

Impact of Covid-19 Pandemic on Information Technology Sector

M. K. Ganeshan¹ and Dr. C. Vethirajan²

Ph.D Research Scholar in Management, ICSSR Doctoral Fellow¹

Senior Professor and Head, Department of Corporate Secretaryship²

Alagappa Institute of Management School of Management, Alagappa University, Karaikudi, Tamil Nadu, India
mkganeshanmba@gmail.com

Abstract: Information technology is a vast industry that comprises services, consulting, and outsourcing. Every element of life has been severely impacted by the COVID-19 pandemic. Due to the coronavirus Covid-19 outbreak, players in India's IT services, according to industry analysts, will see a significant slowdown in growth during the financial year. According to reports, big software exporters like TCS, Infosys, and HCL Technologies will be most negatively affected by clients' reduced technology spending in the US and Europe as a result of lockdowns around the world. Positively, the disruption has accelerated remote working and sharpened attention to analyzing and reducing risks throughout the entire value chain. Additionally, possible reductions in carbon emissions can lead to renewed interest in sustainability measures. IT asset management will become increasingly important to ensure teams can efficiently access and utilize future technology to perform their jobs.

Keywords: COVID-19, pandemic, information technology, work from home, sustainability

I. INTRODUCTION

Organizations all over the world, including in India, have been impacted by the COVID-19 issue. Many of these organizations are finding it difficult to manage with less operating capital and maintain a consistent top line. The health and safety of the workforce are of the utmost significance. Since fewer people were travelling across industries, businesses had to embrace new working practices, such as Work From Home (WFH), which had previously only been used sparingly. In the wake of COVID-19, IT has emerged as the most important internal function, with business and other functions now needing IT services and support like never before. In the years following COVID-19, IT will genuinely take over as the centre of the enterprise.

Technology enablement will be essential for any business's progress. A recently identified coronavirus is the source of the infection when an infected person coughs or sneezes. Since the late 1980s, the Indian IT sector has been affected by an infectious disease known as coronavirus disease (COVID-19). It's crucial to practice respiratory etiquette because the COVID-19 virus is primarily transmitted by saliva droplets or discharge from the nose, which is the linchpin of the country's development. An industry with less than \$1 billion in revenue in 1990 generated \$180 billion in revenue in 2019, with approximately 75% of it coming from exports. (Jaganmohan 2020). A succinct industry summary for software services in India We concentrate on the industry's demand- and supply-side economics and make an effort to identify the characteristics and types of capabilities that might have the potential to produce rents. The late 1970s and early 1980s saw the incorporation of many of the industry's most established businesses, making the Indian software services sector relatively young. IT companies initially focused mostly on export markets and international clients due to a tiny and underdeveloped domestic market (Ethiraj et al. 2005). Technologies have the potential to lessen the impact that the coronavirus pandemic has on individuals, groups, and society as a whole. But using technology to fight the pandemic presents issues including security, privacy, prejudice, ethics, and the digital divide.

II. RESEARCH METHODOLOGY

This research paper is based on a concept and exploratory research in nature. In this research paper, secondary data is used as collected information, gathered from research gates, Google websites, etc.

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III. REVIEW OF LITERATURE

Kurian, R. M., & Thomas, S. (2022). The paper did study on "Perceived stress among information technology professionals in India during the COVID-19 pandemic". India's economy depends heavily on the information technology sector. Uncertainty surrounds the COVID-19 epidemic, which is perhaps the biggest challenge now facing the IT sector. Despite the fact that the IT sector has helped many other global industries during the crisis, IT personnel nonetheless face a wide range of mental health issues. Despite this, there haven't been many studies that specifically examine how this period has affected IT professionals' mental health. With regard to IT professionals in India during the pandemic, this study aims to investigate the influence of socio-demographic characteristics on reported stress as well as the relationship between thankfulness and perceived stress.

Vahdat S. (2021), the paper focused on "The Role of IT-Based Technologies on the Management of Human Resources in the COVID-19 Era." Implementing information technology is an area that requires greater attention and a wider variety of innovative approaches. In the post-coronavirus disease 2019 (post-COVID-19) era, where businesses and employees have had to significantly remake themselves in a short period of time, the author would surely see a more human-focused approach to HR management. Following the COVID-19-induced worldwide lockdown, many businesses were forced to choose remote working, which has advantages and disadvantages for both employees and employers. Therefore, the goal of this study is to look into some important effects that COVID-19 has on various HRM positions, how technology is empowering and promoting HRM, insightful forecasts based on how organizations are coping, and finally, the road ahead in the post-pandemic environment.

Dwivedi Y. Hughes, D. Coombs, C. et al. (2020), the paper highlighted on "Impact of the COVID-19 pandemic on information management research and practice: Transforming education, work, and life". The COVID-19 epidemic has compelled many businesses to undergo major change, reconsidering fundamental components of their business processes and the usage of technology to continue operations while conforming to a changing landscape of standards and new policies. Through an information systems and technical viewpoint, this study provides a collective understanding of many of the important issues and underlying difficulties affecting companies and society in COVID-19. The opinions of twelve invited subject matter experts are compiled and analysed, in which each expresses their unique viewpoints on online education, digital strategy, artificial intelligence, information management, social interaction, cyber security, big data, blockchain, privacy, mobile technology, and strategy through the lens of the current crisis and its effects on these particular fields.

IV. THE IMPACT OF COVID 19 ON THE TECHNOLOGY SECTOR

Technology businesses have been fueling the financial markets' boom over the last few years. The market values of the FAANG businesses (Facebook, Amazon, Apple, Netflix, and Google) have skyrocketed. It would be accurate to claim that not every aspect of the global economy is being negatively impacted by the pandemic. While the valuations of some industries are falling off quickly, others are even gaining from the crisis. We shall describe the effect COVID 19 is having on the IT sector in this piece. Hardware, software, and IT services are the three subsectors that make up the technology industry. Following is a description of how COVID-19 has affected each of these three sectors:

Hardware Sector: In the immediate term, the COVID-19 situation will have a negative financial impact on the hardware industry. The sector will benefit from this crisis in the long run, though. Currently, the COVID-19 situation has impacted the whole worldwide supply chain for electronic items. In the majority of nations around the world, technology like computers, routers, and similar devices are not considered necessities. The supply chains for these goods have been impacted as a result. There is hardly any production taking place. As a result, these products won't sell well in the short term. This truth is already known to the major IT companies. They postponed the release of certain of their products, including cellphones, because of this. Despite the fact that there is a need for these products, businesses lack the logistics to manage the supply side. Due to a lack of available raw materials like copper, aluminium, etc., businesses won't be able to purchase the goods, at least not for the upcoming quarter. The industry will have a promising future. Companies will begin investing enormous sums of money to upgrade their information technology infrastructure as soon as business activities return to normal. Hardware will be purchased in vast quantities by both businesses and individuals. This is because they would want to create business continuity procedures that would enable them to function normally even if a

similar catastrophe were to occur again. Private institutions like schools and small enterprises will also make significant investments in hardware that enables productive work from home.

Software Sector: Since the COVID-19 crisis started, the software industry has already experienced a boom. This occurs as a result of multinational corporations being compelled to permit employees to work from home. Some forms of software must be used for this. For instance, the number of downloads for a firm called Zoom, which offers software that enables teleconferencing for up to 100 users, has skyrocketed. Because of this, Zoom has seen its shares soar even while the overall stock market is falling. Zoom is currently valued at over \$29 billion, surpassing the capitalization of significant airlines like United Airlines and Delta Airlines. Software companies are able to benefit from this problem since they are not as constrained by supply as the hardware sector is. The software sector has a promising future. This is due to the fact that larger enterprises are now attempting to develop work-from-home features that would enable businesses to operate from homes for protracted periods of time. As a result, there will be a huge market for software products that enable businesses to easily permit employees who deal with sensitive data, such bank account information, to do so from home.

IT Services Sector: In the near future, demand for IT services will decline. This is due to the negative impact on numerous international corporations' businesses. These businesses probably won't pay their support partners much because they don't receive any money from the clients. In the near future, all software upgrades and new software implementations will come to an end. Many businesses will place IT services at the bottom of their priority lists. Thus, it can take some time for this industry to recover. But this decline in demand will only last a short while—possibly until the recession is over. Companies will resume investing on IT services once the recession is over and demand returns to normal. Most IT services are offered by companies that outsource their work and occasionally hire people on temporary visas. It is improbable that governments will permit unrestricted international travel in the post-coronavirus era. It's likely that the visa requirements will be tightened. The IT services sector will suffer as a result of this. Therefore, it is reasonable to conclude that the future is not going to be very promising for IT services. Ultimately, one of the few industries that stand to benefit from the COVID-19 dilemma is technology. Some businesses in the sector will profit, while others will suffer. The crisis will, however, have a favourable effect on the industry as a whole. The COVID-19 epidemic has brought about a number of unintended and extraordinary developments in every industry area, including the automotive, hospitality, aviation, and retail industries. Overall, the majority of these industries have only seen detrimental effects from the epidemic or lockdown situation on their own enterprises.

Platforms: Comparatively speaking, platforms have experienced the quickest company growth in 2020. However, there are several corporate sectors that have not only benefited from this global pandemic but have also seen some positive effects as well. Here, we will discuss one of these well-known areas: information technology. The IT sector has not only handled the current situation efficiently to maintain its workflow, but it has also saved numerous other enterprises. Before continuing, let's look at a few significant statistics based on a number of widely used study reports:

Despite the current global economic crisis, the IT industry is projected to generate revenues of roughly USD 190 billion for 2020–21 and USD 300–350 billion by 2025. Due to the COVID-19 outbreak, 35–38% of IT organisations are likely to upgrade or strengthen their IT infrastructure and procedures. The COVID-19 epidemic has caused an average 5–10% rise in IT spending, according to the largest corporations in the industries. Digital and Cloud Technologies at a time when everyone worked from home. According to the statistics cited above, the IT industry has managed to benefit the most from the current crisis, while all other industries are working extremely hard to resume normal operations. When examine the causes of the COVID crisis or corresponding lockdown situation's positive effects on the IT sector, you'll discover that everyone uses digital tools and technologies to continue their work and operations while they are confined to their homes or are working remotely, whether it be social media platforms like LinkedIn or Instagram, communication apps like Zoom or Microsoft Teams, cloud software, etc.. The as a result, the demand for the use of the internet and other technologies finally expanded dramatically. Just as an illustration, in the year 2020, Zoom alone saw year-over-year growth of over 340–345 percent. Similar to this, according to studies from McKinsey & Company, the COVID-19 issue has caused a substantial change in technology adoption and digitization globally, with the latter having advanced by about 3 years. Additionally, in order to keep things running, the IT industry has assisted other companies or sectors. For instance, it is because of all those tools and technologies that students throughout the world are able to continue learning even when all the schools and actual classrooms are closed. In fact, compared to traditional physical classroom-based education,

different tech developments in ed-tech, such as AI and ML, AR & VR, etc., are improving the learning experience for students. Additionally, throughout the shutdown time, platforms relating to e-commerce and other similar fields recorded utilization and growth that had never been witnessed before.

One of the primary causes of this sector's increasing growth and demand trend is the recent involvement of the IT industry in the healthcare sector to address the corona virus epidemic. The tech sector is helping the healthcare system in every way possible, from contact tracing platforms to cutting-edge technologies for rapid testing to remote patient surveillance. Many apps and platforms have been developed recently to carry out various healthcare-related tasks. Despite the fact that the IT industry has not been negatively impacted, the pandemic crisis has prompted IT organizations to implement cutting-edge solutions that can handle such emergencies without having to halt operations. And as a result, IT organizations are compelled to go through the necessary digital transformation, which will undoubtedly provide a large number of job prospects for people. On the other hand, many traditional technologies or their corresponding tech positions appear to become obsolete. For instance, the lockdown has created an urgent need for chatbots in end-to-end customer enterprises that can answer consumers' questions or address their complaints. Now, there is a greater likelihood that, in the near future, chatbots will be utilised by practically every company to respond to consumer questions or provide them with the most recent information, ultimately taking the role of human executives. As a result of the COVID-19 issue and its ramifications, the following are some tech trends or fields that are expected to see an increase in demand and usage:

- Internet of Behaviors (IoB)
- 5G
- Augmented Reality and Virtual Reality
- Total Experience (TX)
- Blockchain
- Distributed Cloud
- Hyperautomation
- Artificial Intelligence and Machine Learning, etc.

Instead of just replacing human labour with technological innovation, it would be preferable if tech companies integrated these technologies into their workflow and infrastructure to strengthen operations and increase the productivity and efficiency of their staff.

In addition, the COVID issue has had a substantial impact on and modified the internal management, operations, and policies of tech companies. As an illustration, a swift switch to the WFH model, online hiring and interviewing procedures, etc. But this might also be seen as a blessing in disguise for the tech industry, as many top tech firms have seen that their productivity and efficiency have grown as a result of the remote working procedure. And perhaps for this reason, even in the post-Covid era, many large IT companies are likely to embrace similar workflow modifications permanently. Just as an illustration, Twitter has already made its long-term work-from-home ambitions public. In a similar vein, Facebook has also made an official suggestion that in the next five to ten years, about 50% of the company's personnel may work remotely. Small tech startups or enterprises, on the other hand, may find it challenging to quickly adjust to such changes, most often due to a lack of infrastructure, funding, exposure, etc. Information Technology (IT) is one of many businesses that have undergone significant transformation as a result of the COVID-19 Pandemic. When compared to good outcomes, this circumstance has more negative effects.

Effect of Lockdown on IT Sector: owing to the current economic downturn, many businesses are being compelled to urge their workers to work remotely from home owing to public health concerns. This has resulted in substantial disadvantages for the IT sector. As a result, the IT sector has suffered significantly. For many enterprises with international dealers, this means a huge loss of opportunity. For example, it is expected that Apple Inc.'s stock will fall by at least 10% as a result of the market's scarcity of iPhones. China, which is now undergoing a major crackdown, is expected to supply the components required to manufacture the iPhones. As a result of the spread of this lethal sickness, numerous tech conferences have been cancelled, which might have offered many organizations with a fantastic opportunity to cooperate and widen their horizons. Participants in the conference won't be allowed to network as effectively as they would if they were present in person because some of the meetings were changed to teleconferences. The cancellation of these significant IT conferences will result in a revenue loss of \$1 billion, according to estimates.

Disguised benefits in this pandemic:

Despite all of this, the information technology sector is predicted to see a tremendous market expansion from US\$ 131 billion in 2020 to US\$ 295 billion in the following five years by 2025, compared to many other businesses. The key engine of this industry's economic growth is the increased need for software and social media platforms like Google Hangouts, WhatsApp Video chat, Zoom, and Microsoft Teams. With the help of each of these teleconferencing solutions, people who are in quarantine can stay in touch with their loved ones while also performing business and attending meetings. The economy will benefit as a result of the recognition of the importance of the internet and technology during these crises, which helped us stay safe and facilitated contact between the general public and medical professionals.

Impact of Covid-19: Indian IT Industry Growth Slows, But Not Significantly

The market for IT services will expand between 2019 and 2024 at a compound yearly growth rate of 7.6%, reaching a value of \$14.6 billion by the end of that year.

According to a prediction from International Data Corporation (IDC), COVID-19's negative effects will cause the yearly growth of the India IT & business services sector to increase by 6.5 percent to reach \$14 billion by December 2020.

Prior to the pandemic's confirmed spread, IDC predicted in November of last year that the IT and business services market will expand annually by 6.8% and reach a value of \$14.2 billion by December 2020.

The most recent IDC "Worldwide Semiannual Services Tracker-2H19" estimates that this market expanded by 8% year over year in the second half of 2019. The IT services market accounted for 76.3% of the IT & business services market in 2019 and increased by 8.5% year over year. Additionally, according to IDC, the market for IT services will expand between 2019 and 2024 at a compound annual growth rate of 7.6%, reaching a value of \$14.6 billion.

The COVID-19 epidemic has caused the economy as a whole and the market for IT services to slow down, according to the report. Although it is anticipated that new contracts and contract renewals in the IT sector will be impacted by the crisis, it is also anticipated that higher revenue-generating opportunities will be presented by consulting services, contemporary collaborative applications, managed security services, network management services, and hosting services in the year 2020.

According to Garima Goenka, Market Analyst, IT Services, IDC India, "During the pandemic in CY2020, the focus of IT services vendors has shifted to addressing the challenges of remote connectivity and collaboration, connecting with their ecosystem of customers, suppliers, and partners, while also ensuring business continuity, building organisational resilience, and being more adaptable".

Project-oriented services including consultancy, bespoke application development, systems integration, etc. are anticipated to experience a sharp decline in demand in the immediate term due to the COVID-19 outbreak. However, managed services including application management, hosting, IT outsourcing, network management, etc. are anticipated to have relatively slight short-term declines.

V. CONCLUSION

Technology is crucial to the fight against Covid-19, both in terms of creating instruments to combat the virus itself and in terms of the effects the pandemic will have on society as a whole. Emerging technologies are now opening up a whole new range of options for leading IT firms in India, who have already demonstrated their ability to provide both on-shore and off-shore services to clients worldwide. The majority of India's GDP has come from the service sector. In light of the COVID-19 epidemic, consider how drastically changing digital usage will affect all facets of professional and personal life. The COVID-19 epidemic has been referred to as technology's "great accelerator" of the digital transformation. The pandemic's backdrop has made ensuring a sound approach to technology policy even more difficult because decision-makers have been forced to act quickly and forcefully in a public health emergency. While the effects of their actions in the long run are still very unpredictable. The internet keeps us connected even when we are miles apart because new ideas and technologies recognise no boundaries. The world can and will be shown that a better future is still attainable by leaders that place this thinking at the core of their approach.

VI. SUGGESTIONS

A few clever options from around the globe: Many nations that are experiencing a shutdown have made investments in

smart city solutions, such as the Chinese police who use drones fitted with thermal sensors to spot coronavirus signs and summon emergency medical assistance. In Australia, the government has introduced a chatbot to inform the populace of the situation and respond to their inquiries in order to reduce the spread of false information and prevent the potential for public panic. The local government in South Korea has introduced a smartphone app that allows self-quarantined personnel to stay in touch with their coworkers to ask inquiries and receive updates on the work process. By connecting the doctors at West China Hospital to 27 other hospitals in the region, the telecom company AHS in China created a 5G-powered system to facilitate consultations and diagnosis of those affected by the virus. As a result, doctors are able to diagnose patients more quickly and keep track of emergency patients who require immediate medical attention. If a hospital is unable to meet these needs, the patient may be transferred right away to the nearest hospital with the necessary equipment.

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