

## Artificial Intelligence in Commerce and Business to Deal with COVID-19 Pandemic

Mohammed Arshad Khan<sup>a</sup>, Anushka Tiwari<sup>b</sup>, Tanu Sharma<sup>c</sup>, Md. Rashid Farooqi<sup>d</sup>, Muhammad Tahir<sup>e</sup>

<sup>a</sup> Department of accounting, Collehe of Administration and Financial Science ,Saudi Elec-tronic University, Riyadh,Saudi Arabia.

<sup>b,c</sup> Department of Computer Science, Jamia Millia Islamia, New Delhi, India.

<sup>d</sup> Department of Management, Maulana Azad National Urdu University, Hyderabad, India.

<sup>e</sup> College of Computing and Informatics, Saudi Electronic University, Riyadh, Saudi Arabia.

<sup>a</sup> m.akhan@seu.edu.sa

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**Abstract:** Many countries imposed a complete lockdown in response to the increase in the number of COVID-19 patients. Hence, it results in the devastating global economic crisis across the globe. The pandemic vigorously affecting the services sectors, supply chain, and global trade business with visible repercussions in the increase in the unemployment rate in various industries. The rapid pace of AI and technologies are helpful to reshape their business during this hard time. The application of AI is resulting in a business and commerce world which is innovative and smart. The technological implication of AI simplifying our lives and business complexities. This escalates the popularity of Artificial Intelligence (AI) and its methods like the Heuristics method, Support vector machines(SVM), Markov Decision Process, Natural Language Processing (NLP), Fuzzy Logic, and Artificial Neural Network (ANN) to fathom the challenges arising due to the pandemic. Artificial Intelligence, Big Data, and Sensors are must in compliance with real-time data analysis, predictions for better decision making, in various sectors of the economy. The conglomerate, MSMEs, and start-up companies are emphasizing more on the creation of digital enterprise leading by making their presence felt in various e-commerce platforms for the emergence of a new world. In this research paper, we also try to highlight some of the COVID-19 pandemic related issues that is basically affecting the commerce and business. This current outbreak has severe economic consequences across the world and it does not look like any country will be unaffected.

**Keywords:**

### 1. Introduction

The COVID-19 is a global pandemic. The virus spreads by close contact with infected individual through air droplets from cough, sneeze, etc. There is no known cure available right now. Prevention is better than cure. The World Health Organisation (WHO) has declared that the COVID-19 outbreak is a public health emergency of international concern since it has spread across the globe[1]. The pandemic is having a noticeable impact on global economic growth. The prescribed lockdown has created more damage to the economy than to life. With the prolonged countrywide lockdown, the economy, face severe problem in the growth of unemployment & loss in human resource with each death[9]. Progress in technology is lending a helping hand in this time of dire distress, especially AI. It helps in prediction, diagnosis & prevention. Its unique property of imitating humans helps in reaching that place where humans cannot reach. The sluggish economy can be revived with AI models by generating skilled labor & machine automation. All the major businesses of the world are presently dealing with the devastating effect of COVID-19. From production to marketing 2020 has seen a shift in commerce and business operations in the wake of the deadly virus. The abrupt halt of global travel during the COVID-19 pandemic had a major impact on business across sectors especially operationally intensive sectors that the COVID-19 crises have accelerated automation and digitization.

The countries across the world are facing serious threats to the economies. The entire globe is passing through great uncertainty. India's trade and businesses have been severely affected. This COVID-19 pandemic disrupted normal life as well as economic activities of the country. With new advancement of AI technologies, leading companies from the emerging markets have started implementing AI to expand their profit and business. In order to enhance productivity in developing countries like China are witnessing an upward trend in AI implementation. For today's complex business models, AI provides a technological solution to the economic barriers and challenges faced by the firms. It provides help and support to firms for building strong data management platform, developing around business approach, and creating innovative new business models [3]. AI based technologies can create markets and expand opportunities as well as boost economic prosperities. We have attempted to present an overview of big data and AI to identify the applications aimed at fighting against this pandemic of COVID-19 in business and commerce. In the light of recent advances in technologies and application of AI and big data in various fields, this paper focuses on preventing from the severe effect of this pandemic on commerce and business. It is expected that this research paper will communicate new insights as big data and AI will improve business communications during COVID-19.

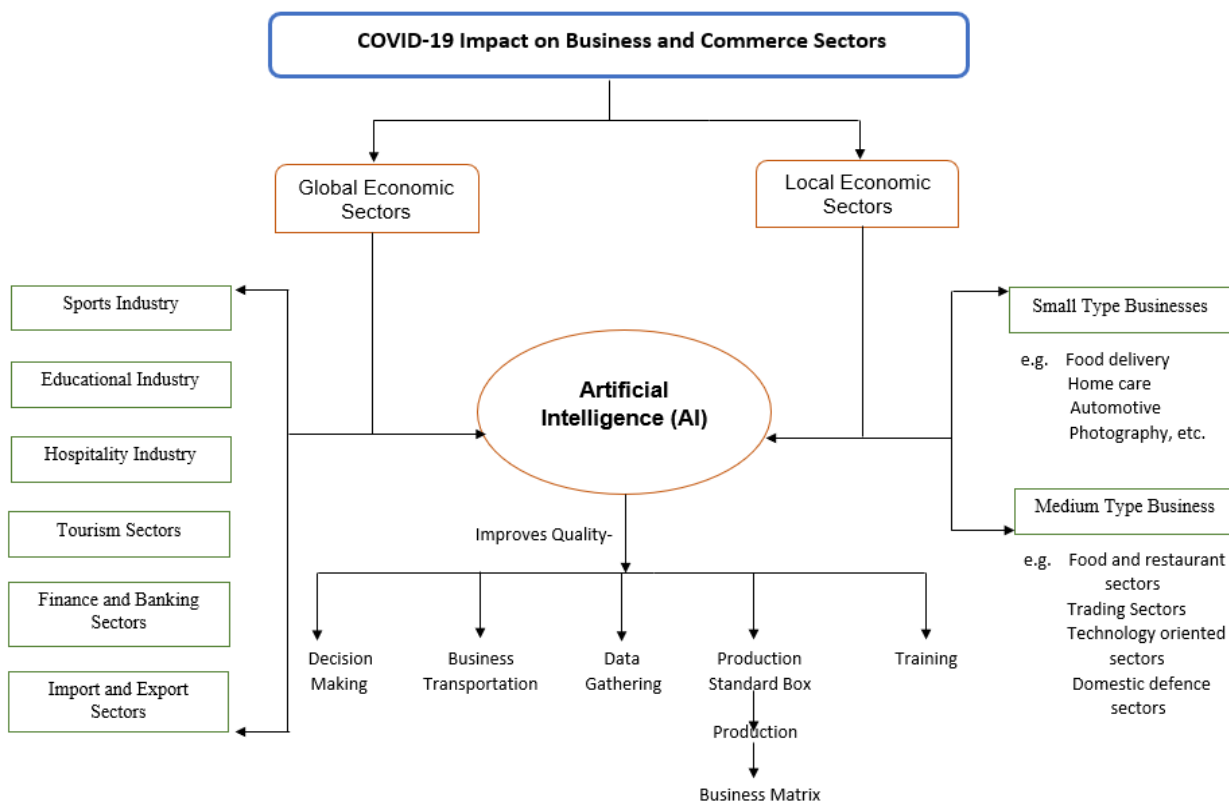
## 2. Impact of COVID-19 on Global Economy

In the beginning of this pandemic, the people thought was that the COVID-19 pandemics basically confined to China only but later on it spread around the world through the movement of people [4]. The economic pain became big and severe as the people were confined in the four walls of their boundaries and the rigor was felt in the various economic sector with travel ban affects the tourism and aviation industry[8], the cancellation of sports event affected the Sports Industries the ban on mass gathering affects the event and entertainment industries badly. The sudden breakdown in business and economy caused by COVID-19 is not only destructive but also has a wider implication because it created demand and supply in almost every area of human endeavor. The global trade business could also fall by 3% according to the report of the International Monetary Fund (IMF)[2]. Besides the impact on human lives and the international supply chain the pandemic is fatal and severe around most of the countries are going into lockdown and business and commerce sectors across the globe are operating in fear of an impending collapse of the global market. The present situation results in sluggish economic growth, especially in developing nations like India that are leading towards extremely volatile market conditions. The economic and business recession that has existed due to COVID-19 is an unhidden truth and environment as well the increasing number of positive cases of the virus did not leave a big effect on the level of commercial activities.

Various countries sealed their national borders with the COVID-19. Millions of workers and laborers are on the brink of losing their job. According to a forecast, it is said that lockdown in the USA and Europe is hitting the service sector hard especially industries that involve physical interaction like transportation, retail, hospitality services collectively. These industries account for more than a quarter of all jobs in these business economies.

### 2.1. Various Local & Global sectors of Business and Commerce affected due to COVID-19

The COVID - 19 pandemics is causing widespread economic hardship and concern for business communities, consumers, supplies across the world. The crisis begins to raise several challenges. The spread of COVID-19 brings the global economy to its knees.



**Figure 1:** Chart of COVID-19 impact on business and commerce sectors –using AI

There are the following business and commerce sectors that are affected due to the COVID-19 pandemic:

**(i) Educational Institutions:** Around the world students and educational institutes felt the surge effect of the virus as Universities and educational Institutes were instructed to close after the declaration of the coronavirus, a public health emergency in many countries. The outbreak had more severe consequences on school education that did not have online learning means. The Covid-19 pandemic has affected the educational system globally. Most of the educational institutions are closed temporarily decided by the government in an attempt to reduce the spread of it. The lack of student-teacher interaction has also led students to feel less motivational about their studying but another side it opens avenues for academic integrity. ie:- Allowing students and staff to build and develop new ideas, Knowledge, and creative work.

**(ii) Sports Industries:** The sports industries are badly affected during the COVID-19 outbreak. Sports and physical events are the major contributors to economics and social development, but due to the COVID-19 pandemic and to safeguard the health of the athletes and others involved most of the sporting events at the international, national and regional levels have been postponed or canceled. For the very first time in the history of modern games the Olympics and Paralympics have been postponed and likely to be held in 2021. The resulting loss in revenues to the sponsors of the canceled games ran into billions of dollars.

**(iii) Tourism Industry:** The COVID-19 pandemic emerged in the whole world like a big black crippling blow basically in travel and tourism industry around the world. The outbreak leads the government of most of the nations to impose restrictions to travel anywhere or a few places. A few countries imposed a complete ban on all forms of domestic and international airlines[3].The travel industries facing problems due to pandemics. Many firms master the challenges of digitalization and adapt well to the changing environment. The major player of this sector must be reading to combat the situation by conducting accurate risk analysis and to survive in the business. They are developing crisis management policies too[42].

**(iv) Hospitality Industry:** COVID -19 pandemic is globally spread the status of a pandemic, which cause to a worldwide crisis with its effect on the hospitality industry. It has never experienced this kind of sudden downturn situation before. The effect of COVID-19 on the hospitality industry can be seen in all the regions including Asian continent, America, Europe, as well as the rest of the world. Hotels, restaurants also have been affected during this pandemic situation because of the announcement of various countries government to people are basically stay at their home guidelines and social distancing enforce in most of the countries[7, 10]. Hotels, restaurants across the world witnessed booking cancellations worth billions of dollars. It threw many hotels and restaurants into sudden shock. In this situation of lockdown, customers prefer to stay at home and prefer to eat cooked food.

**(v) Import depending country:** During this COVID-19 pandemic, most of the import-dependent countries were badly affected. Many countries import their essential goods from major exporting countries like Japan, India ,China are mainly depends on these countries for the consumption of essential goods and services [5].Due to the degradation cause in goods and services of the economic sectors flowing through across the world supply chain and substantial dependence on these countries for imported goods led to a shortage of supplies to import-dependent countries. This has hike the worth of the rest of the stock of imported supplies already in import-dependent countries of the world.

**(vi) Finance and e-commerce Business sector:** The main visible outcome of the crisis of the COVID-19 on the financial market and e-commerce sectors are the effect on the global stock market. The consequences of the COVID-19 pandemic for the worldwide economy, financial and commercial sectors, in particular, are still unpredictable. As more cases inevitably appear across the U.S. and therefore the world at large, physical banking will look less appealing for everyone, not just the foremost vulnerable populations. The commercial banks and government agencies are anticipating this shift towards digital banking, hence, taking relevant action[9,11].

**(vii) Energy and Natural Resources:** The COVID-19 will badly affect the energy resource sector. Exploration and development projects have been suspended and the demand for oil and other renewable energy has been diminished on account of complete lockdown in different parts of the world.The global disruption caused by the fatal pandemic has resulted in various effects on the environment and the climate.The global decline in human day-to-day activities has caused a large drop in water-related pollution and air pollution in many areas.However, the Covid pandemic has also provided a cover for the activities which are supposed to be illegal such as poaching in Africa, Created an economic fallout and environmental diplomacy efforts, etc.

**(viii) International Trade business sectors:** The world trade organization (WTO) stated that the current pandemic is an unrivaled cause to the worldwide economy and trade as production and consumption are scaled back across the world. This is a big task at a time of trade tensions. While the internationally system of trade was already subject to an increased number of latest restrictions and distortions, but within the context of severe economic strain from COVID -19, it is more necessary than ever to avoid escalation of the present trade tensions.

### 3. Artificial Intelligence Transforming business and e-commerce

COVID-19 pandemic is a blessing in disguise for computational sciences. Most medical science & business research relies on AI will help in the digital revolution impregnating a variety of areas and entirely transforming business and commerce, science, and our daily lives. Internet-based communications, AI technology, the satellite system, accelerating the pace of discovery, stimulate the global connectivity of people and devices. The rise of practically artificial intelligence plays an important role by promoting business and e-commerce, social media, personalized medicine, self-driving cars and metros, and other ground-breaking transformations [13].

Artificial intelligence aims to improve computer functions that are related to human knowledge and intelligence. Intelligence is impalpable and consists of: -

- Perception
- Linguistic knowledge
- Reasoning
- Solution providing
- Learning

These points are very important in understanding the artificial intelligence method in the field of business and e-commerce sectors [17].

#### 3.1. AI to fight against COVID-19

“We are always at war.” The influenza pandemic of 1918 was the “last war” & COVID-19 is the current one. Everything is looming under threat including public safety, health, and the economy. Available advanced technologies have never been worked to their maximum capacity and now is the moment to implement them in full throttle [18]. Technology can be an effective force multiplier that can aid in the detection and treatment of the next epidemic & to achieve this following approach can help:

Modernization of disease surveillance data platform.

Testing enables an understanding of epidemiological characters and their patterns as well — incidence, prevalence, recovery, and demography.

Different methods for testing of viral infection and exposure are basically mature so, they need to be coordinated and linked to scale-up pathways.

Genomic tests to get crucial data on that is mostly at the risk point, and likely to recover.

These approaches will

- discover the crucial absent data
- facilitate in the prescription of the extent of physical distancing
- ways of socio-economic revitalization
- Prepare government for mitigation.

AI presented a strong response to fight this pandemic. This fight got assistance from tech leaders, such as Alibaba, Baidu, Huawei, and the government's healthcare initiatives. As a result, strong integration was established between tech start-ups & the health sector, academics, and government entities around the world [15].

As the world grapples with COVID-19, every ounce of technological innovation and ingenuity harnessed to fight this pandemic brings us one step closer to overcoming it. Artificial intelligence (AI) is playing a key role in better understanding and addressing the COVID-19 crisis & enables to mimic human intelligence and ingest large volumes of data to quickly identify patterns and insights. In the fight against COVID-19, every kind of organization, whether small or large, public or private, is finding new ways to operate effectively and to meet the needs of their customers and employees as social distancing and quarantine measures remain in place. AI technology is playing an important role in enabling that shift by providing the tools to support remote communication, enable telemedicine, and protect food security. AI helpful in fighting with COVID-19 pandemic in following ways in terms of Business and commerce sectors:

#### (a) Understanding spreads of COVID-19

AI is also helping researchers and practitioners analyze large volumes of data to forecast the spread of COVID-19, in order to act as an early warning system for future pandemics and to identify vulnerable populations. Researchers have built a model to estimate the number of COVID-19 infections that go undetected and the consequences for public health, analyzing the regions across the globe. Organizations are also examining ways to limit the spread of COVID-19, particularly among vulnerable populations. AI help in start-up work with help of expertise in healthcare data to identify those at the highest risk of severe complications from COVID-19. AI being

used by healthcare systems, care management organizations and insurance companies to identify high-risk individuals, then calling them to share the importance of handwashing and social distancing, and also offering to deliver food, toilet paper, and other essential supplies so they can stay at home[43].

#### **(b)Speeding up research , prevention and treatment**

Healthcare providers and researchers are faced with an exponentially increasing volume of information about COVID-19, which makes it difficult to derive insights that can inform treatment. The number of COVID-19 cases has shown that healthcare systems and response measures can be overwhelmed. AI has leveraged its natural language processing capabilities to build a multi-lingual virtual healthcare agent that can answer questions related to COVID-19, provide reliable information and clear guidelines, recommend protection measures, check and monitor symptoms, and advise individuals whether they need hospital screening or self-isolation at their homes[44]. With the help of real-time data analysis, AI can provide updated information which is helpful in the prevention of this disease. It can be used to predict the probable sites of infection, the influx of the virus, need for beds and healthcare professionals during this crisis. AI is helpful for the future virus and diseases prevention, with the help of previous mentored data over data prevalent at different time. It identifies traits, causes and reasons for the spread of infection. In future, this will become an important technology to fight against the other epidemics and pandemics. It can provide a preventive measure and fight against many other diseases. In future, AI will play a vital role in providing more predictive and preventive healthcare[45].

#### **4. Artificial Intelligence methods–Useful in the business and economic sectors**

Artificial intelligence creates a very old history in applications of business and commerce sectors- for expert systems it's helpful for decision support in management like heuristics methods, neural networks methods, support vector machine, and fuzzy logic, etc. It have been basically utilized in process control and it have different variety of techniques which helpful in utilized in forecasting, and works in data mining also and become a basic components of customer's relationship management in marketing fields and as well as industrial fields in present time [39]. While in literature field, it is spread over many disciplines and also in various publications, that creating the difficult task to find out the pertinent information in one source basically.

Apply advanced Artificial Intelligence methods to drive more value from Business Analytics

- Manage uncertainty via neural networks, genetic algorithms support vector machine, and fuzzy systems, etc.
- Build powerful prediction and classification models.
- Improve profiling, cross-selling, credit score analysis, and fraud detection.
- Contains new case studies and examples from across the enterprise

Using artificial intelligence one can gain more value from business analytics, successfully account for uncertainty and complexity, and make far better decisions. This guide thoroughly illuminates today's key artificial intelligence concepts, tools, knowledge, and strategies and shows how to apply them in the real world.

#### **4.1. Basic Concepts of Artificial Intelligence**

Artificial intelligence (AI) basically extended throughout from many years; without regards it can be walkthrough in a matter of discussion and it is increasing according to the developing technologies in business and commerce sectors in present time. Recently, it have big demands because of its comprehensive nature and for human, in learning of a computational medium manner and it is able to changing in its behavioral faith. AI refers to mani-fold tools and technologies with the capability to learn from past experiences and accept overtime. It is combined in diverse ways -

- Perform
- Cognize, and
- Sense

By and large, intelligence has the ability to appreciate the purpose of business world and it have ability to solve the business and commercials problems. The intelligence have ability of a person repose to broad creativities like as: it is capable in discovery and helpful in understanding the target of things in the commercial world as well as it have ability to gain experience and acquire knowledge through learning of the AI methods and it has the recreates ability to compete for the knowledge and and applied those knowledge and experience for business and e-commerce problem analysis as well as problem-solving. It is also capable in association, reasoning and as well as making a stick judgment, decision making of the linguistic detachment and a method of generalization; it have also capabilities of discovery, invention, creativity, and innovation, etc. in the fields of business and commerce sectors which is Capable of appropriate, promptly, and reasonably cope with the complex environmental

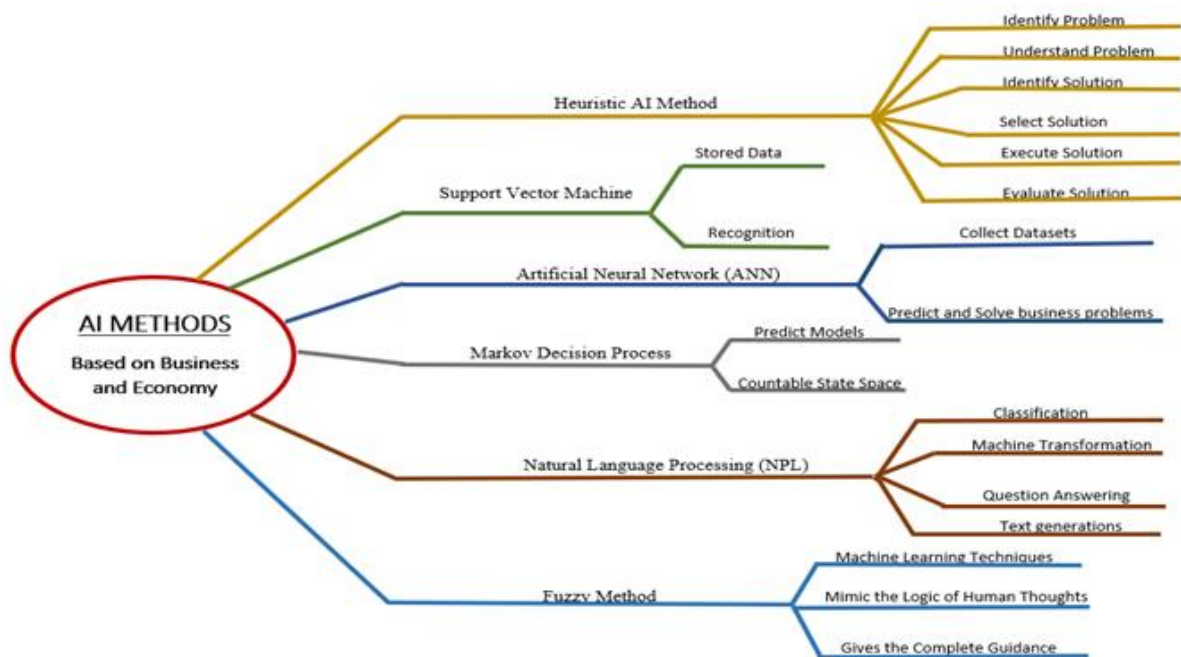
behaviour of an individuals which helps in better predictions of works and insights into the development and changes of things [33].

**4.2. Artificial Intelligence is harnessed by the following methods**

There are the following methods which are generally used in fundamental Artificial intelligence techniques in terms of business and economy :

1. Heuristics artificial intelligence method
2. Support vector machines (SVM)
3. Artificial Neural Networks (ANN)
4. The Markov Decision process
5. Natural language processing (NPL)
6. Fuzzy Logic.

Diagramtic representation of AI methods-



**Figure 2:** AI methods and their functions based on business and economics sectors which is helpful during COVID-19 pandemics.

**4.2.1 Heuristics AI method**

The word ‘Heuristic’ as “involving or serving as an aid to learning, discovery, or problem-solving by experimental and especially trial and error methods”. In general, we can said that whenever problems get origin ,it is basically hard to find the exact and guaranteed correct possible solution by applying these methods, In Heuristics methods, we generally tried to apply a practical method for searching a better solution and somewhere it is not guaranteed to gain a optimal solution , but it is sufficient for the achieving of the current goal in the business world .

In the Heuristic method, some of the aspects are necessary to understand in business and commerce sectors like-

- Identify the problem
- Understand the problem
- Identify the solution to those problems
- Selecting a solution to the problem

- Execute the solution to the problem
- Evaluating the solution to the problem etc. (Robert Turner, How Heuristics help you succeed in business life) [34]

#### 4.2.2. Support Vector Machine (SVM)

A support vector machine (SVM) is a basically machine learning method or algorithm that helpful in analyzing classified data and in regression analysis [35]. SVM is based on the supervised learning method that is looks at data and helpful in sorting it into one of two categories:

- A SVM gives the outputs a map of the sorting of data with the margins between the two as far apart as possible.
- SVMs are useful in classified the text categories, image classification and as well as handwriting recognition etc.

So, we can say that a support vector machine is a support vector network (SVN) also.

##### Support Vector Machine (SVM) in business fields:

An SVM algorithm should not only place objects into categorization but have the margins between them on a graph as wide as best possible way.

The applications of SVM include which is required in business fields-

- It is helpful in text and as well as hypertext classification
- It is also useful in Image classification and recognition
- Its also able in recognizing the handwritten characters
- It is useful in biological sciences processes, including protein and amino acids classification.

For example in terms of the E-mail app either an e-mail is going to be spam or not is an example is based on the classification problem in the case of SVM. In these types of problems, the target is to function out whether a given data point are related to a certain class or not. After the training the classifier model on data points for which the class is known (e.g. a set of emails that are found as spam or not spam), one can then use the model to determine the class of new, unseen data-points. It is a big and powerful technique for these types of problems is Support Vector Machines (SVM) which is very helpful in business and commerce sectors nowadays.

#### 4.2.3. Artificial Neural Networks

Neural network method- Neural networks (NN) revolutionized business and everyday life, by giving us the wisdom to harness artificial intelligence (AI). It emulates the interconnected brain cells function & enables machines like smartphones and computers to train, learn, recognize patterns, and predict & solve problems in every business sector similar to a human[31].

Artificial Neural Networks are helpful in finding the varieties of tasks in business sectors nowadays, and it is useful in classification methods [36]. it able to store the datasets of images for instance of different types of breeds of dogs and images of trains in neural network methods and if we supply a new image of a dog to it, this will provide us a statistical score on how closely the new image matches to the model and then it will gives output that what is the breed of dog image is. Neural Networks are also helpful in recognising of a Self Driving cars, classification and Character Recognition, Image Compression, Stock Exchange Prediction, and many different interesting applications in business and commercial worlds .

#### 4.2.4. The Markov Decision Process

It is a stochastic control process, based on mathematics pioneered by Russian scientist Andrey Markov in the late 19th and early 20th centuries.

##### Markov Decision Process (MDP) in the business and economic sectors:

Markov decision process and associated Markov chains are elements of modern game theory predicated on simpler mathematical research by the Russian scientist some hundred years ago. A Markov decision process describes that it studies a scenario where a system is in some given set of states and moves forward to another state based on the decisions of a decision-maker. A Markov chain as a model shows a sequence of events where the probability of a given event depends on a previously attained state. In general, Markov decision processes are often applied to some of the most sophisticated technologies that professionals are working on today. For example, in robotics, automation, and research models for business and commerce purposes [19].

#### 4.2.5. Natural Language Processing (NLP)

Natural Language Processing (NLP) methods basically assign for the AI method which communicating with an intelligent system of business and commerce sectors to employing a natural language like English. The natural language processing is necessary, when we want to do an intelligent system for sorting of a robot performance as per our instructions and it is also helpful in listening to the decision from a dialogue which is based on the clinical expert system etc.

For computers it's generally design for the interpreting in human language and they must be changed according to a form that a successfully manipulate it by the help of computer. After all, it isn't simple as to change the text data into numbers. To derive the correct meaning from the human language we need to a patterns that to be extracted from the hundreds or thousands of words that is necessary to make a structure of a text document. This is a very hard task so we need some of few hard and fast rules that can be applied to the interpretation of human language in business sectors. Despite this, there are some general guidelines available that can be helpful in interpreting the words and characters, like- the character "s" is being used to marked as plural item. This general guidelines is helpful in concert with each other to extract the exact meaning from the text, to create features of a machine learning algorithm that canbe useful for interpreting in this method [16].

#### 4.2.6.Fuzzy logic

AI Zadeh introduced the term of fuzzy logic in 1965. In conjunction with trade, Cox and Von Altrock described the theory of fuzzy sets and fuzzy logic with motivation to implement this idea to establish the possibility of capturing partial membership in a set for a real-time experience. It is the most suited form of a logic system that helps in real-time decision-making tasks by simplifying the design of complex control systems in comparison to the classical logic system. Example: dishwasher, washing machine, cruise control in the sports car, Kiln control in cement industry, etc. [30].

Duringthe pandemic of COVID-19, applications of Neural Networks (NN) to classify COVID-19 patients arelimited however, they are more useful during the situation. AI has used NN to predict recoveries anddeaths using the majority of clinical features, when it can be difficult to collect the detailed informationneeded for prediction purposes. Availability of specific and rich data enabled the proposed models todemonstrate satisfactory performance. AI is not only establishing foundations for accurate models butalso offering reliability to the prediction models. NN is capable of predicting confirmed COVID-19cases by considering the estimated duration of incubation that usually ranges from two to fourteendays.The corresponding data was divided into two parts including train and test data during thesedays. The cumulative confirmed cases estimated from the test data were compared with the observedcases. In essence, it is a powerful tool for finding a relationship between input and output data. Toachieve this goal, it must be trained using 364 a set of records including the corresponding input data andoutput data. The learning process is generally driven by the flexible architecture of NN, which consistsof three layers: (1) an input layer, (2) a hidden layer, and (3) an output layer. The first and third layerscontain the neurons associated with the input and output vectors, respectively. However, short-termforecasts do not provide a suitable perspective for the COVID-19 outbreak for health decision-makers.In addition, NN can be used as a prediction tool for time series data, while such applications require a large database so that ANN can capture possible patterns. However, such databases are currently notavailable for the COVID-19 outbreak. These deficiencies may limit NN's use to predict the COVID-outbreak [33].

### 5. Business Innovation with Artificial Intelligence And Big Data

The data's demand has been increasing day by day from past few years. Businesses are hastening to take on in-autogeneous data store and business and commercial analytics methods of software that are touching out for public and business innovation with the help of Big Data and methods of Artificial Intelligence [14, 38].

The private databases extraction increasing the exploration of data and use to encourage for Artificial intelligence actions in the business and commerce sectors. Due to the increasing the demand of data in business sectors, the data have been become an important asset in business sectors that is helpful in starting to compete for the most profitable reserves in the competitive business world in present time. Until in recent times, businesses and commerce sectors have not envision that they were somewhere sitting on an important house of data and they didn't know basically how to use these data in business world specially in this pandemic time. The advancement increasing in the data mining and AI of new innovation in businesses and commerce sectors can able to create a profitable meaning of these data that is produced by with the help of consumers and producers as well. For example, we can see the Moz is basically used AI for the prediction of customer's churn by using deep learning methods in business sectors. Introduction of AI and neural networks that are helpful in investigating the user actions and also helpful in prediction of the users behavior.



The activities received from the customers are about their performance within the system that are caused by multiple factors from the old experiences and makes it easy to mine some important business insights and helpful in overcome to the jolt of active customers in business world, which has arisen a tremendous cause on the total company profits. At present time, the online process of consumer actions such like search about their queries, or the purchases or clicks are the key of the valuable data sources for big enterprises. However, it turns out, data is very useful and productive in our physical environments and as well as offline experiences in business activities. The big Companies such as Amazon which have introduced corporate actions surveillance techniques into their grocery and other technical stores.

The new sensors are actually installed in storage system of the machinery and can become a valuable storage and data saver about the companies consumer desire as well as their behaviors [37]. The big AI systems like drones and Internet of Things (IoT) are big data tools that have the capability to change every single second of human lives into valuable data and these data is based on the driver of price-setting algorithms for the companies that reacts to changes in consumer demand in business sectors. Big businesses basically increasing on the times of innovation have become a good prospect to achieve the profit from consumer behavior [29]. The important most trustable paths are the sentimental analytics that is used by the NLP methods to make a understandable the dynamics process of the users emotions as well as their feedback. Basically in the inclination analysis in companies profit is helpful in identifying positive and negative feedbacks from consumers and their products on business and e-commerce platforms big companies like Amazon. Moreover, know about the sentiments which are somewhere related to the competitors become a helpful for the companies to judge their performance and find a best possible ways to improve it. The best profitable sentiments analytics for the managing of online prominence which is automation since it become tough to process the tons of the users feedback manually. Changing the feedback into data can be conveyed into one of the important business intelligence software which is most useful in finding the solutions that will be one apart from the competitive business world. Some businesses share the valuable determine to data by reaching out to public and commercial databases, which can be crowdsourcing storage of data and classified into services and helpful in concerting with data-driven businesses and commerce etc. Whatsoever approach better fits for one businesses and e-commerce base-model that we have necessary to introduce effective data procurement strategies to leverage the power of AI [40].

### **5.1. Big Data, AI, and Sensors**

During this COVID-19 pandemic, the clinical data become a highly variable in their quality and consistency. The complications arising of the sorting of data must be considered as the cases of false-positive COVID-19 patients. Big data and AI must be helpful to check the docility with quarantines and the machine learning techniques can be useful in drug research [23, 27].

Hong Kong-based AI technology company Sense-Time has developed a platform that can be helpful to check fever by scanning people's faces even if they are wearing the medical mask. Sense-Time is the check about the contactless temperature that is detected by the help of detection software has been implemented nowadays in public places like subway stations, schools, hospitals, and other public centers in Beijing, Shanghai, and Shenzhen [25].

Alibaba a Chinese company has developed an AI-based system for COVID-19 patient diagnosis that useful in the detection of new COVID-19 cases with an accuracy rate of 96% employing computer tomographic scans (CT scans) [26].

Big data has been widely used for the improvement of surveillance systems to map the increasing rate of the novel coronavirus cases. The addition and processes of the big data have required new methods for storage and analysis of the data. In a particular manner, we can add four methodologies for big-data analysis:

Descriptive analytics methods of big data are used to basically tells about the present and past situation of business and commercial processes and other business projects that are representing synthetically and graphically to the performance indicators of the activities.

It is also helpful in predictive analysis of comprising data analysis tools that might be useful to understand what could happen in the future by using mathematical techniques such as regression and predictive models [29].

The prescriptive analytics techniques is helpful to identify the important strategic and operational solutions in the business sectors.

The automated analytics method has the tools become the desired action to be implemented to the autonomously in an automated way and according to the result of the analyses that have been conducted as well.

### **5.2. Measurement of physiological matrices by using wearable Sensors for COVID-19**

Like other viral illnesses, COVID-19 patients are also associated with different types of physiological changes that is monitored by the help of using the wearable sensors. Most of the metrics systems are taken from the

cardiac rhythm i.e- heart rate (HR), heart rate variability (HRV), resting heart rate (RHR), and respiration rate (RR) as well and it is serve as the potential markers of the COVID-19 infection of the patients are often measured by the help of wearable sensors devices like the Apple Watch, WHOOP Strap, Fitbit, Zephyr BioHarness, or VivaLNK Vital Scout and others wearable sensors . Basically, in the changes of electrocardiogram (ECG) waveforms could helpful in storage of the information that become expressive of an infection during this time to know about the growth rate of the COVID-19 cases . Most of the wearables sensors reports are complex metrics like stress, recovery, activity, and sleep, of the infected people which are calculated by with the help of employing a combined diveces likeas- cardiac and accelerometer-derived metrics devices. The integration of various measurements via devices these metrics is somewhere exhibit an aggregate a higher signal to noise ratio (SNR) than the raw signals of an individuals alone and know about the higher predictive based values. The bottomline body temperature of the infected patients and arterial oxygen saturation (SpO2) are also a clinical value that has been originated because of the high prevalence of the predictive analytics of fever or body temperature and respiratory symptoms in case of COVID-19. Moreover, such types of measurements technics are not habitually measured by any commercial wearables sensors in present time. However, the patient-centered quality of the metrics are considered only in present time [32].

Despite the fact that society and industry both are witnessing significant achievements with bigdata, huge efforts are still required to effectively use the power of big data in search of COVID-19cure. Big data analytics and signal detection techniques in healthcare systems are among the largeautomation enhancements that will help surface the signs of the pandemic. Models based on bigdata analytics have accurately predicted the epidemiological projections. The treatment of COVID-19patients greatly depends on the early detection and utilization of the data collected from individualvictims. This will help us understand differences in presentation, response to the various treatmentmodalities, and codification of those treatments that are having better impact [42].

## 6. The use of Big Data and Artificial Intelligence (AI) against COVID-19 Impact on Economy

At the point of multiple things about the COVID-19 infections are somewhere up within the air in present time . We have unknown about the actual infection speed and therefore the mortality of the virus rate. Even we don't know actually how long it remains active on surfaces and enviornment and whether it survives and spreads in warm conditions or not. This is often an enormous global crisis and advancing at lightning of the virus infection speed. Any information becomes stale in a matter of few hours and any new information gets buried under the press of the latest events [24].

### 6.1.A Storm of Data help gets theactual Information about the COVID-19 Pandemic

Storms of data have an irregular qualities from a good area of origins and virtually not possible to know about the entire picture. We have many quaries than the answers, but we need to trustable on the data that is aggregated by public institutions like the World health organization (WHO).

For this 21st-century hazard, we need to use 21st-century modern methodologies and tools. These tools are like Big data, and artificial intelligence (AI) must be arrange within the global effort against to fight with the COVID - 19 pandemics [29]. For this fight, we have to need better and simplest available tools. Scientists and doctors around the whole world are trying their best to understand more about COVID-19 [22].

There are various areas in which researchers are trying to gain information about COVID -19:

The research of genes and genomics area is very critical to understanding the process of the coronavirus inner secrets. Genomics is a big fields where big data are considered as forces with deep learning methods and bioinformatics. In the valuable weeks, the COVID-19 genome was sequenced by many country labs around the world which is not possible to detect coronavirus inner secrets without advanced and corrective machine-learning tools .

The development of vaccine is now the foremost important and demanding task worldwide. Bio-informatics tools help boost the efficiency of the fastest vaccine development process in history. Without collaborative of the tools and therefore the big data, this would be not an easy task.

Epidemiologists of varied countries like South Korea, China, and Singapore, the USA, and other countries are using real-time tracking tools to raised understand the COVID-19 infection rate and slow the spread of the disease.

## 7. Discussion and Conclusion

Restrictions in human activities around the globe have substantially disrupted the international economy due to the break off in the various operations of the businesses. The pandemic has affected several local and global sectors of business and commerce. The most affected industries are tourism, aviation, and hospitality sectors owing to interruption in transportation facilities and the temporary closing of public places. Consequently, it

comes as a huge blow to those counties whose considerable economy comes from these industries. Other institutes that face the same fate are related to Educational, Sports, finance and e-commerce, Energy and Natural Resources, Export and Import, trading, etc. The demand for all the supplies except the essential goods like medical equipment, medicines, and food items has been shrunk. As a result, it creates havoc in the balance between demand and supply. Big corporates and small-scale companies are making use of Artificial Intelligence (AI) techniques and methods like Fuzzy System and Artificial Neural Network (ANN) and Support Vector Machine(SVM) etc. in applications to counter the challenges in various fields of business like data-analysis, decision making, finance, prediction analysis, risk management, etc. The emergence of Artificial Intelligence (AI), Big Data, and Sensors can be used to identify, track, and forecast in real-time data analysis, drug discovery, diagnosis, image recognition, and interpretation of transcribing speech, surveillance systems, etc. AI can be applied to any sector from agriculture to finance facing predictions and automatically computerized the model based on the better decision taken to transform the economy. Although, AI tools and services are costly on account of the computationally complex model interface. Developers are developing apps like the Arogya Setu app, Test and Trace, and Microsoft cloud for use in both healthcare and business. These apps can be used in surveillance, tracking, and identification of patients, and to establish a "work-from-home" smooth working environment for employees and workers. Digitization of commerce companies enables them to reach the doorstep of their consumers with their services and products. Hence, companies are accepting stringent security protocols and tools including encryption and digital certificates to protect the consumers' data and other interests against hackers, fraud, and theft. Even though the contribution of AI in business and commerce industries seems to be promising, nevertheless, it has some limitations too.

#### **Disclosure Statement**

The authors declare that there is no conflict of interest regarding the publication of this paper.

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