TRUEDEM: Trust in European Democracies
2023-2025
European Commission Grant No 101095237

LITERATURE REVIEW ON THE IMPACT OF DIGITALIZATION OF WORK ON POLITICAL ATTITUDES, PARTICIPATION AND TRUST

Deliverable number:	D3.3
Due date:	29 February 2024
Type:	REPORT
Dissemination Level:	PU (PUBLIC)
Work Package:	WP3. Role of socioeconomic transformations in reshaping European democracies
Lead Beneficiary:	UOP-GR
Contributing Beneficiaries:	UOP-GR
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Purpose and scope of the deliverable:
The objective of this report is to provide a literature overview on the impact of the digitalization of work on political attitudes, participation, and trust. The report thus summarizes the results of a survey of the existing literature outlining main implications the digitalization of work and the experience of home-office during the corona pandemic have had on political attitudes, political participation, and citizens' engagement into political matters as well as political trust.

Citation: Koniordos, S. & Yfanti, A. (2024). Literature Review on the Impact of Digitalization of Work on Political Attitudes, Participation and Trust. *Working paper no.3.3.* TRUEDEM: Trust in European Democracies Project (www.truedem.eu).

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Project summary

TRUEDEM is a 3-year multinational research project funded by the Horizon program of the European Commission with several core objectives. TRUEDEM aims to design and implement a complex research effort to collect comprehensive evidence on the perceptions of trust and judgments of trustworthiness in a range of European states. The project will create a robust and comprehensive knowledge base on long-term dynamics and predictors of trust in political institutions of representative democracy (parties, executives, parliaments, judiciary etc.) in the EU. TRUEDEM will examine the role of new patterns of electoral behaviour, impact of socioeconomic transformations, the erosion of old and emergence of new political cleavages for the inclusiveness, representativity and legitimacy in European democracies, and political trust. TRUEDEM will identify strategies to address the demands and needs of citizens expressed via both electoral and non-electoral forms of political participation as means to enhance active engagement and inclusion and thus booster inclusive and responsive decision-making and governance in Europe. TRUEDEM will distinguish clusters of values that can hinder or foster pro-democratic values and attitudes and thus contribute to the barriers and opportunities to re-invigorating and enhancing representative democratic systems. Finally, TRUEDEM will develop a comprehensive and transparent toolbox of policy interventions including recommendations, toolkits and methodologies for enhancing trust in political institutions, boosting transparency inclusiveness of representative systems. TRUEDEM is coordinated in Austria with partners in Czechia, France, Germany, Greece, Italy, Poland, Romania, Slovakia, Slovenia, Sweden, and Ukraine. The three-year program runs from January 2023 to December 2025.

Annotation of the Deliverable (D3.3)

The initial intention for this deliverable was to generate a literature review whose specific focus would have been the digitalization of work and the experience of home-office during the pandemic and its impact on political attitudes, political participation, and citizens' engagement into political matters as well as political trust. In fact, the digitalization of work during the pandemic, as the altered experience of home-office indicates, played a role in exacerbating some inequalities that impacted on political trust in European countries. However, as the disease subsided this one aspect was not that vital for making it the focus of the report. In addition, it was by far not the only aspect affected by the pandemic that had some implications for political trust. Besides, the project already has had one report on the impact of pandemic on trust, thus making an adjustment of focus became necessary.

While digitalization of work is retained at the heart of the D3.3 report, the emphasis shifts. Two key issues are taken up in relation to two problematic facets of work digitalization of. Namely the issue of job losses/redundancies, and that of surveillance at work. The former is opted for because it allows an examination of how digitalization of work and the risk of job loss affect trustworthiness and trust leading to specific outcomes in political participation such as in voting. The latter provides an opportunity to examine how the digitalization of work renders possible the constant surveillance of workers, threatens their privacy, and by extension disturbs the work-life distinction and may pose a threat for democracy too. On their part the role of political elites in safeguarding these qualities is in question, which affects their trustworthiness and the trust in what they say/do or respond. A summary of statistical exploration of the finding of the European Social Survey (ESS) round 10 in participating European countries on digitalization and its impact on trustworthiness and trust are placed in appendixes, supplementing the report.

Acknowledgements

Several colleagues have made suggestions on various aspects of this paper. The report has profited from them, and we would like to express our gratitude, even though we may have not adopted all of them. These colleagues are Nicolas Demertzis, Frédéric Gonthier, Christian Haerpfer, Kseniya Kizilova, Michalis Lianos, Dimitris Michailakis, and Dimitri A. Sotiropoulos.

Introduction

The initially cautionary introduction of computer-controls in industry, in the late 1960s and early 1970s has been superseded by an exponential expansion in the introduction of such systems. Since that time, computer controls have come to be applied in all areas of economic and social activity. Technological change has caught the eye and was followed in academia by reflection and rethinking of issues of work organization and work content. The starting point has been the seminal *Second Industrial Divide* (Piore & Sabel, 1984) with its discussion of flexible specialization as a new work and organization paradigm based on the extensive and multifarious application of computers, one superseding mass production, and fitting to the new technological bases of industry.

Since then, technological shifts, adaptations and changes has been continuous. These incorporate computer-controlled systems, which have expanded to include virtually all areas of human activity and maintain on-line communication. Application of digital technology, for instance the Internet or other Information and Communication Technologies (ICT) and their applications, have and are affecting the general population in multifarious ways: by providing viaducts for expression and communication (e.g., through cellphones), and political participation too (electronic polling, voting, petition signing, public consultation, expressing one's views, etc.). They also provide the ground for new inequalities and divides, such as that of digital illiteracy (Gilster, 1997) or the digital divide (Norris, 2001; Warschauer, 2003), or old practices under a new cloth, as in computer crime or cyber-crime. More positively, by providing opportunities, through e.g., social media, but also by other arrangements for political expression and participation (Hindman, 2009; Stolle et al., 2005; Zúñiga, 2010; Vaccari & Valeriani, 2021).

The breadth and the rate of change is extensive and in recent years has come to include digitalization at work too and its effects, in the area of politics and democracy. More specifically, on its impact on political attitudes, participation, and trust in a democratic context, which is the specific topic and area of concern here.

Digitalisation as a major as well as notable shift, involves changes that seem to result to the emergence of a new, wide-ranging, and potentially all-encompassing technological system, one whose impact exceeds the technical dimension. It carries broad and wide changes, which while reformulating work skills, work content, and work experience, it also alters the relationships of work to the non-work, as well as the social and political environments. In this sense, and at the risk of overgeneralization, one could refer to it as an "episode of change" (Carneiro, 1970) or perceive it in terms of a Kuhnian paradigm shift (1970).

At the same time, as some authors have mentioned (Hirsch-Kreinse, 2016; Wolf et al., 2019) a lot of the discussion of digitalization and of its various aspects and expected impact exhibits features of a hype. This, apparently, is related to the fact that digitalization and its applications there is lack of certainty as they are still unfolding and shifting too, which impacts on the solidity of evidence and of interpretations about their features, course, and potential. Given that, the discussion relies

heavily on estimations, themselves based on earlier experience of episodes of change that are then projected to the future.

The aim of this report is to review literature that concerns the impact of digitalization of work on political attitudes, political participation, and citizens' engagement into political matters as well as political trust. The initial intention was to generate a literature review whose specific focus would have been the digitalization of work and the experience of home-office during the pandemic and its impact on political attitudes, political participation, and citizens' engagement into political matters as well as political trust. This has not been possible to pursue. The reason is that relevant literature that focuses on this particular subject and issue does not exist or,[1] I reckon, essentially is unavailable as yet.

At the same time the episode of the pandemic, and that of the closedown period brought turmoil and a most significant shift to the work-home equation in Europe involving an extensive use of digitalised tools and means. Indeed, during the lockdown periods, which for most European countries included the largest part of year 2020 and partly 2021, a major segment of working processes was carried away from the regular workplaces to employee homes. In this shift, the role of digital technology has been of paramount importance as it made working from home possible. In the circumstances homeworking and hybrid types of work expanded hugely. That was also true for a significant array of services that otherwise would have meant the physical presence of incumbents and clients too. Besides, while social activities that before the pandemic were conducted on a face-to-face basis, were constricted to exchanges that could be take place at a distance if they could be facilitated by electronic means.

The turbulence and the changes that have been brought were very prominent at the time when the proposal for this project was drawn. However, after the lockdown period, which may be seen to be the pandemic's peak as regards the level of disruption it effected, a return to normalcy occurred, with most employees returning to their regular workplaces. Still, as the use and implementation of digitalised tools and means was partly maintained, this has left a legacy. In the everyday social world too, despite the return to normalcy, the continuation in the use of digitalised tools and media for various social activities, for instance shopping or communicating, has been maintained.

The difficulty just explained is countered by expanding the scope of the report in two ways: by looking at how digitalization of work not only during the pandemic, but more broadly, impacts on political attitudes, political participation, citizens' engagement into political matters as well as political trust. Also, by exploring what digitalization means for political trust perceptions and for citizens' institutional trustworthiness by looking the available ESS-10 data.

This report is organized as follows. First, an attempt is made to clarify the central notion. This is continued in Appendix A. Second, a brief overview follows of the current extent of the digitization in the EU. This is pursued selectively with the use of a set of indicators that provide a measure of concentration or scale of the phenomenon and allow an appraisal of it too.

The focus then shifts to digitalization of work. Its basic features are outlined, and two key issues are taken up in relation to two problematic facets of it. Namely the issue of job losses/redundancies, and that of surveillance at work. The former is opted for because it allows an examination of how digitalization of work and the risk of job loss affects trustworthiness[2] and trust and leads to political

[1] To our knowledge, there is just one pertinent exception, the "Values in Crisis" research, https://data.aussda.at/dataset.xhtml?persistentId=doi:10.11587/LIHK1L

[2] Trustworthiness, as distinct from trust (Hardin, 1992).

participation in the form of voting, which in itself is implicated with the discussion of the attraction of populism. The latter provides an opportunity to examine how digitalization renders possible the constant surveillance of workers, threatens their privacy, and by extension disturbs the work-life distinction and may pose a threat for democracy too. On their part the role of political elites in safeguarding these qualities is an open issue, which affects their trustworthiness and the trust in what they say/do or respond.

A summary of statistical exploration of ESS-10 in participating European countries on digitalization and its impact on trustworthiness and trust was initially intended as a 4th section. However, as it does not directly relate to digitalization of work and its impact, it has been moved in an Appendix (C) as a stand-alone account. The reports round off with an attempt to draw some conclusions.

Digitalization in this report includes what outflows from the essential technical transformation process and the developments and applications at workplaces and broader in societies that stem from this transformation. Whenever one reads about ICT, the platform or gig economy, robotization, or for that matter, artificial intelligence (AI), or Industry 4.0, these are facets and extensions of digitalization, which in this sense is an umbrella notion that includes each and all of them, despite their substantial variability.

1. Digitalization – meaning and usage

The term "digitalization" refers to a converting process, which is a mathematical and technical transformation process. It involves the conversion of information available in analog form into digital format. Both of them are forms of signals that carry information. However, they differ in that the analog ones have continuous electrical signals, while non-continuous electrical signals are the feature of digital signals.[3]

Once the mathematical-technical dimension that is at the core of the conversion process denoted by the term digitalization is explicated, the notion may come to assume a broader referent. It comes to mean "the process of socioeconomic change, triggered by the introduction of digital technology" (T. Hess as referred in Hitsch-Kreinsen, 2016: 2). It is in this broader sense that digitalization is used and referred to in the literature, even though the exact wording may vary.[4]

Patently, digitalization conceptualized in this sense refers to an extremely broad process touching practically every aspect of human activity, which it effectively changes. It is anticipated that the direction of change is benign although critiques have been expressed too. It saves on labour, movement, speed, and effectiveness. Examples confirming these claims do abound. However, the

[3] Digitalization entails a process by means of which information available in analog form, specifically in a decimal numeral, is shifted into the binary system. The latter is a mathematical expression that use only two numbers. These are one or "1", and zero or "0", and are known as "bits". Digitalization has wide applicability with the use of computer systems and the internet, which operate with the use of electricity. If the electrical current is passing, it is represented with 1, if it is not passing, it is represented by 0. Accordingly, a digit in the decimal numerical system is transformed into the binary system as a sequence of 0's and 1's. Such sequences are known as "bytes" (Hanna, 2023).

In fact, it is because of its broad and mounting coverage that digitalization has been characterised a *hypernym* (Wolf et al., 2019). Digitalization is in the very heart of contemporary ICT's, so much so that is has been designated as a "megatrend changing societies and economies via use of digital technologies" (Creutzig et al., 2022: 481).

[4] As regards, the digitalization vs digitization distinction see, Gardner (n.d.) and Malak (2022).

following example suffices. Thus, and seizing on the COVID-19 pandemic and the restrictions imposed on citizens' physical movements, it is noteworthy that all national governments in EU have taken steps to make available the provisioning of services to citizens from afar. This has been achieved by the introduction and use of variable digital platforms that facilitate the delivery to the citizens of a gamut of computer-mediated state provided services. The gamut is so wide that it has become the object of dedicated public policies and public debates in democracies. It can be assumed that it has consequences for political perceptions, including perceptions of political trust, if not for political behavior too.

The purpose of digitalization, which lead to its *en masse* adoption for production and work purposes, is related to what it can provide. Digitalization makes possible the control of enormous masses of data for specific production or services-related purposes. It has the potential of control and governance of physical artifacts to a degree unforeseen until it emerged as a production technology. This control can be applied, differently and variably, but throughout the diverse work and business levels. Control and governance are pursued through integrated digital devices that make possible adjustments of the various key and secondary segments of production/service cycles. This can be achieved directly as well as at a distance, i.e., remotely, and has the advantage that it can be pursued in an integrated way of value chains, reductions of production times and, of no less importance, provisions of the predictive maintenance of workplaces (Salento, 2019). Thus, digitalization offers utmost flexibility, efficiency and organic integration of the various moments of the work as well as of the business process from the inception of a product or service to its delivery, notwithstanding its maintenance. And these attractive qualities are reflected in the overall economic advantage that it offers. In this sense it is superior to earlier modes of work and production. To the extent that digitalization is steered by governing elites and regulated by competent institutions (e.g., parliaments, settings of social dialogue between employers and employees, etc.), it can be argued that it opens a new field for the study of political trust and political participation.

However, digitalization is also linked to the emergence of new inequalities, both within the advanced countries and between them and the less developed ones. For instance, within the first group, any and potentially all jobs can be replaced by the algorithms of computer programs, rendering, again potentially, all jobs replaceable by artificial intelligence systems. It then becomes possible "to squeeze the workforce and funnel economic gains even more narrowly to the very top" (Inglehart, 2018: 200). With the less developed countries, the aim to "catch up" with the developed ones appears to wane in the face of the huge volumes of capital that may facilitate such a process and the ever-growing economic power augmented by the formers' digitalization.

Digitalization, it emerges is not a uniform or undifferentiated process. In fact, a distinction can be drawn between the first phase of digitalization and a newer one. The first phase can be traced back in the late 1990s, a period in which intangible transactions, that use of data and information were established in various sectors of the economy, but primarily in the services, as in publishing or banking, affecting individual business models too. An example of the latter is the case of Amazon, which transcends traditional business designations. However, a second much more complex digitalization phase (somewhat reminiscent of second phase mutation according to Zuboff, 2010), has already surfaced. It relates to developments such as the "Internet of Things" and "Cyber-Physical Systems (CPS). The claim is that in this second phase digitalization invades the central areas of economic activity generating and applying connectivity between new applications and their societal consequences (Hitsch-Kreinsen, 2016).

2. Expansion of digitalization in Europe

The spread of ICTs and overall digitalization in the EU and Europe as a whole has been significant and ongoing. Particularly in recent years, it has been promulgated by the EU political and legal/administrative apparatuses,[5] that have drafted, pursued and implemented specific plans for that matter. Of no lesser importance has been the role of national governments, which have been undertaking related and multifarious infrastructure growth, and have developed distinct government departments to plan, coordinate, oversee and effect the changes that the deepening of digitalization brings about. Some nodal developments of this ongoing and continuing general expansion of digitalization over the last 7 years are taken up and are worth pondering as it helps appreciate how it develops in a more concrete way.

Nodal developments include ICT infrastructure, access to ICT, digital skills, and broadband connectivity, among other items. Developments also include the extent of digitalization and robot density, as discussed in this section further below.

These developments are evaluated on the basis of three sets of measurements. The first of them is the Development Index (IDI), a composite index that draws values from International Telecommunication Union (ITU) data. Secondly, the EU generated Digital Economy and Society Index (DESI). Thirdly, the trajectory of installation/use of industrial robots in manufacturing, expressed as "robot density", which drawn mostly from International Federation of Robotics (IFR) information.

The first set of measurements, the IDI index itself comprises of 11 general and infrastructure indicators that measure ICT access, use and skills, such as basic skills, internet access, broadband connectivity, and others too, that feed into the composite index.[6] Despite now being dated it has some use as it indicates a trend. In fact, (see Table 1), it does indicate that ICT has been growing and expanding throughout European countries (in all EU-28 countries and two other European countries too) in the later part of the previous decade, namely for years 2017 when compared with year 2016.[7]

Latest trends are gauged in rough form from the 2022, ITU studies. These being much more general in themselves are not directly comparative to the IDI. However, they do provide some updated general indications that ICT has been steadily and rapidly growing and expanding in Europe during the intervening years (i.e. 2017-2022).[8]

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[5] A shorthand panorama of recent key EU initiatives and interventions is available in a Bruegel thinktank data publication (Zenner et al., 2023).

[6] Specifically, the IDI index includes the following indicators:
ICT access: 1. Fixed-telephone subscriptions per 100 inhabitants. 2. Mobile-cellular telephone subscriptions per 100 inhabitants. 3. International Internet bandwidth (bit/s) per internet user. 4. Percentage of households with a computer. 5. Percentage of households with Internet access.
ICT use: 6. Percentage of individuals using the Internet. 7. Fixed-broadband subscriptions per 100 inhabitants.8. Active mobile-broadband subscriptions per 100 inhabitants.
ICT skills: 9. Mean years of schooling. 10. Secondary gross enrolment ratio. 11. Tertiary gross enrolment ratio. See, ITU (2017: 27).

[7] IDI has been discontinued in 2018, for methodological/data availability purposes (ITU, 2023). A new, more accurate, IDI is to be applied in 2023 using 14 indicators.

[8] Thus, with respect to the percentage of individuals using the Internet, by region, in 2022, Europe as a whole comes stand out with 89%, while the world's rate is at 66%. When considering the internet usage by age groups, it emerges that 98% of those aged between 15 and 24 do so, contrasted with a world average of

Table 1 - IDI values, Europe: 2016-2017

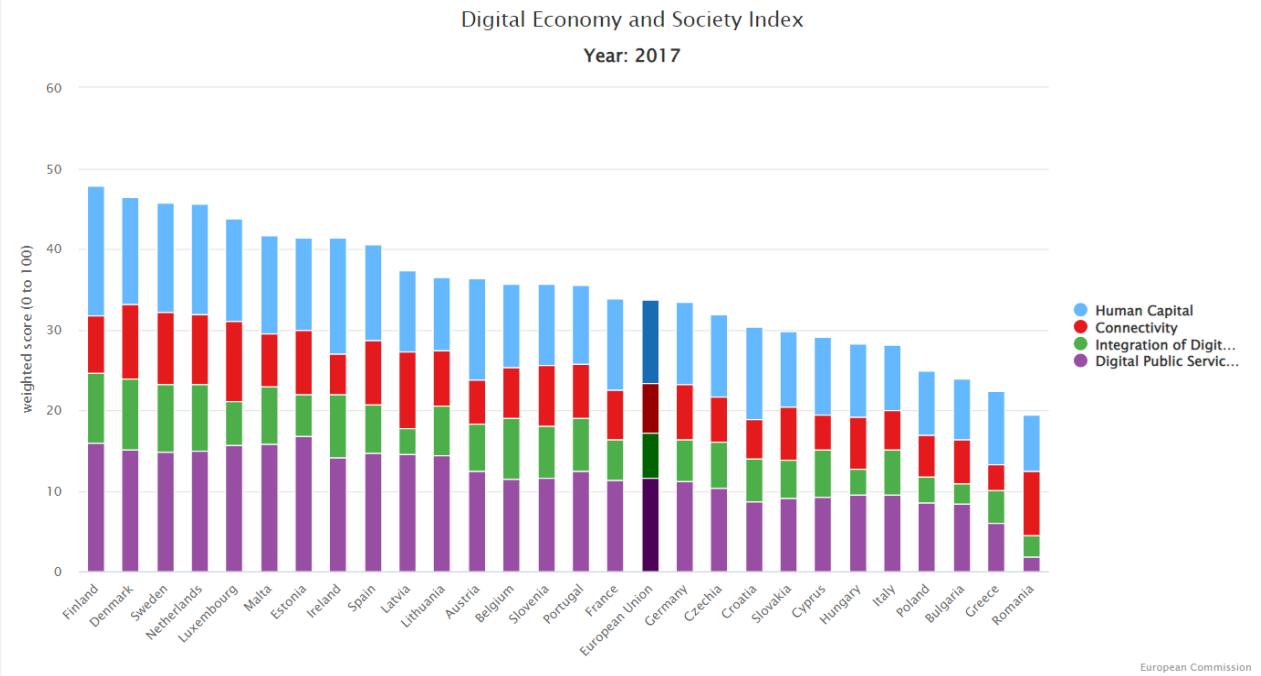
Economy	IDI 2017	IDI 2016
Switzerland	8.74	8.66
Denmark	8.71	8.68
United Kingdom	8.65	8.53
Netherlands	8.49	8.40
Norway	8.47	8.45
Luxembourg	8.47	8.40
Sweden	8.41	8.41
Germany	8.39	8.20
France	8.24	8.05
Estonia	8.14	8.16
Ireland	8.02	7.90
Austria	8.02	7.70
Finland	7.88	7.83
Malta	7.86	7.65
Belgium	7.81	7.70
Spain	7.79	7.61
Cyprus	7.77	7.30
Slovenia	7.38	7.20
Latvia	7.26	7.05
Croatia	7.24	6.96
Greece	7.23	7.08
Lithuania	7.19	6.97
Czechia	7.16	7.06
Portugal	7.13	6.88
Slovakia	7.06	6.84
Italy	7.04	6.84
Hungary	6.93	6.74
Poland	6.89	6.73
Bulgaria	6.86	6.66
Romania	6.48	6.23
Average	*7.50*	*7.34*

Source: (ITU, 2017: 42, simplified).

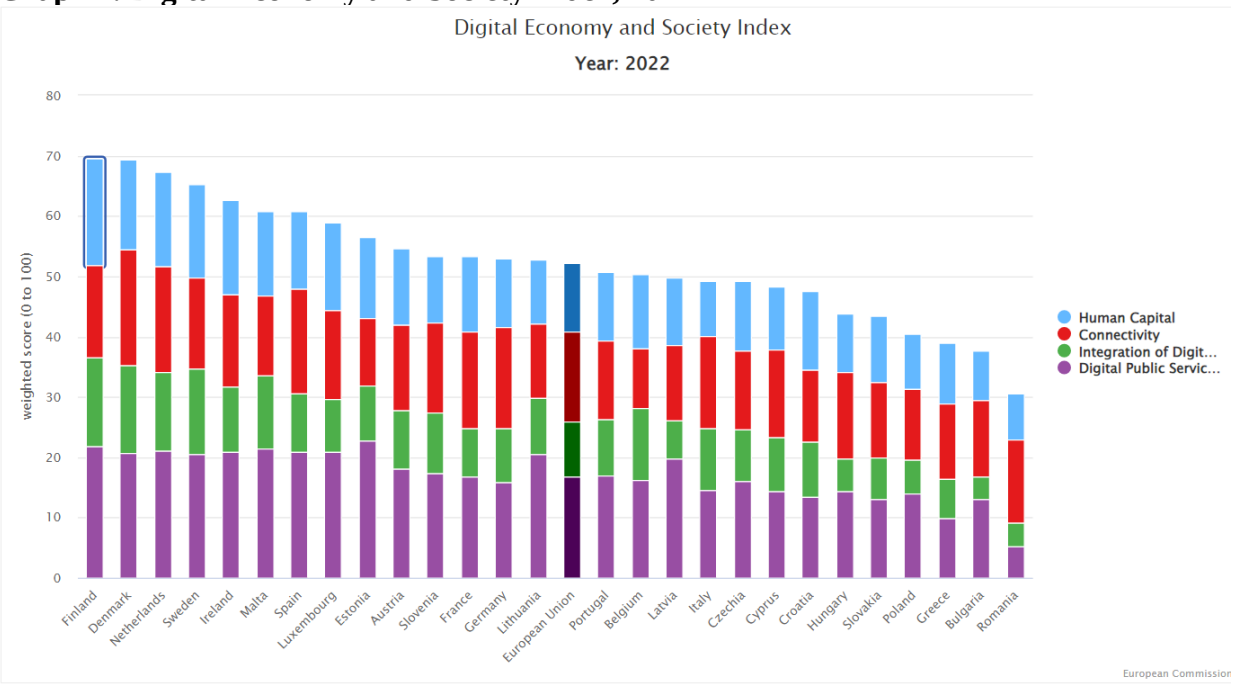
Such data indicate that the use of the internet and mobile phones are definitely on the increase, nearly reaching saturation. This also means that Europeans, particularly the younger age-groups, are familiar with the use of digitalised technologies. Of course, this information concerns very general kind of data that do not necessarily, or directly, relate with the acquisition of digitalised work skills. Still, a measure of rudimentary familiarity of users with such technologies may be reasonably assumed to exist.

75% for this age-group. Then, with respect to the percentage of individuals using the Internet in urban and rural areas in 2022, it stands at 91% in Europe for urban areas and 83% for rural areas against a world value of 83% for urban areas and 46% for rural areas.
As concerns ownership of mobile phones (individuals aged 10 or older) in 2022, it stands at 93% in Europe against 73% which holds for the world. Broadband (4G) coverage applies to 98% in Europe, against a world value of 88%. In the meanwhile, the 4G population coverage by type of mobile network and area in 2022, was 100% for urban areas and 96% for rural ones against, respectively, 97% and 76% for the world. Then the international bandwidth per internet user, in kbit/s, in 2022, was 397 in Europe and 233 in the world (ITU, 2022).

Graph 1. Digital Economy and Society Index, 2017



Graph 2. Digital Economy and Society Index, 2022



Source: European Commission (2023a).

Table 2 - Robot Density in manufacturing industry for selected years and selected European and other countries

Country	Year 2021[9]	Year 2020	Year 2019 [10]	Year 2017 [11]	Year 2016 [12]
Europe	*123*			*106*	
EU countries					
Austria	196	205	189	167	144
Belgium-Luxem-bourg	198	221	211	192	184
Bulgaria	23				
Croatia					6
Czechia	168	162		119	101
Denmark	234	246	243	230	211
Estonia	34	5[13]			11
France	163	194	177	137	132
Finland	161		149	139	138
Germany	397	371	346	332	309
Greece					17[14]
Hungary	115		84[15]		57
Ireland	54				
Italy	217	224	212	190	185
Lithuania	30				
Nether-lands	224	209	194	172	153
Poland	63	52	46		32
Romania	33	21[16]	18[17]		15
Portugal	81				58
Slovakia		175	169	151	135
Slovenia	249	183	157	144	137
Spain	167	203	191	157	160
Sweden	321	289	277	240	223
Other European Countries					
Norway	88				51
Switzer-land	240	181	161	129	128
United Kingdom	111	101		85	71
Other Highly Industrialised Countries					
Canada	191	176	165	161	145
China	322	248	187	97	68
Japan	399	390	364	308	303
Hong Kong	304	275	242		
Singapore	670	605 [18]		658	488
South Korea	1.000	932	855	710	631
Taiwan	276	248	234	197	177
USA	274	255	228	200	189

The EU's DESI index, secondly, corroborates that since 2017 there has been noted progress in the expansion in European countries of a set of items indicative the state of overall digitalization. The items included in all four measurements, which concern human capital, connectivity, integration of digital technologies and digital public services. Also, indications of skills, infrastructure expansion, and use levels are included in the index. All of them appear to have markedly advanced. This emerges from comparing the following two graphs that portray them (see Graph 1 and Graph 2).

The first graph is valid for 2017 while the second is applicable for 2022. Indeed, even a cursory comparison indicates that progress has been recorded in all four categories of items for all European

[9] IFR (2021)
[10] IFR via EU https://ec.europa.eu/newsroom/rtd/items/700621/en
[11] Ansa (2018) and Fleck (2023).
[12] IFR data reported in Dhiraj (2018).
[13] Portulans Institute (2022).
[14] It has been reported that Greece in 2021 had 600 robots installed (Daniilidis et al., 2021).
[15] Budapest Business Journal (2021).
[16] Romania Journal (2021).
[17] In 2018.
[18] Daughters (2022).

countries, with the overall increase noted in the weighted score. As a matter of fact, the EU average has also markedly improved too indicative of the aforementioned progress.

Robot density, thirdly, is a general measurement tool, an index, used by the IFR. Robot density refers to the number of robots per 10.000 employees in manufacturing industry. Its usefulness lies in that it specifies the spread of robots in an economy. Other measurements have been proposed or applied, but it seems that this index is appropriate for providing an overall indication of how widespread the introduction of robots is in manufacturing.

It has been reported that globally the introduction of robots surpassed in 2021 the half a million mark (517 thousand industrial robots were installed; the increase rate from 2016 was 31% (Gambao, 2023: 13). Available figures (see Table 2) indicate a consistent increase in the period 2016-2021 in the use of industrial robots for several EU-27 countries and more globally too, in the developed economies. This trend applies particularly among the more highly industrialised EU countries. In fact, within the EU-27, the highest robot density figure reported for 2021 was for Germany (394 robots per 10.000). It was followed by Sweden (321), Slovenia (249), Denmark (234), the Netherlands (224), Italy (217), Belgium-Luxembourg (198), Austria (196), Czechia (168), Spain (167), France (163), Finland (161), and Poland (63). The same overall trend is also observed among the remaining EU countries, although these exhibit a lesser degree of installation/use of industrial robots in manufacturing.

3. Digitalization of Work

3.1 Digitalization of work – some basic features

In the case of the digitalization of work, existing work processes are transformed with the use of digital technologies. This is not a one-off development; there are several waves of digitalization. Accordingly, it should be pointed out that as with other areas of human activity that come under digitalization, in work too the transformed procedures and interactions may end up being not entirely digital. Still, with each new wave work processes exhibit a heavier reliance on digital technologies than previously. Accordingly, reference to digitalization of work is allusion to transformation processes in the way work tasks, routines and procedures are altered with the application of digital technology. The usage of a computerized medium is intrinsic to any discussion of digitalisation of a work process.

Once the digitalization of work took off, it has proved to be a versatile and multilevel phenomenon. It spread to work activities, tools, and processes, mostly in the secondary and tertiary sectors of the economy; less so in the primary sector. The radius of digitalization as already indicated has been extensive affecting and reshaping office work, logistics, industrial manufacturing, as well as services that have come to be delivered via platforms.

The digitalization of work, variable as it is, has been applied to a broad and extensive gamut of works tasks, enabling a much better use of knowledge. It also "frees" organizations and enterprises from restraints of space and time infusing them with a degree of flexibility that was unavailable before their digital transformation. As the potential for flexibility has been enhanced, it allows for a higher degree of efficiency than before, and there have been repercussions in productivity too leading to substantial increases (Okkonen et al., 2019; OECD, 2021: 3-4; Sabir, et al., 2022).

Work digitalization has caught the eye because of technological upgrading, traditional or live labour was, at least in part, being deskilled − in the sense that the skills of workers were being superseded and thus were not useful/usable anymore. Thus, in various settings traditional labour was further substituted by computing systems.[19] In the process, those labourers considered excessive would be made redundant and this process would lead to waves of technological unemployment. The counterargument is that digitalization also provides for new job opportunities, the learning of new skills and specialities and openings for enskilling that counteracts deskilling (Penn & Scattergood 1985). To the extent that this transformation was unforeseen or mismanaged by governing elites, it may have led to a decline of political trustworthiness and trust on the part of the working-class segments mostly affected by digitalization (see Section 3.2.1 below).

In fact, changes in work content and work organization generate new jobs that are filled in either by new hirings of people possessing the necessary skills and/or by working skills upgrading. This tends to further the already existing polarization of skills in more highly skilled and less highly skilled, or more routine type of work tasks and skills/jobs. At the same time the creation of new technologized jobs do not seem to relate to the volume of new jobs created at earlier phases of manufacturing; nowadays with AI it is much less (Inglehart, 2018, ch. 10).

Of no less importance has been the ability of reprogrammable robots to observing strict specifications in routing manual tasks, the avoidance of worker health complications (for example as in painting jobs done by industrial robots in mass produced goods), or to increase the accord, i.e., production rates. In fact, from a technical point of view, digitalization has been incorporated not only in the computerization of routine tasks, but also of non-routine manual tasks in factories, services and potentially everywhere. Due to technological advances, as in machine learning (ML) and mobile robotics (MR), the computerization on non-routine cognitive tasks has become possible. Tasks are increasingly amenable to turning them into well-defined problems that can be translated into digit code, which is used to create algorithms. Algorithms gives the computer a specific set of instructions allowing it to do everything (at least potentially) including robotized functions (Frey & Osborne, 2013/2017).

However, there is a whole gamut of tasks that are not, for the present, amenable to computerization. These are tasks that involve perception, manipulation, creativity, creative intelligence, and social intelligence, that among other things entail ideas, novelty and values that tend to shift over time. Likewise, occupations that incorporate such features are not amenable to digitalization. Or at least this is not to be expected for the next 10, 20 or more years (Frey & Osborne, 2013/2017). Consequently, there are unresolved technical issues that impede digitalization in the above-mentioned areas. Other impeding factors such as – particularly but not exclusively – the economic scope of digitalization, whenever small entities are involved, is left aside for the moment.

Changes in working modes are in some instances dramatic, although in others there are quite incremental and slow moving. Changes as a rule have been management-led initiatives that operate as mediums, but they have also been presented as enablers of work (Okkonen et al., 2019; Vuori & Palvalin, 2019). Nonetheless, digitalization's expansion is not only horizontal; it is also vertical. This means the digitalization of organizational routines in information systems within organizations. Such processes unfold under managerial initiatives. However, they are also prompted in particular instances by employees, by demand pull and technology push, as Wolf et al. (2019) have shown. The end-result is the further digitalization of work systems within

[19] The deskilling involved is reminiscent of H. Braverman's (1974) same-named argument and thesis that subsequently has been substantiated (De Pleijt & Weisdorf, 2017).

organizations. To the extent that this kind of further digitalization has not caught the eye, nor has it provoked a suitable policy response by political decision-makers and regulators, there is room for suspecting that it has affected political trustworthiness and trust.

Digitalization of work was seen to incorporate a labor-saving potential. In fact, a basic reason for its promulgation has been to increase the productivity of labor. The introduction of digitalized apparatuses made sense as a substitute for live labor once the economic conditions for such a substitution were met. It was seen to be advantageous in several ways to certain varieties or kinds of live labour. Once such apparatuses were introduced, live labour were made redundant. The fact of the matter is that during this most recent period, digitalization accelerated by expanding extensively and intensively, impacting on employees' productivity by increasing it most significantly (Garcia, et al., 2023).

What then is the extent that the various jobs are amenable to digitalization? Although there is not as yet a hard and fast rule on the extent of digitalization, it appears that as Ioannou (2022) notes, at least half (50%) of existing jobs can be moved towards it, with remaining jobs remaining unresponsive to it due to their intrinsic features, at least for the foreseeable future.[20] The possibility of teleworking is but one, albeit important, dimension of the digitalization of work. Nevertheless, its expansion has its own limitations given that the physical presence of workers is necessary in several lines of work and cannot be dispensed with, as in repair work, in servicing customers in restaurants or in retail shops, in health services, and whenever the physical presence of workers cannot be dispensed with.

The digitalization of work, as is so often the case, with the introduction of something novel in the social world, has its bright side as well as its less glamorous, or dark side. Eight negative aspects have been identified. These are:

(i) job losses/redundancies,

(ii) reduction of work autonomy (in the gig economy) (Trittin-Ulbrich, et al., 2021),

(iii) casualization,[21]

(iv) surveillance at work,

(v) work and life balance disruption in that there is an acceleration and exaggerated extension of working hours (Rintala & Suolanen, 2006),

(vi) technostress,[22]

(vii) transfer of risk to employees (Tubaro & Casilli, 2022), and

(viii) isolation - for an extensive review, see Marsh et al. (2022).

[20] Ioannou notes that as determined by the particular work-tasks of each job the methods of work, work organization, tools of the job and the technologies that are utilized, out of the 120 occupations of the international classification of professions, 24 have a full potential to be accommodated by telework, while 40 have partial one. By contrast 56 professions or 50% of the total are not amenable to telework (Ioannou, 2022).

[21] Digitalization may infuse a new push to the *casualization* of work (that among other things might imply longer working hours, as in platform organised work in delivery of food or other "crowd"-related jobs). Workforce casualization entails moving from full-time/permanent employment to casual and restricted contract work positions.

[22] Technostress: The stress of keeping up technologically at work or, differently expressed, the concern about one's ability to learn to use new technologies, overall to adapting to technological change (Bicchi et al, 2023: 4, 9 ; Troisi et al., 2022).

In what will follow I focus on two of them, namely job losses/redundancies and surveillance at work, as these are most useful for considering the issue of the impact of digitalization of work might have on political attitudes, participation and political trust. The former, affects on-site workers threatened that they may loses their jobs due to robotization. It allows an examination of how digitalization of work and the risk of job loss affects trustworthiness and trust. Seemingly these affect voting in favour of particular political parties. The latter concerns mostly on-line platform workers, but also on-site workers too. It provides an opportunity to examine how digitalization renders possible the constant algorithmic surveillance of platform workers, threatens their privacy, adversely affects the work-life distinction and the privacy too, and potentially may pose a threat for democracy too. On their part the role of political elites in safeguarding these qualities is an open issue, which affects their trustworthiness and the trust in what they say/do that have repercussions for political participation.

3.2 Robots and job losses/redundancies

The substitution of live labour with machinery for cost-cutting purposes has for long been a prime purpose for creating/applying a new technology. Such unemployment, dubbed technological, has been seen to be a source of discontent often having political repercussions. With digitalization too, one of its unwelcoming aspects is the claim that the introduction of digitalised tools and processes have as collorary job losses or/and an augmentation of redundancies for those workers that are substituted and overall left out. There have been contested views on this issue.

Thus, there are those who adhere to the conventional economists' view: that the technical efficiency digitalization introduces occurs at rates faster to the rates at which the redundant labour can be absorbed. Yet, the claim is that the dynamism technical innovations bring "always" allows for a long-term compensation for initial job losses and this is the case for digitalization too. Accordingly, it argued that with the progression of time, as the application of new technologies spreads it generates labour demand of workers in possession of skills and knowledge to working with the new technology. This leads to an increase in employment of a workforce with an overall positive labour substitution rate. In this sense there is a long-term compensation for initial job losses. In fact, metrics provided by the OECD (2021) indicate employment increases, itself differentiated according to profession, in nearly all countries surveyed since 2012.

The angle from which this perspective set's out is an overall one, i.e., that of the development of the economy as a whole, and it is based on econometric modelling and related projections of attributes of subjects perceived as embodiments of the "economic man" abstraction, rather than from substantial empirical studies.

This view is not particularly convincing, especially since sweeping job losses have been reported by more empirically oriented social scientist, whose projections indicate that routinised tasks in, for example, the US are to be phased out by automation (Frey & Osborn, 2013/2017). For Germany it is estimated that 59% of low-level routine jobs are at risk to be substituted by a multitude of digitalised innovations and automations (ING DiBA, mentioned in, Hirsch-Kreinsen, 2016). Then, in another more recent exploration of the automation risk for employment in EU countries it is confirmed that it is high: the average percentage share of jobs potentially at risk of automation at the country level varies between 47% and 64% (Foster-McGregor et al., 2021: 10).

A third view on the matter, which is a response to the sweeping job losses view, attempt to relativize it. It is argued that the rate at which digitalization is introduced is not particular fast and this means that the probability that routine jobs with be phased out is much lower. The example of advanced

industrial countries is invoked, specifically the US and Germany, in which routine jobs are to be phased out by 9% and 12% respectively (Hirsch-Kreinsen, 2016).

With respect to the substitution capacity the adoption of industrial robots has over live labour, Acemoglu & Restrepo (2020) have assessed a huge and strong negative effect of robots in particular on both employment and wages. Specifically, they have calculated that each one new robot is reducing employment by about *six* workers. Additionally, each industrial robot per one thousand workers cuts wages down by 0.5 percent, approx. These calculations are alarming in that they indicate that, at least potentially, the impact for the application of robots on employments and wage-levels is onerous. The impact of integration of robots in the workspace may also have political consequences, such as, for example, shifts in the electoral behavior of workers replaced by robots or changes in their levels of political trust (see discussion in Section 3.2.1 below).

Other analyses and calculations relativize the job loss threat. Thus, it is maintained that the skills necessary for working with complex technologies are highly qualitative and therefore not easily obtained, which works against a fast phasing out of existing jobs, that the costs associated with redundancies are often very high for a firm, and that the introduction of automation/robotization is reacted upon by enhancing occupational mobility of affected workers within the same firm, i.e. by changing the set of tasks for employees of long standing (Dauth et al., 2018). Besides, as several factors are at play that may act as enablers or restraints for worker adaptation to recent technology, it emerges that the context and the internal organization of firms may be of importance for channeling them in either way (Okkonen et al., 2019). In the meanwhile, it has been claimed that many among the affected workers already possess capacity and experience that allows them to deal with technology complexity related demand in industrial work. Accordingly, any negative consequences of the introduction of advanced complex digitalized technologies and the expectation for subsequent increases in redundancies may well be overestimated (Hitsch-Kreinsen, 2016).

3.2.1 Work digitalization, threat of job losses and its impact on political participation: the attraction of populism

The literature that relates to the impact the digitalization of work may have on political behaviour is limited. However, the available explorations address a particular theme that concerns the impact that digitalization - in its variable expressions - might have on political participation. This refers the participation of those workers whose jobs are affected, mostly adversely but positively too. A particularly interesting question concerns the kind of political leanings that such actors may adopt and specifically the voting preference that affected workers may express in the ballot box, which has consequences for democracy.

Reminiscent of J. A. Schumpeter's "creative destruction", the automation which digitalization engenders is that it both renders technologically older job redundant and creates new ones. Indeed, there is recognition that such automation generates a displacement effect, which shifts the task content of production against labour, it reduces labour share's. On the other hand, the launch of new tasks increases labour's share (Acemoglu & Restrepo, 2019).

Against this backdrop, and as indicated earlier, the introduction of digitalization in workplaces polarizes jobs. In fact, job polarization with the gradual elimination of middle-skilled jobs is well established. It has been maintained that the hallowing out of the middle observed throughout Europe is largely due to technological change (Kurer & Palier, 2019). This is confirmed, although other factors are also recognized to exert influence (Peugny, 2019). Having said that, the overall

job balance as digitalization is still unfolding is not transparent, while the more specific impact the political disruption that this structural process may engender is less well established and somewhat "open" too. These require a closer examination since it reverberates on the impact digitalisation of work may exert on the political dimension.[23]

In a well-argued thesis economists Acemoglou & Auter (2011) point out that the introduction of automated digitalised systems in the workplace, both in manufacturing industry and in the services, does not affect the work performed there in a unitary way.[24] Some jobs, and their work-tasks, those that are repetitive, patterned, or ordinary (non-creative) jobs, designated as "routine" (Auter et al., 2003), are more liable to be displaced by rule-based technologies, which themselves are based on constructed algorithms that effectively mimic such work-tasks. Such routine jobs and work-tasks are typically performed by low- and medium-skilled workers, for instance machinists and clerks, who comprise about 25%–30% of the workforce in advanced western countries (Kurer, 2020: 1799). It is precisely such workers that have seen jobs such as theirs being trimmed down that *fear* that they will be replaced by machines. This fear extends to a fear of robots, which are utilized in repetitive work-tasks in mass-production, for instance in car manufacturing to implement welding or painting jobs. At the same time, it has been established that in such sectors the demand for routine live jobs has withered (Goss et al, 2014; Graetz & Michaels, 2015).

New jobs to be sure do emerge as a result of the ongoing variable digitalization. But these usually require younger high-skilled workers and educated personnel, that can adapt. Such new jobs are frequent in more dynamic technology-oriented industries, but as far as the overall employment balance is concerned, is not clear if it is a positive or a negative one (about which see the previous section). In the meanwhile, the low-skilled routine workers, especially the older amongst them, may not be in a position to upgrade their skills; their jobs often are phased out by not being filled up anew upon their retirement.

The noted fear of automation among the most vulnerable has its roots on self-interest as a study of 20 European countries indicates. Interestingly, and by contrast, those whose jobs are not threatened by digitalization and robotization, do not express such a sentiment. Still, and despite the primacy of self-interest, other factors are also at play in generating fear, such as cultural discontent and uncertainty, particularly in countries that have experienced severe economic strain (Dekker et al, 2017).

Gallego & Kurer (2022) examine the claim that digitalization of work poses a threat to the democratic stability of contemporary democracies. This threat would materialize if those adversely affected by digitalization in their work environments are left out, i.e., they are not sufficiently compensated or/and trained to take up new digitalized jobs. Besides, apart from retraining a related

[23] A recent example of the optimist claim is provided by Gallego et al. (2022). The authors claim, on the basis of econometric modelling with respect to the British economy, that "a majority of workers benefit economically from rapid digitalization in their industries" (*op cit*., 433), while recognizing that the benefits are far from being distributed equally. The winners among workers are those that have middle and high levels of education. These tend to support mainstream political parties, i.e. the Conservative party. Still, a minority of workers – those in possession of low-level skills which the authors dub lower-middle class – are threatened by job loss. Such low-skilled workers tend to follow/support anti-establishment political parties. This stance, however, is viewed not simply as stemming from low-skilled workers being "left behind" in their workplaces by digitalisation but is considered a more complex development.

[24] The primary sector is relatively slow in absorbing or/and adapting to automated digitalization. The focus in related research is on expanding telecommunications (broadband) capacities, notwithstanding some advanced there too. An overall review on the state of digitalization and participation in rural areas is available in a Stein et al. (2022).

particular issue is that it might not be possible for the application of new digital technologies to generate new employment on a par with those jobs that are replaced by digitalised machinery and automation. Such technological applications have a build in (programmable) capacity and tolerances that by far exceed those of the workers that perform routine tasks which they replace, and as already indicated, a major reason for their introduction is to cut down employee-related costs. Thus, any new jobs have to differ from those terminated, not compete with the newly installed apparatuses, and basically involve a more educated and willing workforce.

Accordingly, there might be political aftereffects-consequences. Indeed, as Gallego & Kurer (2022) point out, there are consistent findings that those left out due to the introduction of new technologies in the workplaces, tend to turn against the status quo and favour populist political parties. Particularly it is routine workers, i.e., industrial workers and clerks who think of themselves in terms of revenue as middle class that are disproportionally affected and are mostly at risk of having their jobs replaced by AI automated systems and robots too. It is this spectre that moves them to express their discontent by voting against status quo political parties (Kurer & Palier, 2019).

In particular, on the basis of information drawn from individual panel data that runs from the 1990s to 2014 for Germany, Switzerland and the United Kingdom it emerges who is prone to react by voting for populist parties. Specifically, it is not so much those that have lost their job because of automation, as rather those who while still clinging to their jobs perceive their status as declining. These are the ones that tend to vote for right-wing populist political parties. The causal chain leads from digitalized automation to fear for ones' job, to self-perceptions of social/status decline, to reacting by voting for populist agents (Kurer 2020). Additional supporting evidence is available in Gallego & Kurer (2022: 471-2).

The other side is that those that fill in the new digital-rich jobs, the more highly skilled and managers do not perceive a threat and favour/vote mainstream political parties, and beyond them too. In particular, in a study of the relationship between technological change and its impact on regional voting in Germany, Schöll & Kurer (2023) point out that those that fill in the new non-routine jobs are highly-educated, highly-skilled workers. Such are often working on cognitive interactive tasks and tend to vote for cosmopolitan left political parties. Many such workers belong to the workforce of are available in large numbers of Germany, whereas the balance between the reinstatement effect generating new highly skilled jobs and the substitution effect of technological upgrading, is overall positive. Possibly, this is an exception compared to other countries given that Germany is the locus of most industrial robots in Europe, is one of the largest ICT markets in the world and retains the largest share of employment in its versatile manufacturing economy.

Of course, the way digitalization/automation and its possible outcomes, e.g., loss of jobs, trade-offs, etc., is *framed*, for instance by the media and political agents, is important in shaping workers appraisals of them, which may have political repercussions in their voting behaviour (Magistro et al., 2023).

Similar outcomes to the one just outlined come from two other explorations, one more global and the other more specific, on the linkages between digitalization/automation and populism.[25] The

[25] Populism, as it is so often the case with terms in the social sciences, evades a single acceptable by all definition. For present purposes, the way populism is approaches by Edward Shils suffices. For that author, populism highlights the supremacy of "the will of the people 'over every other standard' ... [which is identified] ... 'with justice and morality'; it is also about a 'direct' relationship between people and leadership, unmediated by institutions" (Shils, as mentioned in Worsley, 1969: 244). A qualification may be added: the recognition that populism may be, selectively, both inclusionary and exclusionary (Mudde & Rovira Kaltwasser, 2013).

first of these utilizes data for 82 countries for the year 2016. This econometric study indicates that the leading political party, i.e., the one that obtained the highest share of votes in elections, is "more likely" to adopt populist rhetoric if the business sector's adoption of ICT is high. Certain industries intensively introduce ICT in their production technologies and service provision, which generates wealth. Alongside new wealth, an enhanced technological capacity impact on income inequality, which means that it increases the cost of living for non-technical workers. This increases income gaps and related worker resentment. Besides, automation brings an end to certain sectors and labour groups while forming new ones, which is seen to instigate economic nationalism in the form of populism and voter realignment. Moreover, cross-country regressions which the study attempts, show that democracy that is counterpoised to populism, is also at stake. While a high level of democracy decreases populist rhetoric, corruption increases it (Güvercin, 2022).

The second study is based on a representative sample with workers in the US (N: 4,300). It examines individual worker perceptions of current automation threat and looks at their responses to this perceived risk. One of the main findings (arrived at by grouping outcome variables into an aggregate index for preferences for populist attitude) is that respondents, particularly the younger ones (those aged 24-28), do fear that their jobs are at risk because of workplace automation, and the introduction of robots and artificial intelligence. This leads them to opt to vote for populists, albeit such workers place themselves in the political left, or abstain (Golin & Rauh, 2022).[26]

Moving now to investigations with a European focus on the issue of digitalization/automation at workplaces and its implications for political preference/voting, several studies are available. All draw on the European Social Survey (ESS) and contribute to the understanding of the issue at hand.

A first study uses cross-sectional individual level data drawn from the ESS (rounds 6-8) to explore the political consequences of automation in 11 European countries. Those threatened by automation and who are still "just about managing" economically are identified as the ones more inclined to vote for the radical right when compared with the average voter (Im et al., 2019). As Kurer (2020) has pointed out, this study concurs that an overall risk of automation does not suffice for workers to be drawn in supporting right-wing parties. It is those of them that are fearful of losing what they have and move downwards socially, and for the time being just coping, and not those that have lost their jobs, which are motivated the vote for radical right parties.

Independent confirmation of the above-mentioned finding is also provided in the research by Anelli et al. (2019; 2021). These researchers explored seven waves of the ESS to discover that individual workers in 13 European countries that are more exposed individually to automation/robot adoption for a period of 16 years (1999-2015), tend to display higher support for the right-wing and populist political parties.

The third study draws supportive material from the three most recent ESS rounds for 14 European countries. It explores, among other issues, to what extent employment risk can predict voting for populist parties and whether this preference can be offset by specific labour market policies. It concludes that voters' objective economic position relates to their subjective risk assessment. It

[26] While the perceived threat or the experience of job loss because of automation has been associated in the literature with preference and voting for populist right-wing political assemblages, the trend in the abovementioned research was for left-wing one. In another US exploration, there is noteworthy measure of similarity too. Thus, it has been maintained that the victims of the current technological revolution at the workplace, in the US in 2016, in electoral districts that had a higher exposure to robots were significantly more likely to opt for radical political change, which at the time meant support for the right-wing populist candidate, Donald Trump (Frey et al., 2018).

was found that workers most at risk might actually increase their support for populist radical right parties when there are strong government interventions in the economy (Bergman, 2022: 535).

Therefore, in what has been expounded above, there are good indications that the underlying mechanisms between material interests and political reaction, which are not apparent, are mediated in this case through status perceptions. This is why when the detection of clear associations between them is untenable it is surmised that noneconomic motives must prevail over economic ones, as in the cultural backlash thesis (Inglehart & Norris, 2016). A view congruent with the results of another study (Gingrich, 2019), which among other things also maintains that those exposed to technological change at work are more likely to vote for populists.

It goes without saying that in such circumstances in which fear rules about the prospects of workers remaining in employments, trustworthiness towards those that introduce new technologies in the workplaces, i.e., business managers, and towards those who have an overseeing institutional role, namely the state, its functionaries and primarily those that take the related political decisions, i.e. the government and the political class, is low. Routine workers consider political decision-makers as particularly untrustworthy. In this context, the absence of trust, including political trust, predominates. In this sense it may be surmised that indeed higher exposure to job-threatening automation triggers electoral support for radical-right parties, which is much in line with the Gallego & Kurer (2022) hypothesis that digitalization of work poses a threat to the democratic stability of contemporary democracies.

Such findings that bring out the proclivity of employees working in manufacturing and the services that feel threatened by the multifaced digitalization to support/vote populist political parties are available for several western advanced economies. What however seems to perplex researchers is that this perceived threat on jobs from technological advanced automation is underplayed by all those concerned, when compared to other crisis factors such as migration or the offshoring of economic activities. The threat is underplayed both, by workers feeling threatened and by political parties that want to represent them and obtain their support.

As far as the workers are concerned, they arguably do so because they *misattribute* techno-economic change. This is a point raised initially by Wu (2021) who, on the basis of a representative sample in the US has indicated that those workers that feel threatened by automation tend to displace blame. Thus, instead of channelling blame to the underlying labour market risks that confront them, they point towards immigrants and foreign workers. Wu (2021) considers that this stems from a politically motivated framing by US elites, who manage to influence the workers' outlook on the matter. The outcome is a reinforcement of ingroup and outgroup differences, the heightened of visibility of globalization-induced job losses relative to technological displacement, and the maintenance of the general public's attachment to technology. Interestingly, that author feels that her findings are valid not solely for the US but for other advanced economies.

The misattribution argument has led to some hypothesizing and guesswork that are sensible (Gallego & Kurer, 2022: 476). Further, it has been supported by a country-specific empirical grounding of this claim, i.e., for Spain (Bicchi, et al., 2023). The study drew evidence from a representative sample of the working-age population (N: 1450). It indicated that workers worrying about the impact of technological change on their jobs prioritize aggressive policies to prevent any such change in the first place. While this rolling back of digitalised technology is untenable to say the least, it is populist parties that favour a return to idealised images of the past (Collatrone & Stanig, 2018, as mentioned in Bicchi, et al., 2023: 16). Such parties follow what has been termed "nostalgic producerism", i.e., familialist policies supporting the male-breadwinner pattern of

"work, family, fatherland" (Betgman, 2022: 523-4). This finding, if generalisable, would explain the appeal of populism to such at-risk workers.

However, a possibly divergent but related empirical evidence appeared in Borwein et al. (2023) that undertook a survey experiment in 10 advanced Western countries (N: 17,728) (*ibid*: 9). Their study indicates that subjects do not feel attracted to those political agents who specifically propose to protect them against automation. Rather they express higher support for political agents that address all economic threats, at "levels that either match or exceed (in the case of offshoring) support for candidates who target automation" (Borwein et al., 2023: 22). This indicates that more research is necessary on this issue.

As far as political parties are concerned, these tend to prioritize factors other than technological change. Populist parties point to immigration and offshoring/globalization because these two challenges are convenient for drawing support towards them as they play with economic nationalism, which has strong referents to worker protection, inclusive of protection from automation (Anneli, et al., 2019: 6-7). This is convenient for populist parties to oppose other parties. Furthermore, technological change is usually something that mainstream political parties have welcomed,[27] and apparently find it difficult to rebut. Also, it has been pointed out that mainstream politicians prefer to blame offshoring for job losses when automation's role is not less significant (Chaudoin et al., 2022). Besides, the mainstream political parties provide the public at large, including workers at risk of losing their jobs from automation, with explanations or ideologies about the causes of economic change, i.e. the above-mentioned, which the latter accept in some or good measure.

3.2.2 The impact of digitalization of work and an unconvincing explanation

Essentially radical change as that brought about by the modernization that the digitalization of work brings about, has unforeseen or unintended consequences. In what has just been elaborated in this Section 3.2.1 (above), fear of losing one's job by automation provoke a shift of electoral support towards populist political constellations. This has been facilitated by political parties that want to reserve discontent for their own purposes and in an "easy" for them way. However, such a shift is facilitated by the step by step, gradual, unfolding of digitalization of work. This is unlike the abrupt shock that crises such as the COVID-19 pandemic, or those triggered by migratory waves, have brought about. Because of the gradualness of digitalization, the perception of its presence, the perception of it, and of its impact among the citizenry it is not felt as particularly unforeseen or strident. This means that opposition by affected workers to digitalization tends not to be sharp and defences are low, with some exceptions of course. In turn, it makes it is "easy" for political parties to offer their ideological explanations that provide a politically convenient misattribution framework to the rather isolated workers that feel at risk of job loss. The observed political shift in voting may, and arguably does, pose a threat to the democratic stability of contemporary democracies as the more recent political developments have shown for several Western countries in Europe and beyond, e.g., in the US in the 2010s, in Brazil, Hungary and Italy, recently in the Netherlands and Argentina.

An obvious candidate for explaining the shift towards populism among those workers that are in fear of job loss is the Right-Wing Populism (RWP) thesis. The RWP idea contends that there has

[27] The acceptance of digitalization is not of course uniform across political parties and countries. In fact, as Marenco & Seidl (2021) have demonstrated, it shifts significantly depending on the socio-political national discourses.

been a reactionary ideological shift in segments of the population in several Western type democracies, as a result of a decade-long domination of various emancipatory ideas, espoused by an increasingly educated citizenry. The regression or "backsliding" to more conservative ideas is espoused by those voters who have been "left-behind" (Foa & Mounk, 2017; Mechkova et al., 2017). These are from the lower middle-class, they are not particularly educated, and their remuneration level is in the lower-middle band, which Brunkert, et al. (2023: 4) identify as petty bourgeoisie.

However, the specific working-class segment discussed here that is identified as supporting right-wing and populist parties diverges from this portrayal. This segment does not have the sociological features mentioned, although these may be shared with other segments. Rather the working-class segment consists of workers fearful of losing their jobs because of digitalization – this is a distinct group that is confronted with a particular difficulty, and it is this dimension that underlies their political voting preference, according to the academic literature surveyed in this and the previous sections. Besides, as attested, such workers self-identify with the left, at least ideologically (Frey et al., 2018; Golin & Rauh, 2022). These then would have to be distinguished from other workers that used to hold routine jobs but, have lost their job and are unemployed, as the latter exhibit, as attested, a different voting pattern (Kurer 2020: 20). Therefore, there are traces of a diverging impact on those that run the risk of losing their job and perceive themselves as threatened. The diverse concerns, on the one hand, their political attitudes and, on the other hand, their political participation in the form of voting. In this sense the RWP thesis, does not seem to apply to the specific working-class segment.

In the case with which we are concerned, no direct evidence is available that would indicate what are the perceptions of decision-making political personnel and government officials among those that feel that their job is threatened by the encroaches of digitalization. The trustworthiness of such personnel,[28] as perceived by affected workers, cannot be ascertained with any measure of precision. However, from the voting pattern exhibited we may hypothesize that implicated principals consider that the informal social contract with agents has not been upheld. The former were not provided with the necessary protection by the latter, which in this sense did not fulfil their responsibility, therefore the judgment would be that they are not trustworthy. Hence the agents' decisions or policies (with respect to the digitalization of work) are not trusted by principals. At the very least, this would be a case of skeptical mistrust on the part of principals (Norris, 2019: 7, 11-13).

Nonetheless, while the available evidence provides a set of indications, these are indirect and fragmented rather than solid. At the same time, the clarity of the picture and impact is obscured and even subsumed to party politicking and the populist phenomenon too. So, more research is necessary to be able to arrive at more definite conclusions.

[28] As P. Norris points out,

> The concept of trustworthiness can be understood to involve an informal social contract where principals authorize others to act on their behalf in the expectation that the agent will fulfil their responsibilities, despite conditions of risk and uncertainty (Norris, 2022: 4).

3.3 Digitalized surveillance at work

The digitalization of work has been made possible and is the outcome too of meticulous measurements of the various facets of working that are transcribed in algorithmic code. Alongside such measurements and the appropriate technical development new forms of controlling work have emerged. The trend in the control of work and working has been to move from direct control, which involves direct observation of workers, to bureaucratic control that includes monitoring and regulating by bureaucratic means, to responsible autonomy, in which the (high-skilled/knowledgeable) worker is self-controlled (Edwards, 1979; Edwards & Wajcman, 2005), to algorithmic control, i.e. control via algorithms embedded in digitalised systems that coordinate labour procedures in the absence of direct supervision (Duggan et al., 2020). In fact, because of socio-technological developments, the digitalization that has occurred makes it possible for increasing numbers of labourers to work with digital tools *in situ* or at a distance from traditional workplaces and to be controlled via various work surveying and monitoring systems. Such systems that incorporate algorithmic controls are the work platforms, wearables, mobile telephones and suchlike.

Each of these basic labour control modes, marks a particular technological period and its counterpart employer/managerial strategy, although today all of them may co-exist and coalesce (Mengay, 2020). Such control systems are intrinsic to forms of work surveillance, which by utilizing them upgrade their capabilities (Wood et al., 2019).

Surveillance is a theme extensively discussed and analysed in social theory in the course of the last 45 or so years. The discussion has centred on the work of M. Foucault (1977, 1982), and has been of concern in the sociology in general as one of the pillars of modernity (Giddens, 1996: 55-63), in the sociology of work and organizations in particular (Ball, 2010); the discussion continues unabated to this date (Galière 2020; Hafermalz, 2021). In a different vein and more recently, it has been taken up by S. Zuboff who has been stressing its central role in the development of what she describes as "Surveillance Capitalism" (2019; 2022). At the risk of oversimplification, for Zuboff surveillance capitalism regards human experience as an available and free raw material to be converted into behavioural data. Some of these data are useful and utilised for the upgrading and enhancement of a multitude of material products and services. The remaining, however, are asserted as a "proprietary behavioural surplus", which are then supplied in various advanced production procedures dubbed "machine intelligence". The latter are then engineered into "prediction products", i.e. they anticipate what you will do now, soon, and later, and are traded in a market for behavioural predictions, which Zuboff calls "behavioural futures markets" (2019: 8).[29]

The system seems to work like this: a service is render to a person, for instance in response to an internet search, and is recorded. At the same time pieces of information of other online searches by the same person are combined with purchases of goods and services undertaken, of news items read, of places visited, of photos/videos uploaded or looked at, of routes followed, and of any other interests shown in online connections, all of which are related to the person to which the initial service was granted. This information is collected by companies such as Google or Facebook, which are then traded.[30]

[29] This last point on behavioural futures markets has been objected upon. For instance, it has been pointed out that instead of "resting surveillance capitalism on a kind of market *institution*, Zuboff should have relied upon a kind of market *logic*" (Rinehart, 2020).
[30] An example of misuse is the profiling scandal of Cambridge Analytica (Kavenna, 2019).

Of course, this entails the blatant violation of one's privacy. As such violations take place on a mass scale, they are giving rise to opposition, protest and suspicion towards business companies. Even so, the use of digital means continually expands and with this the surveillance of each and every user-person, whose life and choices are monitored continually, expands too, while any "behavioural surplus" is traded. The implicated companies amass huge profits, which further stimulates this form of capitalism to persist in its practices and thus sets the tone, according to Zuboff. In fact, this author maintains that the state (in the US and elsewhere too) has relinquished the information spaces to surveillance capitalism companies, and that this has severe repercussions for democracy (Zuboff, 2022).

Zuboff's thesis, however, is about the purpose, workings and impact of surveillance among the general population. Turning to the world of work it is its digitalization that ensures the expansion and specification of surveillance, by means of which worker control is feasible in the new technological context.

The digitalization in the world of work has been openly propagated by management as the means to achieve increases in productivity with increased autonomy for the workers in pursuing their work (de Vaujany et al., 2021). Such claim seems to apply with developments in the various workplaces in which a greater degree of independence, responsibility and choice is conceded to workers (usually to the more highly skilled and educated) so that their working hours are more flexible, team and group work is encouraged, consultations and suggestion from the workforce are welcomed, while some teleworking is possible too or even promoted, for instance working from home for some weekdays.

However, these developments are not entirely new. In fact, they have been occurring, irregularly, for several years (Watson, 2012). What dramatically shifted the scenery is the advent of the pandemic since 2020 and the modes adopted to counter the COVID-19 threat. This involved the introduction, heavy reliance and use by governments and the general public too of digital apps, devices and means, expressly for purposes of controlling the ailment.[31] It also heavily affected work and working, which from the factory and particularly the office was largely moved to home. In this sense the pandemic is a watershed as it brought into general use technical solutions that already existed or were fast developed to facilitate, both everyday restricted living and homeworking for a significant part of the working population. It also meant that for the new homeworkers the distinction between work and life (home) was largely annulled.

During this most recent period, the use of digitalized tools at work accelerated by expanding extensively and intensively, impacting by augmenting employees' productivity (Garcia et al., 2023). But the experience is not unitary. It bifurcated between those that had to work from home and those remaining in their regular workplaces. Michailakis & Kelfve (2023) report that the latter faced in an advanced and socially sensitive industrial country (Sweden), an increase of work-load. But with the former too there have been good evidence that supervision and surveillance have intensified, as in teleworking (Aloisi & De Stefano, 2022; Lal et al., 2023), or that isolation increased, which generated problems of a different order (Forte et al., 2021).

The movement toward more autonomy, choice and independence in what may be termed "regular" or "traditional" workplaces is rather reserved. It becomes more apparent in arrangements in which

[31] For instance, the Digital Contact Tracing App was utilised to trace the movements of the population for monitoring and containing the spread of the disease. Its use was voluntary in Western-type countries, but compulsory in authoritarian ones (Wang et al., 2022).

the employees do not have to be physically present in their regular workplace as in freelancing, coworking, homeworking. It is even more so for those who engage in various contractual forms of freelancing. As de Veaujany et al. (2023) indicate, the managerial claim about more worker autonomy is not necessarily frivolous. At the same time managerial controls are maintained and even strengthened by means of algorithmic surveillance practiced through various monitoring devices that are embedded in the tools and cell-phones/Apps with which work is undertaken, and which have perceptible as well as hidden affordances (Shor et al, 2020). This impacts differentially to the implicated workforce. On the one hand there are those that closely identify with the autonomy and independence claim, and to have them they willingly accept the enhanced surveillance. These tend to be more educated, multi-skilled and dexterous, may perform creative or specialist work, are freelancing, tend to espouse post-materialist values and attempt to incorporate them to their lifestyle, with at least some success. Their rewards are significantly intrinsic, specified as autonomy, mastery, purpose and psychological safety, but as they are highly skilled and dextrous high pay is an anticipated extrinsic reward (Gol et al., 2018). Such outworkers are numerically few.

By contrast, the many, *hoi polloi*, are those working in *micro-tasking* (*crowd-work*) and those engaged with platform-controlled *gig* work (see de Groen et al. (2018) for a compendium of related types of jobs/work). The former perform compartmentalized work tasks on-site locations or at a distance. These tasks do not particularly resemble a complete job, as the latter would have been known until the emergence of mediating and mobilizing platform work. This compartmentalization undermines the central role jobs have for identity purposes and as anchors of the social structure (Pesole et al., 2018).[32] The latter are working in the various platform coordinating delivery, courier, cleaning household and personal services, or taxi services. From repeated measurements it emerges that both those working in micro-tasking and gig work do so primarily on a part-time basis (Huws et al., 2019; Urzì Brancati et al., 2019; Piasna et al. 2022).

Crowd-workers, internally fragmented as they are (Howcroft et al., 2019), often possess a higher degree, mostly of technical nature (Pouliakas, 2019). For at least some of them their participation in crowd-work entails a career as skills acquired in that work environment may be transferable to another (Idowu & Elbanna, 2022), but for others it is just a part-time supplement to a full-time job, or other conditions may prevail. This is unlike the gig workers that operate in the "sharing economy", who are more numerous but possess more low-grade skills. The latter were estimated to number 28 million by the end of 2023, in Europe (*Euronews,* 13/12/2023). Both of these two broad categories of workers are under algorithmic surveillance; it is reportedly more comprehensive with the latter (European Commission, 2021a). The surveillance they are under, algorithmic alongside managerial surveillance as well as customer evaluation (when available as in delivery and taxi services), operates as an assemblage that arrives at an "algorithmic gaze", which ideal-typically ends up not only in replacing human observation but also replacing human decision making (Newlands, 2021: 732), in part. The implication is that the comprehensiveness of the surveillance they undergo at work is thorough and exceeds what is necessary for work control purposes. Such workers are poorly remunerated, in dire need to keep any job they might have and do not seem to value that much their autonomy or independence (Rivera & Cruz, 2021: 4; O'Higgins & Caro 2022).

[32] An indication of the number of persons implicated is available in crowd-work is as follows: Amazon's MTurk and Clickworker.com, each employs 700,000 registered crowd-workers, while the CrowdFlower, that has about 5 million crowd workers (which are coordinated by just one hundred direct employees), and others too (Schmidt 2017).

3.3.1 Compliance and opposition to algorithmic surveillance/control at work

Algorithmic surveillance exercised at distant work lies beneath the opening up of working in non-traditional work sites, although it may and does occur with on-site digitalised working too. Given the extreme heterogeneity of employment and working conditions across the different types of crowd-work and platform work, algorithmic surveillance nonetheless raises issues that concern the purpose of it and the compliance to it too. Ball presents and analyses an extensive array of surveillance practices in relation to digital platform work and worker responses (2021). Constant monitoring is verified by other researchers too (Urzì Brancati et al., 2020; Aloisi et al., 2022). This is possible since platform organizers/managers, true to their function are in a position to embed rules, monitoring functions and even sanctions into the digital interfaces of the platform (Ametowobla & Kirchner, 2023), that may be furthered with the use of AI. Ball details the conditions of surveillance and mechanisms utilised to implement it and underlies the importance of "behavioural visibility" that may be seen to be a control tactic pursued by organisations in relation to their workforce. In response, employees have to show "appropriate performance and behaviours which are captured in data, not only to be evaluated, but also to be acknowledged and recognised for their efforts" (2021: 41). In such context compliance is the outcome of employees responding in fear "of not being seen". Galière (2020) on her part, on the basis of research she undertook on the Deliveroo platform, holds that worker compliance to algorithmic management rests in that algorithmic control is rational. It is also imperfect, but compliance is aided by techniques of what has been termed subjectification. Several dispositives on the platforms, more often than not generate an active mobilisation of workers that end up in supporting the efficiency goals of the platforms. In this sense platforms exerts not only rational but also normative control on them.

Apart from compliance there is also opposition to algorithmic controls as there are continuous breaches of the privacy dimension that enrages platform workers. With reference to open opposition, Cini (2023) reports on two instances of platform worker mobilization in relation to algorithmic control; one relating to crowd-workers and the other to gig workers. Such mobilizations became possible because, as he points out, the implicated workers were able to draw support from specific communities and from available traditions of political activism for organising purposes. However, it is evident from this and other accounts (Wood et al., 2019; 2021; Collier et al., 2017; Ball, 2021) that as a rule outworkers have difficulty in organizing collectively to express their grievances and put forward claims. This is because they are almost totally organisationally outflanked (Mann, 2012) by the companies they work for. The latter exert centralised algorithmic surveillance and control, whilst the former are communicatively isolated, atomised, dependent upon the platforms for work and are ambivalent towards trade union organization.

Notwithstanding a noteworthy country effect, it emerges from disparate case studies that platform workers, compliant or opposing the surveillance and monitoring they undergo, perceive it to denote that they are not trusted by platform companies. This realization undermines cooperation with platforms (Lodovici et al., 2021; Lloyd & Payne, 2023).

Muted as most platform workers are, they do express grievances against specific customers, platform companies, and the state too. Patently complaints on customers and platform companies are not necessarily political in character, although they may be. This may be the case as when customers evaluate platform workers. Thus, effectively passing judgements on not always transparent or agreed upon criteria, that affect the latter's prospects of gainful employment. Or it

may arise when business corporations' monitoring breaches crowd-workers or platform workers privacy, which leads to discriminatory practices (Ball, 2021).

However, demands platform workers make on the state are definitely political. Wood et al. (2021) in their research of gig workers note that they express support for greater state regulation of platforms, including their surveillance practices, but they also make other claims on the state. The state is called for to institute a national minimum wage to be paid by platforms, and that it should do more to overall regulate them; the legal ambiguity of the status of platform workers is another reason they ask for state regulation.[33]

It has been suggested that employers' preference for algorithmic surveillance was not solely the sensible utilization of a technical possibility. That it was, but it is also understandable that platform-mediated organisations are motivated to avoid imposing direct managerial activities to evade legal challenges around workers' employment classification; in fact, their position was safeguarded by some European court decisions (Newlands et al., 2018).

3.3.2 EU-level response and intervention, and political trustfulness

Earlier the demands on the state for the regulation of platforms, of surveillance practices, and for the setting of a minimum wage were mentioned, to which the legal status is another major demand. Past experience indicates that the state, national or the EU quasi-state for that matter, has not been responsive to calls to intervene to regulate the platform economy, its work relations, safeguard privacy and the public/private divide and so on. Patently this omission has played in the hands of platform corporations, with their nominally independent workforce looking for state intervention as the way to resolve their described difficulties.

State intervention at the national level is not reviewed here. However, there have been a series of movements at the EU level that once agreed upon would have a binding effect on platform and gig work in member states. Thus, an initial political agreement was passed at the European Council that stressed issues of social protection of all labouring categories and referred specifically at

[33] As a matter of fact, most platform workers participating in the large-scale "COLLEEM" survey that took place in 2017 in 14 EU countries, identified themselves as employees by 68,1%, while 7,6% as self-employed (Pesole et al., 2018: 31). The remaining declare themselves as unemployed, students, retired, pensioners, homemakers, people with a migrant background, and others. Gig work attracts people that to a very significant extent work in it part-time to supplement their income (Pesole et al., 2018). In the subsequent second wave of the "COLLEEM" survey that took place in 2018 in 16 EU countries, those identified as employees remained constant, although those identified as self-employed increased reaching 10% (Urzì Brancati et al., 2020: 50). In the 2017 COLLEEM survey 32,409 persons participated or about 2,500 per country, while in the 2018 38,022 participated; about 2,370 per country (Pesole et al., 2018; Urzì Brancati et al., 2020). The self-identification as an employee implies that such labourers see themselves as under the domain of a single employer, and not as an independent who is working with another company is working for only employer only. However, beyond subjective self-identification the legal status of such workers was/is that of independent contractors, in other words they are considered legally as self-employed. This has important implication as it affects access to social security, entitlements and coverage by legislation on working conditions. It also implies that such nominally independent platform workers are exclusively burdened for social security expenses while the stability of their work and pay, or pay-rate, are open issues often calculated on individual performance, which is reminiscent of the piece-rate and associated 19th century labour relations.

platform worker too (Council of the European Union, 2018). Besides, a European Commission's Ethics guidelines for trustworthy AI, has been prepared by a high-level committee of experts to be piloted and further discussed for eventual presentation to the European Commission, as part of the measures taken to respond to the challenges of digitalization (European Commission, 2019).

The next major step took place in late 2021, when under the impact of the pandemic a set of measures were proposed that address the demands that have been expressed, referred to earlier. Indeed, the Platform Work Directive (PWD) was presented to the European Commission. This document looked into the self-employed legal status of platform workers, accepting that there have been misclassification and proposed a new legally binding arrangement. Moreover, it recognised excesses in personal data collection taking place under algorithmic surveillance and management. To protect personal data algorithmic surveillance and management are to be regulated. Explicitly, the uncontrolled processing of personal data by AI systems that operate on the basis of automated decision-making systems is to be adjusted. To do so, human oversight of them is to be introduced, while specific rules are to be formulated and applied. An example of the intendent intervention is the envisaged article 6 which addresses surveillance excesses. It:

> ... provides that digital labour platforms must not process any personal data concerning platform workers that are not intrinsically connected to and strictly necessary for the performance of their contract. This includes data on private conversations, on the health, psychological or emotional state of the platform worker and any data while the platform worker is not offering or performing platform work (European Commission, 2021b: 16).

Moreover, this comes on top of already existing legal EU stipulations that one has the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning her/him or similarly significantly affects her/him, which obligations are extended to include digital labour platforms. It also applies to persons performing platform work who do not have an employment contract or employment relationship (*ibid*. 2021: 26, 29).

Relatedly, the PWD proposes to introduce and establish the collective representation of workers in consultation processes in the platform economy too. The expressed aim is to achieve transparency and accountability in the collection and use of personal data, implying the imposition of definite limits. Further, the directive calls for enforcement of applicable rules for all platform workers including those working across border. Payment issues are also touched upon in a broad sense, and in relation to the overall aim of achieving equality and transparency (European Commission, 2021b).[34]

Subsequently, in mid-summer 2023, a general approach was agreed upon and announced (Council of the European Union, 2023a; 2023b), and the document took the road to be further elaborated as legislature in progress summing up agreement and disagreements too, leaving room to additional consultation before it was to be tabled for a European Parliament vote (European Parliament, 2023a). An agreement between the EU Parliament and the EU Council, which represents member states, was announced in mid-December 2023 (European Parliament, 2023b). The imminent new law would also affect the legal status of 5,5 million of the 28 million gig workers that are considered active in the EU in the end of 2021 (on December 11, 2023).[35] It was envisioned to do so by

[34] The specific legislative process is outlined in a European Parliament research service document (2023a) until the stage of Trilogue negotiations (COREPER).

[35] A current estimate (December 2023) of the number of platform workers in EU stands at 40 million (European Parliament, 2023b). A World Economic Forum estimated is for digitalized jobs to reach the 92 million globally by 2030 (World Economic Forum, 2024).

establishing a relevant set of legal criteria for considering a person an employee, and by increasing the transparency in the use of algorithmic surveillance, which platform companies utilize, by introducing non-automated human intervention and safeguards. Once ratified, it is to be enforced in two years' time. However, 12 national governments have raised objection objections, and the bill has been frozen for the time being, as announced by the outgoing Spanish presidency of the EU (on the 22 December 2023).[36] The declared intention, as announced on the 16 of January 2024, is that a new set of negotiations will begin under the new Belgian presidency (European Parliament, 2024).

Overall, notwithstanding criticisms,[37] the PWD initiative appears to be comprehensive and addresses the issue of the digital surveillance perspective it, although it is still an open unsettled issue. It is now appropriate to attempt an evaluation of this case as regard the impact of the digitalization of work on political attitudes, participation and trustworthiness-trust. Let us first sum up what has emerged so far.

It emerges that the underlying digitalization on the basis of which platform work is possible, specifically in the forms of crowd-working and gig-work, also renders possible the control of these forms of work by the implicated platform organizations that employ algorithmic forms of surveillance. Such surveillance is excessive as reacting platform workers point out. Alongside other work-related issues that distress platform workers, it breeds discontent and demands on the (national) state to regulate platform work. The reactions of national states are not surveyed here, thus unknown, although indirectly, from the various reports undertaken under EU auspices, it may be surmised that the demands made are not addressed. However, reactions and attempts to institute measures that would regulate surveillance and overall platform work are forthcoming at the EU level with the formulation of the PWD. This EU's initiative forms a universal response to the issue of excessive surveillance and of other issues too, and once passed it will be mandatory in the EU. Currently, however, reaching a decision on this initiative is stalled for political reasons. The said Directive is a response to platform workers calls for intervention and regulation of platforms and platform work. In this sense, it can be maintained that in the informal contract of trustworthiness, the agent (the EU) responds to the principal's (platform workers) call to look after and protect their interests, so there can be fulfilment of this responsibility which is the basis for building trust.

However, the regulation called for is only in the making. It might occur, but there are no guarantees that it will materialize (). Patently such a prospect does not suffice to allow platform workers-citizens' appraise positively the trustworthiness of the EU high-level personnel or/and the EU organization. Then, attitude indicators that would specifically measure such a relationship or proclivity, are unavailable. Therefore, one would reckon that platform workers cannot form an opinion on the matter, as political accountability cannot be assessed with some precision, nor can

[36] Journalistic sources have insinuated that the cost will rise very significantly for delivery companies, for instance Bolt, Deliveroo, Uber, Wolt, etc., since it would mean that they would have to pay significantly for wages and employers contributions for their reclassified workforce. Accordingly, it has been suggested that pro-business conservative political forces are stalling the agreement (Euronews, 2023). The permanent representatives of the following countries at the "Committee of the Permanent Representatives of the Governments of the Member States to the European Union" (COREPER), that have right-wing or centre-right governments, namely the "Baltics", Bulgaria, Czechia, Finland, France, Greece, Hungary, Ireland, Italy, and Sweden have been implicated in halting the agreement (Euractiv, 2023).

[37] Criticism external to the EU Parliament has surfaced on the extent of the anticipated PWD intervention as regards its regulation, provided of course that the PWD is indeed passed and instituted. One such criticism considers the regulation to be provided wanting, as it is not addressing the issue of the precarity of the work situation of platform workers (Aloisi et al., 2023).

their trust or mistrust towards political institutions be assessed; the factors outlined in Norris (2022: 7), that could lead to such an assessment, remain unknown. However, to leave it to just that this would be an all too academic approach to the issue; not necessarily one espoused by platform work incumbents. The mere fact that there is no recognizable response to their calls for regulation, may be assumed to indicate the officials' unresponsiveness to the platform workers call for the resolution of the issues that concern them. This would possibly indicate a very low degree of trustworthiness of EU officials and apparatuses and their being distrustful of them.

Thus, the impact that this specific example of work digitalization - that instigates the above-mentioned segments of platform workers to address the state and call for its political intervention/protection - may bear on political attitudes, participation, and political trust, might well be there. However, as these agents are organizational outflanked and muffled, and with empirical studies and measurements unavailable or non-existent, this impact cannot presently be assessed.

Conclusion

From what has been presented earlier in this report it emerges that in broad and overall terms the actual process of digitalization in EU-27, is expanding continuously and significantly. This expansion affects communications that are nearly reaching the saturation point. The expansion is also portrayed in the DESI index that measure ICT access and use, skills, internet access, and other items, and is reflected in the progressive substitution of live labour by robot systems in manufacturing industry. In fact, digitalisation permeates all areas of socio-economic economic life.

It also affects the world of work. Commencing as early as nearly 55 years ago, the digitalization of work has been extensive and multilayered, alternating in the process the way and content of work. Crises such as the pandemic not only have not slowed down its expansion, but the reverse has happened as the digital means and apparatuses have made possible an expansion of working from home, and from other non-standard workplaces too. It has been hypothesized that the digitalization of work does not just alter profoundly the ways of working, but exerts influence on political attitudes, participation and trust. The task at hand has been to review the related literature to show how the relationship between work digitalisation and its impact on the said political processes unfolds.

In the process it was discovered that the relevant social-scientific literature is limited and that the various social surveys did not address this issue at hand. Given this dearth of material it was decided to focus on two areas about which there were indications that the digitalization of work was at the very heart of the difficulties that certain worker segments experienced. The guiding idea has been that the strain exerted could have to be faced, perhaps creating agents opposition, ensuing the unfolding of repercussions in the direction of this paper's interests. The two areas, themselves outcomes of digitalization, are robotization and the platform economy.

The introduction of robots has been linked with redundancies, as arguably they are utilized to substitute an array of specific kinds of jobs. Particularly it was affecting repetitive and routine work posts/jobs, substituting them. It was among those workers (routine workers and clerks) who fear that their job is at risk, agonise about the maintenance of their income and status and who feel that they are "left out", that it was discovered that they tend to vote for populist and particularly for right-wing populist parties, although they tend to place themselves in the political left. This occurs

since this worker segment perceives mainstream political parties as neglecting them and being responsible for their difficulties.

This is unlike the case with other worker segments that either became redundant as their jobs were substituted by robots or obtained a new job in digitalised manufacturing. Therefore, there are some good indications of a diverging impact on those that run the risk of losing their job and perceive themselves as threatened. The diverse concerns, on the one hand, their political attitudes, and their political participation in the form of voting, on the other hand. Underlying such a shift is that this segment of workers that is "left-out" considers political decision-makers as particularly untrustworthy and as a result do not express political trust in the latter's decisions, hence find an outlet by voting populist parties. It is this support for populist parties that poses a threat to the democratic stability of contemporary democracies.

With respect to the platform economy, it is the algorithmic surveillance of platform work primarily affecting crowd- and gig-workers that is posing a significant problem, and potentially a problem for democracy. This form of surveillance renders possible the constant surveillance of workers, collects personal data on them in excess of what may be considered necessary for work monitoring. Thus, there is violation of privacy, and it may be seen to permeate the home-work and private-public divide. Such practices if left unanswered have the potential to undermine democracy. Platform workers have reportedly expressed their objections on this and other matters of concern to them, but this opposition has not been expressed in an organised form at there are organizationally outflanked by platform companies. Besides, the conditions of their work do not facilitate nor are conducive of collective action. Nevertheless, platform workers have raised their demands calling the state to regulate platform work.

On their part the role of political elites excert at the national level in the EU in safeguarding privacy, the work-life balance, delimiting work surveillance itself to what is absolutely necessary, and addressing platform regulation is not known. Some indirect indications however point in that there are no noteworthy response/intervention on their part, but in essence this is an open-unknown issue. At the EU level, however, there has been an attempt to address the issues and regulate the platform economy with the launch of the PWD initiative. This attempt at a response may be seen to have, by refraction, some equivalence to country-level responses, as once PWD is adopted it will apply in all EU-27 countries.

However, as the agreement on the PWD is currently delayed and uncertain, it cannot be considered as a response that goes in some way to satisfy the demands that have been registered for the regulation of platform work. As excessive algorithmic surveillance continues the trustworthiness of political elites and citizens' trust in what they say/do on the matter, is possibly quite negative. Because of a dearth of evidence in the literature, the impact excreted on political attitudes, participation and trust cannot be determined.

Overall, it can be said that digitalization of work and what outflows from it does affects segments of workers making possible practices (robotization, algorithmic surveillance) that are threatening to them. The political elites do not appear to respond so problems are not addressed, while their trustworthiness in these instances is, apparently reduced significantly. The former on their part react and their reactions impinge on their political attitudes, participation and trust. However, the exact processes by means of which the impact takes form, is partly revealed in the case of robotization, while it remains largely unknow in the case of algorithmic surveillance. Patently more research is required.

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Appendix A − Digitalization and related notions

Digitalization has speciated into two closely related dimensions. These are *robotization* and the *platform economy* with its own labour market that is dubbed the "crowd".

Robotization

The first of these dimensions, namely *robotization*, is taken to encompass all practices, procedures and processes that are associated with computerization and automation, which allow robots to perform routine and non-routine manual as well as cognitive tasks. Robots may have a physical dimension and in this sense be real, as in the examples of 3-dimension printers or smart factories. Otherwise, they may be virtual, as in algorithms, control systems, process management, software, and suchlike (Degryse, 2017). In addition to industrial robotization in the offices and services in general a *virtual* robotization is omnipresent. Thus, in education, trade, office work at large, distribution, banking, insurance, and other areas there is an evolving and accelerated process of dematerialization of work tasks, for example in process automation, in the automatic reading of documents, and suchlike. This has and is leading to deep changes in the content of work, in work organization and in employment as we have come to know it.

The platform (gig) economy

The second one, the *platform economy* refers to the use of digital platforms. Such a platform is marked by the pervasiveness of connectivity among a variety of devices and data, which makes both possible and available interlinkages among its handlers or/and users who may access a variety of services. It is also possible to build up business models base on online outsourcing via a platform.

The platform economy is also known as the *gig* economy. This refers to telework, to working via internet platforms, and performing certain individual pieces of a larger project, which are called "gigs". A "gig", which is a slang word, stands for a job that lasts a specified period of time. At first, it was musicians that used the term 'gig' for defining a performance engagement (Lutkevich & Gillis, 2022). By extension it refers to a section or part of a complete piece, or project (Houliaras & Sotiropoulos, 2020).

What happens is that gigs, i.e., pieces of work that are related to an item or a service of a tangible or intangible character as it may be, are mediated, organized, and coordinated on the basis of a digital platform. For example, for software development, for translating a book, for an architectural design, for delivering lessons or a course, for the graphics of a video game, for "image tagging" on social media, for the provisioning of services as in the preparation, packing or delivery of specific items, e.g., food. It follows that the compartmentalized work in the gig economy relies heavily on temporary, part-time, or project-based contractors and freelancers. This type of work may also have political consequences. It may affect the political trust of workers employed in the gig economy.

A basic distinction may be drawn between *cloud* work, which is web-based and may be performed irrespective of the location in which the cloud-worker is, and *gig* work, which is location-based digital labour (Schmidt, 2017).[38]

[38] The distinction between cloud and gig work allows for three types of digital labour platform for web-based services, namely freelance marketplaces, micro-tasking crowd work, and contest-based creative crowd work. Three other types are distinguished in relation to the gig work (location-based digital labour): accommodation, transportation and delivery services, and household and personal services. Besides these

With respect to the crowd: it is comprised of individual workers, performing separately and from a distance by means of computer apparatuses that are coordinated through digital labour platforms. The crowd may be virtual or material, but nonetheless, is available continuously. Such workers are organised to work by performing small but interconnected specific work-tasks, which are platform mediated and coordinated. When their operation is looked like a whole it appears that they are working continuously, on a 24/7 base. However, while such workers may work from a variety of places, at various times, in different capacities (freelancers, paid by the piece, online outsourcing, etc.) and maybe numerous (hence the "crowd" referent), the fact is that they are quite isolated. Further to this, crowd-workers often are paid low wages as employers may play on country-based differential pay rates and may be replaceable. Again, this type of work may also have an impact on levels of political trust.

Digital platform labour, as already indicated, is far from unitary. On-line outsourcing may conceal a diversity of work roles and positions, work situations and statuses. The crowd, when taken as a whole, is a fragmented labour market (Doeringer & Piore, 1971; Wilkinson, 1981; Schmid, 2016). Thus, there are workers performing more trivial work tasks, which require easily accessible skills, that often enough are available in large numbers so that there is an oversupply of labour. Such workers are paid at lower rates. One the other hand, there are other workers that perform more complex or key work-tasks, which form a top tier for the platform regulated labour market. Besides, the range of meanings that such work has for agents-workers, work satisfaction too is quite variable (Cedefop, 2020). In this sense those working via digital labour platforms are quite isolated from their physically unseen and unconnected co-workers and individualised too.

The platform economy is expanding. By the end of 2023, there were over than 10,000 platforms in the EU, who catered for a variety of services with most of them, over 90%, operating in small and medium sized enterprises, according to EU estimates (European Commission 2023). However, digital services in the EU currently have to deal with 27 different sets of national rules, which means that only the largest platform companies can deal with the resulting compliance costs (European Commission 2023b). Platforms have been growing incessantly with the turnover and employment linked to them growing too. The larger platforms, nevertheless, operating in several European countries were calculated to number about 600 but the end of 2021 (European Commission 2021a).

Two other terms that are often used in close connection to digitalization are Artificial Intelligence (AI) and "Industry 4.0". They are discussed in this Appendix for clarification purposes.

Artificial Intelligence

Artificial Intelligence (AI) is a generic notion. It refers to the use of computers to work out things that usually require human intelligence.[39] AI is a general-purpose technology. What distinguishes

six platform-based variants of digital work and distinct labour markets, various hybrid variants have also appeared (Schmidt, 2017: 9-13).

[39] In the words of the US Artificial Intelligence Research Resource Task Force, the term "artificial intelligence" means:

> a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments. Artificial intelligence systems use machine and human-based inputs to: (A) Perceive real and virtual environments. (B) Abstract such perceptions into models through analysis in an automated manner. (C) Use model inference to formulate options for information or action (National Artificial Intelligence Research Resource Task Force, 2023: 1).

AI from other types of digital technology is that it is based on programming logic: "If X, then Y". Accordingly, algorithms are developed that trace patters in data, are in a position to generate models and formulate prediction on a probabilistic basis, which are applied to software for various purposes.

AI in computers has analytically been distinguished into four types. The first type is that of "reactive machines"; it is the most basic types of AI. Such machines just do not have the capacity to form or mobilize memories. Also, they cannot utilize past experiences to inform current decisions. Then there is the "limited memory" or type 2. These might be able to look in the past as in self-driving cars. "Theory of mind" is the 3rd type of AI in computers. These would be machines endowed with the capacity to form representations about the world, as well as about other agents or entities. It is purported that they would be built in the future. "Awareness" would be the 4th type. What would distinguish them from other digital technologies is that they have consciousness and form representations about themselves. The last two types of computer machines just do not exist, at least not yet. While it is doubtful whether they will ever appear, it is not anticipated that they will emerge in the near future (Hintze, 2016).

The use of AI implies that enormous amounts of data are processed in ways that humans cannot process. The goal with AI is that it will be able to perform tasks, for instance, recognizing patterns, making decisions, and judging as humans do, in effect replicating them.

As a result, computers may perform tasks that require visual perception, speech recognition, decision-making, and translation between languages, with applications far and wide in areas as diverse as self-driving cars, or machine translation (Varian, 2018). Such AI applications can replicate the work-tasks of routine workers whose jobs it effectively reduces; AI has an explicit labour substitution dimension, although it also complements labour (Gallego & Kurer, 2022: 469).

Industry 4.0/4IR

The term "Industry 4.0" or "4IR" (Industrial Revolution-IR) has been applied to designate the idea that due to technological advancements there has been a move beyond the earlier industrialization models and towards the fourth industrial revolution or stage of industrialization. According to a relevant classification, the first industrial revolution (1760-1830) involved the harnessing of steam power, use of coal, mechanization, and the factory system. The second industrial revolution (latter part of the 19th-early 20th century) relates to the application of science in production in use of electricity, manufacturing of chemicals and mass production. The third industrial revolution (late 1960s – today) refers to the application of computing systems, and electronics, I.T. systems and automation. The third IR has led to the 4.0, which is an extension of the former. Industry's 4.0 timeframe is the 21rst century (the notion was coined in 2015/6 by Klaus Schwab, the founder and president of the World Economic Forum at Davos, Switzerland).

As such, the designation "Industry 4.0" is used to mostly refer to digitalisation in relation to manufacturing industry, and largely employed in Germany, which has an enhanced role in European manufacturing, but less so in other countries or contexts (Hirsch-Kreinsen, 2023, 2016; Salento, 29018; Kop et al., 2019; Chatterjee et al., 2023).

An almost identical definition has been adopted by the OECD AI experts' group, indicating consensus. The latter add that: "AI systems are designed to operate with varying levels of autonomy" (mentioned in Lane & Williams, 2023: 11).

The fourth industrial revolution involves the digital transformation of manufacturing and production as well as generation of services and in the value creation processes. In particular, the ongoing and increasing use of digital technology in industry has generated an anticipation and much discussion that a far-comprehensive technology push in industrial manufacture is underway that would have repercussion for the future of work in Industry 4.0 (Hirsch-Kreinsen, 2016). Indeed, 4IR describes the trend towards automation as well as data exchange in technology and processes within the manufacturing industry and services too. It applies to the "Internet of Things (IoT) that is of significance, smart manufacturing, smart factories cyber-physical systems, artificial intelligence, and relates to digital twin technologies too. 4IR is characterized by the bridging of physical industrial assets and digital technologies in so-called cyber-physical systems (Kamble et al. 2018; Silvestri et al. 2020; Zheng et al., 2020).

The industry 4.0 idea is a way to classify technological systems development. It is usually recognised that between, say, the third and the fourth industrial revolution there is a lot of common ground and co-presence, and that the latter is an extension of the former. Certainly, this way of classifying technological systems is not the only one available or necessarily the most appropriate way of doings so. In fact, criticisms have been levels against the notion of Industry 4.0 on analytical,[40] as well as ethical grounds.[41] However, it sems that the notion has caught up, at least for the time being, and is being used and applied extensively, and interchangeably to terms such as the gig or platform economy and digitalization.

[40] Thus, Jeremy Rifkin has pointed out that that digitalization is the hallmark and defining technology of the third IR. Digitalization has just embarked its course of expansion and has not run its course. The emerging new configuration of digitalization in tecno-systems, namely the Internet of Things that is associated with 4IAR, represents a next stage of its development that will mature in no less than 30-40 years (Rifkin, 2016).
[41] The political scientist Klaus-Gerd Giesen has exerted criticism connecting the 4IR idea with the ideology of transhumanism (Giesen, 2018).

Appendix B – The country's government should/should not have the right to keep people under video surveillance and monitor e-mails.[42]

In Tables A.B.1 and A.B.2, the frequency distributions of whether the country's government should or should not have the right to keep people under video surveillance in public spaces and monitor all e-mails and any other information exchanged on the Internet are presented, respectively, for 23 European countries participating in the World Values Survey Wave 7, 2017-2022 (Haerpfer et al., 2022).

Table A.B.1 - Frequency distribution of whether the country's government should or should not have the right to keep people under video surveillance in public spaces: WVS, 2017-2022.

Q196 - Do you think that the country's government should or should not have the right to keep people under video surveillance in public spaces (%)?

Country	*N*	Definitely should have the right	Probably should have the right	Probably should not have the right	Definitely should not have the right	NA
Austria	1,651	17.2	34.2	21.0	25.4	2.2
Bulgaria	1,566	29.0	26.3	15.0	25.0	4.7
Croatia	1,493	9.9	25.7	26.7	34.7	3.0
Cyprus	1.000	9.8	18.9	16.5	49.2	5.7
Czechia	3,029	16.3	30.4	22.0	29.0	2.2
Estonia	1,304	19.4	35.2	15.9	26.7	2.8
Finland	1,220	49.1	39.1	8.5	1.9	1.4
France	1,880	25.0	40.2	16.5	15.7	2.6
Germany	3,706	26.5	40.9	16.9	14.1	1.7
Greece	1,200	5.6	20.0	27.3	44.8	2.3
Hungary	1,519	35.1	33.7	12.7	16.9	1.7
Italy	2,282	38.7	35.5	12.7	10.3	2.7
Latvia	1,334	28.5	38.8	16.9	13.3	2.6
Lithuania	1,453	22.9	32.8	16.2	25.3	2.7
Netherlands	2,145	21.4	37.9	16.3	12.2	12.3
Poland	1,358	6.0	25.4	26.7	38.6	3.3
Portugal	1,201	24.0	30.7	13.5	26.6	5.2
Slovakia	2,636	13.2	33.4	23.3	28.4	1.8
Slovenia	1,080	9.2	24.3	22.5	41.7	2.3
Spain	1,210	21.0	30.1	15.5	31.5	1.9
Sweden	1,198	52.1	34.4	10.2	2.3	0.9
Switzerland	3,181	21.4	40.2	24.1	13.1	1.2
UK	2,609	28.1	46.9	14.9	8.9	1.2

Source: Haerpfer et al., 2022

As shown (Table A.B.1), respondents in Bulgaria, Finland, Hungary and Italy believe in the main that the government should definitely have the right to keep people under video surveillance in public spaces with their opinions ranging from 29.0% (Bulgaria) to 49.1% (Finland). Those in Austria, Czechia, Estonia, France, Germany, Latvia, Lithuania, the Netherlands, Portugal,

[42] This appendix has been authored by Angliki Yfanti.

Slovakia, Sweden, Switzerland and the UK think mainly that that the government should probably have the right to keep people under video surveillance in public spaces with their opinions ranging from 30.4% (Czechia) to 46.9% (UK). Respondents in Croatia, Cyprus, Greece, Poland, Slovenia and Spain believe in the main that the government should definitely not have the right to keep people under video surveillance in public spaces with their opinions ranging from 31.5% (Spain) to 49.2% (Cyprus).

Table A.B.2 - Frequency distribution of whether the country's government should or should not have the right to monitor all e-mails and any other information exchanged on the Internet: WVS, 2017-2022.

Q197 - Do you think that the country's government should or should not have the right to monitor all e-mails and any other information exchanged on the Internet (%)?

Country	*N*	Definitely should have the right	Probably should have the right	Probably should not have the right	Definitely should not have the right	NA
Austria	1,651	5.9	15.8	26.4	48.4	3.4
Bulgaria	1,566	3.2	17.2	22.2	44.7	12.7
Croatia	1,493	3.3	11.4	28.8	51.9	4.6
Cyprus	1.000	6.9	13.3	15.5	58.0	6.4
Czechia	3,029	3.5	7.9	24.1	61.6	3.0
Estonia	1,304	2.2	9.0	24.0	59.6	5.2
Finland	1,220	10.1	30.2	33.2	23.2	0.6
France	1,880	10.2	20.1	27.6	38.2	3.8
Germany	3,706	6.8	18.6	31.3	40.4	2.8
Greece	1,200	3.1	11.9	24.3	57.7	3.1
Hungary	1,519	4.0	10.3	25.2	56.9	3.7
Italy	2,282	8.2	18.1	29.3	38.6	5.8
Latvia	1,334	5.9	10.5	24.9	55.6	3.0
Lithuania	1,453	1.6	8.9	27.9	54.8	6.7
Netherlands	2,145	4.8	14.5	27.7	41.6	11.4
Poland	1,358	1.9	7.5	29.9	56.8	4.0
Portugal	1,201	3.0	9.1	21.6	57.6	8.7
Slovakia	2,636	3.1	12.4	27.9	54.2	1.5
Slovenia	1,080	2.3	9.3	20.8	63.9	3.7
Spain	1,210	10.5	20.2	19.2	46.5	3.6
Sweden	1,198	6.9	21.9	35.3	34.1	1.9
Switzerland	3,181	5.5	20.2	37.8	35.1	1.3
UK	2,609	5.4	17.9	33.5	41.6	1.7

Source: Haerpfer et al., 2022

As shown (Table A.B.2), respondents in Finland, Sweden and Switzerland believe in the main that the government should probably not have the right to monitor all e-mails and any other information exchanged on the Internet ranging from 33.2% (Bulgaria) to 37.8% (Switzerland). Respondents in all other countries believe in the main that the government should definitely not have the right to monitor all e-mails and any other information exchanged on the Internet ranging from 38.2% (France) to 63.9% (Slovenia).

Appendix C − Summary statistical explorations of ESS-10 on digitalization and its impact[43]

Introduction

This section investigates the relation of political trust in a country's parliament to the use of the Internet and mobile phones for communicating with family and work relations based on the 2020 European Social Survey (ESS) datasets for 25 EU member countries. We chose to analyze three variables assessing the impact of online communication on people's emotional proximity, work and personal life and personal privacy from the most recent ESS survey in relation to the index of trust in one of the most basic political institutions in modern democratic regimes, which is the national parliament. It was decided to use the question on the national parliament as indicative of the political trust index as was justified in our previous work (Sotiropoulos, Kanellopoulos & Yfanti, 2023). Notwithstanding the space limitation of this report, we opted to analyze this particular index of political trust in relation to the three variables, referred to earlier, concerning experiences of online and mobile communication in the ESS samples.

AC.1 Method

AC.1.1 The data

The analysis was based on the 2020 ESS datasets for the following 23 European countries that provided data for the module under consideration on "Digital social contacts in work and family life": Austria, Belgium, Bulgaria, Croatia, Czechia, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and the UK. The surveys of all rounds used exclusively face-to-face interviewing as the data collection method, but in the 2020 survey, due to the pandemic, national teams could implement self-completion methods for the first time. Consequently, two different datasets were provided for the countries implementing face-to-face interviewing (European Social Survey European Research Infrastructure (ESS ERIC), 2023a) and self-completion (European Social Survey European Research Infrastructure (ESS ERIC), 2023b) methods, respectively. Therefore, the two ESS surveys are not comparable. In this respect, the surveys of Belgium, Bulgaria, Croatia, Czechia, Estonia, Finland, France, Greece, Hungary, Ireland, Italy, Lithuania, the Netherlands, Portugal, Slovakia, Slovenia Switzerland and the UK used face-to-face interviewing and the surveys of Austria, Germany, Poland, Spain and Sweden self-completion questionnaires. In the analyses, the countries are presented using the ISO 3166-1 alpha-2 codes.

AC.1.2 Measures

The questions used in the analyses were all included in the ESS core questionnaire (European Social Survey, 2020). The question on political trust in country's parliament was worded as follows: "Using this card, please tell me on a score of 0-10 how much you personally trust each of the institutions I read out. 0 means you do not trust an institution at all, and 10 means you have complete trust. Firstly [country's] parliament".

In the 2020 ESS, a module on "Digital social contacts in work and family life" was included in the questionnaire. From this module, three questions measuring experiences of online and mobile communication were used: "To what extent would you say that online and mobile communication … makes people feel closer to one another? … makes work and personal life interrupt each other?

[43] The work appearing in this appendix has been authored by Angliki Yfanti.

… undermines personal privacy?" All three questions were assigned a 0-10 scale with 0 and 10 meaning "not at all" and "completely", respectively. (Note that, in the ESS questionnaire, it is clarified that in the first question "closer" is considered in the sense of emotional rather than physical proximity.)

As all the earlier mentioned four variables were assigned a 0-10 scale, their level of measurement was considered as interval.

AC.1.3 Statistical Analysis

Initially, univariate analyses were carried out. Crosstabulations were performed and only results statistically significant at $p<.001$ were to be presented. Bivariate correlation analyses were performed using Pearson's correlation coefficients. Correlations were considered significant at $p<.05$. Scatterplots were carried out based on the variables' mean scores to provide an indication for cross-national comparisons. In all models, political trust in country's parliament defined the independent variable (IV) and each of the three questions on experiences of online and mobile communication constituted the dependent variable (DV). Certainly, the 25 cases (countries) included in the analyses do not allow for a proper presentation of the simple regression analysis results as large samples are required to perform such analyses.

Statistical analyses were performed using IBM SPSS Statistics Version 29.

AC.2 Results

AC.2.1 Experiences in Using the Internet and Mobile Phones for Communication and Political Trust: Univariate Analysis Results

In Figure AC.1, the mean values of political trust in the country's parliament are presented for all countries. As shown, political trust ranged from 2.34 (Bulgaria) to 6.6 (Switzerland).

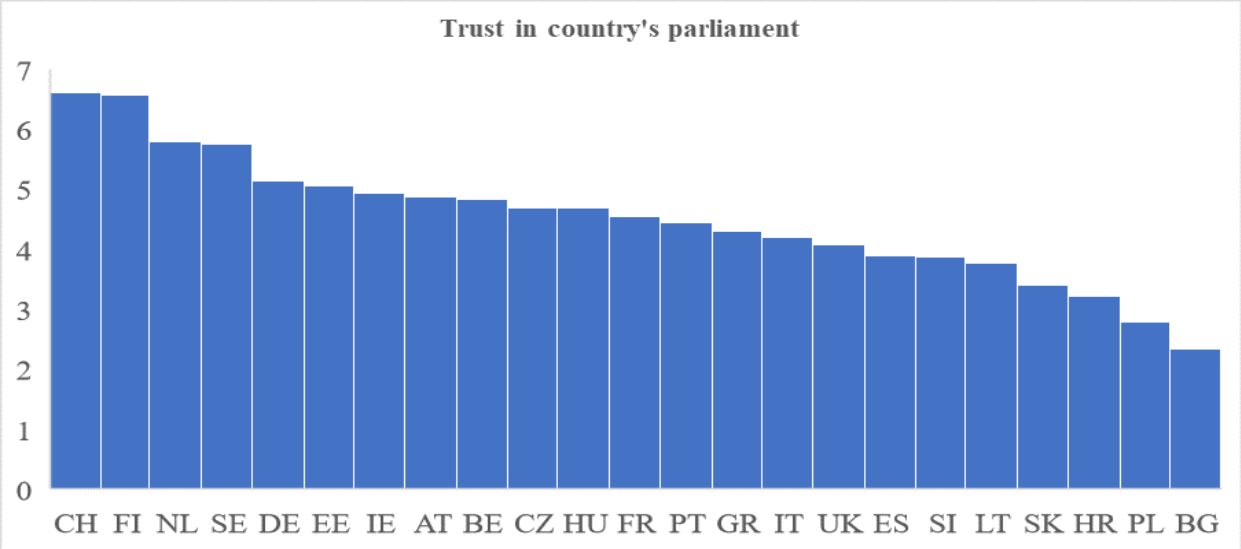

Figure AC.1 Mean scores on political trust in country's parliament: European Social Survey, 2020.

In Figure AC.2, the mean values of experiences of whether or not online and mobile communication is making people feel closer to one another are presented for all countries. As shown, the mean scores ranged from 5.26 (Germany) to 7.58 (Greece).

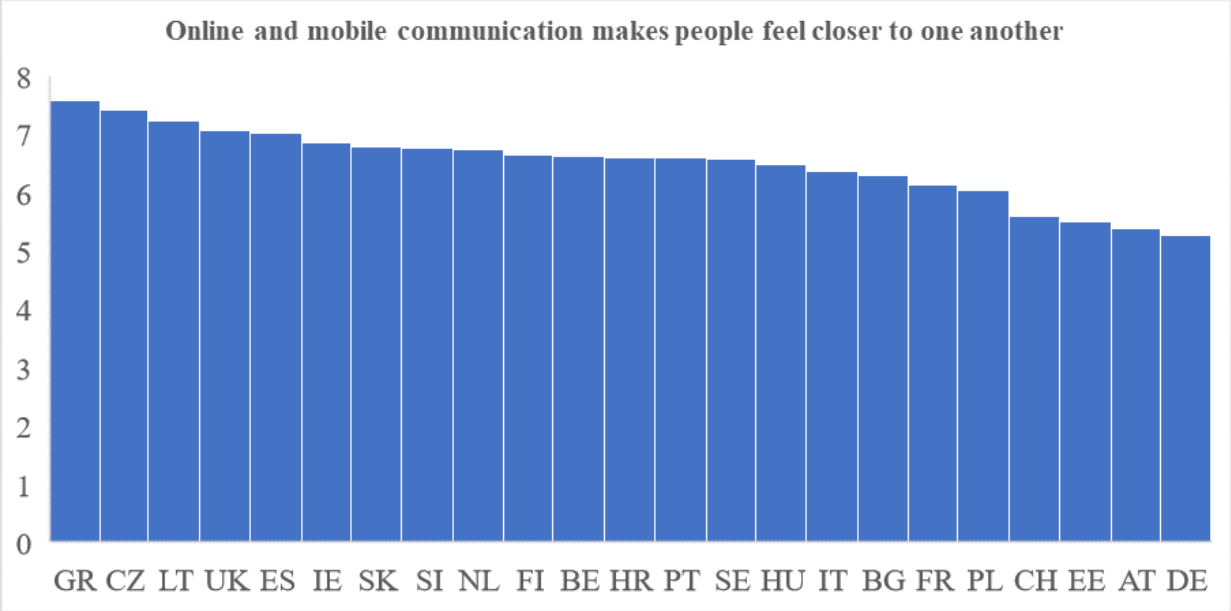

Figure AC.2 Mean scores on experiences of whether or not online and mobile communication is making people feeling closer to one another: European Social Survey, 2020.

In Figure 4.3, the mean values of experiences of whether or not online and mobile communication is making work and personal life interrupt each other are presented for all countries. As shown, the mean scores ranged from 4.84 (Lithuania) to 7.90 (Sweden).

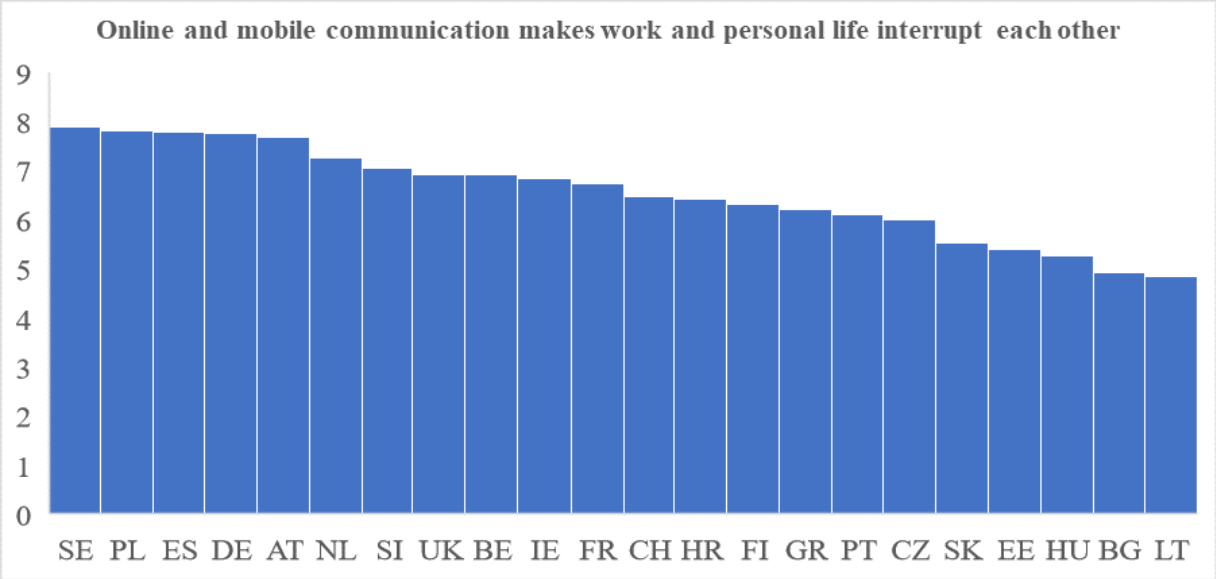

Figure AC.3 Mean scores on experiences of whether or not online and mobile communication is making work and personal life interrupting each other: European Social Survey, 2020.

In Figure AC.4, the mean values of experiences of whether or not online and mobile communication is undermining personal privacy are presented for all countries. As shown, the mean scores ranged from 4.46 (Bulgaria) to 7.21 (Spain).

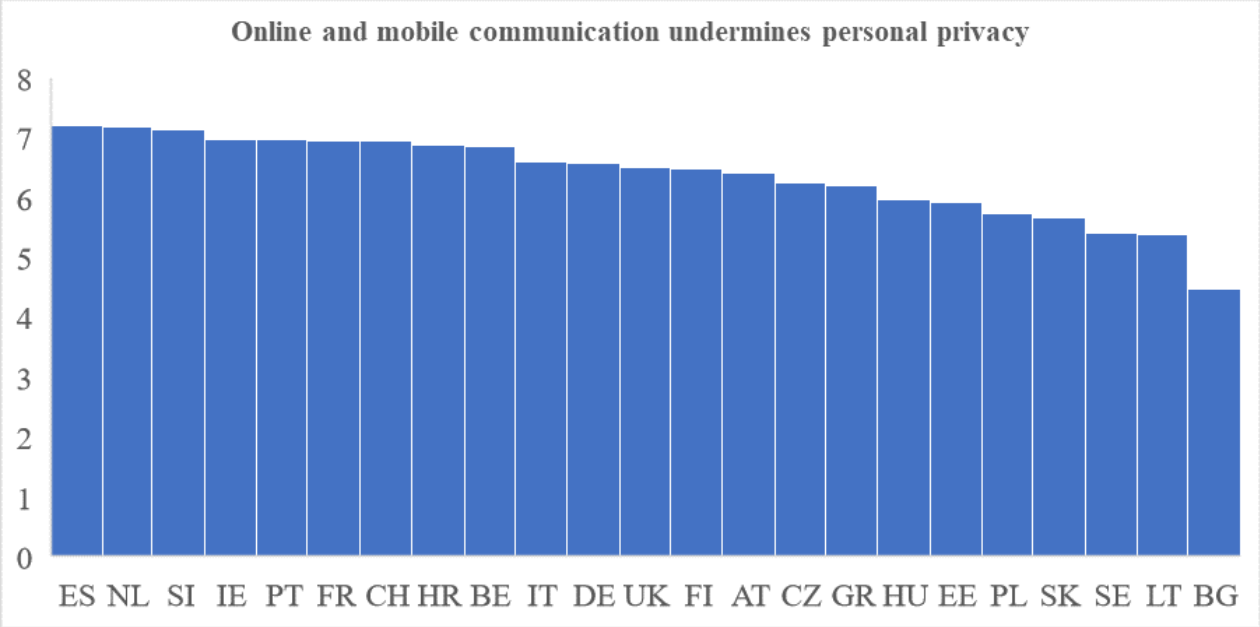

Figure AC.4 Mean scores on experiences of whether or not online and mobile communication is undermining personal privacy: European Social Survey, 2020.

AC.2.2 Experiences in Using the Internet and Mobile Phones for Communication and Political Trust: Cross-national Results

In Table AC.1, the correlation coefficients of the three experiences in using the Internet and mobile phones for communicating and political trust are presented.

Table AC.1 Pearson's correlation coefficients of experiences in using the Internet and mobile phones for communication and trust in country's parliament: European Social Survey, 2020

	Trust in country's parliament		
	Online and mobile communication:		
Country	makes people feel closer to one another	makes work and personal life interrupt each other	undermines personal privacy
Austria	.139	-.018**	-.052*
Belgium	.118	.126	.000
Bulgaria	.083	-.009**	-.060
Croatia	.108	-.040**	-.057*
Czechia	.181	-.006**	-.037**
Estonia	.103	-.009**	-.024**
Finland	.153	.118	-.031**
France	.189	.092	-.050*
Germany	.156	.031	-.045
Greece	.090	.154	-.013**
Hungary	.067	.040**	-.021**
Ireland	.033**	.075	-.014**
Italy	.124	–	-.059
Lithuania	.129	.023**	.006**
Netherlands	.155	.074	-.020**
Poland	.033	-.005	-.045
Portugal	.153	.045**	-.015**
Slovakia	.257	-.117	-.134
Slovenia	.092	.009**	-.056**
Spain	.065	.012**	-.074
Sweden	.157	.033**	-.022**
Switzerland	.133	.087	-.020**
UK	.090	-.008**	-.066*

All correlations are significant at $p < .01$ (2-tailed).
* Correlation is significant at $p < .05$ (2-tailed).
** Correlation is not significant.

As shown, in all countries but Ireland, correlations of experiences of whether or not online and mobile communication is making people feeling closer to one another and political trust in the country's parliament were significant. All these correlations were positive ranging from .033 (Poland) to .257 (Slovakia). In Belgium, Finland, France, Germany, Greece, Ireland, the Netherlands, Poland, Slovakia and Switzerland, correlations of experiences of whether or not online and mobile communication is making work and personal life interrupting each other and political trust in the country's parliament were significant. In these countries but Poland and Slovakia, these significant correlations were positive ranging from .031 (Germany) to .154

(Greece). In Austria, Belgium, Bulgaria, Croatia, France, Germany, Italy, Poland, Slovakia, Spain and the UK, correlations of experiences of whether or not online and mobile communication is undermining personal privacy and political trust in the country's parliament were significant. All these correlations, except the one for Belgium, were negative ranging from -.134 (Slovakia) to -.045 (Germany, Poland).

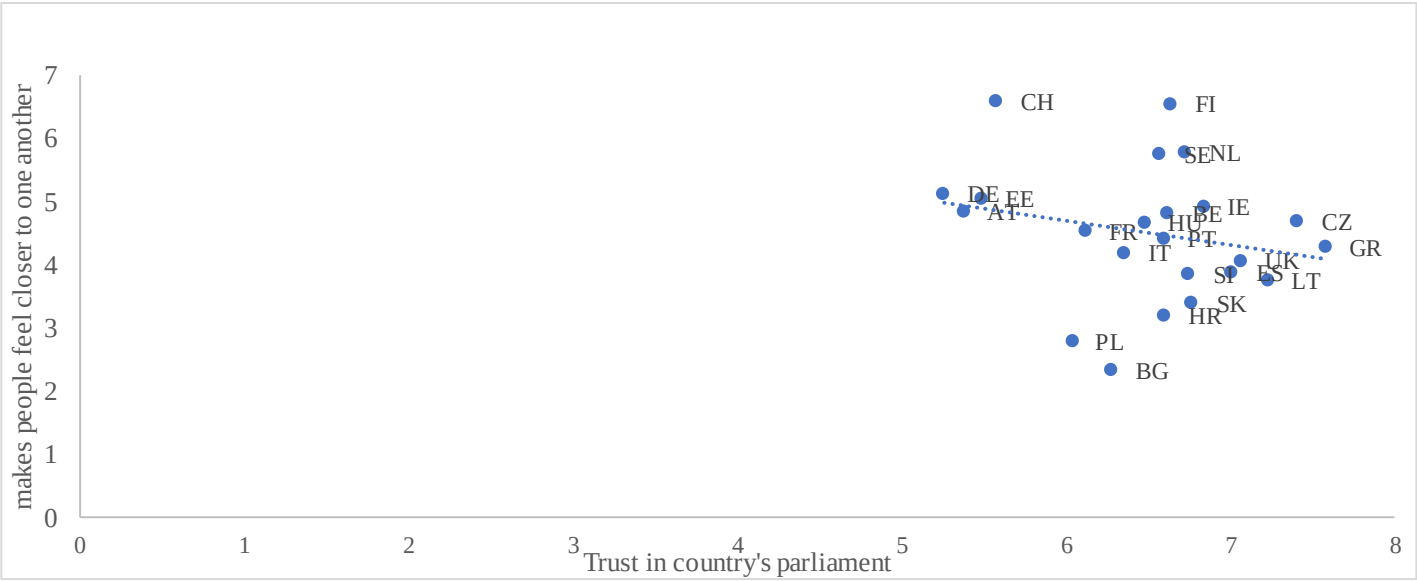

Figure AC.5 Scatterplot of the mean scores on political trust in country's parliament and experiences of whether or not online and mobile communication is making people feel closer to one another: European Social Survey, 2020.

In Figure AC.5, the scatterplot of the mean scores on political trust in country's parliament and experiences of whether or not online and mobile communication is making people feel closer to one another is presented. As shown, a "downhill" pattern is detected indicating a negative relationship between the two variables. Germany, Estonia and Austria "cluster" closer at the "line" and its left end of lower value points; France, Italy Portugal and Croatia at the middle; and Greece, the UK, Spain and Lithuania at the right end of higher value points.

In Figure AC.6, the scatterplot of the mean scores on political trust in country's parliament and experiences of whether or not online and mobile communication is making work and personal life interrupting each other is presented. As shown, an "uphill" pattern is detected indicating a positive relationship between the two variables. Lithuania is closer at the "line" and its left end of lower value points; France, Germany and Ireland at the middle; and Austria and Germany at the right end of higher value points.

In Figure AC.7, the scatterplot of the mean scores on political trust in country's parliament and experiences of whether or not online and mobile communication is undermining personal privacy is presented. As shown, an "uphill" pattern is detected indicating a positive relationship between the two variables. Lithuania is closer at the "line" and its left lower value points; Greece at the middle; and Ireland, Belgium, Germany and Austria at the right end of higher value points.

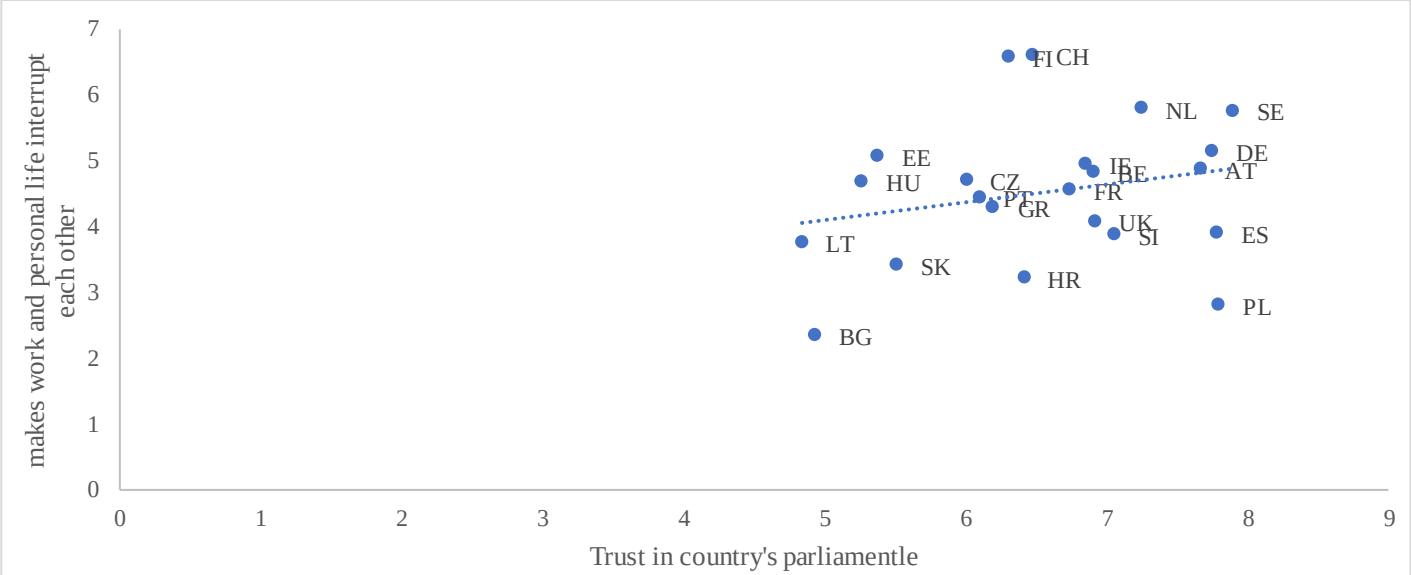

Figure AC.6 Scatterplot of the mean scores on political trust in country's parliament and experiences of whether or not online and mobile communication is making work and personal life interrupting each other: European Social Survey, 2020.

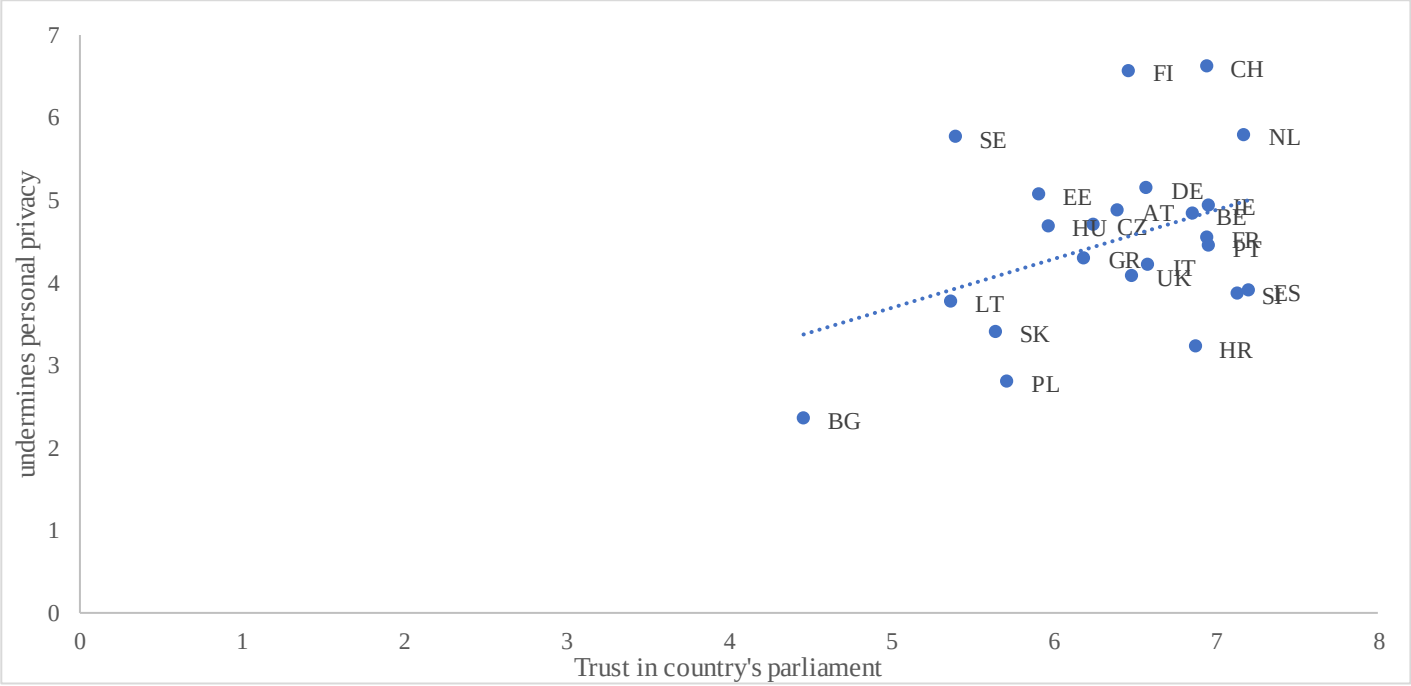

Figure AC.7 Scatterplot of the mean scores on political trust in country's parliament and experiences of whether or not online and mobile communication is undermining personal privacy: European Social Survey, 2020.

Conclusions

In this section, the relation of political trust in a country's parliament and experiences of online and mobile communication was investigated for 23 EU member countries participating in the 2020 ESS.

The findings showed that the mean scores on political trust in the country's parliament were lower (<3.4) for Bulgaria, Poland, Croatia and Slovakia and higher (5.75>) for Switzerland, Finland, the Netherlands and Sweden.

The mean scores on experiences of whether or not online and mobile communication is making people feeling closer to one another were lower (<5.58) for Czechia, Estonia, Austria and Germany and higher (7.01 >) for Spain, the UK, Lithuania, Switzerland and Greece. The mean scores on experiences of whether or not online and mobile communication is making work and personal life interrupting each other were lower (<5.52) for Slovakia, Estonia, Hungary, Bulgaria and Lithuania and higher (7.06 >) for Slovenia, the Netherlands, Austria, Germany, Spain, Poland and Sweden. The mean scores on experiences of whether or not online and mobile communication is undermining personal privacy were lower (<5.65) for Slovakia, Sweden, Lithuania and Bulgaria and higher (7.14 >) for Slovenia, the Netherlands and Spain.

In all countries but Ireland, correlations of experiences of whether or not online and mobile communication is making people feeling closer to one another and political trust in the country's parliament were significant and positive. Correlations of experiences of whether or not online and mobile communication is making work and personal life interrupting each other and political trust in the country's parliament were significant only in Belgium, Finland, France, Germany, Greece, Ireland, the Netherlands, Poland, Slovakia and Switzerland and they were positive in all these countries but Poland and Slovakia. Correlations of experiences of whether or not of online and mobile communication is undermining personal privacy and political trust in the country's parliament were significant in Austria, Belgium, Bulgaria, Croatia, France, Germany, Italy, Poland, Slovakia, Spain and the UK and they were negative except in the case of Belgium.

In the scatterplot of the mean scores on political trust in country's parliament and experiences of whether or not online and mobile communication is making people feeling closer to one another, a "downhill" pattern was detected indicating a negative relationship. Germany, Estonia and Austria "cluster" closer at the "line" and its left end of lower value points; France, Italy Portugal and Croatia at the middle; and Greece, the UK, Spain and Lithuania at the right end of higher value points.

In the other two scatterplots, an "uphill" pattern was detected indicating a positive relationship between the mean scores on political trust in country's parliament and the experiences of whether or not online and mobile communication is making work and personal life interrupting each other and the experiences of whether or not online and mobile communication is undermining personal privacy, respectively. In both cases, Lithuania "clustered" closer at the "line" and its left end of lower value points;

Lithuania is closer at the "line" and its left end of lower value points; France, Germany and Ireland at the middle; and Austria and Germany at the right end of higher value points and Germany at the right end of higher value points.