Generative AI's Impact on the Labor Market

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction

In a tale as old as time, a technological breakthrough is causing a major disruption in the economy. In this case, the evolution of generative artificial intelligence (AI) is causing a major breakthrough in the job industry. Such cases often pivot a substantial divide in public opinion. On one hand, many will embrace the continual evolution of technology that will provide opportunities to help us grow and evolve as a society. On the other hand, there is a heavy concern on how this technological evolution will be a net negative for mankind, especially when it comes to the job market. As such, that leads to the modern technological disruption that persists today in the continual evolution of generative AI.

In many ways, generative AI shares similarities with other technological disruptions such as the internet, computers, and even as far back as the industrial revolution. However, such a substantial technological disruption raises the issue as to whether people need to be concerned about their job security in the near future. Generative AI is anticipated to have a major impact across almost all job sectors and as of February 2024, 66% of employment is exposed to a high or moderate level of generative AI and even the remaining 34% are impacted in some secondary tasks (Daco, 2024). The major concern is just how far generative AI can impact the job market as a whole and whether these concerns are valid or hyperbolic.

The reality is that whether for the better or for the worse, the “pandora’s box” that is the potential of artificial intelligence has been opened and in a practical sense, it is impossible to shut it and revert back to an industry that is not reliant on generative AI. However, it is important to understand how the rise of generative AI took place by examining where we are at now and any indicators for what the future holds. By examining a variety of meaningful impacts that generative AI has made in regards to the job market, ethics, and society as a whole, an

understanding can be made as to what is needed to ensure it can be a useful tool in the economic industry while ensuring it can be a net positive for the future of the labor market. So the question is what impact will generative AI have on the job market and what can we do going forward? While generative AI is still a relatively new and developing technology, it will forever change the job industry and workers need to familiarize themselves with both the potential achievements and pitfalls this technology will pose.

Significance of Generative AI in the Workforce

As a young adult preparing to enter the workforce, there are going to be many adjustments that will need to be made from the transition into the role of a student into the role of entering the workforce. Naturally, to become best equipped for the next step, understanding the major impact new technologies will have on the labor market will help ensure new and young workers are well prepared to succeed in the midst of a job market undergoing a massive evolution. What is quite clear is that generative AI is in its early stages of massive economic growth and will continue to grow at an accelerated rate, as the market size is expected to grow from $40 billion in 2022 to $1.3 trillion over the next 10 years, demonstrating a compound annual growth rate (CAGR) of around 42% (Bloomberg, 2023).

Technology is often a driving force in the evolution in the workforce, just look at how computers and the internet went from a novelty to something that is pretty much a requirement in all businesses today. This became even more paramount during the COVID-19 pandemic, when nearly 50% of surveyed workers reported working remotely at least once per week in December 2020 (Walsh, 2023). Most of those remote workers did not work remotely prior to the beginning of the COVID-19 pandemic, demonstrating that workers will often need to make key adjustments involving technology due to an evolving job economy. As a result, it is important to

understand why generative AI will be the next major technological evolution in the job market which is what the next portion of this research will consist of.

Why Implement Generative AI into Businesses?

In order to envision how generative AI will impact the job market, it is essential to understand why it became a technological breakthrough in the first place and why businesses are embracing the technology. One of the main reasons why generative AI is being implemented into businesses is due to the major potential for increased productivity. The anticipated increase in productivity does vary from industry to industry, but across all sectors, generative AI will serve as a substantial positive for increasing productivity. For example, generative AI is anticipated to increase sales productivity by 3 to 5 percent, marketing productivity by 5 to 15 percent, consumer packaged goods productivity by 1.2 to 2.0 percent, and banking productivity by 2.8 to 4.7 percent just to name a few examples (Chui, et al., 2023). Given that implementing generative AI technology is mutually beneficial towards increasing productivity across a wide range of industries, it is no wonder that businesses feel inclined to implement ways to incorporate generative AI into their tasks no matter what the task is at hold.

Not only does generative AI increase productivity, it increases efficiency. Specifically, delegating certain tasks to generative AI or in many cases, using generative AI as a tool or assistance in the completion of tasks helps boost the efficiency of that work. Diving into a more specific example for how generative AI increases efficiency can be found from the company CarbonHealth. CarbonHealth is a primary care facility that benefitted recently from the implementation of telemedicine as a major part of their business. However, even a healthcare company saw major benefits from the implementation of generative AI, specifically when it comes to efficiency. To achieve this, they introduced hands-free charting which allows generative

AI to chart a patient's information. This eliminates the need for their physicians to manually chart patients which the company sources as one of the major reasons for physician burnout (Bali, 2023). The results for implementing hands-free charting are that the generative AI system was able to generate a complete medical chart of a patient's information in less than 4 minutes, which is substantially quicker than the average time it takes a physician to manually chart a patient, which takes on average 16 minutes (Bali, 2023). As a result, physicians do not have to spend much of their time and energy into the redundant task of filling in the paperwork of writing down information of a patient, which can also correlate to an increase in productivity as the physician now has more needed tasks instead of spending a lot of their time with the repetitive and mundane task of constantly charting information. From the business world as a whole, generative AI has the potential to become a tool that can help workers spend less time on repetitive and mundane tasks which will save them a lot of time. As the old saying goes, "time is money" so to reduce the time needed to complete tasks means more opportunities to generate revenue.

With generative AI having the ability to increase both productivity and efficiency, it should come as no surprise that this technology is expected to have a major impact on potential economic growth. Looking at the bigger picture, McKinsey & Company found that after examining 63 use cases each representing a different job industry, they found that generative AI will add $2.6 trillion to $4.4 trillion annually to their economic growth (Chui, et al., 2023). Looking at specific industries shows that some industries will have a more significant impact on generative AI's contributions to economic growth as sales, marketing, product research and development, customer operations, and software engineering represent roughly 75% of generative AI's economic impact (Chui, et al., 2023).

As a result of the expected economic potential generative AI has across job industries, businesses would be foolish to not have already begun finding ways to implement generative AI into their job tasks. As demonstrated above, the expected increase in both productivity and efficiency leads to the result of billions of dollars in economic gains per industry.

Potential Pitfalls of Generative AI

While generative AI does have major economic potential and is already being integrated into the job economy and will continue to be, it is important to understand why many are pushing back and have their concerns about a future involving generative AI. Given that the technology is still relatively new and has been shown to be very powerful, one concern that persists is that generative AI will not be a complementary tool for workers, but instead a substitution for workers. In other words, there is a concern that many workers will find themselves being replaced by generative AI and find it much more difficult to obtain a sustainable job. It certainly can be seen as a concern even from AI developers and investors as one investor stated "the vast majority of what I see in terms of artificial intelligence development is labor-replacing as opposed to labor-augmenting" (Kohan, et al., 2024). There are several factors that lead to this revelation but one potential reason mentioned is the time pressures to bring AI products to the market quickly would lead to trying to maximize generative AI's potential with no regard to the impact it will have on workers (Kohan, et al., 2024). This observation seems to make sense given that as mentioned earlier, generative AI is anticipated to have substantial economic growth in the upcoming years so it would only make sense for developers to feel pressured to create as much innovation as quickly as possible to ensure their product is the one businesses will rely on.

Another concern that persists with generative AI is potential security risks. Some risks include phishing, deep fakes, cyberattacks, and the general unpredictability of large language

models (LLMs) (Barrett, et al., 2024). Specifically when it comes to cybersecurity risks, cyber offenders can use generative AI to perform cyber attacks by either directly extracting the information or circumventing ethical policies (Gupta, et al., 2023). The additional risk that persists with generative AI containing these cyber attacks is that the barrier-of-entry is a lot lower thanks to their advanced machine learning. Previously, being capable of performing cyber attacks required a vast amount of knowledge in programming and data analysis and is a time-consuming, laborious, and a costly endeavor (Barrett, et al., 2024). But with generative AI, all it takes is just manipulating generative AI's prompts to achieve quick and effective results. This also significantly reduces the cost required for an attack, as the cost of producing an attack ranges from just $0.0064 to $0.0016 in comparison to human generation costing up to $0.10 (Kang, et al., 2023). The ability to make effective attacks not only quickly, but without much hard work or knowledge will only naturally lead to the added risk that so many more people who previously did not have the capabilities to perform cyber attacks can cause serious damage to both workers and businesses as a whole which is why it is a major cause for concern.

What Other Scholars Think About Generative AI's Impact on Workers

Generative AI will continue to evolve and become a more substantial part of business as a whole, and as a result, it has become a topic of major awareness from plenty of scholars who will examine just how impactful generative AI truly is. One important factor is that no matter what career path or occupation someone chooses, chances are that a lot of their work will involve generative AI, specifically LLMs. In fact, roughly 80% of workers will have at least 10% of their tasks exposed to LLMs, while 19% of workers will have over half their tasks exposed to LLMs (Eloundou, et al., 2023).

With this high of an impact on workers, there is also plenty of research about generative AI's ability to displace workers which scholars seem to be pretty split on. On one hand, some scholars have very pessimistic estimations of AI's ability to replace workers. For example, Chen and Xu who examined how AI will impact China's labor market estimates that AI will replace 76.76% of China's workforce within 20 years (Chen, Xu, 2018). If those estimates come to fruition, that would imply China did not implement policies that would protect workers which is something discussed later on potential policy recommendations to avoid this kind of scenario where the majority of workers struggle to find a job. However, many scholars do not share this same pessimistic viewpoint that generative AI will be capable of completely replacing human workers. One argument is that even future AI tools may not be able to replace us due to their lack of semantic understanding (Loebbecke, et al., 2020). In other words, sure, technological progress can create more advanced models that can compute and analyze faster than humanly possible, but given many jobs often require a level of human judgment and thought. To them, it is practically impossible to create a LLM that can replicate the human factor of successfully completing certain tasks better than a human, no matter how technologically advanced it is.

Generative AI Impact on Workers

When it comes to the concern about whether generative AI will replace jobs, while they won't marginally replace humans when it comes to employment, the technology will change the roles and tasks humans will perform. Essentially, job profiles might change by adding new tasks or modifying existing ones instead of suppressing a job entirely (Ernst, et al., 2019). Looking forward, as certain occupational needs wane, other occupational needs will be in higher demand. As a result, it is very likely that generative AI innovations could lead to job losses in the short term, but in the long run, it will fuel economic growth as by 2030, there are an anticipated

additional 12 million occupational shifts (Ellingrud, et al., 2023). The reality is though that works with lower wages and educational requirements will be most affected by generative AI innovations, as workers who fall into the two lowest quintiles of annual wages (less than $30,800 a year and between $30,800 to $38,200) are 10 and 14 times more likely to need to change occupations compared to the highest earners (Ellingrud, et al., 2023). What this argument poses is that lower income workers will be disproportionately affected by generative AI and are much more prone to being forced to make massive adjustments when this technology does become more prevalent and advanced in the workplace. Ellingrud does spin this as a positive though as he sources that while the two lowest wage quintiles will show a decrease of 1.1 million jobs, jobs in the highest wage quintile will grow by 3.8 million jobs (Ellingrud, et al., 2023). This belief does hold some merit though since an argument can be made that if generative AI does end up taking on the mundane, repetitive, and easier roles, job tasks that require a high level of education and human thought could become much more valuable going forward.

Policy Action and Recommendations

As it currently stands, generative AI is a new technology that is not yet fully realized just how impactful it is, although one certainty is that it will have a major impact on economics and society as a whole. The important factor is that policies are already in the process to ensure proper regulations and protections, one example being a law passed by the European Union called the AI Act in August 2023. One introduction that this bill introduces is an introduction of a risk-based regulatory approach, which distinguishes certain AI systems as low risk, high risk, and unacceptable risk (European Parliament, 2023). The goal of this portion of the policy is to associate types of AI systems that are more prone to be potentially harmful to people if in the wrong hands. With systems that fall under unacceptable like cognitive behavioral manipulation

and facial recognition will be swiftly banned hence the name unacceptable while systems that fall under high risk such as education, legal consulting, and employment fall under high risk which ensure proper inspection before given the clearance to be put on the market (European Parliament, 2023). As for the United States, there have been policies at a state level, but as of now, there is no federal policy in regards to proper regulation for generative AI. However, the White House has proposed a blueprint called the AI Bill of Rights which ensures proper regulation and protections of AI systems. The White House's blueprint includes ensuring safe and effective systems, algorithmic discrimination protections, data privacy, notice and explanation, and human alternatives, considerations, and fallback (White House, 2022).

While there are steps being taken to ensure proper regulation, there are more steps to be made especially in the business world. One recommendation is an investment in training and development. Specifically, training that focuses on the capabilities and limitations of generative AI as well as teaching technical skills required to interact with AI systems (Capraro, et al., 2023). Given that for example, a computer scientist is expected to receive an education that includes training in programming in computer languages like Java, Python, C++, etc. it would only make sense for businesses and potential workers to have the educational background and training to properly interact with generative AI. As a result, investments need to be made to ensure potential workers that are bound to be using generative AI as a tool in the workplace are properly trained and educated to have the knowledge needed to contribute successfully. So whether that be proper workplace training, or the more likely route of introducing educational methods at schools and/or universities, there needs to be an investment in the education of the future workforce that will be much more involved with generative AI.

Another recommendation is research on combating misinformation. Generative AI builds on user interaction, specifically, the system can generate convincing content including text, images, audios, and videos (Xu, et al., 2023). Such a tool can be easily weaponized to spread misinformation that can become very harmful to both users and businesses. One example being that users can utilize generative AI to create fake social media accounts that are completely automated with the goal to continuously misinform the public (Thomas, 2023). This massive rise in automated content with such malicious intent has two negative implications in that it not only puts users in harm's way that fall for whatever deception these automated accounts are trying to push, people's trust in actual reliable information is severely diminished. As a result, creating methods to detect, combat, and penalize people that intentionally misinform the public with the use of generative AI is essential to ensure this practice is deterred.

One final recommendation is to create a committee of people focused on addressing workers' concerns to AI developers. As previously mentioned in potential pitfalls for generative AI, one concern is that AI developers are investing more in labor-replacing than labor-augmenting. With that in mind, having a government-backed committee in a similar fashion to that of a workers' union, the committee's purpose will be to provide a voice to workers to express their concerns about how the development of generative AI models will have a negative impact on them. As a result, there will be a potential for collaboration between AI developers and workers to ensure a better product more suitable for maximizing productivity and efficiency in business.

Conclusion

When it comes to the future of generative AI in the job market, what has become clear is that this technology will become a major factor in future economic growth and will be a large

determinant of the future of the labor market. On top of that, given how powerful this technology can be, ensuring proper policies and regulations is key to help minimize the potential harms of generative AI while providing ways to ensure continual economic growth. As for going forward, regardless of what policies are enacted by countries in the future, workers need to become educated and informed about how generative AI works since if it hasn't become a major part of someone's job tasks yet, more than likely, it will become a major factor in the upcoming years. While in many ways it is largely unknown just how impactful generative AI will end up being for the labor market, ensuring proper preparement for what the future holds ahead is the best way to ensure a very successful and prosperous future.

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