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AI Automation and it's Future in the UnitedStates

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Abstract

Artificial Intelligence automation is developing rapidly and increasingly impacts and changes important sectors' landscape, including business and the economy. With AI Automation advancement, businesses, organizations, and companies are increasing their focus on applying technology to increase efficiency and effectiveness in different processes. Irrespective of the many benefits that have been identified with increased automation, fear has also increased among a section of sectors especially labor, as workers perceive the risk of job loss and unemployment. Based on this growing controversy, it is important to conduct critical research on AI Automation in terms of what it is, what other researchers have found regarding the topic, its important applications, what the future holds, and the relevance of the findings to America in particular.

Introduction and Discussion

Artificial Intelligence (AI) automation is a technology that enables software, robots, machines, and other hardware devices to perform both simple and complex tasks with and in other cases without the help of humans. AI automation increases human efficiency and effectiveness by complementing human labor and performing beyond human capability. As AI automation continues to become more complex, its demand is increasing due to its capability to respond to complex problems using minimum human expertise and resources within a short time (Nof, 2009). Artificial Intelligence can provide technical expertise and improve the technical process by providing new procedures and applications. The AI Automation system comprises an agent together with its environment. For example, an agent or a human can identify its environment using effectors and sensors. It then performs the search and matches task by instructing the computer to locate its knowledge base on the match and solve a certain problem once the corresponding conditions are met.

Elements of AI automation, including software, algorithms, and hardware computers, are increasingly become part of daily modern activities, and it is now becoming hard to imagine life without them (David, 2015). At the same time, however, it isn't easy to imagine AI automation without human input. Information economy as a factor of exponential growth is replacing mass production based on economies of scale. Transferring past experiences to the future critical questions as people anticipate how the future world workplace would look like and the duration it would take to reach there. Although some people relish a future workplace where little time and effort will be required to earn a living, majority are concerned about the mass poverty, unemployment, social distortion, and other negativities that will come as a result of machines, robots, intelligent systems, and computers overtaking the human central role in the production process.

Up to now, it is clear and evident that continuous technological advancements will have a big impact on the world's workplace and the labor market in the coming years. This impact is based not only on industrial or manual jobs but also on the basic human tasks in the service industry that are currently deemed untouchable by this technological development. Additionally, work relationships, economic systems, job profiles, work durations, and remuneration systems will experience major transformations (Nof, 2009). Artificial Intelligence is widely applied in modern industries, including the business sector, healthcare, law, education,

and manufacturing. For instance, medical experts rely on machine learning to diagnose diseases within a minimum time. Scheduling appointments, support meetings for patients, and billing processes have all been made effective through applications and systems such as chatbots.

AI Automation is applied in the education sector to perform auto-grading tasks and aid students' learning by supporting their needs and maintaining them on the right track. In the law sector, the technology has enabled legislators to easily access large volumes of legal documents accurately, normally taking a lot of time with mere human effort (Coeckelbergh, 2015). Industrial manufacturing has also been made efficient and effective through the help of robots produced in large bulks and within minimum time compared to humans. Irrespective of these benefits, Artificial Intelligence Automation presents new challenges as a factor of constant and rapid technological advancements that companies, employers, employees, and society struggle to cope with. Therefore, this research article seeks to establish the current state of AI Automation technology across various sectors and what the future holds in the US context.

Literature Review

The impact of AI automation on the global job market and economy has been the subject of intense debate over the last decades. Leading global companies such as Telsa and SpaceX have recently raised concerns that the government will in the next few years be required to pay a UBI (Universal Basic Income) to make up for the fact that most human jobs will be made irrelevant by technologies such as AI Automation (Yampolskiy, 2013). However, it is expected that most authorities will reject this proposal. An Accenture research established that Artificial Intelligence would create completely new job descriptions and categories for human workers. Besides, it is estimated that full automation will impact at least five percent of the entire jobs, thus questioning the real deal regarding AI Automation. Studies have revealed that AI has truly transformed various industries, and society is concerned about the overall implications.

According to recent data, 80 percent of the U.S workforce is concerned about an increase in unemployment due to increased automation. An approximated 40 percent of the workers have stated that they are afraid of the technology (Barnhizer, 2016). Despite the trepidation, AI automation is moving fast, and actual progress is being made in improving the technology and making it applicable in more sectors and industries than ever before. Various researches have been conducted to establish the number of jobs that can be automated. An analysis by McKinsey and PwC established that 20 percent of modern industries' job activities could be automated using AI and other related technologies. The study's findings state that the automation wave could go as far as the late 2020s and could extend to 30 percent of all job activities by early or mid-2030 (Strasser et al., 2014).

According to the findings, automation can impact at least 18 percent of all business activities. This is bottom-up estimation that 30 percent of job activities in 60 percent of all professions can be automated. The research also establishes that less than 5 percent of the professions can be completely automated with continued AI advancement (Strasser et al., 2014). According to PwC, 20% and 30% of the jobs will be automated by the late 2020s and mid-2030s. The research categorizes this wave of automation into three stages; the algorithm stage of the early 2020s, the augmentation stage of the late 2020s, and the autonomy stage of the mid-2030s (Barnhizer, 2016). Simple tasks involving computations are automated, and structured data is analyzed during the algorithm period that is currently ongoing. The second stage, augmentation, is predicted to entail dynamic integration of AI and automation of recurring tasks. The stage also involves semi-automation of robotic or machinery tasks such as moving goods and objects in factories. Autonomy will involve complete automation of physical activities.

The main focus is on deploying AI Automation in solving dynamic problems that occur in workplaces and that need continuous responses such as manufacturing and transportation of goods. Although AI is predicted to attain full maturity in a wide economic scale by the mid-2030s, PwC's research predicts that 30 percent of all occupations' job activities will be automated (Mulhall, 2010). The estimated outcome from increased automation is growth in the mid-2030s from 0.8 to 1.4 percent yearly. Accordingly, all occupations' job activities that occur in the workplace improve efficiency and effectiveness. Additionally, automated systems will achieve outcomes that exceed human limits. Based on these outcomes, therefore, companies are looking forward to further automations to their current AI-powered systems to improve productivity.

McKinsey's research also sought to establish the types of jobs that are prone to AI Automation. Therefore, based on these outcomes, physical tasks in predictable environments are predicted to have the highest automation potential. An estimated 81 percent of such activities are likely to be automated in the modern AI technology as well as robotics (Strasser et al., 2014). Tasks that involve physical labor can be grouped into predictable and unpredictable environment activities. Predictable activities are monotonous and boring to humans; hence machines are better performers of such tasks and don't get tired or bored. However, humans are more suitable to the unpredictable tasks than machines, since they involve adaptation and flexibility that automation fails to provide. Job activities that have high chances of automation require low level skills and education. Repetition is highly expected, and researchers have therefore predicted that repetitive and predictable tasks can be successfully implemented by machines more efficiently and effectively. PwC also identified machine assemblers and operators as activities with high potential for automation. While tasks involving such occupations can be automated by approximately 64 percent, businesses operating in the industry can achieve this goal by mid 2035 (Barnhizer, 2016). While there is an incoming trend of self-driven vehicles, jobs within the transport sector have a high automation potential.

Another industry that has been identified as prone to automation is manufacturing, which involves activities in highly predictable environments. Bain predicted a growth percentage of 55 in automation within the manufacturing sector, between 2015 and 2030. This prediction comes along with companies' efforts to have completely automated manufacturing plants with continuous production. McKinsey's research identified the data production sector as the second-highest in automation potential, with 69 percent (Forsythe, 2001). Data processing involves data storage, manipulation, preparation, and distribution. AI Automation in data processing will allow large volumes with limited human interaction and sharing with various audiences with minimal errors. Additionally, automation of data processing will improve customer satisfaction and experience.

To individual companies, increased automation of data processing has significantly reduced finance and computing errors which can cause severe harm. Companies in the modern business environment are highly dependent on business decisions related to financial reporting and data analysis (Mulhall, 2010). There is a shift from the traditional manual system that business executives used to make critical decisions. However, automation increases efficiency and effectiveness in report production and sharing. According to a recent EY report, data processing automation can extend to an estimated 65 percent of human resource tasks, including assessment and development of new data, cleansing, remuneration process, and CV screening, among others (Mulhall, 2010).

Data processing automation is predicted to eradicate delays and cut costs by 65 percent within the HR sector. The data collection occupation is the third job activity with the largest automation potential. Data collection comprises 17 percent of the entire time involved in occupations across the United States. The study by McKinsey established that businesses could automate approximately 64 percent of their data collection activities (Barnhizer, 2016). Automation in data collection is tipped to minimize manual data entry, save time, and reduce the cost of such processes. Manual data collection hinders the effectiveness of other projects related to it. Additionally, errors and low morale among employees can erupt from tedious tasks of entering data manually from forms or uploading emails to organizational databases.

According to McKinsey's study, modern technologies can introduce approximately 80 percent automation to payable accounts (Barnhizer, 2016). Various studies on AI Automation have sought to establish the new age of automation in the context of modern technology. The findings have affirmed that AI innovation is increasingly leading to the adoption of machines that exceed human capability, thus impacting the modern workplace. Additionally, researchers have identified the occupations and job tasks that are more likely to be influenced by AI Automation as the technology continues to evolve, as discussed in this literature review.

Important Applications of AI Automation

Artificial Intelligence automation can be applied in various ways that are beneficial to different industries and job sectors. From self-driven vehicles to drones and robots, businesses benefit a lot from AI Automation in terms of efficiency and effectiveness in production. First is fraud prevention, whereby theft or any act of misconduct can be linked directly to the perpetrator. AI Automation enables companies to attach cameras and surveillance devices to the POS system, record all the transactions, and link them directly to the system user's face and details. It, therefore, becomes easier to apprehend fraudulent users by identifying them easily. Furthermore, an automated system can prevent cyber-attacks and crimes by quickly identifying deviant behavior by a user (Walls & Lollar, 2009). In such circumstances, the system can automatically stop responding to commands and send a signal to the management.

Secondly, AI Automation is important in helping companies and marketers in brand management. Through automation, marketers can easily access important information about their brand and easily understand customers' opinions. AI Automation enables marketers to analyze all the information, responses, and feedback from consumers on the internet regarding their brand (Bi, Bi & Zhang, 2001). Companies can conduct this analysis daily and therefore identify critical issues and put strategies to improve customer experience. For example, the Watson Analytics for social media enables users to define some focus words and context and identify trends among online users.

Companies also use AI Automation to improve customer service. A good example is chat bots that have become popular among organizations as they engage clients through their websites and other online platforms. Chat bots understand clients' input in a contextual order and respond to their issues accordingly. Organizations use this technology to automate messages related to customer service, sales, and marketing (Walls & Lollar, 2009). This enables organizations to provide efficient and effective customer service and reduce queues on the customer service desk.

Fourthly, AI Automation has been widely adopted y companies and organizations for software testing and development. This is one of the fast-evolving fields of AI Automation. With the availability of a whole range of tools, it is possible to automate this field with AI Automation's future advancement fully. Some popular testing tools that have recently been developed include Appitools,SauceLabs, ReTest, among others (Ford, 2009). These tools help developers concentrate more on the main testing and leave bug fixing tasks to the automated systems. Although full automation of software testing and development is a long way to go, significant advancements have been made that help developers focus on the core tasks, thus no need to engage in menial tasks.

AI Automation has been successfully applied in human resource management. Employers and human resource personnel can struggle a lot in going through applicants' CVs and qualification details when hiring. However, with automation, it is easy to identify suitable candidates through a tracking system in which the CVs of candidates are uploaded directly upon making the application. Companies have also used AI Automation to reduce production cost (Bi, Bi & Zhang, 2001). The technology has helped cut costs involved in activities such as employees' training, which keeps on recurring. Additionally, managers have to deal with turnover among employees, observe their gradual experience and incur further cost and time in vocational and skills training. With automated CVs, the cost of training is cut as machines or computers need to be programmed with the tasks that they are required to perform, which may be upgraded once necessary.

Lastly, AI Automation has helped increase efficiency among industries and other sectors. Despite the level of expertise, people are still vulnerable to errors and mistakes, which can be costly. Automated systems are, however, foolproof and rarely indulge in errors. The output in automated systems depends on the input and is rationally proportional. AI Automation, therefore, has helped increase efficiency and effectiveness in production systems by minimizing errors that human beings may create (Bi, Bi & Zhang, 2001). AI Automation has multiple important applications in almost all modern sectors and industries, as discussed above.

AI Automation Future Predictions

With the rapid advancement of technology, fear has been widely expressed on the possibility of an AI Automation pandemic. Various research institutions and individual scholars have predicted different positive and negative outcomes relating to AI Automation's future. The predictions are based on data facts and statistics. The first is a change in customer service, which is the basis of the modern digital era. AI Automation enables businesses and organizations to connect easily with clients from different geographical locations than ever before (Ford, 2013). The connections are mostly personalized between organizations and clients. However, the customer service sector stands out as the most likely to be impacted by AI Automation as the current trend continues.

It is predicted that in the next few years, more than 80 percent of the customer-related services and connections will be conducted via AI Automations (David, 2015). The industry is more likely to be overtaken by automation, especially with the increase of chat bots that connect clients emotionally with their services. Furthermore, most consumers in the current markets who boast a high purchasing power are millennials who increasingly prefer the DIY type of customer service over in-store and telephone service. Humans are therefore going to get comfortable working in the same environments as non-humans.

Secondly, there is fear that AI Automation will take jobs or at least a portion of job activities. Learning from the past is among the most important things that people can do to prepare for the future. Critical research on employment in the past years reveals that 88 percent of the jobs lost are attributed to the more efficient and effective production backed by AI Automation and other technological inventions (Ford, 2013). It is now clear that AI Automation can relieve humans from huge workloads, and this capability is set to increase with advancements in self-learning technologies.

Research has revealed that approximately 40 percent of the United States jobs are at a high risk of being taken over by AI between the early to mid-2030s. However, according to MIT initiative's Erick Brynjolfsson, the modern challenge in the digital economy is not a world with no occupations, but with rapidly evolving occupations- a world whereby automation will take over some job aspects or tasks, thus creating completely new jobs that would have never been imagined or anticipated years earlier (Smith & Anderson, 2014). It is least expected that human labor will be needed to counter-check AI Automated systems and machine learning information. Tasks that cannot be automated are least expected. With the advancement of AI Automation, smart homes and buildings are expected to become more commonplaces.

The growth of IoT (Internet of Things) will trigger smart homes and buildings, particularly with the development of systems such as Amazon Echo that help coordinate the set of protocols and platforms that previously were confused (Goodall, 2014). Many smart home devices use the Echo Smart Home Skill API as the central point that enables them to function more flawlessly. Further advancement of this technology will create room for other developments to occur, enabling phones, laptops, and other gadgets to manage homes preserve energy, and improve comfort, irrespective of individuals' geographical location. Many scholars and researchers tip AI Automation to spearhead rapid technological progress in the future. Besides traditional automation, robots, and machines in industries, there has been a new generation of autonomous and capable systems in various environments, including self-drive vehicles and Automatic grocery stores (Goodall, 2014).

With continuous improvements in software, mechanics, and sensors, further innovations are expected to be made soon. Growth of computing power is specifically highly anticipated, with the creation of more sophisticated machine learning algorithms. AI Automation is expected to transform the business environment and contribute to economic growth soon (Coeckelbergh, 2015). The technology is already creating value in different products and services that companies are manipulating to improve product recommendations generate anomalies, detect fraud, among other operations that improve overall business performance. The current generation of AI Automation, such as techniques for addressing classification and clustering challenges, is also predicted to increase future value.

A recent case analysis conducted on the use of AI revealed that most deep learning techniques that deploy artificial networks account for up to a value of 3.5 trillion to 5.8 trillion USD annually, and this is set to grow further with advancements in AI Automation (Issa, Sun & Vasarhelyi, 2016). The adoption of AI and automation in many industries will also improve the global economy. Additionally, there will be improved global prosperity. Many have considered it key, especially when dropping birthrates and aging threaten to

slow down global economic growth. A key factor of economic growth is labor productivity, which has slowed in many large economies. For instance, the average labor productivity in the United States dropped from 2.4 percent to 0.5 percent between 2010 and 2014 (Wang et al., 2011).

After the 2008 economic downturn, productivity in major European economies had waned. However, with advanced AI, productivity is estimated to grow by an approximated 2 percent annually in the next decade, thanks to digital technologies' multiple opportunities. AI Automation will in the future be critical in helping to solve several moons-hot challenges within society. The application of AI and automation in fields such as material science for climate and medical research and other scientific disciplines could help solve moons-hot challenges. For instance, Geisinger researchers have recently invented an algorithm capable of reducing diagnostic time for intracranial hemorrhaging by 96 percent (Jovane, Koren & Boer, 2003). In another research, George Washington University is currently engaged in improving accuracy in weighing climate models through machine learning. The intergovernmental panel will use this technology to discuss matters related to climate change.

Importance of the Research to America

This research's literature and findings are important in helping America understand the past, current, and future context of AI Automation and the benefits and challenges that come with the rapid continuous advancement of automation among various industries. First, the research will help the US understand how to enhance robust productivity and economic growth. Rapid growth is not the overall answer to the threats posed by AI Automation but is rather a precondition for increased productivity and job growth (Mulhall, 2010). Productivity is a direct contributor to economic growth. Understanding this will enable the government and other stakeholders to embrace automation as a critical economic growth component. Secondly, the research will help the United States to foster business dynamism. New business formation and rapid entrepreneurship will boost productivity and create employment opportunities.

A healthy and competitive environment for small and large businesses will enhance business dynamism and foster job growth (David, 2015). This will appeal to stakeholders to accelerate the rate of new business development and growth and competition of both large and small businesses (Forsythe, 2001). The research will help the United States create more business opportunities with the aid of simpler and evolved tax policies and business regulations, among other factors. It will also help Americans to evolve education systems and learn for a transformed workplace. Policymakers within the education sector will work closely with employers to enhance essential STEM skills through the school curriculum and on-the-job training. This will create an emphasis on a new approach to critical thinking, adapting to different changes, and long-life learning (Parasuraman et al., 2007). Through this AI Automation research article, Americans will be enlightened on human capital investment. It is important to reverse the downwards trend of declined public investments, particularly in employee training. Policymakers can use tax benefits and other related incentives to encourage employers to increase their human capital investment by creating job opportunities, training and capacity building, and improved wages. Similarly, private investors will be encouraged to venture into other kinds of capital such as R & D R&D. the research will help Americans improve labor-market dynamism.

Information signals that help matching employees to work could function well in the American economy. Digital platforms enabled by rapid technological advancements will help people identify matching jobs and revive enthusiasm into the labor market (Jämsä-Jounela, 2007). The research article will help Americans redesign work by adapting the nature and flow of work to a new era characterized by increased interaction between humans and machines. Creating a productive and safe job environment will be both challenging and an opportunity as well. Lastly, the research will help Americans to embrace AL Automation safety. Although most people will tend to capture the benefits of this rapidly advancing technology, there is also a need to protect against the negative outcomes and mitigate any risks that come along.

Conclusion

AI Automation is one of the trending issues of the past decades, attracting numerous research and debates regarding its worth and impact on different sectors and aspects of human life. As much as many people embrace the positive factors associated with technological advancements, a significant number of people have raised fears about how the future will be with rapidly growing automation. AI and automation have resulted in reduced vocational and operational costs among businesses. Additionally, a new standard of accuracy has been set, with a significant reduction in humans' errors, faults, and irregularities. Efficiency and effectiveness have increased over time as a result of improved learning ability enabled by artificial intelligence. Despite the fears of future job loss and high unemployment, organizations still believe that artificial intelligence, machine learning, and automation are crucial to their entrepreneurial success. AI Automation is therefore set to continue to significantly impact various aspects and sectors of human life as organizations, businesses, and companies seek to adapt to the swiftly evolving technology to remain relevant.

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