

The impact of covid-19 on projects in the UAE

Waheeb Saeed Al Kamali

Hamdan Bin Mohammed Smart University

walkamali.ae@gmail.com, 200112112@hbmsu.ac.ae

United Arab Emirates, Sharjah 301, UAE

United Arab Emirates, Dubai 71400, UAE

Abstract

The covid-19 pandemic has been the biggest worldwide health crisis in decades. Apart from unprecedented number of hospitalizations and deaths, the pandemic has led to in the financial and economic downturns and business disruptions. The current will aim to establish the implications of the covid-19 pandemic on the projects in the UAE. The main objective of the research will be to identify the challenges facing the UAE projects and determine the success of risk management. In addition to that, the research will focus on identifying the most impacted project knowledge areas by the pandemic and the effectiveness of government support to help the business sustain the success of their projects. The research will also address the strategies followed by project managers to recover the delay of projects caused by the pandemic. The descriptive research design and deductive approach will be adopted for the study. Simple random sampling method and purposive sampling method will be applied in the selection of respondents for quantitative and qualitative data, respectively. A total of 50 project managers and 5 senior project managers working in the UAE will be sample for the survey and interview method, respectively. Survey and interview data will be collected will be using the close-ended online and open-ended questionnaire, respectively. It is expected that the research will find a significant impact of covid-19 pandemic on the number of days to complete the projects in the UAE. The finding will also reveal that the pandemic has resulted in inadequate access to labor and raw materials, thereby resulting in delay of the business projects. The implications of this research would inform the decision and policy-makers in the UAE to employ efficient ways of addressing the issues and challenges for the stability of the sector.

Key wordes: covid-19, project management, project, pandemic, UAE.

1. Literature Review

1.1. Challenges faced by businesses in continuing their projects amidst COVID-19

As opined by AL MANSOORI, ALSAUD & YAS (2021), the COVID-19 pandemic has been a nightmare for global businesses. The pandemic increased distance between businesses and their customers. Therefore, it has become complex task for the companies to reach their customers. In order to reduce the spread of virus, the government declared national lockdowns. The organizations were closed overnight and people were instructed to stay at home. Only the essential services were available and companies have to shut down their ongoing projects immediately due to lack of resources and workforces. The government also instructed firms to continue their necessary operations with least number of employees possible. The work from home was quickly

introduced due to lack of physical contacts the employees' participation and performances were largely affected. The lack of employee engagement affected quality of projects. Therefore, the lack of customers, employees, and communication are some primary challenges faced by businesses to continue their projects during the pandemic. In the discussion of Dwivedi et al. (2020), there are some secondary challenges as well that restricted businesses from carrying out or completing their projects. During pandemic many people lost their jobs and due to unemployment the economic conditions of people were deteriorated. The effect of pandemic on employment can be felt even today after one year of lockdown.

Due to lack of proper income many customers changed their buying habits. It is observed that people developed preferences for essential products over luxury products. As mentioned by Baxter & Casady (2020), the pandemic taught people to save as much as they can and not to be flamboyant. The changing consumer behaviour has been a major challenge for business projects. The businesses are neither able to attract customers nor enhance their profits. Thus, they ultimately failed to contribute to their projects and the only options either are to postponed or terminate the projects. Many industries have to shut down their premises or workplaces permanently as they ran out of budget to complete their projects and operations.

1.2. Role of government in supporting businesses to sustain the impacts of COVID-19

Everyone was speculating about a pandemic; however, no one was sure about when and how it is going to hit. Finally, it did on 2019 in form of COVID-19 pandemic. As opined by Mofijur et al. (2020), the science was quick to identify that the virus is airborne and measures like social distancing and mass lockdown are essential to sustain. In modern world, businesses and organizations influence people to get out from their homes in search of jobs, essential products and to meet several desires. Hence, the best option for government was to temporarily shut down every business operation in order to restrict mass gathering. However, the lockdown ceased all opportunities for businesses and they quickly began to fail in their projects. In order to ensure sustainability of these businesses, government offered aids and supports. As discussed by Fairlie (2020), the governmental helps came in form of loans and funds that are required to complete the projects. Thus, even in absence of revenues or profits, the businesses continued their projects through the funds and loans provided by government at lower interests. The government also encouraged business acquisitions in order to save a dying company or business.

The local companies were encouraged to develop partnership with global MNCs in order to get the necessary supports and helps. Through the business partnership, the local companies were able to share their risks with other companies. On the other hand, the government also influenced the entrepreneurs to act according to new behaviours and necessities of customers. As stated by Walker, Brewster & Fontinha (2020), the businesses were encouraged to provide essential products and services like masks, sanitizers, PPEs, ventilators, food home delivery, and ambulance services etc. Therefore, the pandemic changed preferences of people from luxury to essential services and so the companies were bound to change their methods in order to meet the requirements of a new world.

1.3. Success of the National sterilization operations and the national and international partnership to deal with Covid-19 carried out by the UAE government

As per the report of Municipal Efforts in the GCC Countries to Confront the COVID-19 Pandemic, November (2020), In the agricultural and environmental fields creating and managing communication protocols with the local and federal authorities and the private sector related to ensure sustainable partnerships to achieve sustainable food production and supply, Employing

technology and its applications to achieve sustainable agricultural systems and sustainable environment to operate in the UAE market .

- Approving the entrepreneurship policy for importing and re-exporting agricultural and animal consignments
- Ensure the follow up of the SPS and take the required actions
- Conducted joint research with national and international institution(Korean, ICARDA, UAEU,)
- Sustaining the food supply chains through facilitating the Electronic Phytosanitary Certificates (Brazil - USA - Honduras - Chile - Netherlands - Argentina - Ecuador - India - Colombia – Spain)
- Marketing initiatives by accessing five markets through MOUs with the retail stores to benefit More than 100 farmers that Value sold items to more than AED 150 Million.
- Sterilization efforts to sustain environment:

Sterilization was followed up periodically and continuously during the entire sterilization period for the main markets frequented by people on a daily basis, and to prevent the spread of Covid 19, through which sterilization operations were followed up intensively and daily according to the work plans in each emirate. During the national sterilization campaign, field visits to establishments, institutions and places of population gathering were intensified with the aim of increasing awareness and community education, in addition to following up on oversight and inspection of the extent of compliance with the precautionary measures taken by the state through the concerned authorities.

Cleaning and sterilization of waiting stations	All waiting stations for mass and individual transport have been sterilized
Cleanliness and sterilization of rubbish dumps	All waste dumps distributed in regions in all emirates of the country were sterilized during the entire sterilization period (1,342,635)
Street cleaning and disinfection	All the external and internal streets of the country have been sterilized for the regions, especially the dense roads for the use of individuals
Cleaning and sterilizing waste cars	All mechanisms used in sterilization operations were sterilized periodically and continuously during the entire sterilization period (71,619)
Sterilization of all fruit and vegetable markets	5,120
Disinfection of all fish markets	4,835
Sterilization of all popular markets	2,708
Sterilization of all commercial markets	26,567
The number of daily inspectors	1,194
Number of inspections within 90 days	205,293
Number of violations within 90 days	19,550
Quantities of concentrated sterilization materials used for national sterilization operations (liters)	2,967,433.14
Number of equipment used per day	6,734
The number of machines used per day	927

(Cleaning and sterilization efforts during the lockdown 90 days in the UAE)

1.4. Standard guide for sterilization procedures and the use of disinfectants and detergents

The Ministry has prepared a unified guideline for sterilization procedures and the use of disinfectants and detergents to organize sterilization and field disinfection operations with the aim of providing scientific information that assists the various authorities in performing their tasks in the required manner. The importance of the guide lies in: Providing information that can be used in cleaning and field disinfection operations to confront the threat of microbes and germs at the state level, especially when facing crises and disasters (epidemics). Learn about international best practices in the field of sterilization and field disinfection of cities, including the experience of Wuhan, China, and the measures taken in the containment process and confronting pandemics and epidemics. Use it as a reference to obtain information on the current pandemic (Covid-19), and to learn about the virus, its characteristics, and the various ways to combat it.

Preparing a reference guide for the best practices used in hygiene and field disinfection operations to be applied during the outbreak of the Covid-19 pandemic by local authorities and other bodies responsible for this in various regions of the United Arab Emirates, in addition to providing scientific information that can constitute a reference to identify the virus and its characteristics and the various special ways

1.5. Scope of application

All governmental and private agencies and institutions that can benefit from this guide for sterilization purposes have been identified, and by relying on it, results that prevent the spread of epidemics are achieved.

1.6. Prior to field cleaning and disinfection

Before starting sterilization operations, materials and tools approved for disinfection and sterilization are selected, their efficiency is ensured, and the specific instructions for use from the manufacturer are reviewed, and the number of manpower sufficient to sterilize each area is determined to achieve the goal of sterilization.

1.7. During field cleaning and disinfection

The implementation stages are followed according to the important requirements before starting sterilization, which includes the procedures to be followed to shift to the basic stages of sterilization and disinfection, which differ in the case of floors and surfaces for the method of handling.

1.8. After field cleaning and disinfection

The health instructions and conditions to be taken after the implementation of the field cleaning and disinfection process are followed, in addition to limiting the opportunities for improvement for the future dealings of any emergency.

1.9. Risk Mitigation efficiencies in overcoming the challenges of COVID-19

As per Nurunnabi, Alhawal & Hoque (2020), every business has their personal risk mitigation strategy to overcome any significant challenge or risk. However, the modern civilization had never witnessed a pandemic; thus, all the plans were only in theories until they were implemented during the COVID-19 pandemic. Due to lack of practical implementations and evidences the businesses initially stumbled with their risk mitigation strategies. Firstly, the workforce was significantly reduced to avoid the chance of spread. Secondly, the works from home measures were implemented to continue operations from isolation. As per Nurunnabi, Alhawal & Hoque (2020), thirdly, the e-commerce projects were initiated to meet customers' demands through internet. Fourthly, the health and safety measures became primary consideration for all businesses. All these strategies have been most important considerations in risk mitigation plans of businesses during a pandemic. It has been observed that due to insufficient workforce the companies failed to complete their projects. In the discussion of As per Nurunnabi, Alhawal & Hoque (2020), the work home from helped in resolving issues and carrying out basic operations but the complex projects remained incomplete due to lack of collaboration and communication.

In order to avoid the possible collapse, the businesses quickly transformed their projects into e-commerce projects. The e-commerce has been recognized as most important risk mitigation strategy during the COVID-19 pandemic. As mentioned by Wuest et al. (2020), the online channels enabled businesses to maintain communication with their customers and suppliers. The e-commerce also provided opportunity to businesses to regain their customer base. The e-commerce also reduced chances of exposure to the virus and to operate the e-commerce framework, the work from home is suitable. Lastly, the sanitization and wearing masks or gloves have become mandatory health and safety measures in modern organizations. Proper precautions enabled businesses to increase their workforce slowly until they are back at original pace. Therefore, it can be opined that the risk mitigation strategies have acted slowly but effectively to eradicate the impact of pandemic on business projects.

1.10. Recovery and restarting the projects

The start-ups and local businesses were most affected due to the pandemic. As discussed by Škare, Soriano & Porada-Rochoń (2021), the global MNCs are able to survive because of their enhanced financial strengths; however, the lack of experiences and budget led several SMEs and new ventures to permanent shut down. It is important to remember that the businesses largely contribute to economical development of nations; therefore, the recovery and restarting the projects has been necessary to ensure proper revenue collections. It is impossible for businesses to recover from the losses that they incurred during pandemic. Hence, the government intervention has been significant in allowing these organizations to recover and restart their operations. The pandemic has delayed the projects of organizations for at least a decade or more. Even with governmental supports and regained customer bases, the businesses are far behind than their forecasted results.

In the opinion of Buchheim et al. (2020), the pandemic has affected businesses worldwide; thus, it is important for the governments to work together in order to recover the businesses and restart their projects. The supports are necessary as businesses currently lack resources, workforce and budget required to initiate and complete the projects.

1.11. Interview

- What is the impact of COVID-19 on projects?

Manager 1	Manager 2	Manager 3
The pandemic has stopped work flow in organizations and it might take years to restart the collapsed projects or operations.	COVID-19 was an unseen threat and businesses were not prepared for it. The sudden stop of operations was necessary to contain the spread of virus.	Currently, the organizations lack resources, workforce as well as budget that are essential in completing the projects. Hence, unless these factors are adequately available again, it will be hard for companies to re-initiate and complete the projects.

- How government's intervention can solve the challenges posed by pandemic?

Manager 1	Manager 2	Manager 3
The government needs to support businesses with proper funds and aids in order to encourage them to complete the projects.	The government intervention will enable organizations to overcome their losses and develop their methods.	The government can provided loans, funds, and even take over SMEs for re-building their frameworks.

- What are risk mitigation strategies available to counter the challenges?

Manager 1	Manager 2	Manager 3
The work from home has been our best choice to continue business operations amidst the pandemic.	The risks were immediately mitigated by reducing the workforce and e-commerce strategy was adopted to continue operations.	Currently, the healthy and safety resolutions have enabled organizations to counter all the challenges posed by pandemic.

- How much the projects have been delayed due to the pandemic?

Manager 1	Manager 2	Manager 3
It has been forecasted that it will take almost 10 years to recover and rebuilt the projects.	The projects have been delayed and it will take multiple decades to regain the same glory.	Even with all the governmental supports it will take more than a decade to complete the projects

2. Methodological Design

Research methodology means the practical 'how' of any study. In simple words, research methodology is about how a research generally designs a research to guarantee reliable and valid results, which can address the research objectives and aims. In this context, the research methodology section addresses the research design and approach, data collection method, sampling method, and data analysis method to be used for identifying the impact of covid-19 on projects in the UAE.

2.1. Research Design and Approach

According to Rutberg & Bouikidis (2018), research design can be defined as the model of research techniques and methods selected by a researcher. There are three types of research design, such as descriptive research design, explanatory research design and exploratory research design. For this research, the descriptive research design is going to be used. As opined by Chih-Pei & Chang (2017), descriptive design includes identification of the attributes of a specific phenomenon depending on an observational basis or the investigation of the correlation between two or more phenomena. Adoption of descriptive design is appropriate for this study as it offers the possibility to examine the phenomenon in a completely unchanged natural environment as well as the chance to integrate both quantitative and qualitative data collection method. There are two forms of research approaches like deductive and inductive approach. The current study will be conducted based on the deductive research approach. According to Woiceshyn & Daellenbach (2018), deductive research approach generally explores a known phenomenon or theory and tests if the phenomenon or theory is true in the provided circumstances. The main reason for adopting the deductive approach is that it offers the chance to address causal connection between variables and concepts.

2.2. Data Collection Method

Data collection method refers to the processes of collecting, measuring and evaluating proper insights for a study utilizing the standard validated techniques. The study will make use of mixed research method. Sahin & Öztürk (2019) stated that mixed method is a form of research where a researcher combines the elements of both quantitative and qualitative research approaches. The main reason for using the mixed method is that it is an effective method in evaluating and understanding the contradictions between qualitative results and quantitative findings.

For the collection of quantitative data, the research will conduct an online survey with the project managers working in the UAE organizations. In this context, close-ended multiple choice questionnaire will be used as the data collection instrument for primary quantitative data. The qualitative data will be collected by conducting interview with the senior project managers, using the open-ended questions.

2.3. Research Sample and Sampling Method

For the primary quantitative data, the target population includes 100 managers working in the projects in the UAE. From the target population, 50 respondents will be selected using the simple random sampling method. Random sampling method will be used for the survey as it will provide all the members of target population with fair and equal chance for being selected in the survey. On the other hand, five senior project managers for the interview will be selected using the purposive sampling method. Purposive sampling is a type of non-probability sampling method where the research will depend on their own judgment while selecting the members (Sharma, 2017). The final sample size for the entire research will include 55 respondents.

2.4. Data Analysis Method

Data analysis method means the process of modeling and analyzing the collected data. For the collected quantitative data, the research will make use of graphs and charts with response frequency and percentage. On the other hand, the collected qualitative data will be analyzed using the thematic data analysis method. The thematic data analysis method will be applied to interview transcripts and the data will be closely examined to identify the common patterns of meaning and idea, which come up repeatedly.

3. Conclusion and Expected Findings

The research has concluded that COVID-19 has significant impacts on the business projects. It has been discussed that due to lack of knowledge on pandemics, the businesses were not prepared to face COVID-19. The lack of preparedness harshly affected the ongoing as well as future projects of organizations. It has been evaluated that most SMEs were succumbed and MNCs' projects have been delayed permanently for more than decades. In order to derive the authentic outcomes, both secondary and primary data has been studied. The secondary data has been collected from online sources, books, journals, or articles. On other hand, the primary data has been collected from the interview. The data has suggested that governmental aids and supports are necessary to overcome the losses caused due to the pandemic. The research has also specified each challenge that businesses had to face during the COVID-19. In order to reduce contain the spread, the workforce was significantly reduced; hence, it is almost became impossible for organizations to carry out their international projects. In order to balance the organizational operations and precautions, the work from home was introduced. The enhanced digitalization has enabled modern businesses to communicate with their employees through technologies. However, the work from home process has often been criticized due to technical glitches. The ineffective communication has affected collaboration between leaders and employees. Thus, it can be opined that the current pandemic has hampered the overall operations and projects of businesses.

It has been expected that proper completion of research will allow in analyzing the impacts of COVID-19 on the business projects. It has been expected that the research will identify the challenges that the businesses have to encounter in order to carry out their projects efficiently. The research will conclude the role of government in developing the projects after the pandemic. It has been observed that due to the pandemic the businesses have incurred heavy losses. The lack of adequate resources, employees and customers has ceased all the opportunities for modern businesses. The research will also derive solutions for each challenge. It has been expected that the paper will discuss the importance of acquisitions and partnership in mitigating the threats possessed by COVID-19. The research will evaluate the helps that the government can offer to the businesses. The governments' aids might come in form of loans or funds. It is important for businesses to determine a proper budget to initiate and complete their projects. The governmental intervention and support is important to reconstruct the projects. The paper will also determine changing behaviour of customers and their impacts on business projects. It has been observed that due to changing customer behaviour the organizations have not managed to understand the needs and requirements of markets. Hence, the modern businesses are losing their customer bases at fast pace. The research is also expected to discuss the important to e-commerce in developing abilities of businesses to achieve their goals and complete their projects. The e-commerce business will allow in maintaining continuous communication with the customers as well as to meet their demands. The research will propose a risk mitigation plan that every business needs to prepare in order to overcome the threats of future pandemics. The world has already witnessed the level of devastation that pandemic can cause to the economy. Hence, it is important to stay a step ahead of pandemic in order to continue projects even at most threatening situations. Thus, it can be opined that the research will allow specify the impacts of COVID-9 on the projects and will propose effective remedies to overcome the threats.

References

- AL MANSOORI, H. M., ALSAUD, A. B., & YAS, H. (2021). The impact of Covid 19 on increasing the cost of labor and project price in the United Arab Emirates. *International Journal of Pharmaceutical Research*, 13(1). Retrieved from:

- https://www.researchgate.net/profile/Harith-Yas/publication/349138675_The_Impact_of_Covid_19_on_Increasing_the_Cost_of_Labor_and_Project_Price_in_the_United_Arab_Emirates/links/602245654585158939902916/The-Impact-of-Covid-19-on-Increasing-the-Cost-of-Labor-and-Project-Price-in-the-United-Arab-Emirates.pdf
- Baxter, D., & Casady, C. B. (2020). A Coronavirus (COVID-19) Triage Framework for (Sub) National Public–Private Partnership (PPP) Programs. *Sustainability*, 12(13), 5253. Retrieved from: <https://www.mdpi.com/2071-1050/12/13/5253/pdf>
- Buchheim, L., Dovern, J., Krolage, C., & Link, S. (2020). Firm-level Expectations and Behavior in Response to the COVID-19 Crisis. Retrieved from: <https://www.econstor.eu/bitstream/10419/223695/1/dp13253.pdf>
- Chih-Pei, H. U., & Chang, Y. Y. (2017). John W. Creswell, research design: Qualitative, quantitative, and mixed methods approaches. *Journal of Social and Administrative Sciences*, 4(2), 205-207. Retrieved from <http://www.kspjournals.org/index.php/JSAS/article/download/1313/1341>
- Dwivedi, Y. K., Hughes, D. L., Coombs, C., Constantiou, I., Duan, Y., Edwards, J. S., ... & Upadhyay, N. (2020). Impact of COVID-19 pandemic on information management research and practice: Transforming education, work and life. *International Journal of Information Management*, 55, 102211. Retrieved from: <https://www.sciencedirect.com/science/article/pii/S026840122031286X>
- Fairlie, R. W. (2020). The impact of COVID-19 on small business owners: Continued losses and the partial rebound in May 2020. NBER working paper, (w27462). Retrieved from: https://www.nber.org/system/files/working_papers/w27309/w27309.pdf
- Mofijur, M., Fattah, I. R., Alam, M. A., Islam, H. C., Ong, H. C., Rahman, S. A., ... & Mahlia, T. M. I. (2020). Impact of COVID-19 on the social, economic, environmental and energy domains: Lessons learnt from a global pandemic. Sustainable production and consumption. Retrieved from: <https://www.sciencedirect.com/science/article/pii/S2352550920313567>
- Nurunnabi, M., Alhawal, H. M., & Hoque, Z. (2020). Impact of COVID-19: how CEOs respond to SMEs recovery planning in Saudi Arabia. White Paper, 3. Retrieved from: <https://www.snc.org.sa/L20/wp-content/uploads/2021/02/2-How-CEOs-Respond-to-SMEs-Recovery-Planning-FP.pdf>
- Rutberg, S., & Bouikidis, C. D. (2018). Focusing on the fundamentals: A simplistic differentiation between qualitative and quantitative research. *Nephrology Nursing Journal*, 45(2), 209-213. Retrieved from <http://www.homeworkgain.com/wp-content/uploads/edd/2019/09/20181009143525article2.pdf>
- Sahin, M. D., & Öztürk, G. (2019). Mixed Method Research: Theoretical Foundations, Designs and Its Use in Educational Research. *International Journal of Contemporary Educational Research*, 6(2), 301-310. Retrieved from <https://dergipark.org.tr/en/download/article-file/880619>
- Sharma, G. (2017). Pros and cons of different sampling techniques. *International journal of applied research*, 3(7), 749-752. Retrieved from https://d1wqtxts1xzle7.cloudfront.net/58765080/Pros_and_cons_of_sampling.pdf?1554128717=&response-content-disposition=inline%3B+filename%3DImpact_Factor_5_2_IJAR.pdf&Expires=1620813851&Signature=U0P4ZN~mzOeWwrrAbsXqEh29DO6IPh42KrZ~vy2cAJK8owIKndtZrKVdINYtEuTQnATGXrqIpsPmdKzYPpMV6dJDCEX~w95tX0ckUs4~r0Af~My-YJ42i~vs23JYyriiMUuFrzTRliyxbmimi9QXc27QGMdcZyu54xL7FZv3pDZd8BR-DtbLV0zEkKl6XM3XNjxluat~Xv0rarAVmygOxIDg8OSplRDHRhmtwKuSxjwnTL5GsEagrS~ur8yeWJ3CslvbSng3jYFVmGUS4oeVw7Mf4lI9s9eov3SpnoFBjIF~tx91f7H~ydeQqg6LruVTgSU7UrNvjwOjU7lYt9G-dKQ_&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA
- Škare, M., Soriano, D. R., & Porada-Rochoń, M. (2021). Impact of COVID-19 on the travel and tourism industry. *Technological Forecasting and Social Change*, 163, 120469. Retrieved from: https://www.researchgate.net/profile/Malgorzata-Porada-Rochon/publication/346914362_Impact_of_COVID-19_on_the_travel_and_tourism_industry/links/600ffb55299bf14088c0e545/Impact-of-COVID-19-on-the-travel-and-tourism-industry.pdf
- The General Secretariat of the Cooperation Council for the Arab States of the Gulf. (2020, November). Municipal Efforts in the GCC Countries to Confront the COVID-19 Pandemic, November 2020. (No. 1). <http://www.wam.ae/ar/details/1395302885150>
- Walker, J., Brewster, C., & Fontinha, R. (2020). Consultation on the impact of Covid-19 on the working lives of business, management and economics' academics in UK 2020. Retrieved from: <https://sites.les.univr.it/eisc/wp-content/uploads/2020/06/Report-on-the-Consultation-on-the-Impact-of-Covid-010620.pdf>
- Woiceshyn, J., & Daellenbach, U. (2018). Evaluating inductive vs deductive research in management studies: Implications for authors, editors, and reviewers. *Qualitative Research in Organizations and Management: An International Journal*. Retrieved from https://www.researchgate.net/profile/Jaana-Woiceshyn/publication/324596659_Evaluating_Inductive_versus_Deductive_Research_in_Management_Studies_Implications_for_Authors_Editors_and_Reviewers/links/5b78d9aa92851c1e121f7477/Evaluating-Inductive-versus-Deductive-Research-in-Management-Studies-Implications-for-Authors-Editors-and-Reviewers.pdf
- Wuest, T., Kusiak, A., Dai, T., & Tayur, S. R. (2020). Impact of COVID-19 on manufacturing and supply networks—The case for AI-inspired digital transformation. Available at SSRN 3593540. Retrieved from: https://www.researchgate.net/profile/Thorsten-Wuest/publication/341224264_Impact_of_COVID-19_on_Manufacturing_and_Supply_Networks_-_The_Case_for_AI-

Inspired_Digital_Transformation/links/6056451392851cd8ce571c26/Impact-of-COVID-19-on-Manufacturing-and-Supply-Networks-The-Case-for-AI-Inspired-Digital-Transformation.pdf