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Table of Contents

1. Executive Summary

This study examines how the COVID-19 epidemic has affected the information technology sector. Two areas where information technology (IT) has been essential in responding to COVID-19-related issues are crisis management and crisis response. Examination of the IT industry's economics during the pandemic focuses on three primary areas: patterns of employment, developments and adaptations in technology, and the potential for growth in relation to global commerce. This trend in employment shows how increasing interest rates, markets that are unstable, economic uncertainty, and geopolitical concerns are affecting IT startups. The technical adjustments explore the relevance of remote work and telecommuting with a focus on digitalization, virtualization, and online education. The research additionally looks into the topic of how remote work is driving up the cost of IT infrastructure. The research also shows that the company has to put money into technologies that let employees work together remotely. Furthermore, the research highlights virtual reality's importance as a crucial application that will impact the information technology sector and companies. Training courses are necessary to address the present and future needs of the IT sector. To solve IT issues and open up new opportunities, the research stresses the need for stakeholders and governments to collaborate.

2. Introduction

Many organisations have felt the effects of the COVID-19 epidemic. These include healthcare systems, companies, educational institutions, and the economy in general. In order to assist society limit the spread of the coronavirus, telemedicine, telecommuting, and online education are becoming essential tools (He, Zhang and Li, 2020). O'Leary (2020) states that as the COVID-19 pandemic has progressed, the need for new technology to mitigate the virus's impact on human health has intensified. Information technology (IT) and systems are crucial to the healthcare sector, crisis response, and risk management. Many professionals in the field of information systems and technology are reportedly addressing the epidemic (Ben-Assuli and Padman, 2020). Their efforts include creating anti-viral products, monitoring and forecasting the virus's progress, and defending healthcare facilities from cyberattacks. Contributing their expertise in crisis response, making decisions, remote work, virtual team management, big data analysis, etc., are applications in the field of information systems and technology that help in the worldwide fight against COVID-19 and future pandemics (Thompson et al., 2019). As of right now, the battle against COVID-19 is suffering from a lack of research contributions in the fields of economic analysis of information technology (IT). This assignment aims to provide the employment pattern, technological adaptation and international trade through economic analysis of IT industry.

3. Economic Analysis of IT Industry- Covid-19 and Employment Pattern

In 2022, as economic uncertainty grew, layoffs in the IT industry increased significantly. As of December 2022, over 970 companies have laid off over 150,000 workers at tech startups throughout the entire world. The United States accounted for over half of the layoffs. Startups in this country have been struggling to get fresh investments due to market uncertainty, increasing interest rates, sluggish economic growth, and geopolitical tensions (Statista, 2023). The researcher emphasises the significance of investigating the direct impacts of COVID-19 on US wages and employment. As seen in Figure 1, COVID-19 increased the unemployment rate, decreased work hours and labour force involvement, and had significant impact on salary, as stated by Beland,

Brodeur, and Wright (2023). In their study, Fana, Torrejón Pérez, and Fernández-Macías (2020) found that the COVID-19 pandemic disproportionately affects men, younger employees, Hispanics, and people with a lack of education in the labour market. Furthermore, they classified employment into three groups according to their potential exposure to diseases, the distance from colleagues, and the ability to work remotely. They find that jobs that are economically dependent on being physically close to other people are taking declines more severe than those that allow employees to work remotely.

At the occupational level, they also show that low-wage employment are much more vulnerable to negative supply-and demand-side shocks than those having high pays. The degree of economic effect is proportional to the degree of specialisation in the nation. Countries with low public employment rates and reliance on service sectors, which are not highly productive, are the most affected by the IT industry (Andersen et al., 2020). Importantly, financial specialisation, insurance coverage, and labour laws of the IT sector's markets are essential and institutional variations that will, in the medium-long term, have a far greater impact on the country's job opportunities, employment prospects, and economic performance (Herath and Herath, 2020).

In addition, according to another researcher, the IT industry is more vulnerable in southern and French countries, whereas northern European regions are less vulnerable overall. Eastern and central European regions fall somewhere in the middle. Telecommuting has helped lessen the impact of the present crisis's social isolation and activity limits (Doerr and Gambacorta, 2020). There are new difficulties with work-life balance, mental health, and organisational practices brought about by employees' need to make significant lifestyle adjustments to work from home. However, when it comes to work, it is a method that lets individuals keep working (and making money) even when the government puts a lot of limitations on it, at least for those who have regular jobs. Telework aids those who can carry out their job duties from a distance, allowing them to avoid the economic consequences of the crisis (Fana, Torrejón Pérez and Fernández-Macías, 2020).

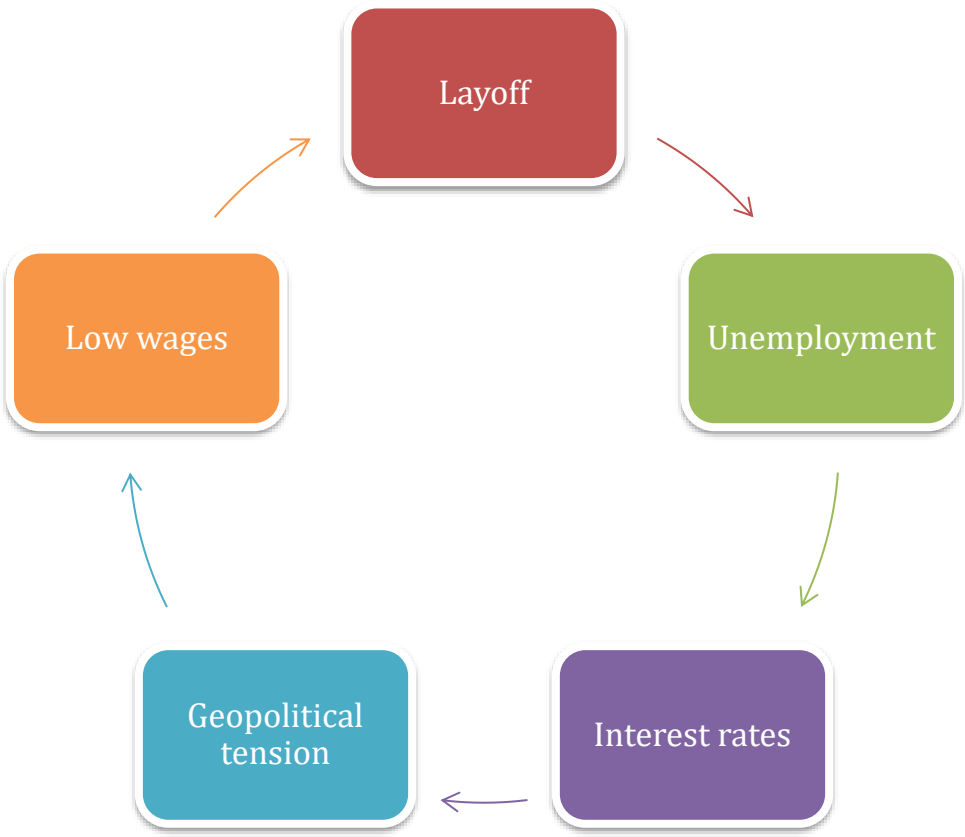

Figure 1: Impact of COVID-19 on Employment (Source:Self)

4. Economic Analysis of the IT Industry- Covid-19 and Technological Adaptions

The COVID-19 pandemic is causing fast changes in the workplace. As a result of teleworking, millions of individuals are bringing their offices into their homes. Virtualization, telecommuting, and the usage of cloud computing to process and store data are becoming more prevalent, which is beneficial for the IT sector. Various IT sectors and individuals are increasingly embracing online services as we go through this epidemic. The widespread recognition of the significance of information technology infrastructure in facilitating telework, online learning, e-government, and e-commerce has led to an increase in the economic advantages of the nation (He, Zhang and Li, 2020). There is a lot of demand for remote connection networks since the pandemic is making a lot of workers operate remotely for a long time. Society needs to accelerate its digital

transformation initiatives and maintain its investments in IT infrastructure to deal with the consequences of COVID-19 and other future public health emergencies as shown in Figure 2 (Watson, Ives and Piccoli, 2020). To facilitate remote work and virtual collaboration, businesses should increase their spending on technologies like video conferencing and group decision-making support systems (Xu, 2011). Contrarily, with more and more people working remotely and taking courses online due to the COVID-19 pandemic, the expenses of IT infrastructure are quite high. To keep up with the skyrocketing demand, one must be aware of the increasing hard expenses of IT infrastructure. Improving IT infrastructures is crucial to ensure that personnel can carry out their jobs safely and healthily while the pandemic progresses (Dalal et al., 2004). There has to be a solution found since certain important things can not be done from home. Finding out what goes into the price of meeting the increasing demand for telework is crucial. This includes things like cloud server fees, video conferencing charges, and extra licenses for support items.

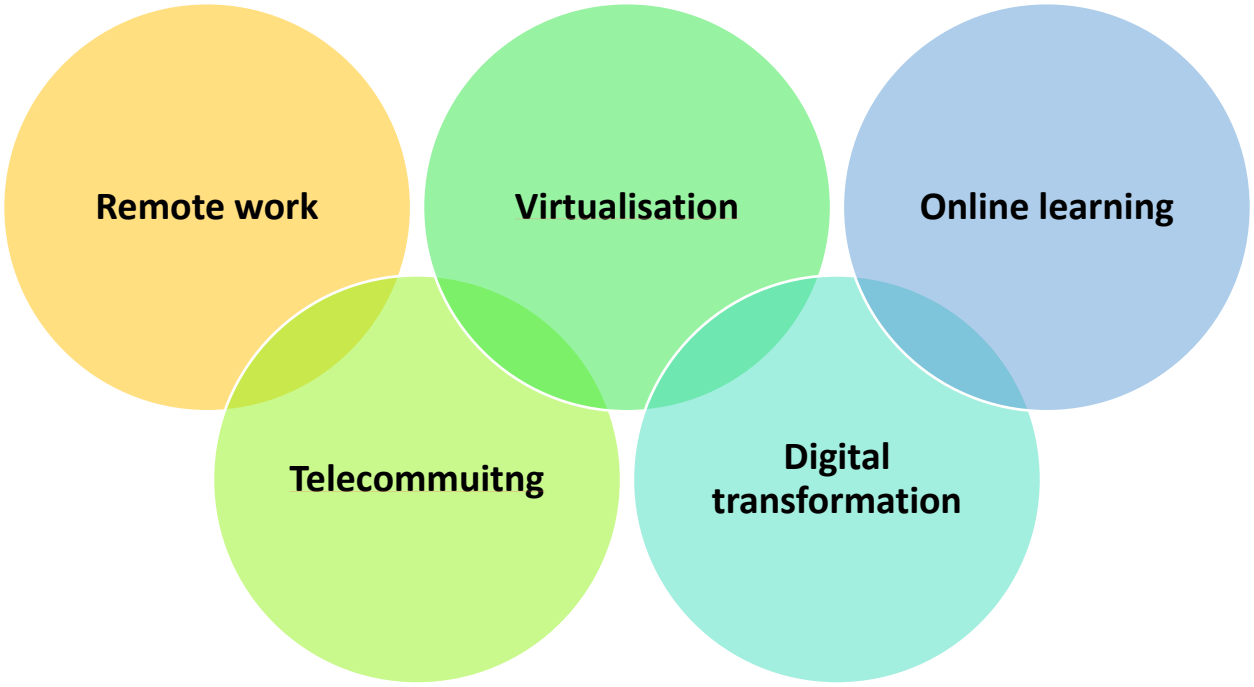

Figure 2: Impact of COVID-19 on Technological Adaptations

5. Possibility of the Industry-Expansion and Relevance for International Trade

Virtual reality is one application that might lead to growth in the IT industry and the economy. According to Schuh et al. (2015), virtual reality has the potential to play a significant role in many fields of study, including engineering, ICT, production, surgical intervention simulation, pilot training, and many more as shown in Figure 3. The use of VR in the field of engineering and information and communication technology (ICT) education has the potential to improve students' digital literacy and pedagogical ethos throughout elementary and secondary school. The goal of augmented reality is to assist in the elimination of design mistakes by facilitating the interactive combination of actual and virtual activities (Dávideková, Mjartan and Greguš, 2017). With the use of machine learning and AI, the construction industry can streamline the process of preparing for and building different objects, as well as optimise financial costs and create predictive models with accurate predictions. With its time-saving, practical, environmentally friendly, and economic advantages, augmented reality is attracting a lot of interest within the Industry 4.0 concept (Straka et al., 2020). Using data interchange in both human-robot and robot-robot cooperation, these cutting-edge technologies provide simple, straightforward ways to connect and combine our perceptions of the physical world with those of man-made things. Logistics services in the area of real-time production process information provision for work process improvement and decision-making on current production are where the advantages of Industry 4.0 are most often assessed (Vahdat, 2021).

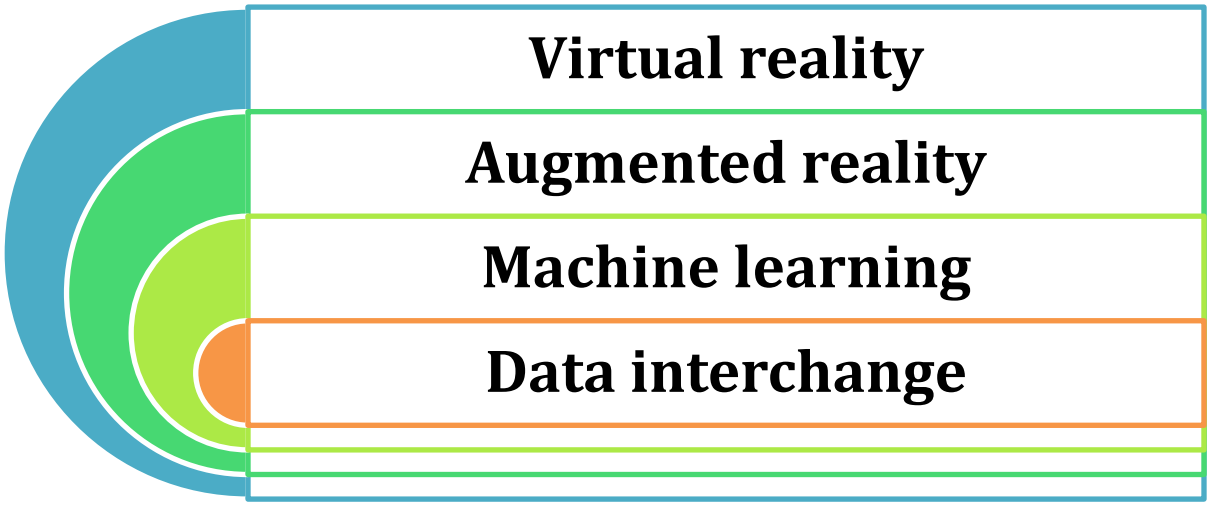

Figure 3: IT Industry Expansion and Relevance for International Trade

6. Conclusion and Recommendations

In conclusion, the COVID-19 pandemic has significantly impacted the IT industry leading to changes in employment patterns, technological adaptations and a potential for industry expansion. However, the economic analysis reveals that the pandemic has resulted in layoffs and loss of talent in the IT industry. Even though the IT industry has shown adaptability, there is still a need to focus on the development of IT skills and talented workers to provide suitable economic solutions in the world. Furthermore, the COVID pandemic has led to an increase in telecommuting and technological advancement. The study suggests that policyholders and stakeholders must collaborate to mitigate the challenges of the IT industry. Furthermore, the increased dependence on remote workers indicates an increase in digital investments. Therefore, the government must make policies addressing remote workers to ensure an efficient remote and digitalised environment and create opportunities.

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