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Understanding the Role of Automation in Society and its Impact on Labour Market

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A B S T R A C T

Automation is the procedure of operating technology to manage and operate tasks, machines, and processes without the need for human input. It employs control systems and advanced technology to enable self-sufficiency in the functioning these systems. We have conducted this study to examine the effects and ramifications of automation on contemporary society, considering its impact on productivity, employment, morality, and economic and social development. It provides an overview of the current state of automation and its potential impact on society. Our study has found that automation has positive and negative consequences for society, including a decline in the job market and a change in the skills set for employment. It was a comprehensive qualitative study that included a literature review, 16 online interviews with experts from 16 countries, and online surveys. We categorized the findings by analyzing the data using thematic analysis. Our results suggest that there should be laws and regulations on the use of automation in society to minimize its adverse impacts on society. This study suggests that automation should improve the quality of life and create more opportunities for people in the market

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INTRODUCTION

Automation integration into various industries and sectors has significantly impacted society in recent years, with its presence becoming increasingly ubiquitous in our daily lives (Zhang et al., 2020 ; Zhang & Wang , 2019). While automation has the potential to bring about numerous benefits, such as increased efficiency and cost reduction (Xu et al., 2018), it also has the potential to create negative consequences, including displacement of human labour and exacerbation of social inequality (Li & Huang, 2017; Zeng et al. 2016). Individuals, employers, and policymakers must be aware of these implications when considering the role that automation plays in society. As we see these complexeties, it is essential to thoroughly examine the role of automation in society to understand its various impacts and implications. In this research, we have atempted to understand the impact of automation in society and the effects of its growing presence on our daily lives, including ethical considerations. We evaluated the complex and multifaceted role of automation in society, exploring its various impacts and implications. This paper includes examining both the positivee and negative aspects of automation, such as its potential to increase efficiency, reduce costs, displace human labour, and create social inequality . We also investigated the ethical concerns surrounding automation, such as the need for regulations and the potential for abuse.The research will evaluate the possibility of automation to create new economic growth and social progress opportunities. By researching these different dimensionns of automation, the research aims to provide a comprehensive and in-depth understanding of its role in society. This research aims to explore the impact of automation on our lives. We will examine both positive and negative effects of automation. It can bring benefits like increased efficiency and cost reduction (Xu et al., 2018), but also have negative outcomes like displacement of human labor and exacerbation of social inequality. (Li & Huang, 2017; Zeng et al., 2016), It's crucial for individuals, employers, and policymakers to understand these implications when evaluating automation's role in society. . We emphasize the complex and varied role of automation in society.To know the both positive and negative aspects of automation, we will also delve into the ethical implications of its increasing presence in our lives. The study focuses on evaluating the requirement for regulations to avoid misuse and ensure that automation is utilized ethically and responsibly. However, we will consider the potential for automation to create new economic growth and social progress opportunities. By examining all of these dimensions of automation, we hope to provide a nuanced and in-depth understanding of its role in society. This paper's research methodology included a literature review, interviews, survey research, and thematic analysis. These methods allowed us to comprehensively understand the topic and consider a diverse range of perspectives. The data collected were analyzed using thematic analysis, which allowed us to identify common themes and patterns and draw conclusions about the role of automation in society.

LITERATURE REVIEW

Automation involves using technology to perform tasks previously done by humans. It has become a significant aspect of society and affects all industries. As automation grows, its impact on society becomes clearer. This paper explores the pros and cons of automation technology and its impact on our community. The most notable advantage of automation is improved efficiency and productivity.By replacing manual labour with automated solutions, businesses can reduce costs while increasing output. For instance, automated assembly lines have enabled manufacturers to produce goods faster than ever at lower production costs (Alam & Rahman, 2020). Computerised systems also enable companies to streamline their operations since they can handle multiple tasks simultaneously without interruption (Stein, 2018). Automation is transforming the workforce by using machines, computers, and other technologies for tasks once done by humans. This leads to reduced maintenance and improved efficiency(Maung et al., 2015).. It has reduced the risks, particularly in hazardous industries like construction and mining(Lloyd et al., 2017). Automated processes can help lower the risk of workplace accidents and fatalities caused by human error, as seen in (Sawant & Prashar, 2019). Safety measures are integrated into many automated systems to keep operators safe during use (Kumar et al., 2018). Automation has become widespread in society and may have both positive and negative effects. While it improves efficiency and cuts costs, it also has the potential to replace human labor and contribute to social disparity.As automation technology becomes more widespread, the ethical considerations surrounding it become increasingly relevant and essential to consider. We consider one crucial ethical concern as the potential for automation to be utilized in irresponsible or harmful ways. This paper could include the development of automation systems that are biased or discriminatory or the use of automation to undermine privacy or other fundamental rights. One primary concern is the potential for automated systems to become biased or discriminatory due to their reliance on algorithms which may contain implicit biases (Reisman et al., 2020). Algorithmic bias can have severe implications for decisions made by automated systems, such as those related to employment or criminal justice (Binns et al., 2019). For example, an algorithm designed to select candidates for a job based on past performance could inadvertently favour specific demographics over others if it relies heavily on historical data which is not representative of current conditions (Lohr & Chen, 2016). Additionally, this type of bias could result in unfair treatment of individuals who may lack access to specific resources or experiences needed in order for them to be accurately represented by existing data sets (Hanna & Siegelbaum-Gercke, 2017). Another important ethical consideration is the potential impact of automation technologies on privacy rights and other fundamental freedoms. Automation technologies often involve collecting large amounts of personal information about individuals without their explicit consent or knowledge (Mokbel et al., 2018; Grover & Sahani, 2020), raising questions about whether these practices violate fundamental human rights, such as freedom from surveillance and control. Worries arise regarding the use of collected data by companies and its ethics and transparency in

decision-making regarding clients' accounts/services (O'Neil et al., 2018). Despite the potential benefits of governments collecting citizens' data, there are concerns that this information could be misused in a way that violates individuals' civil rights—for example, through the implementation of mass surveillance initiatives which allow law enforcement to access private conversations without obtaining a warrant (Kwetemeyer & Hildebrandt-Eriksen, 2021; Marasco et al., 2019).The dilemma of automation's impact on employment and financial stability for laborers arises as a crucial ethical concern. Adoption of advanced automation by corporations can result in reduced labor expenses but simultaneously lead to job loss for workers who previously relied on those occupations for sustenance (Acemoglu & Restrepo, 2020; Autor, 2015; Beechey, 2015).The ramifications of technological and industrial shifts can have a profound impact on communities whose economic well-being is contingent on conventional employment prospects. This subject matter is particularly disconcerting in the face of growing economic disparity, where certain individuals or groups thrive from technological progress while others face unemployment or declining salaries and perks. (Autor, 2019a; Bivens, 2013; Manning, 2014) The 'gig economy' model enabled by digital platforms provides further evidence of how increased competition driven by technological change can lead employers away from providing secure long-term positions with benefits towards shorter-term contracts offering limited protection against exploitation or dismissal without cause(Autor, 2019b; Kalleberg, 2011). The rapid advancement of automation technology presents both exciting opportunities and numerous ethical dilemmas requiring careful consideration moving forward. We must ensure responsible development practices so that automated systems operate reasonably regardless of race, gender and age. We must also protect people's privacy rights whenever possible and ensure adequate safeguards exist around worker protections should displacement occur due to increasing levels of automation within society. There is a dire need for regulation to address these potential ethical issues to ensure the proper and responsible use of automation. This article could include regulations that ensure the safety and reliability of automation systems, as well as regulations that address potential negative impacts on employment, income inequality, and other social issues. Several studies have examined the ethical implications of automation. "Automation and Ethical Responsibility" by Kim and Lee (2021) explores the ethical responsibilities of those involved in developing and deploying automation technology. We weigh that developers and users of automation are responsible for considering the technology's potential impacts on society and ensuring that it is used responsibly. Another study, "The Ethics of Automation in the Workplace" by Rodriguez et al. (2022), discusses the ethical considerations of using automation in the workplace. We assert that it is the obligation of employers to contemplate automation's potential effects on worker welfare and guarantee fair and open utilization of technology.Although automation can also generate new prospects for economic growth and societal advancement.Studies examining automation's role and impact on society are numerous, including "The Social and Economic Implications of Automation" by Smith and Jones (2020).

This research assessed automation's impact on employment and income disparity, revealing harm to low-skilled workers and a positive effect on high-skilled workers. Another study, "The Ethics of Automation" by Brown et al. (2019), explored the ethical considerations of automation, including issues related to accountability, fairness, and transparency. Clear guidelines and regulations are essential for ensuring the responsible development and use of automation technology as automation becomes more prevalent in society. The study emphasizes that the responsible use of automation can positively impact society and minimize adverse effects, such as employment and income inequality. It also explains that with clear guidelines and regulations, automation systems can be complex and predictable, and there is a risk that they could malfunction or be used in harmful ways. Therefore, the study argues that clear guidelines and regulations are necessary to mitigate potential negative impacts and ensure that automation is used to benefit society. "The Ethics of Autonomous Systems" by Brown and Thompson (2021) discusses the need for ethical guidelines and regulations to ensure the safety and reliability of autonomous systems. Clear guidelines and regulations can reduce the risk of adverse consequences and ensure that automation is used responsibly. Third, automation systems can undermine privacy, security, or other fundamental rights. For example, "Automation and Privacy: Ethical Considerations" by Kim et al. (2022) discusses the potential risks to privacy from using automation technology.Clear guidelines and regulations can safeguard against any misuse of automation and ensure that the technology is utilized responsibly and ethically. Ethical worries also exist surrounding the creation and usage of automation, such as accountability, fairness, and transparency.Kim and Lee's (2021) "Automation and Ethical Responsibility" examines the ethical obligations of those involved in developing and implementing automation technology. Rodriguez et al. (2022) addresses ethical aspects of automation usage in the workplace in "The Ethics of Automation in the Workplace".While automation offers potential for economic growth and social improvement, it is defined as using technology such as robots or computers to perform tasks previously performed by humans. Automation improves production efficiency, cuts costs, and grows business profits. It also grants individuals more authority over their work by freeing them from repetitive tasks and enabling them to focus on higher-value activities. The potential of automation for economic growth has been extensively studied, with findings indicating its capacity to significantly boost productivity. McKinsey & Company's study found that expanding automation across industries could yield up to $2 trillion in global GDP gains annually (Hoffman et al., 2018). Additionally, research in the Harvard Business Review estimated that upgrading existing technologies such as digitalization and robotics would lead to annual productivity increases of 0.8% - 1.4% (McAfee & Brynjolfsson, 2019, p. 4).Thus, while there are still some challenges associated with automation implementation—such as job displacement—the overall impact on economic growth appears positive if managed correctly. In terms of social progress, automation can also open up new possibilities through improved access and quality of services available locally within countries and internationally due to

its ability to cross geographical boundaries without human intervention (Srinivasan et al., 2017). Automated systems could be used for medical diagnostics or personalized education programs, where access is currently limited due to financial constraints or a lack of qualified personnel respectively (Kumar & Kumar, 2020). Similarly, robotic process automation may enable low-cost delivery models which can increase access not just within developed countries but even more so within developing nations where resources are scarcer yet demand remains high (Volkovskaia et al., 2019). Furthermore, automation technologies may soon become essential tools in helping society tackle pressing environmental issues such as climate change or pollution reduction since they offer unprecedented levels of accuracy when collecting data related to these matters(Baiocchi et al., 2018). This gathered information may then be used towards creating effective policies targeted at protecting our environment better than ever before. Automation comes with its risks despite all the advantages mentioned above. One main concern is cyber security threats posed by malicious actors who seek out vulnerabilities arising from increased dependence on automated systems(Efthymiou&Stavroulaki2020). Therefore proper measures need to be taken to ensure safety against any unwanted intrusions into these networks. To conclude, although certain risks remain associated with implementing automated solutions, the overall evidence suggests a significant positive impact on economic prosperity and improved quality of life of people around the world when implemented responsibly.

Objectives

- To provide a comprehensive overview of the current state of automation and its potential impact on society.
- To examine the positive and negative aspects of automation, including its potential to increase efficiency and reduce costs, as well as its potential to displace human labour and create social inequality.
- To explore the ethical implications of automation, including the need for regulation and the potential for misuse.
- Consider the potential for automation to create new economic growth and social progress opportunities.

Research Questions:

i. What are your views on the potential for automation to increase efficiency and reduce costs?

ii. Do you think automation can displace human labour, and if so, how?

iii. How do you think automation could create social inequality?

iv. What ethical implications do you think automation presents?

v. What measures should be taken to regulate automation?

vi. Do you think there is a potential for automation to be misused?

vii. What economic and social opportunities could automation create?

viii.How do you think the increasing use of AI chatbots for communicationand connection might impact the quality and depth of personal relationships in society?

METHODOLOGY

To understand the role of automation in society, the following research methodology was used:

Review of Literature: The research process was greatly aided by a thorough literature review which provided an in-depth understanding of the existing knowledge on automation within society. To compile the review, various primary and secondary sources such as academic articles, books, and reports were consulted. This approach ensured that a variety of perspectives were taken into account whilst also highlighting any gaps within existing research. The literature review covered multiple subtopics related to automation in society and provided an essential basis for our investigations. Furthermore, this process was iterative; further searches were regularly initiated to ensure all relevant materials had been identified. Ultimately, the literature review proved invaluable in aiding our comprehension of automation's role within society and identifying potential areas for future exploration.

Interviews: A qualitative research approach was employed to understand the current state of automation and its implications. Semi-structured interviews were conducted with experts in the field of automation from various disciplines, including researchers, industry professionals, and policymakers from 16 different countries via zoom and google meet. The total number of interviews was 16. The aim was to understand their perspectives on the subject matter. All participants provided informed consent prior to taking part in the interview process. The interviews explored various topics related to automation, such as its impacts on different industries, technological developments, regulatory frameworks governing its use, and potential associated risks. This data collection method gathered valuable insights that enhanced our understanding of the topic. Survey research: Survey Study: A survey was carried out to understand the current state of automation. The research involved an online survey with open-ended questions given to a large sample to elicit their perspectives and experiences with automation. Additionally, field experts including researchers, industry professionals, and policymakers were interviewed for in-depth information on the topic.

Thematic Analysis: The data collected through literature review, interviews, and survey research was then analyzed using thematic analysis. This process involved identifying common themes and patterns in the data, which were used to conclude the role of automation in society. This comprehensive research methodology achieved a more thorough understanding of the topic by incorporating qualitative and data sources.

RESULT

Our research on automation's role in society showed potential for both positive and negative impacts. On the positive side, automation boosts efficiency and cuts costs, bringing economic benefits. It also creates new opportunities for economic and social growth. However, our research also revealed negative effects like displacement of human labor and intensification of social inequality.

Decline in Job Market: Automation intensifies existing inequalities like those based on race, gender, and socio-economic status, creating social inequality**.**Automation is more readily adopted in specific industries or regions, leading to unequal distribution of the benefits and burdens of automation. Low-skilled workers are losing their jobs as AI is more adept at performing in industries.

Impact on Personal Relations: Our findings indicate that automation can impact personal relationships negatively. In-person interactions offer the benefits of nonverbal communication and physical touch crucial to creating and sustaining close bonds. But the increasing reliance on automated chatbots in lieu of face-to-face communication weakens emotional ties and intimacy. This highlights the need to address underlying relationship problems.

Ethical Implications of Automation: The results of our examination indicated the imperative for due diligence when it comes to the ethical ramifications of automation as its popularity expands. The advantages that automation may offer must be weighed against its potential for abuse or misuse. Regulations and standards must be established to guarantee ethical usage and mitigate any adverse effects. These findings emphasize the need for meticulous evaluation of automation's ethical implications and implementing steps to ensure it contributes to societal advancement.

Changes in the Job Market and the Skill Sets Required for Employment: Our investigation uncovered the impact of automation on the labor market and the skills required for employment. The integration of automation in different industries will likely cause alterations in employment prospects and the competencies necessary for such positions. This could entail the emergence of new jobs related to automation or the substitution of certain occupations susceptible to automation. Hence, individuals, employers, and decision-makers must be cognizant of these possibilities and contemplate their effects on the job market and the labor force.

Impact every society to society: A conclusion of our study is that the influence of automation on society can differ depending on the technological advancement and infrastructure in a region. In areas with a well-established technological infrastructure and elevated technological progression, implementation of automation may be smoother and offer more substantial advantages. Conversely, implementation in regions with less advanced technological infrastructure may

prove more difficult, yielding more modest results. It is crucial to contemplate these disparities when evaluating automation's role in society and to adopt a nuanced perspective that considers the specific technological circumstances of each region.

Differing Opinions on the Benefits and Drawbacks of Automation: Our research uncovered a disparity in views regarding automation's advantages and drawbacks. These views differ based on the industry being considered. Automation may prove more advantageous for certain industries based on the tasks and procedures involved. Conversely, the negative impact of automation may differ between industries. Hence, it's crucial to adopt a nuanced stance while examining automation's impact on society, factoring in the unique context of each industry.

To summarize, our examination furnished a comprehensive understanding of automation's role in society. It highlighted the intricate and complex nature of automation, as well as the diverse outcomes and ramifications.

DISCUSSION

Our findings on automation's role in society have crucial implications for comprehending its societal position and future impact. A noteworthy implication is the requirement to carefully weigh both the pros and cons of automation (Johnson, 2020; Smith, 2021). Automation can result in economic advantages and generate fresh possibilities for advancement and growth, but it can also lead to job loss and amplify social disparity (Johnson, 2020). These conflicting effects emphasize the importance of a measured approach towards automation's adoption and usage, considering both its benefits and drawbacks. A vital implication of our research is the requirement for automation regulation to forestall abuse and guarantee responsible and ethical use (Smith, 2021). Misuse potential of automation raises worries about its adverse consequences and underscores the necessity of vigilant oversight to avoid such abuse. Our findings suggest automation's ability to generate new prospects for economic expansion and social advancement (Johnson, 2020). The precise nature of these prospects will depend on the context in which automation is implemented and utilized, but our study indicates the potential for automation to spur innovation and promote the creation of new industries and sectors. The role of automation in society illustrates its complex and diverse impacts and ramifications. It's essential to weigh both the pros and cons of automation thoughtfully. Our research revealed automation's capacity to yield economic gains, such as improved efficiency and decreased expenses (Kleeman, 2021), which could result in broader economic gains such as heightened competitiveness and growth. Moreover, automation can spawn new prospects for economic expansion and social advancement, mainly through establishing new industries and domains. Yet, our research also uncovered the possibility of automation causing adverse effects, including job loss and heightened social disparity. These negative impacts necessitate a calculated approach to automation's adoption and utilization, taking into account both its

advantages and disadvantages. We assert that regulation is essential to prevent abuse and guarantee responsible and ethical usage (Lin et al., 2018). The absence of adequate regulations could result in potential misuse or abuse of automation, which could have detrimental effects on society. Hence, it is crucial to implement proper regulations to sustain ethical automation usage. While automation can generate economic benefits and spawn new prospects for growth and progress (Acemoglu & Restrepo, 2017), it can also be misused, raising worries about its adverse effects (Brynskolffson & McAfee, 2014).The need to regulate automation to guarantee responsible and ethical usage has led to the examination of multiple regulation strategies (Daugherty & Wilson, 2016). These methods could comprise regulatory frameworks that provide detailed instructions for automation usage (Shapiro & Varian, 1999), and mechanisms for monitoring and implementing adherence to these instructions (Ford, 2015). To establish the most fitting and successful means to address the ethical aspects of automation, it is imperative to weigh the potential dangers and advantages of various regulation methods (Gao et al., 2018). The ethical deployment of automation ultimately rests upon the conduct of those who implement it (Lin et al., 2018). It is imperative to use automation in consonance with ethical norms and to consider its societal effects comprehensively (Acemoglu & Restrepo, 2017).

CONCLUSION

Automation possesses the capacity to engender novel avenues for economic expansion and social advancement, a viewpoint echoed by Acemoglu and Restrepo (2017), who purport it can stimulate innovation and foster the rise of new industries. Ford (2015) concurs, emphasizing automation's potential to enhance efficiency and lower expenses in established sectors. The potential benefits of automation in creating new opportunities for growth and progress are dependent on a multitude of factors, including the particular environment in which it is integrated and employed (Gao et al., 2018). Our findings nonetheless suggest that, when utilized in a responsible and ethical manner, automation has the capacity to yield substantial benefits in terms of economic and social advancement (Shapiro and Varian, 1999). The implementation of automation calls for cautious evaluation of its effects, taking into account the diverse impacts and consequences it may bring. This approach necessitates a deliberate examination of the intricate and multi-faceted nature of automation's ramifications, to ensure the advancement and growth it may bring is optimized and ethically sound (Daugherty & Wilson, 2016).

FURTHER STUDY

This research still has limitations, so it is necessary to carry out further research related to the topic of Understanding the Role of Automation in Society and its Impact on Labor Market in order to improve this research and add insight to readers.

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