The Future of Work and the Impact of Automation on Jobs in Gig Economy in Thailand: A Review of Literature

Wanvicechanee Tanoamchard[*], Krisada Ceienwattanasook

Abstract

Purpose: This article aims to analyze the diverse factors that exert a substantial impact on Thailand's gig economy. The factors encompassed in this discussion comprise the potential ramifications of automation, the emergence of novel employment prospects, and the significance of education, labor, and collaboration between industry and academia. **Methodology:** The authors systematically organized the data to identify patterns, with an emphasis on automation, job creation, and education-industry collaboration. The authors investigated the potential impact of automation on the gig economy, the possibility of job displacement and the need for workers to develop new skills, as well as the chance of new employment opportunities in emerging industries and sectors that require human skills and creativity. **Major findings:** Patterns and trends indicate that automation influences Thailand's freelance economy. Due to its inherent flexibility and independence, an increasing number of people are opting for contract work. In addition, success in this discipline requires self-motivation, creativity, problem-solving, and evaluation skills. Workers and human resource administrators are able to effectively manage the numerous opportunities and challenges presented due to their proactive adaptation. This procedure optimizes efficiency and cost savings, which in turn drives the expansion of automation. Despite the fact that technology and automation may appear to eliminate occupations, gig laborers still require human skills and self-motivation.

Keywords: Future of Work, Automation, Gig Economy, Thailand

JEL Classification Code: E24, J24, J40, L21, L62

1. Introduction

The gig economy refers to a labor market characterized by the prevalence of short-term contractual arrangements, transient job prospects, and self-employed freelancing, typically aided by internet platforms (Bulian, 2021). In this particular economic model, individuals are commonly engaged in employment on a per-project basis, so affording them more adaptability with regards to their working hours, geographical preferences, and occupational selections. In recent years, there has been a notable surge in the adoption of the gig economy, wherein a growing number of individuals opt to engage in independent contracting or freelancing as a means to exert greater autonomy over their professional and personal spheres (Kuek et al., 2015).

The gig economy has emerged as a significant force in

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1 *Wanvicechanee Tanoamchard, Asst. Prof., Lecturer, Human Resource Management Program, Burapha Business School, Burapha University, Thailand. Email: wanvice@buu.ac.th

2 Krisada Ceienwattanasook, Lecturer, Department of Management, Faculty of Business Administration, Rajamangala University of Technology Thanyaburi, Thailand. Email: krisada_c@rmutt.ac.th

the global labor market, offering employees in many industries a choice of flexible work arrangements and job opportunities (Bulian, 2021; Mieruch & McFarlane, 2022). The emergence and expansion of the gig economy has prompted apprehensions over the potential implications of automation on employment and the trajectory of labor (Horton et al., 2017; Manyika et al., 2017). The anticipated impact of technological advancements on the labor force and the requisite skills across different industries is substantial, as automation increasingly replaces manual jobs and operations (Frey & Osborne, 2017; Manyika et al., 2017). The gig economy is characterized by the employment of digital technology and platform-based labor to promote the interaction between employees and clients for a wide range of assignments. The implications of automation on employment are of great importance in the given setting, as highlighted by Wood et al. (2019).

The potential impact of automation on jobs in the gig economy has been a topic of growing interest among scholars and policymakers. According to Agrawal et al., (2018), a substantial body of research suggests that the introduction of automation has the potential to lead to job displacement and a feeling of insecurity among workers in the gig economy. However, it is crucial to consider alternate perspectives that propose automation as a possible driver for the formation of new job opportunities and the enhancement of overall working conditions. Vinayan et al., (2020) conducted research that indicates the introduction of automation in the gig economy may result in a demand for workers with enhanced proficiencies, such as creativity, problem-solving, and interpersonal communication skills. Wood et al. (2019) suggest that the integration of artificial intelligence (AI) and other digital technologies into the gig economy has the potential to improve employees' ability to do complex jobs, resulting in increased earnings and improved working conditions. However, it is crucial to recognize the potential for job displacement and the importance of workers acquiring new skills, particularly those who rely on platform-based employment as their main source of income (Bulian, 2021).

The survey results provide an illustration of the employment situation within the global gig economy. Based on data from the Bureau of Labor Statistics (2018), it can be observed that around 10.1% of individuals employed in the United States were involved in gig economy work. It is worth noting that the sectors of transportation and utilities demonstrated the highest prevalence of gig work. The demographic cohort that exhibited the greatest prevalence among gig workers was individuals between the ages of 25 and 54, whereas the distribution of genders leaned towards males. Moreover, gig workers predominantly

consisted of individuals of Hispanic or African-American heritage. In 2018, the Office for National Statistics (2018) conducted a study which revealed that 4.4% of the workforce in the United Kingdom participated in gig economy activities. Among workers, the transportation and storage sector demonstrated the highest prevalence of gig economy participation. The demographic characteristics of gig workers reveal that a substantial portion of individuals between the ages of 16 and 34 comprised the majority. Moreover, a noticeable gender discrepancy was observed, characterized by a greater proportion of males. Moreover, gig workers exhibited a propensity for lower educational achievements and predominantly participated in part-time work. Australia: In 2019, a survey conducted by the Australian Bureau of Statistics (2019) unveiled that 7.1% of the employed population in Australia participated in gig work during the preceding 12-month timeframe. It is worth mentioning that the arts and recreation services industry demonstrated the most significant levels of engagement in gig work. The demographic characteristics of gig workers reveal that a considerable segment of individuals involved in gig work belonged to the age bracket of 25 to 54 years. Furthermore, it is worth noting that there is a notable overrepresentation of females in the gender distribution of gig workers. Furthermore, it is worth noting that gig workers exhibited a discernible inclination towards engaging in part-time employment. According to a survey conducted by the Ministry of Internal Affairs and Communications in 2018, it was determined that 3.3% of the labor force in Japan engages in gig work. The prevalence of gig work is most pronounced among Japanese workers in the wholesale and retail sectors. The demographic composition of gig workers primarily comprised individuals between the ages of 20 and 39, exhibiting a greater proportion of females and a comparatively lower income level in comparison to those involved in conventional employment. The gig economy is an emerging trend in Thailand, characterized by a substantial proportion of individuals opting for freelance or contractual work facilitated by online platforms (Mieruch & McFarlane, 2022). The rapid increase in digital connectivity across Thailand, coupled with the rise of online platforms, has had a substantial impact on the growth of the gig economy

in the country (Mieruch & McFarlane, 2022). The previously mentioned phenomenon has led to the rise of flexible work arrangements, which are increasingly common among the workforce in Thailand (Manyika et al., 2017).

According to a report by the Ministry of Digital Economy and Society in Thailand, the top industries that employ gig workers in the country are transportation, delivery, e-commerce, and tourism (International Labour Organization, 2022). In addition, the analysis predicts that the freelance economy will continue to grow in numerous industries, including education, healthcare, and agriculture. However, the freelance economy in Thailand presents some obstacles. The classification of contract economy workers, who frequently do not fall into traditional employment classifications and may not be eligible for the same benefits and protections as traditional employees, emerges as a major concern (Mieruch & McFarlane, 2022). In addition, there are concerns regarding the impact of automation on the gig economy in Thailand, with some experts predicting that the automation of certain professions could result in the displacement of gig economy workers (Manyika et al., 2017).

The comprehension of the gig economy is of great significance to several stakeholders, including industry, labor, and academics, for several compelling reasons. The gig economy is now undergoing significant expansion and is developing as an important element within the global labor market. Education has a pivotal role in facilitating the understanding of the implications and possibilities linked to this emerging employment structure for both individuals and businesses. Moreover, education assumes a pivotal role in providing individuals and companies with the essential information and competencies required to proficiently traverse the intricate legal and regulatory framework linked to the gig economy. This include the examination of relevant issues such as the categorization of employees and the provision of benefits. Furthermore, this particular form of employment arrangement has the potential to enhance workers' understanding of their entitlements and protections. Moreover, education assumes a pivotal role in facilitating individuals to develop innovative skills and competencies that are in high demand within the gig economy. These encompass, but are not restricted to, digital literacy, project management, and entrepreneurship. This phenomenon possesses the capacity to create new work opportunities and career paths for individuals. Education possesses the capacity to cultivate collaboration and creativity among industry, labor, and academia, ultimately leading to the development of original technologies and business models that offer benefits to all participating entities.

The problem statement highlights a significant research void regarding the need for workers, especially those dependent on platform-mediated labor, to acquire new skills. This statement emphasizes the increasing significance of the freelance economy as a major component of the global labor force and the field of education. The significance of closing this knowledge deficit cannot be emphasized, as it enables individuals and organizations to navigate the complex legal and regulatory challenges inherent to the gig economy. In addition, it fosters the development of highly desirable abilities and competencies. Therefore, the purpose of this study is to cover a gap in the literature by investigating the essential factors that facilitate collaboration between industry, labor, and academia.

2. Objectives

The purpose of this article is to examine three important issues concerning the freelance economy in Thailand. The article begins by examining the potential impact of automation on the gig economy, including risks of job displacement and the need for workers to develop new skills to acclimate to the changing nature of work. Second, it investigates the possibility of new employment opportunities in emerging industries and areas that require human creativity and skills. Finally, the significance of addressing these issues through education and collaboration among industry, labor, and academic institutions is discussed.

3. Addressing the intent of this article

The potential impact of automation on the gig economy in Thailand is to work with humans, allowing for greater adaptability and productivity. It is being used to match drivers for services that are important to the future of work, including the gig economy, and has the potential to reduce transaction costs and match job seekers. Understanding the potential risks and opportunities associated with automation in the freelance economy, as well as recognizing the need for employees to acquire new skills in order to remain competitive and adapt to changing work conditions, are of the utmost importance. In addition, the identification of novel employment opportunities and industries can aid workers and policymakers in anticipating and adequately preparing for future developments in the contingent economy. In conclusion, the formation of partnerships between industry, labor, and academia can play a crucial role in ensuring that education and training initiatives are aligned with the needs of both workers and employers. Moreover, such partnerships can facilitate the development

of policies that promote a more inclusive and sustainable trajectory for the contract economy.

3.1 The potential impact of automation on the gig economy in Thailand

The automation industry is currently experiencing global trends characterized by the fast evolution of industries and the realm of employment. This change is mostly driven by the progress made in robotics, artificial intelligence, and machine learning. In recent years, the automation sector has witnessed substantial expansion, principally propelled by the growing need for process optimization, cost reduction, and enhanced efficiency. The automation industry is now experiencing substantial growth on a worldwide scale, characterized by a notable surge in the use of automation technologies across diverse industries. The International Federation of Robotics (IFR) (2019) reported a significant increase of 11% in global sales of industrial robots in 2018, resulting in a total of 384,000 units sold (IFR, 2019). The paper further emphasizes the increasing utilization of robots in non-industrial domains, such as the healthcare sector. The growth of the automation industry is not exclusively propelled by robotic technology, but also by the incorporation of artificial intelligence and machine learning. According to a research published by PwC in 2017, it is anticipated that artificial intelligence (AI) would have a significant impact on the global economy, with the potential to contribute up to $15.7 trillion by the year 2030. According to the paper, the estimated impact of implementing artificial intelligence (AI) is expected to be significant in several areas, including healthcare, retail, and finance.

According to Roy and Shrivastava (2020), the automation sector is projected to sustain its rise in the foreseeable future. This growth may be attributed to technological advancements and the increasing need for automation solutions across diverse industries. One of the emerging trends in the Automation Industry is the subject of discussion. The phenomena of the growth of collaborative robots, also known as cobots, is becoming increasingly significant in the field of automation. According to Manyika et al. (2017), cobots are specifically engineered to participate in cooperative activities alongside people, hence leading to improved adaptability and productivity within industrial processes. In addition, the use of artificial intelligence (AI) and machine learning is projected to undergo additional expansion, presenting the opportunity to fundamentally transform several industries like healthcare, banking, and transportation. The healthcare industry is anticipated to witness significant growth in the use of artificial intelligence (AI), particularly in the domains of customized medicine and illness diagnostics (Hong & Shell, 2018; Manyika et al., 2017).

Moreover, the automation sector in Thailand has experienced significant growth in recent years, primarily driven by the increasing need for automation solutions across diverse industries. Based on data provided by the Thailand Board of Investment, it is anticipated that the automation sector in Thailand would have a compound annual growth rate of 9% during the period spanning from 2019 to 2023. The major users of automation technology in Thailand, as highlighted in the study by the Thailand Board of Investment (2016), are the automotive and electronics sectors. In addition, the Thai government has adopted many measures with the objective of augmenting the utilization of automation technologies. In contemporary times, the influence of automation has become a prominent factor in changing the course of labor, namely in the domain of freelance employment. Various businesses, including the "gig economy," have the potential to benefit from the use of artificial intelligence and machine learning algorithms. Sargeant (2017) posits that the utilization of automation can provide several benefits for gig workers, including the facilitation of job seeker and gig matching processes, as well as the optimization of payment processing efficiency. On the other hand, the introduction of automation in the gig economy may lead to unforeseen consequences. There exists a potential scenario wherein individuals engaged in doing repetitive jobs may be substituted by automated devices. This phenomenon, as identified by Brynjolfsson and McAfee (2014), may lead to potential employment reductions and heightened income inequality within the gig economy. The integration of machine learning and artificial intelligence (AI) inside the gig economy presents a plausible concern of prejudice and discrimination, specifically targeting marginalized populations (Hong & Shell, 2018). The effects of automation on different categories of employment opportunities will exhibit variability. The probability of automation replacing manual or physical labor is somewhat lower in comparison to alternative types of work. Brynjolfsson and McAfee (2014) suggest that the foreseeable future holds the possibility for automation to significantly affect specific categories of work, including data input and customer service. Furthermore, the influence of automation on the gig economy will exhibit variability across diverse industries. Algorithms based on artificial intelligence and machine learning have gained significant prominence within the ride-hailing industry. The utilization of these algorithms is applied to efficiently match drivers with passengers and build suitable price structures for the services provided (Hong & Shell, 2018). In a similar vein, Foodpanda and GrabFood, two widely utilized meal delivery applications, employ matching algorithms to facilitate the pairing of customers with local eateries and delivery personnel. Consequently, automation is expected to

have a significant impact on the gig economy within these sectors.

Based on the aforementioned facts, one may deduce that automation will exert a substantial influence on the future of labor, particularly within the gig economy. Furthermore, the application of artificial intelligence and machine learning algorithms is expected to result in increased levels of efficiency and production. Automation has the potential to reduce transaction costs, match job seekers with appropriate jobs, and streamline payment processes in the gig economy. The Thai government aggressively promotes the extensive adoption of automation technology in several economic areas, including the gig economy. The automation sector in Thailand is seeing significant growth due to the proactive measures and assistance provided by the government. The integration of automation within the gig economy has the potential to induce a transformation in the fundamental characteristics and prerequisites of labor. The current situation necessitates the implementation of expeditious retraining initiatives, while simultaneously addressing apprehensions about workforce relocation.

3.2 The potential for job displacement and the need for workers to develop new skills

The potential for job displacement and the necessity for workers to develop new skills, particularly in the most in-demand areas such as critical thinking, creativity, and problem-solving, will be crucial. Businesses investing in retention programs for their workers are likely to witness a significant increase in demand for gig workers who can readily adopt new technologies. By emphasizing education and training, employees can successfully adapt to the evolving job market and thrive in the digital age. The potential for job displacement due to technology advancements and automation has been a subject of apprehension for several decades. With the increasing dependence of companies on machinery and software, there is a noticeable decline in the need for low-skilled and repetitive occupations. Consequently, people are compelled to adjust to novel positions that necessitate a distinct set of talents. These phenomena are not novel, but its occurrence is occurring at an unparalleled rate in the era of digital technology. Based on a recent publication by the McKinsey Global Institute, the implementation of automation and artificial intelligence has the potential to result in the displacement of around 800 million jobs on a global scale by the year 2030 (McKinsey Global Institute, 2017). The paper highlights the susceptibility of routine physical labor, data processing, and repetitive jobs to automation. This encompasses individuals fulfilling roles such as data entry clerks, customer support agents, and manufacturing line employees. On the contrary, occupations that need a

significant degree of social and emotional intelligence, creativity, and cognitive flexibility have a reduced propensity for automation. This group include healthcare professionals, educators, and creative professions. With the growing automation of occupations, it is imperative for individuals to learn additional skills to maintain competitiveness within the labor market. According to the World Economic Forum, it is projected that critical thinking, creativity, and problem-solving would emerge as the most sought-after talents by the year 2025. In order to remain competitive in the workforce, individuals must possess the ability to continually acquire new skills and knowledge throughout their professional lives. This necessity arises from the fact that the acquisition of these competences necessitates a higher degree of formal education and specialized training. One potential way to mitigate the effects of job displacement is the allocation of resources by governments and corporations towards retraining initiatives for workers. According to the World Economic Forum (2020), these initiatives have the potential to provide individuals with the requisite skills to transfer into occupations that are less vulnerable to automation. As an example, Amazon has made a commitment to allocate $700 million towards initiatives aimed at enhancing the skills of its workforce, with a specific emphasis on data analysis and software engineering (Manyika et al., 2017). In addition, according to McKinsey Global Institute (2017), employment in developing nations like India and China are more susceptible to automation than jobs in developed nations like the United States and Germany.

This is because many developing nations rely on routine, low-skilled occupations that are simpler to automate. Several industries and professions are in jeopardy of extinction as a result of automation and technological progress. These industries include manufacturing, retail, transportation, finance, and healthcare. Developing nations with a greater reliance on routine employment are particularly vulnerable to automation. Several industries, nations, and occupations are threatened by automation and technological progress. Among these industries and occupations are: (1) Due to the rise of automation and robotics, many routine manufacturing positions are at risk of being automated. This includes assembly line personnel and equipment operators Retail employment are threatened by the emergence of e-commerce and automated checkout systems. This consists of cashiers and salesmen. (3) Transportation: The introduction of autonomous vehicles and drones poses a threat to transport drivers and delivery carriers. Numerous routine finance positions, such as data input and processing, are in jeopardy of being automated, and Although healthcare jobs are less susceptible to automation, routine duties like medical billing and administrative labor are at risk (Manyika et al., 2017).

The emergence of the "gig economy" has led to an increased availability of alternative income-generating prospects for individuals beyond the conventional employment setting. Nevertheless, it has also modified the requisite competencies for a multitude of professions. Individuals aspiring to achieve success in the burgeoning gig economy must actively learn novel skill sets. The significance of digital tool competency is growing in the gig economy. This encompasses the capacity to employ digital resources for the sake of job exploration, maintaining positive interactions with clients, and effectively managing financial matters. It is imperative for freelancers to possess a comprehensive understanding of contemporary tools, including mobile applications and web-based software. Gig workers are required to acquire proficiency not only in utilizing technology, but also in properly engaging in customer communication and efficiently managing their time. The acquisition of these abilities is crucial in order to cultivate customer confidence and deliver exceptional service. The quality of adaptability is a fundamental attribute that is crucial for individuals engaged in gig employment. In order to effectively respond to the dynamic demands of the gig economy and satisfy the needs of their clients, workers are required to exhibit a high degree of adaptability. The willingness to acquire novel information and engage in unfamiliar tasks is of paramount importance. It is incumbent upon freelancers to assume accountability for their individual professional and fiscal growth. This includes the activities of pricing, contract negotiation, and cost management. Individuals who can effectively navigate and manage their own professional trajectories in the context of the freelance economy are more likely to experience success. In the freelance economy, it is essential for workers to develop a variety of skills, including computer literacy, interpersonal communication, adaptability, and career planning. Burtch et al., (2018), Roy and Shrivastava (2020), and Sargeant (2017) contend that individuals who devote sufficient time and energy to cultivating these competencies will be in the best position to reap financial benefits from the freelance economy.

As a result of automation and technological advancements, the possibility of job displacement is a significant concern for Gig Economy workers and businesses. To remain competitive on the job market, employees must acquire new skills that are less susceptible to automation, such as critical thinking, creativity, and problem solving. Governments and businesses can support by investing in retraining programs that equip employees with the necessary skills to transition into new roles. Employees can adapt to the changing job market and flourish in the digital age by adopting new technologies and investing in education and training.

3.3 The potential for new job opportunities in emerging industries and fields that require human skills and creativity

The potential for new job opportunities in emerging industries and fields requires human skills and creativity. This involves human intervention to develop and enhance human talent and ingenuity for renewable energy agencies. Additionally, the creative industries are experiencing significant growth and have the capacity to generate innovative ideas and implement them effectively. The gig economy is continually evolving, with new technologies, platforms, and market trends emerging frequently.

Emerging industries and disciplines perpetually reshape the job market, creating new opportunities for those who possess the necessary skills and credentials. Despite the fact that technological advancements have led to the automation of certain occupations, there is still a high demand for human skills and creativity in the service industries. Artificial intelligence is one of the emerging industries that requires human expertise. Although artificial intelligence has the potential to automate certain duties, human intervention is required to develop and enhance the technology. AI specialists, data analysts, and software developers will be in high demand in the future years, according to a report by the World Economic Forum (World Economic Forum, 2020). To qualify for these positions, AI specialists must be able to think critically and generate creative solutions to challenging problems. Renewable energy is yet another burgeoning industry that requires human ingenuity and skill. Due to the rising demand for these systems, there is a need for professionals who can design, construct, and maintain renewable energy systems. The renewable energy sector employed 11.5 million people worldwide in 2019 and has the potential to generate millions more employment in the future years, according to the International Renewable Energy Agency (International Renewable Energy Agency, 2020). Employability in this industry requires engineering, project management, and creativity. With the rise of digital media and the need for content creation across a variety of platforms, the creative industries are also experiencing rapid expansion. This discipline includes jobs such as graphic designers, web developers, social media administrators, and content creators. These roles require both technical and creative skills, as professionals must be able to generate and implement innovative ideas effectively. The Bureau of Labor Statistics projects that employment in the arts, design, entertainment, athletics, and media will increase by 3% from 2019 to 2029, adding a total of 250,800 new positions (Bureau of Labor Statistics, 2023).

The gig economy has experienced a surge in popularity as a preferred option for those seeking self-directed and adaptable job opportunities. However, there is a significant need for certain human talents within the gig economy, since these are crucial for securing work and attaining success. The capacity for self-motivation is a fundamental human attribute that plays a crucial role in achieving success inside the gig economy. In the absence of conventional employment arrangements, gig workers are required to possess the ability to effectively allocate their time, maintain concentration on their goals, and uphold a consistent level of output (Sargeant, 2017). This necessitates a considerable degree of self-discipline and the ability to function independently without direct oversight. Adaptability emerges as a crucial characteristic for those engaged in gig labor. The gig economy is subject to ongoing evolution, characterized by the emergence of novel technologies, platforms, and market trends on a regular basis. In order to maintain a competitive edge, gig workers must possess the capacity to swiftly and efficiently adjust to these aforementioned developments (Kelliher & Anderson, 2008). This necessitates a strong inclination towards acquiring novel skills, embracing unfamiliar difficulties, and adopting innovative approaches to work. Effective communication skills are important for achieving success in the gig economy. In contrast to traditional work settings, gig workers often engage in distant work arrangements and may experience restricted interaction with both clients and colleagues. Therefore, it is important for individuals to possess the capability to effectively and succinctly convey information using diverse communication channels such as email, telephone, and messaging applications (Bughin & Manyika, 2016). Effective communication skills are crucial for gig workers as they facilitate the establishment and sustenance of strong relationships with both clients and colleagues. This, in turn, can lead to the attainment of repeat business and favorable recommendations. Finally, it is imperative for gig workers to possess the essential attributes of critical thinking and problem-solving abilities. According to Bughin and Manyika (2016), individuals should possess the capacity to identify and comprehend problems, devise innovative resolutions, and execute prompt and effective decision-making. This necessitates a combination of analytical reasoning, imaginative thinking, and pragmatic problem-solving abilities. Furthermore, the possession of creative qualities is of utmost importance for those engaged in the gig economy, as they are often tasked with the responsibility of devising inventive and unique resolutions to complex problems. Creativity encompasses the ability to generate original concepts and tackle things from unconventional perspectives. Within the context of the gig economy, the use of creativity extends to a diverse range of jobs encompassing product design, marketing and advertising, content

production, and problem-solving. Creative freelancers have the potential to differentiate themselves from their peers within their industry, so enhancing their ability to attract a larger clientele and command higher rates for their services. Furthermore, the possession of creativity abilities can facilitate the adaptation of gig workers to fluctuations in their industry, including the emergence of novel technological advancements and the evolution of customer preferences. Gig workers may bolster their ongoing significance and maintain a competitive advantage by embracing innovative thoughts and cultivating a culture that encourages creative thinking.

In conclusion, the advent of growing sectors and fields is generating novel employment prospects for those with requisite human abilities and creative aptitude. The aforementioned sectors encompass artificial intelligence, renewable energy, and creative enterprises, among other others. Although the progression of technology may result in the mechanization of certain occupations, there is a robust need for individuals who possess the capacity for critical thinking, the ability to generate inventive resolutions, and the aptitude to generate worth through their distinct proficiencies and capabilities.

4. Discussion and Conclusion

4.1 The potential impact of automation on the gig economy

Globally, robotics, AI, and machine learning are transforming industries and the workforce. Process optimization, cost reduction, and efficiency have fueled the expansion of automation. According to the report, AI will have an impact on healthcare, retail, and finance. The automation trends will be shaped by technology and the demand for automation solutions in the marketplace. The impact of automation on labor is greatest among freelancers. Automation may be detrimental to the gig economy. Humans may be replaced by robots. This could reduce employment in the gig economy and income inequality. AI and machine learning may also discriminate, particularly against marginalized groups in the gig economy (Hong & Shell, 2018). Automation has diverse effects on gigs. Automating manual labor is unlikely. Soon, data entry and customer service may be mechanized (Brynjolfsson & McAfee, 2014). The impact of automation on gig economy businesses varies. AI and machine learning algorithms set ride-hailing prices and match drivers and passengers (Hong & Shell, 2018). Foodpanda and GrabFood utilize algorithms to match customers with nearby restaurants and drivers. The automation of these industries will have a significant impact on the gig economy. It can be concluded that based on these

findings, automation will be crucial to the future of employment, including the gig economy, and AI and machine learning algorithms will boost efficiency and production. Automation may reduce gig economy transaction costs, improve job matching, and streamline payment. Thai authorities support gig economy automation. Government support is growing Thailand's automation industry. The gig economy may automate labor. Retraining and workforce displacement are crucial.

4.2 The risks of job displacement and the need for workers to develop new skills to adapt to the changing nature of work

There is a prevailing belief that technology and automation have the potential to eliminate employment opportunities. The automation of repetitive tasks through the use of machines and software requires the acquisition of novel skill sets. Based on a projection conducted by McKinsey, it is expected that around 800 million job positions will become obsolete due to the implementation of automation and artificial intelligence by the year 2030. The report highlights the potential risks posed by automation to manual labor, data processing, and tasks characterized by repetitive nature. This study centers around three primary domains, namely customer service, data entry, and production. The existence of flexibility diminishes the degree of automation. The present discourse centers around three key domains, namely health care, education, and the arts. In 2017, the McKinsey Global Institute conducted a study which highlights the requirement for training in response to the implementation of automation. The World Economic Forum has projected that there will be a notable rise in the prevalence of critical thinking, creativity, and problem-solving abilities by the year 2025. It is crucial for employees to actively participate in continuous learning in order to obtain further training. According to the World Economic Forum (2020), the emergence of automation and technology presents a substantial risk to various industries and professions. The protection afforded to freelancers in Thailand is inadequate. The findings of the study indicate that a significant portion of Thai food delivery workers are involved in working long hours, despite receiving relatively low compensation. The practice of providing health insurance, sick leave, and vacation leave to freelancers in Thailand is not widely observed. Freelancers in Thailand are presently contending with the difficulties presented by the COVID-19 pandemic. The study conducted by Umar et al., (2020) revealed that the outbreak of the pandemic had a negative impact on the demand for freelancers in the transportation and hospitality sectors. The findings of the study indicate that a significant proportion of gig workers in Thailand participate in various types of employment and

rely on borrowing money. The gig economy offers an increased array of prospects for individuals in search of part-time employment. The job skills landscape has experienced a significant transformation. The demand for gig workers to acquire supplementary skills is experiencing a notable increase. The incorporation of technology is crucial for individuals involved in freelance work. The subjects under consideration encompass the internet, financial affairs, and clientele. The possession of mobile applications and websites is crucial for individuals to operate efficiently as freelancers. There is a discernible demand for gig workers who exhibit a considerable degree of technological proficiency, place a premium on client satisfaction, and exhibit robust organizational abilities. The acquisition of these skills is necessary in order to establish credibility and provide exceptional service. In order to flourish within their respective contexts, autonomous entities must undertake essential adaptations. Freelancers are obligated to adhere to the standards established by their clients and the respective industry within which they operate. It is recommended to demonstrate adaptability. The fiscal considerations pertaining to individuals working as freelancers. The areas of focus encompass cost estimation, pricing strategies, and contractual agreements. Individuals exhibiting a proactive and motivated disposition tend to display a preference for participating in gig work. The gig economy requires the application of computer technology, proficient communication, adaptability to dynamic circumstances, and possession of career-focused skills. The existing body of literature indicates that there is an increasing amount of scholarly research focused on the concept of skill within the gig economy (Burtch et al., 2018; Roy & Shrivastava, 2020; Sargeant, 2017).

4.3 The potential for new job opportunities in emerging industries and fields that require human skills and creativity

Gig workers need human skills. Gigs require self-motivation. According to Sargeant (2017), gig workers are required to demonstrate a strong sense of focus, effective time management skills, and the ability to work autonomously. The presence of self-discipline is imperative. Independent individuals must adapt or make necessary modifications. The gig economy is characterized by the frequent emergence of novel technologies, platforms, and trends. According to Kelliher and Anderson (2008), gig workers are required to adapt swiftly and efficiently in order to remain competitive. This requires the acquisition of novel skills, challenges, and methodologies. Disseminate information to contract workers. Gig workers have minimal interaction with both clients and coworkers. According to Bughin and Manyika (2016), it is imperative to employ

email, phone, and messaging applications in an efficient manner. Effective communication skills play a pivotal role in fostering enduring relationships with both clients and colleagues, thereby leading to the generation of recurring business and the acquisition of referrals. Finally, gig workers necessitate the application of critical thinking skills and the capacity to effectively resolve complex problems. According to Bughin and Manyika (2016), it is imperative for individuals to promptly acknowledge obstacles, devise remedies, and arrive at a resolution.

Furthermore, the possession of analytical reasoning, creativity, and problem-solving abilities is imperative. Freelancers who possess a high degree of creativity are able to effectively navigate and resolve challenging problems. The condition of being original is a necessary requirement for the manifestation of creativity. The necessity for originality is evident in various domains such as product design, marketing and advertising, content creation, and problem-solving within the gig economy. Freelance creative professionals receive higher compensation. In the realm of business, individuals with a creative mindset and a penchant for autonomy possess the ability to effectively adjust their strategies in response to customer preferences and advancements in technology. The generation of novel concepts provides freelancers with a distinct advantage in terms of competition. In the end, emerging sectors tend to employ innovative individuals with advanced human capabilities. The three key concepts under consideration are intellect, originality, and renewable energy. In spite of the widespread adoption of automation, the demand for individuals who possess critical thinking skills, innovative capabilities, and the ability to generate value remains essential.

4.4 The importance of addressing these issues through education and collaboration between industry, labor, and academic institutions

The recognition of the inherent significance resides in the acknowledgment of the potential hazards linked to job displacement and the compelling necessity for workers to acquire fresh proficiencies in order to effectively adjust to the ever-changing work environment. Furthermore, it is imperative to thoroughly analyze the possible consequences of automation on the gig economy, with the objective of cultivating a sustainable and all-encompassing future. The resolution of this intricate and diverse issue requires the collaboration and synchronization among various entities, including industry, labor, academia, and policymakers. To conduct a thorough analysis of the significance of each component, it is imperative to systematically deconstruct and examine their respective importance.

The establishment of partnerships among industry, labor unions, and academic institutions is of utmost importance in order to effectively tackle the various challenges presented by the dynamic nature of work and automation. This collaboration facilitates the discernment of nascent skill requirements, the formulation of pertinent educational initiatives, and the promotion of laborer entitlements and equitable labor circumstances.

In order to enhance the congruence between education and training and the changing demands of the job market, Li (2022) performed a comprehensive investigation on the topic of Reskilling and Upskilling the Future-ready Workforce for Industry 4.0 and Beyond. The findings of the study indicate that the influence of Industry 4.0 on the manufacturing sector and global interconnectedness requires a workforce that is capable of acquiring and using new skills. According to projections, by the year 2025, almost half of the workforce will want reskilling as a result of technological advancements. Furthermore, it is anticipated that around two-thirds of critical skills will undergo modifications throughout this period. Significantly, it is worth noting that around one-third of the vital talents projected to be necessary by the year 2025 will pertain to technological competencies that are currently not considered essential in contemporary work prerequisites. The study delineated the most desired competencies for Industry 4.0 and furnished a comprehensive framework for persons to cultivate and attain novel proficiencies and erudition. The findings of this study highlight the significance of lifelong learning within organizational strategies, stressing the dedication of both individuals and enterprises towards the processes of reskilling, upskilling, and career development.

Additionally, the study conducted by Vinayan, et al., (2020) examined the concept of enhancing the skills and knowledge of the workforce in Malaysia through industry-oriented technical and vocational education and training. The primary objective of their research was to examine the development objectives of Malaysia, with a specific focus on improving industrial productivity and addressing the prevailing employment and economic difficulties. The curriculum, which is designed with a focus on industry needs, provides students with creative and industry-specific programs. Additionally, it strengthens employees' ability to adapt and overcome both small-scale and large-scale issues, ultimately leading to enhanced performance at both the organizational and national levels. This study serves as a reference point for future initiatives aimed at promoting the overall welfare of society.

Furthermore, it was determined that robust collaborations among corporations, labor unions, and academic institutions were vital. Ahmed et al. 2022 conducted a study that focused on the enhancement of the

connection between academia and industry by utilizing the Academia-Industry Collaboration Plan Design Model. The research emphasizes a collaborative framework that promotes innovation and technical advancement by enhancing cooperation between academics and industry, thereby providing individuals with the opportunity to acquire highly sought-after skills.

In summary, the material presented underscores the complex obstacles presented by technological progress and automation to the labor force. My own perspective aligns with the proposition that collaboration between industry and academia is important in order to effectively address these concerns. In order to adequately equip the workforce for future demands, it is imperative that education systems exhibit dynamism, adaptability, and a strong integration with industry-specific requirements. Collaboration serves as the fundamental basis for establishing a workforce that is both sustainable and varied, enabling it to effectively adapt to evolving job demands and technology disruptions.

5. Recommendation

5.1 Recommendation for stakeholders

The gig economy is a rapidly evolving field that is transforming the way we work, earn a living, and engage with the economy. As this sector continues to grow, there are several important questions that remain unanswered. The following points provide a summary of recommendations for stakeholders:

1. It is imperative for stakeholders to actively promote the diversification of skills among gig workers, extending beyond tasks that are susceptible to automation. This will augment their capacity to sustain relevance in light of automation and adjust to evolving job requirements.

2. The provision of specialized training to increase the human skills necessary for success in emerging gig economy sectors can be facilitated by collaboration between industry and educational institutions. This will facilitate the flourishing of gig workers within the dynamic and growing work environment.

3. The establishment and enhancement of partnerships between stakeholders, such as industry leaders, educational institutions, and policymakers, are recommended in order to facilitate the development and implementation of pertinent training programs. This initiative aims to establish a connection between the requirements of the education sector and those of the industry, thereby reducing the existing disparity.

4. In order to facilitate the transition of gig workers whose employment is threatened by automation, it is imperative to establish collaborative efforts with government agencies and industry partners to provide support programs. These programs have the potential to provide individuals with retraining and reskilling opportunities, as well as facilitate their move into developing industries.

5. Collaboration with labor unions and policymakers is essential in order to advocate for policies that effectively uphold equitable working conditions, comprehensive social protections, and continuous educational opportunities for individuals engaged in gig work. This will facilitate the development of a more just and environmentally conscious gig economy.

5.2 Recommendation for future study

The following suggestions are proposed for future study on the gig economy:

The examination of the enduring impacts of gig work on workers' financial security, professional advancement prospects, and overall well-being represents a significant domain for future scholarly investigation. In order to accomplish this, scholars may undertake surveys and face-to-face interviews with individuals engaged in gig work in order to gain insights into their economic conditions, levels of job contentment, and overall well-being.

1. In light of the demographic and occupational diversity observed in the gig economy, it is imperative to analyze the distinct experiences of different segments of the workforce in relation to these advancements. Future research could explore the impact of gig work on preexisting disparities, as well as the unique experiences of marginalized groups such as women, people of color, immigrants, and others.

2. In the future, researchers may explore the policy implications of the gig economy, focusing on potential avenues for implementing novel regulatory frameworks, enhancing social protection measures, and establishing labor standards. The objective is to ensure that gig work is characterized by fairness, durability, and advantages for all stakeholders. One approach to achieve this is to draw insights from the practices of nations that have implemented policies to tackle the gig economy.

The examination of these fundamental inquiries will be crucial in attaining a more profound comprehension of the gig economy and facilitating its realization as a more flexible and innovative form of employment.

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