TECHNOLOGICAL DEVELOPMENT AND ITS EFFECTS ON ECONOMY: AN INTERDISCIPLINARY STUDY

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ABSTRACT
Science and technology aim to make it possible for organisations and individuals to use technology more effectively in order to reduce costs and boost production. Utilising new technologies paves the way for the development of novel, less expensive goods as well as capital accumulation, an improvement in the standard of scientific research institutions, and, for that matter, an improvement in the global competitiveness of specific nations. On the other hand, it also aids in the political and cultural advancement of societies. Both the qualities and the size of growth rates are important. The questions listed below could be used to determine whether or not growth affects people's lives: Are people included in being a part of the growing process? Does everyone value the opportunities that come with development? Do people have more options as a result of new technology or increasing transaction volume? Is the welfare of future generations planned at all? Otherwise, only the current generation is given consideration. Are marketplaces available and open to everyone? There is no escaping the fact that technology significantly affects every part of our lives. Economic development is not an exception to the rule that technology drives change in everything from daily activities to societal functioning.
This chapter focuses on gaps and concerns in how legal and human rights issues related to the role of technology and economic growth are being addressed. The chapter advances the conversation—important given the seriousness of how AI technologies affect vulnerable people and groups and their human rights—while also recognising the excellent work being done in the field of AI law and the necessity of ongoing assessment and flexibility in strategy.
Keywords: Economic growth, Technolgy, Education, Digitalization

180

1.Introduction

Science and technology aim to make it possible for organisations and individuals to use technology more effectively in order to reduce costs and boost production. Utilising new technologies paves the way for the development of novel, less expensive goods as well as capital accumulation, an improvement in the standard of scientific research institutions, and, for that matter, an improvement in the global competitiveness of specific nations. On the other hand, it also aids in the political and cultural advancement of societies. These technologies are used by businesses from many sectors in a range of procedures to tailor product suggestions, detect anomalies in manufacturing, identify fraudulent transactions, and do other things. These technologies have already contributed to the value of numerous products and services. Growth rates' characteristics matter just as much as their magnitude. To determine impact of growth on people's lives or not, one may consider asking the questions below that -Are individuals a part of and incorporated in the process of growth? Does everyone appreciate the possibilities brought on by growth? Do new technology or increased trade volumes provide people more options? Is the level of future generations' welfare planned? Otherwise, just the generations of today are cared about. Are markets open and accessible to all?

2.The Concept of Economic Growth

Economic growth in any country or region is defined as an increase in the tools and items utilised to meet human needs. One technique to determine economic growth rate is to inquire as

to whether there has actually been an increase in GDP (Gross Domestic Product), which is the market equivalent of all measurable values created by one economy. Increases in price are not included in this computation. Capital creation, technological advancement, and population growth are the three basic indicators of economic growth. Economic growth is said to be primarily driven by capital accumulation. The first condition that must be satisfied to guarantee development is the presence of sufficient investments. The growth in savings that may be obtained from revenues also has a role in whether or not an investment can be realised. The second sign of economic progress, technological advancements, can be considered of as the entire system of information, organisation, and procedures required in the manufacturing processes. There will surely be labour and financial savings as a result of this. The last indication is an increase in the work force and population. Population growth and the related increase in the labour force will be a significant economic growth driver.

3.How Technology Will Continue to Contour Economic Development

Technology will undoubtedly continue to influence how economies develop in the years to come. Governments, companies, and individuals will need to make active efforts to embrace emerging technologies and navigate the myriad changes that it brings. Collaboration, lifelong learning, regulatory adaptability, digital inclusiveness, and ethical concerns will all be necessary for the recommendations for navigating these changes. Governments, businesses, and individuals working together and in partnerships may promote innovation, address societal issues, assure inclusive growth, and use their combined knowledge and resources to navigate technological advances.Additionally, in order to stay relevant in the ever-changing job market, people will need to prioritise updating their skills on a regular basis. Governments and businesses must support this by making investments in education and training programmes that give people the skills they need for the future. Governments must take the lead in modifying laws and regulations to keep up with technological progress while maintaining a balance between innovation and the general welfare, free market principles, and consumer protection. Governments must work to reduce the digital divide in addition to regulation adaptation by assuring equitable access and encouraging companies to develop their goods and services to take into account a variety of customer needs and demographics. Finally, as technology permeates every part of our lives, it is critical that businesses, governments, and people work on making sure the ethical ramifications of their decisions are taken into account. While the role of technology in our daily lives will only increase, governments, corporations, and individuals will all need to make efforts to adapt to these changes. These efforts will be crucial to utilising the advantages of technology while ensuring inclusive and sustainable economic development.

181

3.1.The impact of technology on industries

Recent technology advancements have had a profound impact on all businesses, whether directly or indirectly. These technological advancements have forced industries to alter their business practises in order to survive and thrive in the modern world. Processes have been transformed by automation and digitization, which has also upended traditional industries and led to the loss of a large number of employment.

3.2.Automation and Job Displacement

Technology's primary effect on most industries has been automation, which has led to a considerable loss of jobs in the economy. Artificial intelligence and Robotics developments

have made it promising to automate and completing repetitive operations, increasing competence and efficiency while also creating a impermanent decrease in the need for manual labour, which has caused in job losses. Despite the effects on job displacement, automation has also given rise to chances for employees to reskill and upskill in order to take on higher-value tasks and positions that call for only human abilities, leading to a change in the workforce's demographics.

3.3. The Digitalization of Industries and the Emergence of New Business Models

The digitization of industries—driven by technological progresses—permits businesses to rationalize operations, progress customer experiences, and progress new business models by transmuting obsolete processes into digital workflows. While this revolution has disrupted conventional industries like media, retail, and transportation, it is also providing businesses with new chances to leverage digital platforms, cloud computing, and data analytics to boost efficiency, personalise products, and look into uncharted sources of income.

3.4. Changes in Production and Distribution Processes

Technology has also revolutionised the production and distribution process. For example, 3D printing, an advanced manufacturing technology, lowers the cost of prototyping, speeds up production, and allows for customization. In addition to facilitating global e-commerce, allowing firms to access clients all over the world, and changing conventional retail models, these innovations are increasing efficiency, decreasing prices, and expanding market reach for numerous industries.

3.5. The Increasing Importance of Data and Analytics in Decision-Making

182

The significance of data and analytics in decision-making has expanded tremendously across numerous industries thanks to technology. Big data analytics, machine learning, and predictive modelling are examples of developing technologies that offer useful insights for businesses. By enabling organisations to target customers, optimise operations, and create informed strategies based on data-driven analysis, these businesses are better able to adapt to market changes and increase customer satisfaction.

3.6. The impact of technology on the creation of new opportunities for growth

The advancement of technology has significantly influenced the creation of new growth chances for economic development in addition to shifting industries. Opportunities for technologically-driven growth have emerged as companies fight to survive and prosper in the transforming economy. These expansion options have promoted new markets and collaboration, improved communication, and remote work, all of which have contributed to the development of a new digital economy.

3.7. Growth of the Digital Economy

The digital economy, fueled by the internet and digital devices, aims to improve social production efficiency and economic growth (Muraina and Emek, 2023) .The advancement of technology has significantly influenced the creation of new growth chances for economic development in addition to shifting industries. Opportunities for technologically-driven growth have emerged as companies fight to survive and prosper in the transforming economy. These expansion options have promoted new markets and collaboration, improved communication, and remote work, all of which have contributed to the development of a new digital economy.

3.8. Enhanced Communication and Collaboration

Technology improvements have substantially improved communication and teamwork capacities. Companies are able to communicate more effectively, work more productively, and collaborate virtually because to the growth of communication platforms. This improved capacity for communication and teamwork has boosted output, sped up decision-making, and encouraged international collaboration. These developments in communication and collaboration tools have also made remote work more feasible, opening up new employment and business prospects.

4. The Challenges Technology Brings to Traditional Models of Economic Development

While the effects of technology on various businesses and the potential for economic growth may seem obvious, traditional models of economic development are frequently faced with less visible difficulties as a result of technological breakthroughs. The gig economy, which mainly relies on temporary contracts or freelance work instead of long-term employment, has grown as a result of technological improvements and presents difficulties for conventional types of employment. Although those who work in the gig economy have more freedom and flexibility, they may not have the same job security, benefits, or legal protections as regular employees. This is causing established labour markets to be disrupted and increasing income inequality. Similar to this, the rising value of human capital and technological capabilities is having an influence on conventional employment structures. The gig economy has grown as a result of technological advancements and poses challenges for traditional types of employment because it mostly focuses on short-term contracts or freelance work rather than long-term employment. Gig economy employees may not have the same job security, perks, or legal protections as traditional employees, despite the fact that they have greater freedom and flexibility. Due to this, existing employment markets are being upended, which is widening the income gap. Similar to this, traditional employment structures are being impacted by the increasing value of human capital and technical capabilities. Finally, due to the rapid rate of technological change and the need for government adaptation to the digital era, traditional forms of governance in economic development are experiencing difficulties.

4.1. The impact of artificial intelligence on growth and employment

Artificial intelligence has becoming progressively used for ordinary tasks during the last ten years. In the CfM-CEPR study from May 2023, the European panellists were asked to make predictions on how AI would impact worldwide economic development and high-income country unemployment rates during the ensuing 10 years. The majority of panellists predict that artificial intelligence would boost yearly global growth from its historical average of 4% to between 4% and 6%. With the remaining panellists evenly split between anticipating growing and falling unemployment rates, the majority of the group also believes AI won't have a substantial impact on occupation rates in high-income nations. Notably, the majority of panellists express a high level of scepticism regarding their predictions because AI is still in its infancy.Mihir Shukla, a digital entrepreneur, said: "People keep saying AI is coming, but it is already here" at the 2023 World Economic Forum. Artificial intelligence (AI) has becoming increasingly used for ordinary tasks during the last ten years. A brilliant example of this is ChatGPT, a product of OpenAI, whose popular generative AI is used by more than a billion people for tasks as diverse as writing and coding. Simple fact: Instagram took two years to reach the 100 million user mark, whereas ChatGPT did so in just 60 days. This exemplifies the rapidity

183

and breadth of AI acceptance. According to a recent Stanford University study, the number of AI patents surged 30-fold between 2015 and 2021 (HAI 2023), demonstrating the field's high rate of advancement. Information retrieval, logistics coordination, financial services, challenging document translation, business report writing, legal brief creation, and even disease diagnosis are now all tasks that AI-powered systems are capable of. Furthermore, because of their capacity for learning and improvement through the application of machine learning (ML), they expect to increase the efficacy and accuracy of these jobs.Most people concur that AI is a catalyst for growth and productivity. By processing and analysing enormous amounts of data, it has the potential to improve operational efficiency. Approximately 70% of organisations will have implemented at least one form of AI technology by 2030, according to the McKinsey Global Institute, and fewer than half of major organisations may be adopting all of the AI technologies that are currently accessible. Price Waterhouse Coopers estimates that AI might increase the global GDP by 14% in 2030. The investigation into how AI will change the job sector has expanded dramatically. Acemoglu and Restrepo (2018) present a theoretical framework for understanding the impacts of new technologies on the labour market. The three main categories they use to categorise the effects of new technologies on labour are displacement, productivity, and reinstatement (where new technologies can be used to create new jobs in many service industries where labour has a comparative advantage over machines, increasing labour demand).The two main categories used by Frank et al. (2019) to characterise the current studies on the consequences of AI for the labour market are the doomsayer's perspective and the optimist's perspective.Those who predict the end of the world think that AI will hurt jobs. According to Frey and Osborne (2013), during the next ten years, automation is expected to threaten 47% of all US employment. According to their research, a sizable portion of the workforce in service occupations, which have seen the largest job growth in the US over the past few decades, is highly computerisable. Bowles (2014) estimates that 54% of EU employment are at risk of computerization using Frey and Osborne's (2013) approach. Only 9% of occupations in the UK are predicted to be vulnerable to automation in the next ten years, according to Arntz et al. (2016), contrary to other research that found more significant negative consequences. They contend that rather than job substitution, job transformation is more likely to happen, with 35% of jobs expected to undergo significant change over the next 20 years. A task-based theoretical model developed by Nakamura and Zeira (2018) demonstrates that long-term unemployment need not necessarily result from automation. The number of studies that support the labour substitution effect is more than offset by the number of studies that support the labour-creating/reinstating and real income effects of new technologies, according to a systematic review of the empirical literature on technological change and its impact on employment by Somers et al. (2022). Additionally, they discover that research that examine the net employment impact of technological change imply that the overall impact of technology on labour is more favourable than adverse, reiterating this narrative. Bholat (2020) adds that historically, advances in aggregate real income have more than offset employment losses caused by new technologies in particular industries as these innovations result in higher-quality and more affordable goods and services. This increases disposable income, which increases consumer demand for new goods, which increases the need for workers in these industries. With the development of chatbots who are ready to participate in rambling conversations and the capacity to mimic famous voices, artificial intelligence has fast moved from computer science textbooks to the general population.However, the technology, which is referred to as machines programmed to

carry out intelligent activities, also poses a grave danger to social standards, entire industries, and the financial viability of digital corporations. It has the potential to drastically alter everything, from patient diagnosis to weather forecasting, but some experts warn that it could also render millions of people unemployed or even outperform human intelligence.

4.2. AI and Human Right

What it means to be a human is being redefined by artificial intelligence (AI). Until now, the administration of AI has primarily ignored human rights.Even though they do not have all the answers, human rights should serve as the foundation for AI governance. In the last 70 years, the definitions and implications of ethical principles have been well-developed into norms that are codified in international human rights legislation. High levels of international agreement, relative clarity, and the ability to be expanded to take new circumstances into account characterise these norms. They provide a framework that uses tests of necessity and proportionality to balance the individual's rights against competing rights and interests. Human rights give governments and businesses with governance frameworks and a means for providing redress when violations occur. With the recent development of AI ethics concepts and compliance assessment techniques, businesses, governments, and civil society are revisiting the subject of human rights. As a result, companies creating or acquiring AI are unsure of the standards they should uphold and may struggle to justify the costs of ethical procedures in light of the fact that their rivals are not required to follow suit. Meanwhile, people frequently lack the means to file complaints and are unaware of the standards they might expect from AI that will effect them. As a result, a lot of people don't trust AI because they think it might be biassed or unjust, could be spying on them or influencing their decisions. The employment landscape has been significantly impacted by artificial intelligence (AI). AI is being incorporated into many businesses as technology progresses, changing how activities are carried out and providing both opportunities and problems for people. One of AI's most significant implications on employment is the automation of tasks. Manufacturing, customer support, and data analysis are just a handful of the numerous tasks that AI systems can carry out more quickly and effectively than humans. Employees can focus on more demanding and worthwhile tasks by being liberated from tedious and repetitive work by this automation. However, it also means that some jobs may become obsolete because AI systems have the ability to completely automate specific jobs. Another impact of AI on employment is the introduction of new roles. New jobs for AI engineers, data scientists, and machine learning experts are opening up as AI is adopted into more and more economic sectors.

185

These occupations, which require specialist knowledge and talents, give new career alternatives for people who are willing to engage in retraining and upskilling.AI has the potential to boost workplace productivity and efficiency. AI systems are capable of processing enormous amounts of data quickly and accurately, improving decision-making. Additionally, they have the ability to identify trends and insights that others would miss, which enhances outcomes for both clients and organisations. AI's entry into the workforce, nevertheless, also raises concerns about inequality and job loss. When jobs are automated, workers who are unable to adapt to new roles may have problems finding employment. This could lead to increased unemployment and income inequality. Others have persisted in taking a wait-and-see approach in spite of calls for international cooperation in terms of regulation and inspection from industry leaders like OpenAI, the company behind the well-known chatbot ChatGPT. The following are few recent AI law across the globe:

4.2.1.Brazil

The result of three years of proposed (and stalled) measures on the topic is a draught AI law in Brazil. The document, part of a 900-page Senate committee report on artificial intelligence, was published late last year. It carefully describes the rights of people engaging with AI systems and offers rules for classifying various types of AI depending on the risk they pose to society.Due to the law's emphasis on users' rights, it is the responsibility of AI providers to notify users about their AI products. Users have a right to be informed that they are engaging with artificial intelligence, as well as a right to know how the AI arrived at a certain conclusion or suggestion.Users can also appeal AI judgements or ask for human intervention, especially if the outcome is likely to have a big effect on them, like in the case of self-driving cars, hiring, credit scoring, or biometric identity systems.Before releasing an AI product to the market, AI engineers must also do risk analyses. Any AI systems that use "subliminal" tactics or exploit people in ways that endanger their health or safety fall under the highest risk category and are expressly forbidden. A prospective "high-risk" AI implementation is also described in the drafted AI bill, including applications for AI in the fields of credit scoring, biometric identification, and healthcare. A government database will make risk evaluations for "high-risk" AI goods available to the public. While creators of high-risk products are held to an even higher threshold of culpability, all AI developers are responsible for any harm caused by their AI systems.gates at Peking University in Beijing that are monitored by facial recognition cameras in 2020.

4.2.2. China

China has released a draught regulation for generative artificial intelligence and is looking for feedback from the public. China's law, however, makes the distinction that generative AI must adhere to "Socialist Core Values."According to a translation of the draught laws by Stanford University's DigiChina Project, in its current form, the rules state that developers "bear responsibility" for the results produced by their AI. There are also limitations on where developers can get their training data from; if their training data violates someone else's intellectual property, they could face legal repercussions. In accordance with the regulation, AI services must be developed to produce only "true and accurate" content. With these proposed regulations, China will have an advantage over other nations that are creating new laws from scratch in the areas of deepfakes, recommendation algorithms, and data security. In August, the nation's internet watchdog put restrictions on facial recognition software.China has ambitious targets for its tech and AI sectors: According to the architects of the ambitious "Next Generation Artificial Intelligence Development Plan," which was released by the Chinese government in 2017, by the year 2030 "China's AI theories, technologies, and applications should achieve world-leading levels."

4.2.3. European Union

The European Parliament voted in June to pass what it has dubbed "the AI Act." The AI Act divides AI into three danger categories: unacceptable, high, and limited, just like Brazil's proposed legislation.Systems that are regarded as a "threat" to society are those that are deemed unacceptable by AI. (The European Parliament gives the example of "voice-activated toys that promote risky behaviour in children.") The AI Act forbids the use of these kinds of systems. European regulators must authorise high-risk AI both before it enters the market and all during

the product's lifespan. These include, among other things, AI-based tools for border control, law enforcement, and employment screening.

4.2.4. Israel

Israel's Ministry of Innovation, Science, and Technology published a drafting policy on AI regulation in 2022. As a "moral and business-oriented compass for any company, organisation, or government body involved in the field of artificial intelligence," the document's authors underline the importance of "responsible innovation" and describe it as such.According to Israel's national AI policy, AI development and use must uphold "the rule of law, fundamental rights, and public interests, and, in particular, [maintain] human dignity and privacy." The ambiguous statement "reasonable measures must be taken in accordance with accepted professional concepts" is used in another location to describe what must be done to ensure the safety of AI products.In general, the draught policy supports self-regulation and a "soft" approach to governmental interference in the advancement of AI. The statement encourages sector-specific authorities to consider highly-tailored actions where necessary, rather than universal, industry-wide legislation, and calls for the government to work towards compliance with international best practises for AI.

4.2.5. Italy

Italy briefly outlawed ChatGPT in March due to worries about how much user data the chatbot was gathering.Italy has now set aside about $33 million to assist workers who run the risk of being left behind by the digital transition, which includes but is not limited to AI. A third of that amount will go towards training those whose jobs might become automated. The remaining money will go towards providing digital skills training to unemployed or economically inactive people in an effort to encourage their entry into the employment market.

187

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4.2.7. UAE

The National Strategy for Artificial Intelligence of the United Arab Emirates only devotes a few pages to the nation's regulatory goals. An Artificial Intelligence and Blockchain Council will, in summary, "review national approaches to issues such as data management, ethics, and cybersecurity," as well as track and incorporate international best practises on AI.The remaining 46 pages of the document are committed to promoting AI growth in the UAE by luring AI talent and incorporating the technology into vital industries like energy, tourism, and healthcare. The executive summary of the publication states that this plan supports the UAE's initiatives to become "the best country in the world by 2071."

5. Concluding Remark

Although certain forms of work may be replaced by technological advancements, historically speaking, they have been a net job creation. By creating whole new sorts of work and utilising our unique human qualities, we will adapt to these shifts. Technology will liberate us from routine toil and give us the freedom to redefine "work" in ways that are more constructive and useful to society. In the end, our society determines its own course through the decisions we choose.Neverheles, the majority of jobs affected by automation to far are in the blue-collar sector; however, the upcoming wave of innovation poses a threat to white-collar employment as well.Many highly trained employees may be moved into lower paying service industry jobs at best, or permanent unemployment at worst. However, some highly skilled workers will prosper enormously in this new environment.Our political and economic institutions are ill-prepared to manage these difficult decisions, and our educational system is not effectively preparing us for the workforce of the future.

In conclusion, AI has the ability to alter the labour market by presenting fresh opportunities and problems. Some employment may be eliminated by technology, but it also creates new jobs that need specialised skills. People and companies need to reskill and upgrade their skills in order to stay informed and adapt to the changing job market. In addition to guaranteeing that all workforces have an equivalent chance to engage in the new economy, governments and organisations would take act to mitigate the adverse effects of AI on the workforce, such as job displacement and inequality.

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189