ROBOPHOBIA IN EUROPEAN COUNTRIES: HOW DO CULTURAL AND ECONOMIC DIFFERENCES INFLUENCE THE ACCUITY OF THIS FEAR?

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ABSTRACT

This research paper explores public attitudes towards robots in European countries and investigates the influence of cultural and economic differences on employees' perceptions of automation. It aims to provide a comprehensive understanding of the underlying reasons for positive or negative attitudes towards automation among European populations, with a specific focus on the example comparison between Denmark and Greece.

A theoretical approach will be preferred to the empirical one in this work, due to a lack of resources, the abundance of existing literature and survey data on the topic. The available information from academic papers was divided in the three building blocks of this research paper: the cultural perspective, which covers the work of Dr. G. Hofstede, the economic perspective, which covers the main economic indicators and some theory, and the historic perspective, which goes deeper into why a country is the way it is today. By combining all of them the research question was answered in the conclusion section, since history defines culture, history and culture define the economic state, and all of them can explain public attitudes towards robots.

Overall, the goal of this study is to add to the body of knowledge by presenting a thorough understanding of the relationship between cultural, economic, and historical factors and public perceptions of robots.

Graduation Committee members: Maximilian Goethner, etc.

Keywords

Robophobia, technological innovations, labour displacement, culture, economic state, government and business action.

1. INTRODUCTION

Innovations have both positive and negative impacts on the labour market by, on one hand, increasing productivity, reducing costs and creating new job opportunities in emerging industries, and on the other hand, due to the fast pace of technological change, leading to job displacement and skills obsolescence, resulting in income inequality, social unrest and robophobia (Dachs, 2018).

Robophobia, or a fear of technology, can hinder the adoption of new technologies and slow down progress. To address this issue, workers require education and training to adapt to new technologies. Therefore, governments and businesses should provide financial aid and retraining programs to support displaced employees (Acemoglu & Restrepo, 2019).

The question is, however, "How did it all start and how did it get to the point where we became afraid of things that we created ourselves?". A significant turning point in world history was the Industrial Revolution, a phenomenon that started in 1760 and went on until 1840. The development of tools like the spinning wheel, water wheel and steam engine, led to the industrialization of earlier artisanal production techniques (Mohajan, 2019).

This revolution fundamentally altered how products were produced, which in turn contributed to the expansion of the world economy. A speedier and more affordable mass manufacture of items was made possible by greater production efficiency. As a result, more people could afford the commodities, because they became widely available. This led to a shift in the economy, cities, transport systems, and the development of a more integrated global market (Mohajan, 2019).

Moreover, machines continue to play a crucial part in manufacturing today. Technological improvements have produced more advanced tools, that can complete difficult tasks more quickly and accurately. For instance, robots and computer-controlled machines have enabled the automation of numerous production processes, consequently increasing efficiency and output even more, and reaching a point where machines may now operate continuously with no oversight (Javaid et al., 2021).

The use of machines has extended even beyond manufacturing to other sectors such as healthcare, transportation, and entertainment. Machines such as MRI scanners, self-driving cars, and virtual reality systems have transformed these industries, improving the quality of life for many people, but also presenting a serious threat to them in the job market.

The following paragraphs will discuss the topic of public attitudes toward robots, with a focus on the role of innovations and robophobia, and answer the upcoming research question: "How do cultural and economic differences among European countries influence employees' attitudes towards automation?". Thus, helping to understand the underlying reasons in the cultural DNA of European countries, that explain the positive (or negative) attitudes towards automation held by their population.

The paper will start by explaining the methods used to conduct this research and summarising three relevant articles on the topic, after which an explanation will be given as to why they are not enough to understand the differences in attitudes towards automation among various countries.

Later, additional insights will be provided to fill that gap in existing research, along with a thorough conclusion and the answer to the research question above. That answer will be given throughout the whole length of the paper with a final accentuation and a piece of advice for European governments in the conclusion passage.

2. METHODOLOGY

Furthermore, it is crucial to explain the methods that will be used to find the answer to the above-mentioned research question. A theoretical approach will be preferred to the empirical one, since it is challenging to conduct extensive empirical research on the topic, given the lack of resources and possibilities.

This approach will allow for a thorough examination of the available literature and theories related to the subject, consequently providing a framework to analyse and interpret the findings and draw meaningful conclusions that can contribute to the existing body of knowledge on the topic.

At the base of the theoretical analysis in this paper will be a comparison between two EU countries, Denmark and Greece, that will be used for to make a simple accentuation of some new ideas and established facts from all the sources listed below.

This method was chosen due to the fact that the easiest way of understanding discrepancies in attitudes toward robots is through comparison and these specific countries were chosen because of how different their cultures and economic states are, and how abundant the data about the two is.

In addition to that, a combination of quantitative and qualitative research (with a focus on the latter) will be used during the process, because of how important numbers from various statistical analyses, like the Special Eurobarometer, are to understand and accurately compare the enormous output from national surveys. And how numbers are not enough to create a complete image of the situation without knowing the questions asked in the survey and the specific answers given by the respondents from each country.

3. LITERATURE REVIEW

As outlined in the introduction, the discussion on the topics of robophobia and automation will start with an in-depth analysis of existing literature, which will shape a part of the base of this paper, together with the 2 perspectives examined in section 4.

Moreover, these modern issues are well reflected in previously written articles, which encompass the attempts of many different scientists to understand, resolve, compare, and forecast the relationship between robots and workers in several countries around the world.

However, only 3 were selected for a detailed review in this research paper, as they are some of the few that contain valuable and well-grounded insights on the topic (ex.: statistical analyses, recommendations for governments, etc.), and complete each other, while contouring different perspectives to the reader.

One example is the scientific paper written in 2017 by Fabian Dekker, Anna Salomons and Jeroen van der Waal, called: "Fear of robots at work: the role of economic self-interest", which investigates the relationship between job insecurity and individuals' expectations of regaining employment after job loss, based on data collected by British Household Panel Survey.

The study examines how job insecurity affects people's expectations for employment recovery after losing their jobs and emphasizes that this has a negative impact on unemployment expectations, because people who anticipate

having trouble finding new employment are less likely to actively look for new opportunities. This, in turn, increases their likelihood of experiencing prolonged unemployment. The authors conclude that lowering job uncertainty might be a good way to lessen the negative effects of losing a job and encourage quicker re-employment.

A further example would be the paper "Insecure times? Workers' perceived job and labor market security in 23 OECD countries" published by Lena Hipp in 2016, which examines workers' perceptions of job and labor market security in 23 OECD countries. The author argues that these perceptions are important for understanding the impact of economic and social changes on workers and for shaping policy responses to these changes.

Using data from the International Social Survey Programme, the author finds that workers in many OECD countries perceive their jobs to be less secure than in the past. However, there is considerable variation in these perceptions across countries, with workers in some countries (such as Denmark and Norway) reporting high levels of job security and others (such as the United States and Spain) reporting low levels.

Workers who perceive the labor market to be more secure are more likely to support policies that promote job security, such as strong employment protection legislation and collective bargaining.

The author argues that these findings have important implications for policy. She suggests that policies aimed at improving job security need to take into account workers' perceptions of the broader labor market, and that policies that strengthen the labor market as a whole (such as investment in education and training) may be more effective than policies that focus solely on employment protection.

Another eloquent one is "Automation and New Tasks: How Technology Displaces and Reinstates Labor" written in 2019 by Daron Acemoglu and Pascual Restrepo. It explores the impact of automation on the labour market. The authors argue that while automation can displace workers from their jobs, it can also create new tasks that require human skills, leading to the reinstatement of labour. So, it illustrates a more optimistic future for workers and a less negative impact on them brought on by automation, compared to the previously summarised paper.

They find that while automation has reduced employment and wages for routine tasks, it has increased demand for non-routine tasks that require problem-solving, creativity, and social skills. These non-routine tasks are typically complemented by automation, rather than replaced by it.

The paper also highlights the importance of education and training in adapting to technological change. The authors suggest that workers who are able to acquire new skills and adapt to changing technology are more likely to benefit from technological progress. However, they caution that the benefits of automation are not evenly distributed, and that there is a risk of increasing inequality if workers are not adequately prepared for the changing demands of the labour market.

The last example that will be provided in this literature review is the work of Frey and Osborne from 2017, called: "The future of employment: How susceptible are jobs to computerisation?".

According to the authors, routine jobs involving manual labour or data processing are most vulnerable to automation. Jobs requiring creativity, social intelligence, or complex problem-solving, on the other hand, are less vulnerable to automation see fig.1). The authors also discover that higher education-required professions are less prone to automation.

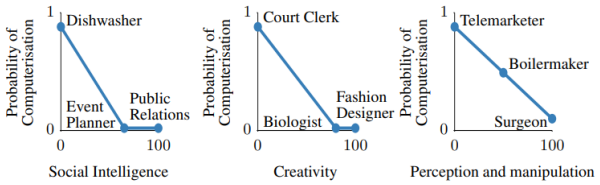

Figure 1. A sketch of how the probability of computerisation might vary as a function of bottleneck variables

Additionally, automation may have a significant impact on how people will work in the future, potentially leading to significant job losses in some sectors. It is important to mention that the research method used by the authors leads to an overestimation of the proportion of workers that will become unemployed due to technological advancements in their industry (approx. 47%).

So, this paper describes quite a pessimistic future for them in the labour market, compared to the one preceding it in the literature review, which is not exactly accurate, especially in the Euro Area. However, the authors also point out that automation may lead to new employment opportunities, particularly in fields like engineering and programming, meaning that by learning a new set of skills, workers can avoid becoming obsolete in the labour market in the future.

4. ACADEMIC AND PRACTICAL RELEVANCE

4.1 Academic relevance

Public perceptions of robots are a complex and intricate issue that calls for a comprehensive knowledge of the social, economic, geopolitical and cultural forces that influence public opinion, as outlined by some the scientists mentioned in the literature review above.

Although existing literature covers the topic quite well, the distinctive cultural and economic aspects of every separate country discussed are overlooked (see fig. 2), which makes it hard to understand why, for instance, 44% of the people in Greece have negative views of robots, while only 9% share the same opinion in Denmark (European Commission, 2012).

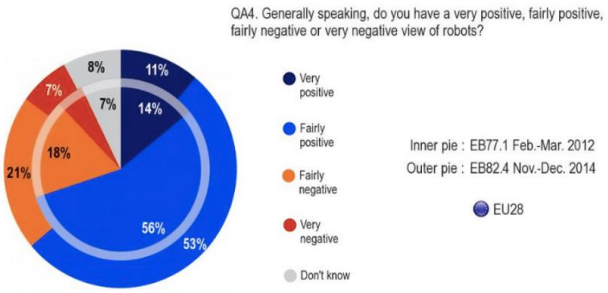

Figure 2. Public attitudes toward robots in the EU/Euro area – survey made by the Special Eurobarometer 427.

A simple look into the economic state of both countries, Dr. G. Hofstede's cultural dimensions and their historic context would explain that difference in attitude and the North-South divide, a phenomenon by which countries in the North of the Europe tend to disagree with the statement "Robots steal people's jobs" and countries in the South tend to agree with it.

This discrepancy, which might not be easily noticeable on the map (see fig. 3 and the difference in colour), is accentuated by the statistical results of the Eurobarometer analysis, where the probability indicator of the t-test performed to understand the significance of that divide is way smaller than the threshold of $\alpha = 0.05$, meaning that the difference between the attitudes of North and South Europeans towards robots at work is quite significant.

The discussion of the academic relevance of the topic will start with a paragraph depicting the economic situation of the two countries used as comparison, with Greece as the first one. The Hellenic Republic has seen a difficult economic position in the past 10 years, with significant unemployment rates and a volatile job market. The higher number of people in this country, who have negative opinions about robots, could be attributed to this background, which may foster feelings of job insecurity and dread of automation.

In contrast, Denmark has a robust economy and a long-standing social welfare system that acts as a safety net for its citizens. This combination may foster a greater sense of security and trust in automation, which would lead to a lower proportion of people holding unfavourable opinions about robots.

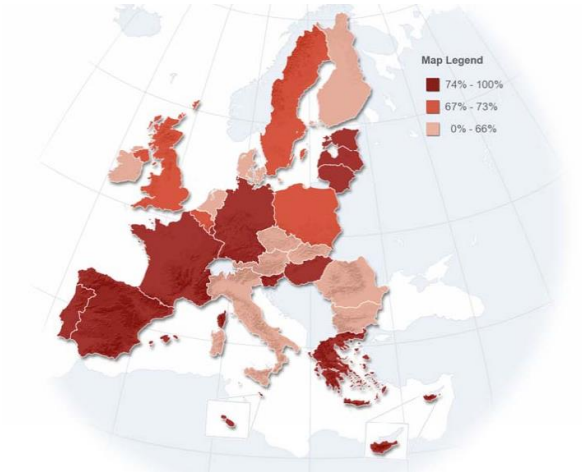

Figure 3. The North-South divide in public attitudes toward robots in the EU/Euro area – Source: Special Eurobarometer.

Dr. G. Hofstede's cultural dimensions, which investigate the cultural values and beliefs of various nations, can also aid in explaining why some nations have more unfavourable attitudes toward robots than others. Namely, there might be more scepticism toward new technologies and automation in nations that place a high value on collectivism and tradition. Countries that place a high value on individualism and innovation, however, might be more receptive to embracing novel technologies like robots.

The last, but not the least important aspect of this research is the historical context, which shapes culture itself and defines who the people of Europe are today. Countries shaped their culture through several transformational processes that took place in their specific context through history, like migration, commerce, wars, etc.

For example, countries that had agriculture as their main occupation for centuries (ex.: Greece) are more inclined to avoid automation and fear its consequences, than countries that had a poor geographic position and less fertile soil for growing food (ex.: Denmark) (Mokyr, 1990). They are the ones that chose the path of innovation and industrialisation, to increase productivity and be able to grow 2 times the amount of food from the little arable soil that they had.

However, geographic position and soil quality is not all the empirical evidence used by Mokyr in his book from 1990, "The lever of riches", but also the development and accumulation of knowledge over time, particularly scientific and technological knowledge. Therefore, he takes into account historical events, like the Industrial Revolution in Europe, technological diffusion (ex.: networks, trade, cross-cultural interactions), institutional factors (ex.: social constructs and norms) and long-term trends in technological development and economic growth during his study.

So, by examining the cultural, historic and economic factors that influence public attitudes toward robots in various nations, this paper seeks to go beyond the existing literature and provide a more thorough understanding of the problem, while also building on the theoretical framework established by earlier researchers by tying these factors together, starting with the economic aspect.

4.2 Economic perspective

Following up on the comparison made above, 4 indicators will be used to assess the economic state of the 2 countries: public debt (as % of GDP), unemployment rate, inflation rate and GDP per capita. Public debt as % of GDP is an indicator of the ability of a government to meet its future obligations, while the unemployment rate illustrates how well the labour market is functioning in a certain country.

Moving on to the next indicator, the rate of inflation contours the quality of the monetary policy of a certain country, which is a set of actions that the national central bank can undertake to achieve sustainable economic growth by adjusting the money supply. Lastly, the GDP per capita is a core indicator of economic performance and is commonly used as a measure of economic well-being, as well as the living standards of the local populus.

Starting on the economic comparison of the two countries, Denmark has approximately 24,225€ higher GDP per capita (see table 4), 147.5% less public debt as % of GDP than Greece (see table 3), which accentuates the fact that the latter owes more than it produces and that it does not stand on a strong foot economically, 6.8% lower unemployment rate (see table 1) and 1.8% higher inflation rate (see table 2), even though the latter is 3 times bigger in size. This could answer the question of why Greeks are more reluctant to the introduction of robots in their society.

The main reason is that Greek citizens know that their government will not be able to take care of them as well as the ones of the more developed countries take care of their citizens (Erlinghagen, 2017), so if workplaces become automated and people's contribution to the labour market is required less, the unemployment insurance that Greeks will receive and their chance to be re-employed will be far lower than in other countries. This will, as a result, make their search efforts for a new job lesser as well and only prolong their unemployment (Dekker et al., 2017).

	Rates (%)				
	Dec 21	Sept 22	Oct 22	Nov 22	Dec 22
Euro area (EA19)	7.0	6.7	6.6	6.6	**6.6**
Euro area (EA20)	7.0	6.7	6.6	6.6	**6.6**
EU	6.4	6.1	6.1	6.1	**6.1**
Belgium	5.6	5.4	5.4	5.5	**5.5**
Bulgaria	4.6	4.0	4.0	3.9	**4.0**
Czechia	2.2	2.3	2.2	2.6	**2.3**
Denmark	4.5	4.6	4.6	4.7	**4.8**
Germany	3.2	3.0	3.0	3.0	**2.9**
Estonia	5.5	5.2	5.4	5.6	**5.7**
Ireland	5.1	4.4	4.4	4.4	**4.3**
Greece	12.9	11.9	11.6	11.6	**11.6**

Table 1. Seasonally adjusted unemployment rates in the EU/Euro area in 2021/2022 - Source: Eurostat.

	Annual rate						
	Feb 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23
Euro area	5.9	9.9	10.6	10.1	9.2	8.6	**8.5**
EU	6.2	10.9	11.5	11.1	10.4	10.0	**9.9**
Belgium	9.5	12.1	13.1	10.5	10.2	7.4	**5.4**
Bulgaria	8.4	15.6	14.8	14.3	14.3	14.3	**13.7**
Czechia	10.0	17.8	15.5	17.2	16.8	19.1	**18.4**
Denmark	5.3	11.1	11.4	9.7	9.6	8.4	**8.3**
Germany	5.5	10.9	11.6	11.3	9.6	9.2	**9.3**
Estonia	11.6	24.1	22.5	21.4	17.5	18.6	**17.8**
Ireland	5.7	8.6	9.4	9.0	8.2	7.5	**8.1**
Greece	6.3	12.1	9.5	8.8	7.6	7.3	**6.5**

Table 2. Inflation rates in the EU/Euro area in 2022 - Source: Eurostat.

		General government gross debt					
		Millions of national currency			% of GDP		
		2021Q3	2022Q2[p]	2022Q3[p]	2021Q3	2022Q2[p]	2022Q3[p]
Euro area 19	EUR	11 750 308	12 103 279	12 152 371	97.3	94.2	93.0
Euro area 20	EUR	11 796 440	12 148 936	12 198 121	97.2	94.1	92.9
EU	EUR	12 762 163	13 121 765	13 180 283	89.7	86.4	85.1
Belgium	EUR	548 189	573 668	575 009	111.9	108.3	106.3
Bulgaria	BGN	30 950	32 157	36 591	23.3	21.3	23.1
Czechia	CZK	2 433 842	2 794 976	2 982 489	40.4	43.5	45.2
Denmark	DKK	960 636	845 856	840 039	39.5	31.8	30.7
Germany	EUR	2 430 788	2 514 916	2 527 294	68.6	67.2	66.6
Estonia	EUR	5 754	5 702	5 585	19.2	16.7	15.8
Ireland	EUR	236 304	236 603	236 142	57.4	51.2	49.0
Greece	EUR	357 369	359 110	357 431	202.9	183.5	178.2

Table 3. Government debt as % of GDP in the EU/Euro area in 2021/2022 - Source: Eurostat.

Country	Gross domestic product (GDP) at market prices		GDP (*Gross domestic product*) growth rate	Inflation rate[2]	General government deficit/surplus[3]	General government gross debt
	bn (*billion*) euros	per inhabitant (PPS)[1]	%		% of GDP (*Gross domestic product*)	
	2022				2021	
Germany	3,867	41,136	1.8	8.7	-3.7	68.6
Austria	406	44,135	4.6	8.6	-5.9	82.3
Belgium	552	42,468	3.1	10.3	-5.6	109.2
Bulgaria	85	20,683	3.4	13.0	-3.9	23.9
Croatia	58	25,805	13.1	10.7	-2.6	78.4
Cyprus	24	32,369	6.6	8.1	-1.7	101.0
Czechia	277	32,059	2.5	14.8	-5.1	42.0
Denmark	376	48,105	3.8	8.5	3.6	36.6
Estonia	36	30,624	-1.3	19.4	-2.4	17.6
Finland	267	38,381	2.1	7.2	-2.7	72.4
France	2,643	35,743	2.6	5.9	-6.5	112.8
Greece	208	23,880	5.9	9.3	-7.5	194.5

Table 4. GDP per capita and Government debt in the EU/Euro area in 2021/2022 - Source: Eurostat.

4.3 Cultural perspective

From a cultural point of view, the reason behind the negative attitude of Greeks toward robots is even simpler. On the 100-point scale of Hofstede's cultural dimensions, Greece scores 100/100 for uncertainty avoidance (see fig. 4), which means that it is a nation with a strong risk averse nature, so it is more reluctant to change than Denmark, for instance, a country that only scores 23/100 on that dimension (Hofstede, 2011).

Since automation is the reason for constant market fluctuations and instability, especially in the food industry, metal constructions and tourism (see fig. 5, that illustrates that 47% of workers in this sector are at risk of being unemployed), which are the biggest industries in the country.

These industries made huge progress in integrating intelligent systems into most production processes (Greece and the Industry 4.0 Intelligent Automations - SEV, n.d.), so it is only reasonable that the Greeks do not want the process to take over their lives any further and endanger their key sources of income.

Additionally, on the individualism dimension described by Dr. Hofstede as "the degree of interdependence a society maintains among its members" Denmark scores 74/100, while Greece, a more traditional and collectivistic country, scores 35/100. This means that the latter is more comfortable sticking to the old ways than doing something new, especially if it might affect the general wellbeing of the local population through an excess of competition or other such developments.

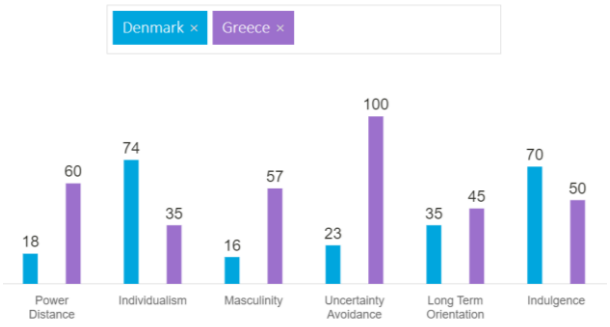

Figure 4. Cultural differences between Denmark and Greece based on the 6 Hofstede dimensions – Source: Hofstede Insights.

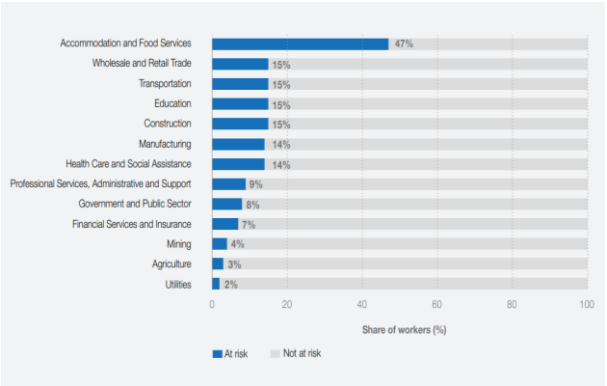

Figure 5. Estimated share of workers at risk of unemployment, by sub-industry - – Source: Special Eurobarometer.

Denmark, however, follows the path of constant development and change, which explains the state of its economy and the great quality of life there. It also explains the more positive attitude of the local population towards automation and their focus on lifelong learning opportunities.

Researchers, such as Daron Acemoglu and Pascual Restrepo, are of the opinion that "workers who are able to acquire new skills and adapt to changing technology are more likely to benefit from technological progress" and the Danish definitely support this idea. Thus, they see automation as a source of opportunity and development, not a threat.

4.4 Practical relevance and research question

Taking all these factors into account, governments in Europe must engage in careful and nuanced analysis before making investment and innovation decisions. By doing so, they can ensure that their initiatives are tailored to the specific needs and contexts of their countries, and that they aid the increase in the well-being of their citizens in the most effective way possible.

Additionally, studying public attitudes towards robots can facilitate the development of guidelines and regulations related to robotics technologies. Policymakers can use the insights gained from this learning process to establish ethical standards, privacy protections, and safety regulations that are in line with societal expectations, since the one-size-fits-all approach would be ineffective in this situation (Hipp, 2016). Not all countries are the same, so a law that can be adopted in Germany is not one that Spanish people would accept. For this reason, tailoring is key.

Furthermore, this proactive approach promotes responsible innovation, safeguards public interests, and ensures that robotic technologies are developed and deployed in a manner that maximizes their benefits while minimizing potential risks.

For instance, with the right rules and regulations robots can be used to perform tasks that present danger to human life and safety, or that are too difficult for people, like space exploration, deep sea exploration, rescue missions, disaster response, transportation of heavy machinery, work with toxic substances, etc. (Special Eurobarometer, 2016).

The socio-demographic analysis done by the Special Eurobarometer indicates that agreement on this matter is widespread among all social groups, with small differences, reaching an average proportion 88% across the EU (see fig. 6).

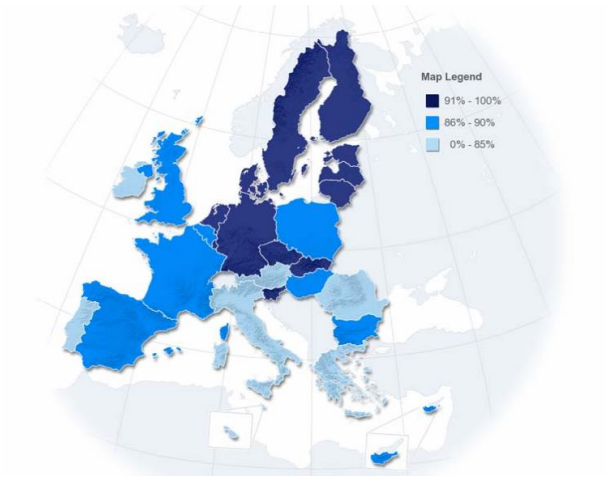

Figure 6. Public attitudes toward robots regarding their use for dangerous activities in the EU/Euro area – Source: Special Eurobarometer.

To emphasise on the differences between the EU countries about the idea that "robots are necessary, as they can do jobs that are too hard or too dangerous for people", this paper will stick to the example comparison between Denmark and Greece used above. The analysis indicates that Greece has one of the lowest levels of agreement (75%) with this statement, while Denmark is in the top 5 countries in the EU that agree with it quite strongly (95%) and would like to make robots part of dangerous missions.

5. CONCLUSION AND RECOMMENDATIONS

The disparities in public perceptions of automation and robots across European nations have been examined throughout this academic paper, with a focus on the influence of cultural, historic and economic factors on those differences.

The investigation, that lasted several months and was based on a multifaceted comparison between two EU countries for simplicity, has shown that the three factors, with sub-factors such as: societal values, attitudes toward technology, historical context and heritage, job market structure, labour market regulations and economic stability interact in a complex way.

Firstly, the study showed that cultural differences greatly affect the way automation and robots are perceived in various European nations. The attitudes that people have toward technology and their willingness to accept automation are influenced by cultural values, traditions, and norms.

For instance, nations with a long history of craftsmanship and a high regard for human labour may be more sceptical of automation, out of concern for the deterioration of traditional skills and the loss of craftsmanship. As a way to increase their competitiveness, countries with a more progressive outlook and a focus on productivity and efficiency might be more receptive to adopting automation (Hofstede, 2010).

Secondly, economic disparities have a significant impact on how people perceive automation. Different industrial structures, job market dynamics, and economic development levels show varying degrees of acceptance or resistance to automation (Acemoglu, 2019).

Automation is frequently viewed as a way to boost productivity and enhance overall economic performance in richer, more developed nations. These nations are more likely to invest in cutting-edge technology and automated systems, which bring along great development opportunities and increase social welfare. Therefore, the public opinion about automation is more favourable in countries of this type. In contrast, nations with a higher percentage of low-skilled jobs and less economic stability may view automation as a threat to employment, which would result in more uneasy attitudes (Acemoglu, 2019).

Lastly, public attitudes toward automation are influenced by the historical context of each nation's industrial development and technological advancement. Automation is generally viewed more favourably in nations that have a long history of embracing technological advancements and a strong industrial heritage. They see it as a chance for economic expansion and a continuation of their historical advancement. As a result of their concern over the potential disruption, that automation may cause to their traditional economic structures, countries with a more agrarian or service-based history may be more cautious and sceptical about it (Mokyr, 1990).

The analysis performed in this paper highlights the significance of taking cultural, historic and economic differences into account when examining public attitudes toward automation and robots in European nations. Understanding these

differences is important for many various stakeholders and institutions.

For example, policy makers can use these insights to get a more profound sense of comprehension how to manage the adoption of automation technologies, deal with various concerns and help people (and communities) affected by automation transition more easily.

Governments, educational institutions, and businesses, on the other hand, can use this information in order to take proactive measures to close these gaps in public opinion. This can be done through novel programmes, meant to raise awareness on the topic and create a sense of security in the labour market.

These programs ought to emphasize the importance of encouraging a culture of ongoing education and retraining, in order to equip people with the abilities they need to adjust to the shifting nature of the labour market and "generate confidence and positive expectations among individuals regarding their economic future" (Hipp, 2016).

Moreover, to prepare individuals and societies for the future, the OECD gathered a group of researchers who wrote the paper "Innovating Education and Educating for Innovation" in 2016. It discusses the significance of increasing awareness of the effects of automation and offers concrete suggestions for how this objective might be accomplished (ex.: the programmes mentioned above).

Proposed contributions by governments (and businesses):

Policy development: Comprehensive policies, that address the challenges and opportunities presented by automation, should be developed. They should focus on promoting innovation, ensuring equal access to education/training and fostering lifelong learning opportunities.

Collaboration: Collaboration among various stakeholders, like educational and research institutions, and industry leaders, who, by working together, can develop effective strategies in raising awareness and addressing the impact pf automation.

Investment in research: New research can help governments understand the issue of automation and its effect on the labour market, which will in turn be a solid base for developing and implementing new policies.

Proposed contributions by educational institutions (and businesses):

Curriculum enhancement: Educational institutions should review and update their curricula to incorporate topics related to automation, technological advancements, and their societal implications.

Practical skills development: Institutions should place a greater emphasis on developing practical skills that are relevant to the future job market, such as project-based learning, internships, etc.

Teacher training: By offering teachers opportunities for continuous professional development, educational institutions enable them to educate and engage students in relevant discussions on the topic of automation, preparing them to real life situations in which they might encounter its effects.

Partnership with industry: Partnerships with industry leaders should be established to stay updated on technological advancements and industry needs. Collaborative efforts can lead to the development of programs that align with the skill requirements of the job market.

Lastly, efforts should be made to raise public awareness of the advantages and difficulties of automation through better communication (Eurofound, 2017). European nations can work together toward a more inclusive and sustainable future, where automation is seen as a tool for progress, rather than a threat to societal well-being, by addressing cultural and economic concerns, and involving citizens in the decision-making process.

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