Usance of industrial 4.0 technique to overcome the pandemic situation of COVID-19

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ABSTRACT. COVID 19 (Coronavirus) pandemic has created surge demand for essential good and other items like medical equipment and industries which were shut and need to revive back themselves again with new strategies and plan to bring the situation back towards normalcy the study also aimed to propose new technique including advantage of Industry 4.0 ethics to reduce the impact and tackle the situation of COVID-19 and post COVID-19. A detailed review of the literature is done on the technologies along with their Industry 4.0 applications during this COVID-19 pandemic. The review holds some basic and advance technologies application to enhance industrial safety and boosting the work culture to normal and efficient. Using appropriate search words on the databases of IEEE papers, Google Scholar and Research Gate. We found several useful applications which can be inculcated along with modern human-machine interfacing which can help for proper control and management of COVID-19 pandemic and these techniques are been discussed in this paper. Available technologies blend along with Industry 4.0 technique and procedure could also help the society to work and understand smartly and get aware of this methodology which can lead them to stay safe and secure along with maintaining working efficiency. Industry 4.0 can fulfil the requirements of society/community during this crisis’s situation. The new technique which firstly make assure that the indidual and belonging health and safety is first priority and their demand are need to be fulfil on time so that no one suffers. These Industry 4.0 technologies could provide a lot of innovative ideas and solution at from base local areas to global platforms. The supply chain partners and government bodies should work along with new technologies wisely for improving the services during COVID-19 and of any similar situations happening anywhere anytime.

1. Introduction

COVID 19 (Coronavirus) pandemic has affected almost all nations across globe and has made a significant effect on everything either human life or industrial point of view in which the available facilities and systems has come to halt. After sudden nationwide lockdowns for many months in almost every country the normalcy cycle of every individual has also came into impact. An attempt to stop spreading of this dangerous virus the governing bodies of nation has order for complete halt of everything at sudden in which the major supply chain also came to stop by which supply and demand system stop. After months of observation this led to the conclusion that everyone has to live with this
only for further more time till vaccine is not discovered but the situation of country depends upon its
economy and economy is not a constant factor. It all depends upon the movement of trade but since
due to this lockdown trade was being paused there was downfall in economy. Now the challenges
arose is that to revive back the situation of nation along with human safety and health So this all lead
to be understand that everyone has to adapt this new change and need to work within this situation
maintain your moral health and other also. So, there is a requirement of various advance technologies
to tackle various problems during this pandemic. Industry 4.0 is also known as the fourth industrial
revolution, which have advance manufacturing and information technologies, to fulfil the requirement
of different sector of the human being in lesser time along with fast productivity rate. These can be
wireless connectivity in the manufacturing and service sector to enhance the concept of automation
which is vital in today’s scenario this totally means less human hinderance or contact but greater the
productive rate.

Industry 4.0 have smart machines which are supported by high speed Internet, wireless connectivity
,quicker response time. These sensors are connected to a system that can visualize and monitor the
entire procedure from statistical demand to supply of actual product in a single database. The smart
database application now a day can be a game change for social community which can make
appropriate analysis to take step to ensure alert for future demands. Industry 4.0 uses smart
manufacturing processes for the manufacturing. Involvement of techniques with old industries will
provides a smart supply chain system during this crisis by which the customer can receive the required
essential good at time and ensuring their safety at priority [5]

This paper aimed to confirm the utility and applications of Industry 4.0 technologies for the
management of different sector during this COVID-19 pandemic, in this comprehensive review.

2. MAJOR CHALLENGES REPORTED DURING COVID-19 OUTBREAK:

1. There was a drastic increase in demand for items (e.g. masks, sanitizer, essential
commodities) that was not fulfilled by limited supply as this epidemic hit the most countries
together past 4-5 months before this pandemic this material like mask and sanitizer was just
part of keeping individual hygienic but now it has become mandatory commodity. So sudden
demand of this wasn’t fulfil which lead to only hiking of prices of commodity. The advance
infrastructure then has become only assets when no smart or proactive produce are taken.

2. As this virus is spreading mainly through human contact and contaminated things, trust issues
become the biggest challenge face by retail industries. “Touch-less deliveries” became new
norms ,every individual has now fear inside him So everyone is trying to as much apart from
each other .The concept of Bio bubble came into effect which maintain the individual isolated
environment which minimize the chance of getting affected . Everyone in today's world are
avoiding to get contact with each other and also from machine which are in public for public
use like ATM machines

3. Supply and demand can only be compensated by transportation system of any organization but
this can only possible when working environment is possible every organization tried to
accelerate their shipment process to fulfill demand but were unable to do so due to lack of
other pause at different stages of processing or storage space un availability if manufactured in
surplus and travel restriction by different governing authority.
3. SIGNIFICANT TECHNOLOGIES WAY WHICH MAY HELP IN COVID 19 OUTBREAK:

As we know how crucial role the technologies play in our day-to-day lives but the perspective of technology in assisting the mitigation of infection and in controlling the situation like the COVID-19 pandemic is something we fail to notice [2]. Therefore, we conceptualized the aspects of technology utilization as various strategies to provide a helping hand in an epidemic state of affairs. For overcoming the epidemic circumstances, the contribution of various technologies can be identified as directly influencing and indirectly influencing [1]. This research work is looking to identify the challenges faced by different industries and retailers during an epidemic outbreak and explicitly for the COVID-19 pandemic.

Major sectors where this combination and interaction of consumer and industries can work through the new technologies-based system which is incubated in shell of industry 4.0

A. Airport/Air travel- Airport and air travel where among those industries which saw drastic downfall due to this pandemic air travel where restricted so that spread of virus doesn’t take place but now since unlock procedure are being implemented to boost economy of nation smart moves need to be taken by the organization which can help them to revive ,here technologies can play a good and make travel for consumer smooth One of the common technology/IT solutions that the airport can implement and conduct during this period is the use of biometric solutions (facial/iris recognition) which also include the paperless process. By using this technique of solutions, it will largely reduce contact at all passenger touchpoints such as check-in counter (including baggage drop), immigration clearance. Accelerate implementation of biometric capabilities that significantly reduce human to human interaction points from curb to gate This would make hassle free travel and safe for commutators [6].

B. Remote area/Community - Advance digital technologies provide telemedicine and mobile app-based system which can provide service for proper preventive and control of this virus and can fulfill the requirement of community from anywhere in country to any location. Digital technologies are helpful for distance education, remote and online learning during the emerging of COVID-19 pandemic. During the lockdown, these technologies are helpful for teaching and learning process in remote areas so that in any situation from best to worst the learning process of individvual should not stop Collection of data can be done easily of everyone with the help of sensors incorporated in mobile phones, robots etc. The data collected is then sent for analytics and decision making to the central cloud server eg Aaroyga setu application which is connected to everyone in present day this application can help you in identify the situation of this pandemic this is because of big data storage and quick response to real time action. Big data can be highly useful for analyzing and forecasting the reach and impact of the coronavirus on people and subsequently equip the scientists, doctors, epidemiologists and policymakers with the latest information which can be very helpful to make better decisions in order to fight against the virus.

C. Logistics/ Storage/Transportation-In these places an autonomous robot can be deployed for patrolling the areas to confirm that there is no delay in shipping and supply items so that there could not any disturbance in any part of supply chain The autonomous may also be deployed in the big warehouses in order to help the staff to perform their duties without any disruption
and will increase the efficiency and trust of consumer of contact less delivery and items. On taking hand with technologies Failure of supplies and uncertainty in material supply would decrease with appropriate procedure like using of IOT and big data method at suppliers end and always ensuring real time tracking of supply and demand which will be Impacting ability to ship and receive products on time before the shortages arrives.

4. INVOLVE BENEFITS WITH TECHNOLOGIES:

When involving new techniques of industrial 4.0 during this pandemic situation

1. Providing a better experience without imposing the risks to healthcare and other workers since in present scenario the requirement of indivual cannot be bring to halt for growth and development the industries has to fulfil the demand of community therefore it is essential to build trust towards there worker because in present time due to this pandemic the fear of this virus is so much that no individual wants to take any risk of his healthcare

2. Increasing asset utilization and efficiency. Since the industries cannot work with there full manpower to maintain the parameter of social distancing but therefore it is mandatory to maintain the production level to fulfil the demand so utilizing the industries assets like machine with up to full and optimal strength and try to minimize shutdown of plant so that production don’t halt. In case of public area like airport smart robots can be efficient which can provide information on different parameter as per indivual convenience

3. Improved quality of services the presented case study displays the rework percentage was much higher earlier as compare to present time, that is, 15% but from specialize machines and cost-effective techniques the firm are now able to sustain the rework cost and the man-hours required in the reworking has decreased subsequently. The industries reduce its cost of production by a high percentage of its assets, which will decrease the chances of human error and thus making it cheap for the organization to operate. The sole expenses for the machines is its acquirement and its maintenance which is far much less than what would be the cost of paying to human labor.

4. These digital technologies help people to perform daily life work during the lockdown and restriction as the movement of public was restricted because of spreading of this virus. The concept of work from home came into light, an indivual can now connect himself from his home with any risk and starts to work freely. The digital technologies like video conferencing and online group meets help the community to stay connect without any hinderance. This not only help working official but the school and colleges student to take back their classes from home through these platforms as that there is no gap and time throwaway.

5. By means of technologies accessibility to remote areas has been establish and earlier there were no statical data there to define their living standard, there were no information about what they need ,what are their requirement during any situation throughout the year but now scenario has change with efforts of establishing new technique and advance service with advance technologies their problems and requirement can solved with fast decision making.

6. Overcoming the information communicating challenges ,nowadays due to availability of internet access to everyone now information can be easily broadcasted to everyone very rapidly in earlier times
it was difficult to broadcast the information as limited resources where there but now in today’s advance world it has now become easier to stay connected to world for latest update and get aware.

5. MAJOR HIGHLIGHTS FROM ABOVE TECHNIQUES

1. Technology based approach to support society during this pandemic any other future pandemic
2. Key Technologies include Human-machine interaction, hassle free supply chain management system
3. Major role of gadgets for surveillance and provide security during action example drone
4. Influence today’s society towards future technologies for betterment.

6. CONCLUSION:

The present study aims to identify the operational challenges and other basic problems faced during the COVID-19 outbreak. This section of paper briefs about research scope in any pandemic situation in present or future. Industry 4.0 aims to create intelligent factories where technologies are transformed and upgraded using IoT, CPSs, big data analytics, Industry 4.0 can be helpful to other sectors like service, healthcare, agriculture, and food. This discusses the use of Industry 4.0 technologies for COVID-19 challenges. Along with each challenge, possible research scopes are also explained in brief. Based on the research scope, a roadmap for implementation of Industry-4.0 was proposed.

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