

The Application of Technology in the Age of Covid-19 and Its Effects on Performance

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Abstract. The Covid-19 pandemic has harmed many parties, but that is not the only reason. Individuals and organizations must be adaptable to changing conditions. One of them is to adapt more to technological advances to have a positive effect on the long-term sustainability of performance, both on an individual and organizational level. In this study, the author will describe the use of technology during the Covid-19 pandemic, as well as how it relates to performance, using a descriptive qualitative approach method. The findings of this study show that technology is an excellent tool for overcoming adversity and becoming a solution for surviving and competing in the age of disruption, particularly during a crisis. We must be adaptable as thinking individuals and organizations to improvise with technological sophistication. Because one of the primary goals of technology is to aid in the improvement of the economy. The study's limitation is that it still does not focus on a specific unit of analysis, which is what type of technology is meant. As a result, it is recommended that future research focus on the type of technology discussed by using a quantitative approach method on specific objects with a large number of samples, and that interview techniques be used as a supplement to data collection techniques. This study can also be used as a reference source to supplement references demonstrating the importance of technology during the Covid-19 pandemic.

Keywords: Covid-19, Performance, Technology

1 Introduction

In 2019, the Covid-19 outbreak occurred in Wuhan, which was caused by the novel coronavirus SARS-COV-2 (Severe Acute Respiratory Syndrome Coronavirus 2). [1]. The World Health Organization (WHO) labeled it a pandemic on March 11, 2020 [2]. As of July 15th, 2021, there were roughly 189 million verified COVID-19 cases worldwide, with over 4 million deaths documented in 222 countries. The virus's spread has surprised the international community due to its quick pace of transmission and mortality. Several traditional methods, including hand washing, face masking, social distancing, and sanitizing, were used to prevent the disease's spread and outbreak. Tracking and contact tracing, social distance monitoring, temp screening, diagnosis, and symptom tracking are all possible using Covid-19 digital tackling technologies. These technologies are being developed to aid in the improvement of present disease prevention strategies [3].

In the workplace, the Covid-19 pandemic had a direct impact on markets, supply, demand (consumption and investment), restrictions on business movement, restrictions on people's mobility, particularly those who travel across cities, school closures, and even most private and public agencies. Work from home (WFH) is mandatory in the country [4]. The legal basis for work from home (WFH) during the Covid-19 pandemic, for example, in Indonesia, is based on the provisions of Article 86 paragraph (1) letter of Law No. 13 of 2013, concerning Manpower, which states that occupational safety and health protection is a right of every worker. Without human resources (employees), organizational activities will be paralyzed and service stability will be disrupted, causing the company to lose money as a result of the Covid-19 emergency.

The Covid-19 pandemic appears to be hastening the adoption of technology. This utilization is very likely to continue after the pandemic is over. The presence of digital technology had a significant impact in the pandemic era. What is clear is that the presence of technology is extremely beneficial in carrying out various

activities despite limited mobility during the pandemic. One of them is the rapidly growing e-commerce technology. The business world is being forced to become more technologically literate to participate in the digital world and keep businesses running even during the pandemic. Previous research has also found that using technology during a pandemic can improve business performance [5]. Because of the availability of services in the form of technology, consumers can access and place orders from a variety of locations, and all services desired by consumers can be delivered immediately [6]. As a result, the business world will be able to provide the best service possible. As a result, in times of crisis, it can boost sales and profits, as well as efficiency and customer satisfaction. The government must continue to improve human resource technology skills through various coaching, competency, and training opportunities [7]. The government must provide services to businesses that have been impacted by the pandemic [8]. The government must be able to invite people to become technologically literate for them to become more accustomed to it, especially during this pandemic.

Technology implementation can also be used as a tool to achieve an organization's goals, particularly during a pandemic, such as manufacturing. The primary goal of any manufacturing organization is to achieve a certain level of productivity to achieve high performance while minimizing environmental impact. Fortunately, thanks to modern technology and innovation, achieving this goal has become relatively simple. Furthermore, concepts like "sustainable" and "green" environment have been stressed because natural resource depletion and high people management costs need a high level of living [9]. As a result, during the Covid-19 pandemic, organizational leaders play a critical role in the technology field. This is because leadership must include the strategic use of IT assets as a whole to maximize business achievements during the pandemic [10]. Digital leadership ensures that the organizations involved remain competitive in their areas of practice to provide the necessary services or commodities to the stakeholders involved [11].

This research will describe how technology was used during the Covid-19 pandemic and how it relates to performance. Because of the gaps that cannot be joined, the author believes that technology is an ideal tool for bridging the gap between space and time. For example, the spatial dimension indicates that a product or service is perceived as novel in one location but not always in another. However, advances in very advanced information technology have now bridged this condition, and there is no longer a space limit. Furthermore, the time dimension refers to the implementation of technology in the era in which the technology is new. This is very clear; the Covid-19 pandemic has shifted the focus of the world's attention to various solutions. Furthermore, the author contends that technology is required as a form of normalization effort in a state of chaos or disruption. As a result, the authors must conduct a review of the scientific literature as material to back up their claims.

2 Method

In this study, the author used a descriptive qualitative approach. Descriptive qualitative research is research that properly interprets data and facts obtained from previous research about the current situation, attitudes, and views of society, as well as the relationship between variables that arise [4]. Secondary data were obtained through literature studies, including journals, books, websites, and a variety of other literary media, with the expectation that research will be able to delve deeper into the various factors studied [13]. Where does the author hope to find or search for "The Application of Technology in the Age of Covid-19 and Its Effects on Performance"?

3 Result and Discussion

3.1 Result

The presence of technology during the Covid-19 pandemic facilitates almost all activities, provides timely information, and can foster individual and organizational creativity so that they can better utilize technology. Table 1 below provides an overview of how technology improves various aspects of performance activities.

Table 1. The application of technology is examined using the findings of previous research

Author	Title	Method	Purpose	Results
[14]	A modified UTAUT model for the acceptance and use of digital technology for tackling COVID-19	For hypothesis testing, this study employs principal component analysis and multiple regression analysis.	The Covid-19 pandemic has accelerated the development of digital technology to combat the virus's spread. Several digital interventions have been deployed to mitigate the pandemic's catastrophic impact and to implement preventive measures.	Technology will help government and private organizations plan and implement Covid-19 digitalization protection measures.
[8]	Social Media Adoption in SMEs Impacted by COVID-19: The TOE Model	This study included 250 SMEs from the Special Region of Yogyakarta, Indonesia. Structural equation modeling with the AMOS data analysis technique was used.	The TOE Model was used to analyze behavioral intentions to adopt social media technology in SMEs affected by the Covid-19 crisis. The TOE framework serves as the theoretical foundation for this study. This study is significant because Covid-19 has destroyed the majority of SMEs, and SMEs are using social media technology to market their products. The successful implementation of social media has aided SMEs in overcoming adversity.	According to the findings of this study, SMEs affected by the Covid-19 crisis are well aware of social media technology and are eager to use it to market their products and connect with customers. Technology context, organizational context, environmental context, and social media awareness all have a significant impact on the intent to adopt social media technology. The findings of this study indicate that government assistance is required during times of crisis due to the Covid-19 pandemic. The government must provide services to SMEs whose operations have been harmed by the pandemic.
[15]	IT adoption and bank performance during the Covid-19 pandemic	Multiple regression analysis	This paper investigates the impact of pre-2020 IT adoption on bank performance during the early stages of the Covid-19 pandemic.	These findings suggest that high IT adopters outperform in terms of market returns, Tobin's q, and lending. Furthermore,

				higher pre-crisis IT investment is associated with more loans issued under the US Payroll Protection Program and lower loan modification rates as a result of Covid-19. This study backs up another recent finding that technology adoption improves bank resilience during crises, thereby improving financial stability.
[16]	Learn 4.0 tools and technologies to improve companies' maturity level: the Covid-19 context	Data were collected from 98 Algerian and French companies of various sizes and sectors of activity. SmartPLS was used for the statistical analysis of path coefficients.	The purpose of this paper is to provide empirical evidence, via a questionnaire survey, on the positive impact of using Lean Management tools and Industry 4.0 technologies on five organizational dimensions (strategy, leadership, culture, operations and products, and technology).	The findings show that industrial technology 4.0 is strongly associated with Lean Management tools, and that understanding the relationship between lean management tools and industry 4.0 technology can help organizations improve in the following areas: leadership, strategy, operations, and production. This study offers managerial implications that can assist managers in understanding the synergies and benefits of integrating and implementing Lean 4.0 tools and technologies in organizations in both crisis and regular contexts.
[17]	The show must go on: The mediating role of self-assessment in the relationship between performers'	This study employs a quantitative approach in the form of a survey questionnaire. Data were collected from 124	Through the lens of a technology adoption model, this study investigates the impact of remote performance on player satisfaction. Furthermore, it investigates whether the players' self-	The findings revealed that their satisfaction was related to the perceived usefulness and ease of use of the technology. However, only the relationship

	technology acceptance and satisfaction level with remote performances in Korea during the COVID-19 pandemic	participants in South Korea who had recently completed a performance (50 percent were professionals from various performing arts forms such as music, classical, dance, and choir, and 47 percent were non-professionals such as amateurs participating as a hobby). remotely as DPDT-enabled performers, such as live streaming on YouTube or Zoom	evaluation of performance quality mediates the relationship between their technology acceptance and satisfaction.	between ease of use and perceived satisfaction was found to have a mediating effect on self-assessment. The findings indicate that event organizers provide simple technology that allows performers to be more involved in remote performances. It also enables players to self-evaluate their performance, which improves the overall quality of the performance.
[18]	Blockchain technology for agricultural supply chains during the COVID-19 pandemic: Benefits and cleaner solutions	The current study employs qualitative data analysis to transform raw data gathered from experts into a novel theory. The qualitative data analysis process is divided into three steps: data reduction (code, categorize, and conceptualize), data display, and concluding.	The purpose of this research is to look into blockchain technology for agricultural supply chains during the Covid-19 pandemic. During Covid-19, blockchain was used to identify benefits and solutions for the smooth operation of agricultural supply chains. This research relies on interviews with agricultural companies in Pakistan.	The findings reveal the seven most commonly shared advantages of implementing blockchain technology, as well as four major challenges and promising solutions. During Covid-19, nearly 100 percent of respondents cited blockchain technology as a solution for tracking shipments, data retrieval and data management, product and transaction fraud, and inflexible international supply chains. In addition to their solutions, approximately 75% of respondents cited the challenges of lack of data retrieval and data management, as

				well as the inflexibility of international supply chains, in Covid-19. This research has the potential to add to our understanding of agricultural supply chains. The findings of this study can be used to teach practitioners how to use blockchain technology to manage agricultural supply chains during pandemics like Covid-19.
[19]	Significance of digital technology in manufacturing sectors: Examination of key factors during Covid-19	The ISM methodology has been used to connect the twelve identified challenges and solutions. Furthermore, the MICMAC analysis classified them based on their driving strength and reliance. The results show that there are no autonomous factors, whereas an efficient supply chain, centralized decision-making, product diversification, and JIT, as well as revenue generation, are significant dependent factors.	The purpose of this research is to look into the factors affecting manufacturing around the world during the Covid-19 epidemic. Furthermore, it describes the application of advanced digital technologies such as Artificial Intelligence (AI), Big Data Analysis (BDA), and the Internet of Things (IoT) to present solutions/approaches for evolving into pandemic-limited manufacturing. All of the twelve key factors identified through an extensive literature review were divided into two categories: challenges and solutions.	Facilitators, such as digital technology, are the forerunners of end-to-end revenue-generating solutions, and are referred to as initial solutions. The findings of this study will eventually lead to policy recommendations for industry leaders to advance manufacturing within the constraints of Covid-19. This will provide a solid foundation for manufacturers all over the world to adapt to the new digital transformation of production scenarios.
[20]	Impact of COVID-19 outbreak on employee performance – Moderating role of industry 4.0 base	The researchers polled 106 employees from various service organizations who worked remotely during the pandemic and	The goal of this study is twofold. First, we intend to investigate the effect of Covid-19's work implications on employee performance (i.e. output quality and delivery). Second, we sought to validate the	During the Covid-19 pandemic, technology 4.0 moderates the improvement of employee performance. Our findings have important theoretical and

technologies	analyzed their responses using multivariate techniques.	role of 4.0-based technologies in this relationship as a moderator.	practical implications for improving employee performance through the digitization of organizational services.
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3.2 Discussion

We will elaborate on the characteristics of Covid-19, technology, and performance, as well as support previous research, in this section. We narrowed our search to *ScienceDirect* because it contains a collection of reputable journals that can be used as a reference source. This reference is critical for the treasures of knowledge, because a reference source with a good and correct reputation will make this paper worthy of trust and can be used as a reference for future writings.

The Covid-19 outbreak has caused people to panic in their daily activities. This fear was shared by the government and the business community. Various efforts were made to mitigate the pandemic's devastating impact. Fortunately, we live in the era of technology 4.0, which is distinguished by the presence of interconnectedness. The government, of course, takes advantage of this opportunity to collaborate or adopt the community's aspirations in dealing with Covid-19, one of which is to use technology. To limit the pandemic's disastrous impact and conduct preventive measures, various digital initiatives have indeed been launched. Government and business enterprises will benefit from technology as they prepare and implement Covid-19 protection measures [14].

What about micro and small businesses? Covid-19 has had the greatest impact on this industry. Many businesses of this size may be nervous and confused, but they are trying to get back on their feet by utilizing new business models. The government is now taking a close look at the scope of SMEs. There are numerous seminars and training programs available. Not only that, but they also receive assistance. Social media technology and SMEs have evolved into a unified whole that complements one another. SMEs affected by the Covid-19 problem has a strong understanding of social media technology and a high intention to use it to advertise their products and engage with clients, according to research findings [8]. According to him, the technology context and social media awareness have a significant impact on the intention to adopt social media technology. The findings of this study indicate that government assistance is required during times of crisis due to the Covid-19 pandemic. The government must provide services to SMEs whose operations have been harmed by the pandemic. Technology has a positive effect on performance not only on the SME scale, but also on medium and large businesses such as the Bank. According to the findings of a recent study, technology adoption promotes bank resilience during a crisis, which in turn improves financial performance stability [15].

Once again, the global pandemic caused by Covid-19 is causing severe limitations in personal and professional life. Almost every organization has been impacted in some way. As a result of the Covid-19 problem, organizations are facing new challenges. As a result, many companies are having to rethink how to adapt many of their procedures and activities to the new Covid-19 framework, accomplish their missions, and maintain a secure and safe management business operational environment both for customer and employee performance. The massive use of technology can provide solutions for a company's management performance to survive. According to the latest research, industrial technology 4.0 can improve organizational dimensions such as leadership, strategy, operations, and production [16].

Something unexpected happened to the art industry gradually but steadily. The performing arts sector devised a new paradigm for digital content delivery in the form of remote performances to deal with the Covid-19 pandemic. Through the lens of the technology adoption model, a study has been conducted to look at the impact of remote performance on player satisfaction. It also looks into whether the players' self-evaluation of performance quality influences the link between technological acceptance and enjoyment. This investigation was conducted by [17]. The findings also show that perceived usefulness and ease of use of technology influence player satisfaction. They also stated that the event organizers provide simple-to-use technology that allows performers to become more involved in remote performances. It also allows players to self-assess their

performance, which improves the overall quality of the performance. As a result, technology is spreading quickly during the Covid-19 pandemic and can be used in a variety of industries. Furthermore, there is an investigation into the use of blockchain technology for agricultural supply chains during the Covid-19 pandemic. [18] stated in his research that the experience shared in his research can be used as a lesson for practitioners to use blockchain technology to carry out agricultural supply chains during pandemic situations such as Covid-19. Almost all respondents identified blockchain technology as a remedy for tracking shipments, retrieval of data and data administration, goods and payment fraud, or rigid global distribution networks during Covid-19, according to him.

The Covid-19 pandemic, which has become the epicenter of this existential human chaos all over the world, has also had extraordinary and unexpected effects on manufacturers. With falling demand, supply, and employment, the scenario is pushed into the shadows. Facilitators, such as digital technology, are the forerunners of end-to-end revenue-generating solutions, and are referred to as initial solutions. Recent research findings from [19] suggest policy recommendations for scenario leaders to advance manufacturing in the Covid-19 scenario. This will provide a solid foundation for manufacturers all over the world to adapt to the new digital transformation of production scenarios. Technology 4.0 has significant theoretical and practical implications for improving organizational performance by digitizing organizational services [20].

4 Conclusion

The Covid-19 pandemic has hurt many parties, but that is not an absolute reason for it to be the only cause. Individuals and organizations must be adaptable to changing circumstances. One of them is to adapt more to technological advances to have a positive effect on the long-term sustainability of performance on both an individual and organizational level. In this study, the author explains that technology is an ideal tool for rising above adversity and becoming a solution to survive and compete in the era of disruption, particularly during a crisis. The implementation of this technology must also involve multiple parties for it to be more effective, efficient, and even optimal, as well as relevant or on target. One of them requires government assistance. The Covid-19 pandemic has yet to be predicted when it will end, but we believe that as individuals and organizations, we must continue to learn to be flexible to improvise with technological sophistication. Because one of the primary goals of technology is to aid in the improvement of the economy.

This study has yet to zero in on a specific unit of analysis, namely the type of technology in question. As a result, it is recommended that future research focus on the types of technology discussed, such as information technology, communication, transportation, education, medical, construction, architecture, agriculture, artificial intelligence, and business technology. The method can also employ a quantitative approach to specific objects and locations with a large number of samples, as well as interview techniques as a supplement to data collection techniques, particularly during times of crisis. Interviews are used to test the stability and correctness of data obtained by other methods as a measure that becomes the basis of the assessment. This study can also be used as a reference source to supplement references demonstrating the importance of technology during the Covid-19 pandemic.

References

- [1] J. Budd *et al.*, "Digital technologies in the public-health response to COVID-19," *Nat Med*, vol. 26, no. 8, pp. 1183–1192, Aug. 2020, doi: 10.1038/s41591-020-1011-4.
- [2] E. Mbunge, S. G. Fashoto, B. Akinnuwesi, C. Gurajena, A. Metfula, and P. Mashwama, "COVID-19 Pandemic in Higher Education: Critical Role of Emerging Technologies in Zimbabwe," *SSRN Electronic Journal*, vol. 5, no. December, pp. 1–15, 2020, doi: 10.2139/ssrn.3743246.
- [3] M. Shahroz *et al.*, "COVID-19 digital contact tracing applications and techniques: A review post initial deployments," *Transportation Engineering*, vol. 5, no. 9, pp. 1–9, Sep. 2021, doi: 10.1016/j.treng.2021.100072.
- [4] N. D. Pramanik, "PENGARUH PANDEMI COVID-19 TERHADAP PRODUKTIVITAS, ETOS KERJA DAN MOTIVASI KARYAWAN SELAMA BEKERJA DI RUMAH (WFH)," *Jurnal EKBIS*, vol. 8, no. 1, pp. 1–11, 2020.
- [5] A. M. A. Ausat and S. Suherlan, "Obstacles and Solutions of MSMEs in Electronic Commerce during Covid-19 Pandemic: Evidence from Indonesia," *BASKARA : Journal of Business and Entrepreneurship*, vol. 4, no. 1, pp. 11–19, Oct. 2021, doi: 10.54268/BASKARA.4.1.11-19.

- [6] A. M. A. Ausat, E. Siti Astuti, and Wilopo, "Analisis Faktor Yang Berpengaruh Pada Adopsi E-commerce Dan Dampaknya Bagi Kinerja UKM Di Kabupaten Subang," *Jurnal Teknologi Informasi dan Ilmu Komputer (JTIK)*, vol. 9, no. 2, pp. 333–346, 2022, doi: 10.25126/jtiik.202295422.
- [7] A. M. A. Ausat and T. Peirisal, "Determinants of E-commerce Adoption on Business Performance : A Study of MSMEs in Malang City , Indonesia," *Journal On Optimizations Of Systems At Industries*, vol. 20, no. 2, pp. 104–114, 2021, doi: 10.25077/josi.v20.n2.p104-114.2021.
- [8] M. I. Effendi, D. Sugandini, and Y. Istanto, "Social Media Adoption in SMEs Impacted by COVID-19: The TOE Model," *Journal of Asian Finance, Economics and Business*, vol. 7, no. 11, pp. 915–925, 2020, doi: 10.13106/jafeb.2020.vol7.no11.915.
- [9] D. Prajapati, S. Agarwal, and Q. Murtaza, "Impact of COVID-19 on Sustainability Enablers and Evaluation of Performance Index," *Mater Today Proc*, vol. 17, no. January, pp. 1–7, Jan. 2022, doi: 10.1016/j.matpr.2022.01.137.
- [10] M. K. AlAjmi, "The impact of digital leadership on teachers' technology integration during the COVID-19 pandemic in Kuwait," *Int J Educ Res*, vol. 112, no. 101928, pp. 1–10, Jan. 2022, doi: 10.1016/j.ijer.2022.101928.
- [11] C. DeLuca, B. Bolden, and J. Chan, "Systemic professional learning through collaborative inquiry: Examining teachers' perspectives," *Teach Teach Educ*, vol. 67, no. October, pp. 67–78, Oct. 2017, doi: 10.1016/j.tate.2017.05.014.
- [12] M. S. Cardon, J. Wincent, J. Singh, and M. Drnovsek, "THE NATURE AND EXPERIENCE OF ENTREPRENEURIAL PASSION," *Academy of Management Review*, vol. 34, no. 3, pp. 511–532, Jul. 2009, doi: 10.5465/amr.2009.40633190.
- [13] A. M. A. Ausat and S. Suherlan, "Adopsi E-commerce di Negara Berkembang," *JURNAL LENTERA BISNIS*, vol. 11, no. 1, p. 8, Jan. 2022, doi: 10.34127/jrlab.v11i1.457.
- [14] B. A. Akinnuwesi *et al.*, "A modified UTAUT model for the acceptance and use of digital technology for tackling COVID-19," *Sustainable Operations and Computers*, vol. 3, no. November, pp. 118–135, 2022, doi: 10.1016/j.susoc.2021.12.001.
- [15] A. Dadoukis, M. Fiaschetti, and G. Fusi, "IT adoption and bank performance during the Covid-19 pandemic," *Econ Lett*, vol. 204, no. 109904, pp. 1–4, Jul. 2021, doi: 10.1016/j.econlet.2021.109904.
- [16] E. Najwa, R. Bertrand, M. Yassine, G. Fernandes, M. Abdeen, and S. Souad, "Lean 4.0 tools and technologies to improve companies' maturity level: The COVID-19 context," in *Procedia Computer Science*, 2021, vol. 196, pp. 207–216. doi: 10.1016/j.procs.2021.12.007.
- [17] J. B. Hahm, K. K. Byon, Y. A. Hyun, and J. Hahm, "The show must go on: The mediating role of self-assessment in the relationship between performers' technology acceptance and satisfaction level with remote performances in Korea during the COVID-19 pandemic," *Technol Soc*, vol. 68, no. 101855, pp. 1–9, Feb. 2022, doi: 10.1016/j.techsoc.2021.101855.
- [18] H. H. Khan, M. N. Malik, Z. Konečná, A. G. Chofreh, F. A. Goni, and J. J. Klemeš, "Blockchain technology for agricultural supply chains during the COVID-19 pandemic: Benefits and cleaner solutions," *J Clean Prod*, vol. 347, no. 131268, pp. 1–13, May 2022, doi: 10.1016/j.jclepro.2022.131268.
- [19] B. Mohapatra, S. Tripathy, D. Singhal, and R. Saha, "Significance of digital technology in manufacturing sectors: Examination of key factors during Covid-19," *Research in Transportation Economics*, no. 101134, pp. 1–14, 2021, doi: 10.1016/j.retrec.2021.101134.
- [20] G. Narayanamurthy and G. Tortorella, "Impact of COVID-19 outbreak on employee performance – Moderating role of industry 4.0 base technologies," *Int J Prod Econ*, vol. 234, no. 108075, pp. 1–10, Apr. 2021, doi: 10.1016/j.ijpe.2021.108075.