditional strategies of trade unions. Teams of workers may come together to voice shared concerns and opposition through social media and online forums, undermine or challenge a platform’s normal operations, leverage the power of their audiences or customers, and in some cases leave platforms to form worker-owned alternatives (Jin, Kominers and Shroff 2021).

One particular organizing strategy is “algo-activism”, which is about workers resisting the managerial control increasingly exercised through algorithms. Examples include the DoorDash #DeclineNow movement and similar attempts to subvert algorithmic control on platforms such as TikTok, Uber, Airbnb, Fiverr and TaskRabbit. However, Jin, Kominers and Shroff (2021) argue that this type of activism has had only a limited impact. Alternatively, there is an “exit strategy” where workers may decide to leave such platforms and establish cooperatives that are democratically run and owned by the workers themselves. Examples include the Drivers Cooperative in New York and Stocksy United. In this regard, Schmidt (2017) argues that although such cooperatives are unlikely to be able to compete with major platforms, they can encourage clients to pay a little more for services that circumvent the exploitative structure of traditional platform economies.

4.4. Organization in the ICT sector

Workers in the ICT sector are often highly trained and skilled. They are more subject to short-term contracts and to mobility between knowledge centres and, accordingly, have in the past proved less amenable to unionization and collective bargaining. By way of illustration, the unionization rate among ICT workers in the United States and Europe is lower than the overall union membership rate – for example, in the United States 3.9 per cent versus 10.7 per cent, and in Belgium 5 per cent versus 55 per cent (Fisher 2020).¹⁴ However, Marks et al. (2020) argue that forums such as the FLOSS (“free/libre open source software”) community may represent a kind of union for these knowledge workers. They conclude that “[t]he empirical data presented ... demonstrate that FLOSS communities provide many of the support functions that a traditional union would offer. While the notion of formal representation is somewhat stigmatized for this group of workers, it certainly appears that some form of representation may arise from these Internet forums and networks.” (Marks et al. 2020, 184). However, according to the authors, such internet spaces and forums do not readily provide a fertile ground for traditional union activity. In this respect, it is likely that organizing ICT workers in the Arab States region will be one of the main challenges faced by trade unions there.

4.5. Data as labour and netizens

One salient feature of the digital economy is the rise of “big data”, which feeds upon the data provided by users on internet platforms. Sites such as Google and Facebook gather such data from users for free while the users are able to use such platforms for free as well. According to Arrieta-Ibbara et al. (2018), such a “social contract” between users and tech corporations is inefficient as it retards the growth of productivity and skews the distribution of returns from the data economy. The current model needs to be replaced by one in which data is treated as labour and such services are to be paid for, which would enable users to develop into “first-class digital citizens”. Similarly, the establishment of “data-labour unions” could act as a countervailing force in the data economy, allowing users to acquire bargaining power over the utilization of user-generated data and increase their earning potential.

4.6. Use of digital technologies in organizing and revitalization

The introduction of AI systems in the workplace may also create opportunities for workers and trade unions to organize and use digital technologies for union revitalization and outreach. TUC (2021) sets out such opportunities, including worker-led AI, collaboration with technologists, and focusing on recruitment and organizing. For example, AI-powered tools (see box 1 below) can help to provide evidence in support of trade union campaigning for better terms and conditions at work, or identify bias and discrimination (TUC 2021).

¹⁴ Investigating unionization in the Israeli ICT sector, Fisher (2020, 2) finds that “[a]n unprecedented unionising trend has been witnessed among Israeli ICT workers since 2014, leading to the formation of the first works councils in this sector and the first CBAs [collective bargaining agreements] being concluded by workers and employers.” Unions achieved such advances by using “institutional power” to change Israeli labour laws and make unionization attractive to workers in the ICT sector and through the increase of “associational power” through new ways of organizing that led to the establishment of works councils in previously unorganized workplaces.

► Box 1. Artificial intelligence-powered tools for organizing and servicing workers

One example of such an AI tool is an app called WeClock (<https://weclock.it/collectives/>) that collects data on an individual's working life. This can be useful for analysing or quantifying the workday, and it can support union campaigning by providing pooled data on the time spent by workers on different activities, including commuting to work. Another example is the AI-enabled chatbot studied by Flanagan and Walker (2021). Originally created by IBM, this chatbot was subsequently developed by an "alt-labour" network in the United States and used by a traditional union in Australia. The authors focus on its contribution to organizing, learning and communication.

More generally, Geelan (2021) surveys the role of new technologies such as the internet and social media in three union revitalization strategies. The first strategy, *organizing*, refers to recruiting, representing and retaining members, and increasing mobilization capacity. The second strategy is *coalition-building with other social movements* on the basis of joint interests such as anti-austerity or the environment. The third strategy is *political action vis-à-vis political parties and governments*, which includes influencing government decisions, voter mobilization, and supporting or blocking legislative initiatives. Nissim and Simon (2021) recommend that in the age of AI, unions adopt several measures in the near future, including the recruitment of on-board technology experts in order to understand better the opportunities offered by the new technologies; joining AI consortiums to stay connected with the main players in the field and keep abreast of new developments; and joining AI ethics committees "to ensure that the AI implementation will not harm employees' rights or dignity, and that it will be carried out in an ethical way" (Nissim and Simon 2021, 7).

4.7. Trade unions' readiness to address digitalization

A survey conducted among some of the main trade union confederations in the Arab States region suggests that unions in the region are only to a limited extent prepared to address the challenges and opportunities arising from digitalization and technological change. The responses from trade unions in three countries (see box 2) indicate that their strategies for tackling the potential threats and harnessing the potential benefits of the fourth industrial revolution are still in their infancy. On the other hand, the use of social media and ICTs such as email and Zoom for communications, meetings and announcements is prevalent.¹⁵

¹⁵ The use of WhatsApp or Facebook for communication – both for internal communications and for disseminating the position of unions – carries certain risks. These platforms could potentially sell information on union communications to a third party, which is of particular concern in countries where trade union and workers' rights are under attack. Moreover, it is essential to ensure effective protection for the data generated and collected by unions, since internal ICT systems could otherwise be hacked. For a broader discussion of concerns regarding the use of WhatsApp for communication in the public sphere, see White (2022).

► **Box 2. Trade unions and digital technologies in Iraq, Lebanon and Oman**

The *General Federation of Oman Workers* stated that it had not undertaken any measures, activities or research related to the potential impact of digital technologies on workers and the labour market in Oman. There are no existing mechanisms or attempts to organize platform workers. However, there are two unions for the workers of two telecommunication firms: Omantel and Ooredoo. The use of digital technologies by the Federation is still limited to simple tasks. Thus, it mainly uses email and social media to make announcements, send out invitations to activities, and receive requests and petitions. However, it is working on the development of a private system for its database and its sectoral affiliates.

The *General Federation of Iraqi Workers* stated that it had not undertaken any measures, activities or research related to the potential impact of digital technologies on workers and the labour market in Iraq. The Federation's application of such technologies is limited to the use of emails, social media and Zoom to communicate with its members and conduct meetings. It faces many challenges, notably a lack of resources, that prevent it from developing further its use of digital technologies. The Federation has not yet made any attempts to organize platform workers into trade unions, but this is something that it would certainly consider once it has acquired the necessary resources, tools, skills and training. It is worth noting that the Federation believes it has staff who would benefit from technical assistance in these areas. Finally, some trade unions in Iraq have been successful in using new technologies to strengthen labour organization – for instance, with regard to the exchange of data and organizing activities.

The *General Confederation of Lebanese Workers* stated that it had not undertaken any measures, activities or research related to the potential impact of digital technologies on workers and the labour market in Lebanon. The Confederation mentioned that poor infrastructure, power cuts and inadequate telecommunication networks, as well as the economic crisis and high unemployment rates, made the issue of organizing platform workers a marginal one. The Confederation's application of digital technologies is limited to the use of emails, social media and Zoom to communicate with its members and conduct meetings.

Source: Compiled from the responses to a questionnaire sent by email to trade union federations in selected countries. See Appendix 2 for the questionnaire.

► 5



► 5. Conclusions and the way forward

Technological advances and, in particular, digitalization are key drivers of change that will determine what the world of work and, consequently, also trade unions will look like in the near future. This paper has shown that the fourth industrial revolution presents trade unions with a myriad of challenges and opportunities. The new technologies threaten to cause major disruption to labour markets and, more generally, to the future of work. Thus, the displacement of labour by new technologies is expected to lead to rising unemployment and inequalities. Moreover, new ways of organizing work engendered by the new technologies, such as the platform economy, are transforming work relations and processes, with negative effects such as the erosion of the traditional employment relationship and the imposition of “digital Taylorism”. While these drivers of change are creating many challenges that call for tailored responses by trade unions, digitalization has significant potential to facilitate union revitalization, which means ensuring the relevance of unions for all workers in a rapidly changing labour market.

The paper finds that trade unions in Arab countries have so far not mounted a comprehensive response to the policy, institutional and organizational challenges presented by the fourth industrial revolution, including increased automation, the introduction of new technologies, the emergence of the platform economy and the organization of workers in the ICT sector. Similarly, these topics are only reflected to a limited extent in social dialogue and collective bargaining agreements in the region.

In the Arab States region, the current level of trade unions’ preparedness to meet these challenges and opportunities is low. Drawing on the discussion in the preceding chapters, we may single out the following areas on which unions should focus their efforts:

► *Public policy on automation*

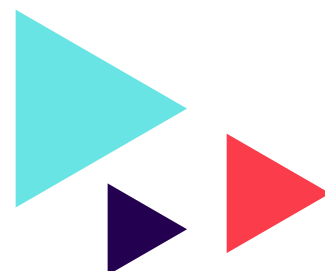
Trade unions in all countries should engage in public debates, or even spearhead such discussions, on the role of digital technologies in producing new economic development paradigms and on their impact on workers in terms of unemployment and inequality.

► *New technologies and social dialogue*

There is a need for social dialogue and collective bargaining in the Arab countries to tackle the issues faced by the social partners as a result of digitalization and automation in the region, including issues related to workers’ rights (for example, the right to disconnect), data protection and the introduction of technological surveillance of workers in the workplace.

► *Organization of gig workers and “data labourers” in platforms*

Platform work poses challenges to workers’ rights, social protection and collective bargaining, as the workers involved are often considered independent contractors or self-employed and hence may fall outside the realm of traditional labour market regulations and institutions. Trade unions need to devise ways of organizing platform workers that address such challenges, specifically the nature of the employment relationship and digital Taylorism.



► *Organization in the ICT sector*

Organizing ICT workers in the Arab countries is one of the main challenges for trade unions in the region. Despite the inherent difficulties in the organization of such workers worldwide, there is ample potential for successful unionization in the ICT sector, as shown by the experiences of a number of countries.

► *Data labour*

The establishment of “data-labour unions” could act as a countervailing force in the data economy, allowing users to acquire bargaining power over the utilization of user-generated data and increase their earning potential.

► *Use of new technologies in trade union organization and strategies*

The internet and social media can be used by unions for organizing, recruiting and retaining members, for union mobilization, coalition-building and engagement in the political space.

It is only by tackling the aforementioned challenges and embracing the opportunities offered by technological change and digitalization that trade unions can grow and thrive in an ever-changing world of work. Unions in the Arab States region can build on existing experience worldwide regarding the best ways of responding to the rapid spread of digital technologies and how to turn key challenges into opportunities for revitalization.

► Appendices

Appendix 1. Tables

► **Table 1. ICT development and/or digital vision in the national development plans of selected Arab countries**

Country	ICT development and/or digital vision
Lebanon	n/a
Iraq	The plan merely mentions turning Iraq into an ICT regional hub and ICT literacy and safety.
Jordan	Yes. Digitalization of the entire economy is envisaged, with a total investment of 430 million Jordanian dinars.
Kuwait	Yes. Promotion of an enabling environment for ICTs; improving the use of ICTs in public administration and infrastructure; development of a national ICT strategy.
Oman	Yes. Digitalization is a national priority and is seen as an enhancer of productivity and competitiveness.

n/a = not applicable

Source: ILO (2022).

► **Table 2. Network Readiness Index ranking of selected Arab countries, 2020**

Country	Ranking
Lebanon	90
Jordan	69
Iraq	n/a
Kuwait	53
Oman	44

n/a = not available

Source: Dutta and Lanvin (2020).

► **Table 3. Ranking and score on the pillars of the Network Readiness Index for selected Arab countries, 2020**

Pillar	Lebanon ranking	Lebanon score	Jordan ranking	Jordan score	Kuwait ranking	Kuwait score	Oman ranking	Oman score
Technology	61	41.55	69	47.50	55	44.34	63	40.34
People	67	47.91	44	53.67	43	53.82	56	50.08
Governance	123	34.82	73	53.13	72	53.70	35	72.54
Impact	100	40.94	90	45.99	47	57.23	44	58.37

Source: Dutta and Lanvin (2020).

► **Table 4. Ranking of selected Arab countries on various Network Readiness Index indicators, 2020**

	Lebanon	Jordan	Kuwait	Oman
Technology (access)				
► Mobile tariffs	95	108	45	41
► International internet bandwidth	89	70	40	48
Technology (future technologies)				
► Adoption of emerging technologies	79	59	76	44
► Investment in emerging technologies	62	46	57	43
► Spending on computer software	102	50	25	98
► Robot density	n/a	n/a	68	64
People (individuals)				
► Active mobile broadband subscriptions	105	48	11	53
People (businesses)				
► Business use of digital tools	74	51	56	58
Governance (trust)				
► Cybersecurity	117	76	69	18
Governance (regulation)				
► ICT regulatory environment	131	64	116	30
► E-commerce legislation	77	77	1	77
Governance (inclusion)				
► E-participation	119	119	18	38
► Socio-economic gap in use of digital payments	121	86	46	n/a
Impact (economy)				
► Mid- and high-tech industry	79	58	51	70
► High-tech exports	100	86	89	110
► Prevalence of gig economy	68	38	45	29

n/a = not available

Source: Dutta and Lanvin (2020).

► **Table 5. Business-to-Consumer Electronic Commerce Index, ranking and value for selected Arab countries and regions, 2019**

Country/Region	2019 ranking	2019 index value
Lebanon	68	59.4
Jordan	87	49.2
Iraq	131	25.3
Kuwait	55	69.3
Oman	59	68.2
Western Asia	n/a	59
Developed	n/a	87
World	n/a	55

n/a = not applicable

Source: UNCTAD (2019b).

► **Table 6. E-Government Development Index for selected Arab countries, 2020**

	Lebanon	Iraq	Jordan	Kuwait	Oman
Ranking	127	143	117	46	50
Index value	0.4955	0.436	0.5309	0.7913	0.7749
Index group	Middle	Middle	High	Very High	Very High

Source: UNDESA (2020).

► **Table 7. E-Participation Index for selected Arab countries, 2020**

	Lebanon	Jordan	Iraq	Kuwait	Oman
Ranking	148	148	158	18	38
Index value	0.3333	0.3333	0.3095	0.9048	0.8333
Index group	Middle	Middle	Middle	Very High	Very High

Source: UNDESA (2020).

► **Table 8. Ranking of selected Arab countries on e-government-related indicators under the Network Readiness Index**

Indicator	Lebanon	Jordan	Kuwait	Oman
Government online services	114	119	31	24
Publication and use of open data	100	86	n/a	n/a
Government promotion of investment in emerging technologies	93	47	69	23

n/a = not available

Source: Dutta and Lanvin (2020).

► **Table 9. Share of jobs in total employment that are at risk of automation in selected Arab countries, total and by sector (percentage)**

Country	Agriculture (%)	Industry (%)	Total (%)
Lebanon	11.0	24.0	35.0
Jordan	2.5	24.0	26.5
Iraq	18.0	23.0	41.0
Kuwait	1.8	22.0	23.8
Oman	4.0	32.0	36.0

Note: The table presents a very crude measure of the proportion of jobs that are automatable, as it is assumed that all jobs in agriculture and industry are at risk of automation.

► **Table 10. Labour share in selected Arab countries, 2012**

Country	Labour share
Iraq	0.11
Jordan	0.49
Kuwait	0.32
Lebanon	0.40
Oman	0.34

Note: The table presents the unadjusted labour share, which is the ratio of the compensation of employees to the value added (net of indirect taxes and consumption of fixed capital).

Source: Guerriero (2012).

► **Table 11. Global Gender Gap Index for selected Arab countries, 2020**

Country	Ranking	Score
Iraq	152	0.530
Jordan	138	0.623
Kuwait	122	0.650
Lebanon	145	0.599
Oman	144	0.602

Source: WEF (2020).

Appendix 2. Email questionnaire

The development of modern technologies, in particular digital technologies and artificial intelligence, as part of a process often referred to as the “fourth industrial revolution” or the “second machine age”, has led to major changes in the world of work, including the expansion of the platform economy, which will have a significant impact in terms of increasing inequality between the owners of capital and workers, as well as between workers with different skills. These changes also threaten to increase unemployment for a large proportion of the workforce, and are driving a shift to temporary and irregular working arrangements. In this context, the ILO Bureau for Workers’ Activities is preparing a study on the potential effects of such technologies in the Arab States region and the role of trade unions in dealing with the attendant challenges. So that the study can incorporate the real experiences of trade unions in the region, we would like to address the following questions to you:

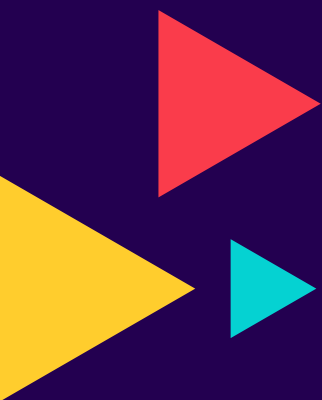
1. Has your organization or any of its member unions undertaken any activities or research related to the potential impact of such technologies on the labour market and workers in your country? If so, please give examples.
2. Has your organization or any of its member unions made attempts to organize platform workers, such as those working for Uber, Deliveroo and Toters? If the answer is yes, please give examples. If the answer is no, please indicate whether you are considering such efforts and, if so, in which sectors and what approach you will adopt.
3. Has your organization or any of its member unions made attempts to organize ICT workers? If the answer is yes, please give examples. If the answer is no, please indicate whether you are considering such efforts and, if so, what approach you will adopt.
4. Trade unions in some countries have been able to use modern technologies to enhance their activities and strengthen their organizing efforts. Has your organization or any of its member unions taken such steps? If so, please give examples.

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