PAGES: 53-57
10/31/23
JOURNAL OF SCIENTIFIC RESEARCH AND TECHNOLOGY(JSRT) VOLUME-1 ISSUE-7 OCTOBER
Registered under MSME Government of India ISSN: 2583-8660

Reducing Corona Virus Transmission Through Information Application In Industry 4.0

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ABSTRACT

Due to the COVID 19 epidemic, medical equipment, pharmaceuticals, and IT solutions are in high demand. Industry 4.0—the fourth industrial revolution—can suit COVID-19's needs. Digital information technology and enhanced industrial methods started this revolution. The industrial revolution of modern technology is Industry 4.0. All manufacturing procedures till now needed hours of preparation. Industry 4.0 will use networked computers to improve machine connection and data transfer and use, enhancing technical agility and responsiveness. This sector includes IoT, Cyber Networks, and cloud computing data translation and analysis technologies. This helps them develop faster, more effective viral containment and suppression tactics. Home isolation and social isolation may control illness transmission. These technologies will let us work from home without disrupting the economy, society, or human lives. Industry 4.0 might provide personalised face masks, instructions, and information for healthcare systems to monitor and treat COVID-19 patients. The study will examine 10 Industry 4.0 innovations that can help fight the viral pandemic. Infected patients benefit from daily surveillance by geography, age group, and government. Using these improvements properly should increase public health knowledge and communication. Industry 4.0 has developed game-changing medical emergency solutions for the home and abroad.

Keywords: Industry 4.0, Covid, IT

I. INTRODUCTION

The global spread of COVID 19 (Coronavirus) has had an effect on the health and treatment infrastructures of almost every country. The widespread problems brought on by the viral pandemic need the use of a wide range of cutting-edge technology. Industry 4.0, sometimes known as the "fourth industrial revolution," is defined by the widespread use of enhanced manufacturing and information technologies across a wide range of human activities. By allowing for wireless communication, these technologies help organizations in the manufacturing and service sectors become more automated. There may be no need for humans to become involved with vaccines, medical equipment, or logistics in a fully integrated Industry 4.0 scenario, where all of these technologies work together to manufacture, utilize, study, detect, and make judgments. Information gleaned from modern technology [1,2] is adequate for keeping one's own library up to date. Industry 4.0 facilities include wireless connectivity and sensor support. During production, these sensors are part of a system that can prove its worth, keep tabs on itself, and make its own selection. Thanks to advancements in Industry 4.0, the tools necessary to combat the global spread of COVID-19 are now within reach. It creates a smart network of medical devices and gadgets so that people may receive the care they need when they need it [3,4]. A flexible manufacturing line capable of managing almost all production processes is the goal of Industry 4.0, an intelligent system that makes use of internal artificial intelligence (AI) data, the Internet of Things (IoT), and other digital technologies. In order to swiftly build crucial components, such as 3D printing, the medical system uses state-of-the-art software and digital manufacturing technologies [5.6]. In this extensive analysis, we set out to investigate the potential of Industry 4.0 technologies in the fight against the COVID-19 pandemic.

II. LITERATURE REVIEW

Industry 4.0 technology identifies COVID-19 indications for use in reducing confusion and gauging susceptibility to disease. It aids in keeping tabs on potential health issues and foresees potential avenues for recovery. The following are some salient details. Applications of Technology in Industry 4.0;

1. Artificial intelligence

In terms of risk assessment and population screening, artificial intelligence is a potent tool that might prove invaluable during the COVID pandemic. Using huge data models, it trains computers to detect, explain, and predict trends, much like machine learning, computer vision, and natural language processing. Data scarcity has severely constrained the usefulness of this technology. In many cases, the provided data is remote and very noisy. Artificial intelligence has the potential to aid in the prevention, control, and eventual elimination of viral

outbreaks. The use of AI to identify false or misleading posts on COVID 19 social media platforms is being considered. Clinical trials for antiviral medicines and vaccines may benefit from the use of AI. Possible applications include the creation of robots to help with things like cleaning and providing online medical examinations. This method can carry out the CT scans required for diagnosing viral pneumonia. Health care infrastructures may benefit from this technology's implementation.

2. Internet of Things

In terms of risk assessment and population screening, artificial intelligence is a potent tool that might prove invaluable during the COVID pandemic. Using huge data models, it trains computers to detect, explain, and predict trends, much like machine learning, computer vision, and natural language processing. Data scarcity has severely constrained the usefulness of this technology. In many cases, the provided data is remote and very noisy. Artificial intelligence has the potential to aid in the prevention, control, and eventual elimination of viral outbreaks. The use of AI to identify false or misleading posts on COVID 19 social media platforms is being considered. Clinical trials for antiviral medicines and vaccines may benefit from the use of AI. Possible applications include the creation of robots to help with things like cleaning and providing online medical examinations. This method can carry out the CT scans required for diagnosing viral pneumonia. Health care infrastructures may benefit from this technology's implementation.

3. Big data

Analysis using big data is well-suited to monitoring and controlling the worldwide spread of the COVID 19 virus. With this method, it's possible to house a very large number of afflicted people. With the help of this technology, we can make choices in a timely manner. It makes it possible to save lives and find effective medications more quickly. In order to evaluate and foresee the impact of the coronavirus on people, big data analysis and forecasting might be helpful. In order to help scientists, clinicians, epidemiologists, and politicians combat the COVID-19 virus, trackers may gather data from virtually real-time sources throughout the globe and then provide the most up-to-date information possible.

4. Virtual reality

To create a simulated environment that is similar to or completely separate from the real world is the goal of virtual reality (VR), a branch of digital technology. This applies to a wide variety of fields, including but not limited to video games, 3D games, academia, the medical field, and the armed forces. This technology creates an environment that is conducive to rest, inspiration, and work. Using user-friendly whiteboards, people may collaborate in real time, visit and record simulations, and more. Video talks using VR technology are a safe bet during the current COVID-19 pandemic. The primary benefit of this medium is that it creates the impression of being in the same room even if the participants are not really present. Furthermore, without distractions, people are able to give their whole attention to the task at hand. Virtual reality has a positive effect on the environment and may increase productivity, boost teamwork, cut down on travel costs, and even decrease absenteeism. Accordingly, virtual reality was a useful tool for sharing information and coordinating efforts during the COVID-19 pandemic.

5. Holography

Holography is short for holographic image. Representation in three dimensions. It has many points-of-view in three dimensions. It depicts the object's wave phase and complex amplitude in contrast to the photo. A hologram of the album. Similar to a "window" in one's recollection. The hologram may provide a photorealistic reproduction of the actual object in three dimensions. It provides a substitute for webcasting that companies may use to create a virtual version of their events. Companies may utilize this to launch new products, attract new customers, and build their brands. Conferences and other live events are now possible thanks to digital holography technology. Protects presenters, employees, and customers from contracting the COVID-19 virus. It's as if people are sharing their ideas digitally in real time from their homes and workplaces on the COVID-19 stage. This live broadcast has the potential to reach thousands of viewers all at once. There has been a tremendous improvement in holographic realism recently. During the COVID 19 pandemic, when workers are confined to their homes, the technology of broadcasting holographic events is widely embraced.

III. SIGNIFICANCE OF INDUSTRY 4.0

Technology from the Fourth Industrial Revolution (I4.0) has potential to improve digital tools at our disposal in this time of need [7e9]. We believe as following benefits of Industry 4.0 technology may aid in fight against COVID-19 pandemic:

- The preparations for COVID-19 are under underway.
- Delivering first-rate service without endangering paramedical personnel's health and safety

- Making preventative measures against viruses
- Deliver on-time medical supplies by implementing a sophisticated supply chain.
- We employed robots to treat the infected patient to reduce the danger to the doctor as much as possible.
- To that end, we have: Used VR for Instruction
- These digital tools increase the versatility of the therapeutic setting by letting patients go about their daily lives even while the facility is under lockdown.

Innovative digital technology enables telemedicine services that may help ensure the proper prevention and management of this illness. In the event of a medical emergency, these devices may detect any irregularities with the patient and immediately contact emergency services. The rapid implementation of a remote health monitoring system is now feasible thanks to these technologies [12,13]. Patients and doctors may benefit from the use of sensors to collect and share vital information. Patients with COVID-19 are benefiting from the use of cutting-edge digital technology for increased visibility and the development of novel therapeutics. During the early stages of the COVID-19 epidemic, digital technology allowed distance education, remote learning, and online learning. These facilitate the dissemination of guidelines and paperwork by making important data accessible. These tools are great for educating people in isolated locations [14,15] when the area is under lockdown. These provide you free access to a wealth of scholarly content in both digital and paper formats.

IV. RESEARCH DESIGN AND METHODOLOGY:

This study is qualitative in nature. The objectives will include an in-depth analysis of Emirates Airline as a case study. Following the lead of the research subject, this study set out to systematically investigate several components of the industrial revolution that may contribute to the suppression of covid virus. This qualitative study will utilize secondary sources to explore how progress in industry 4.0 correlates with lower levels of the influenza virus COVID-19. The study will also be categorized as cross-sectional since data will be gathered after the occurrence of covid 19. Using the right search phrases at selected research centers, we will undertake a complete literature evaluation on the advancements in Industry 4.0 and their relevance to the pandemic of COVID-19.

4.1 Research Objectives:

The objectives of the research will be to analyze,

1. Reducing the Spread of COVID-19
2. What these technological advances mean for society at large.
3. The relevance and efficiency of the market Fourth-generation tools for outlying regions
4. Massive economic benefits COVID-19 Virus Version 4.0 Virus Control Technology.

Research Strategy

A research strategy aids the researcher in carrying out the study, as well as in its design, execution, and evaluation. However, in this investigation, we shall focus mostly on case studies. The research will employ a case study approach to provide a holistic and in-depth comprehension of complicated problems pertaining to the influence and elements of industry 4.0 on decreasing and catering of COVID-19. Given the paucity of prior research on the issue at hand, the case study approach seems especially well suited to the needs of this investigation.

Data Collection:

Secondary data sources including scholarly journals, books, and conference proceedings provide the backbone of the portrayed study. The researcher may collect statistics from secondary data without having to take part in the actual situations themselves. Additionally, it will save both the researcher's time and money. It's common knowledge that using secondary sources to compile data may save money without sacrificing accuracy. In light of this, we plan to undertake a thorough literature evaluation of Industry 4.0 developments and their application to the COVID-19 pandemic by searching the PubMed, SCOPUS, Google Scholar, and Research Gate databases with the most relevant keywords.

Analysis of Data

Due to the qualitative character of this research, the theme analysis method will be the primary emphasis. According to Terry et al., thematic analysis is a method for analyzing qualitative data often applied to a collection of texts, such as interview transcripts. The researcher can use the thematic analysis to sift through the data and identify recurring concepts, themes, meaning patterns, and topics in the context of covid-19 and the role of industry 4.0 in mitigating the effects of the novel corona virus that emerged in 2019.

Time Horizon

Time horizon is shorthand for a longer term of planning. It is a predetermined moment in time that sets the parameters for a study. There are two further divisions of time: longitudinal and cross-sectional. The cross-sectional time horizon, which allows the researcher to examine and analyze data at a single moment in time, will be the focus of the present investigation.

V. FUTURE SCOPE

As digital technology advances, telemedicine's potential to prevent and manage this illness grows. These systems detect abnormalities in patients and immediately alert caregivers in the event of an emergency. Rapid rollout of remote health monitoring systems is now possible thanks to these technologies [12,13]. Sensing devices collect physiological data and provide it to healthcare providers and patients. Thanks to cutting-edge digital technology, patients with COVID-19 will have better access to cutting-edge information and novel treatment choices. Distance, remote, and online methods of education are useful in the face of the COVID-19 epidemic. These facilitate communication and provide guidance. These tools help provide education to areas of the world where the majority of the people does not have access [14,15]. Open educational resources in the form of digital assets are plentiful.

VI. CONCLUSION

Better virus prevention and management are now achievable because to telemedicine, made possible by advancements in digital technology. These systems detect abnormalities in patients and immediately alert caregivers in the event of an emergency. These advances make it possible to construct practical systems for distant health monitoring [12,13]. Sensing devices record vital signs and provide the information to healthcare providers and patients. Thanks to developments in digital technology, COVID-19 patients now have greater access to information and new therapeutic alternatives. Distance, remote, and online methods of education are useful in the face of the COVID-19 epidemic. These facilitate communication and provide direction. When the general public lacks access to them, these technologies may help bring education to previously inaccessible locations [14,15]. It offers a multitude of digital assets for learning that are freely available to the public..

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