

Artificial Intelligence: Can it Help in the COVID-19 Crisis?

Part: 2

This article is the second of a three-part series that attempts to evaluate the capabilities of Artificial Intelligence considering the current pandemic due to the corona virus.

In the first article in the same series, we had discussed how AI can help the community at large by tracking and simulating the impact from the novel corona virus. In this article, we will be discussing how businesses can adapt to the new uncertain business environment they are facing using AI/ML techniques.

Business Impact of COVID-19

Temporary closures and downsized operations of manufacturing facilities across Asia, Europe, and North America is likely to have a severe impact on business operations. With speculations surrounding the severity of the COVID-19 crisis, it is important to understand its consequences on each business. Companies that are heavily dependent on material, parts, and products from China are in the firing line. One should be cautious not to compare the current situation with prior epidemics. Globalization was at a peak prior to the pandemic and this could be the start of a recession. The Chinese economy has a much larger impact now on global businesses than ever before. As a reference point, in 2002 when the SARS epidemic happened, the GDP of China represented 4.31% of the world GDP as opposed to 2020, where it is nearly 16% of the world GDP.



A few examples of the diverse impact of COVID-19 on businesses so far [1]:

- Automotive giants like Ford, GM, Fiat Chrysler Automobiles NV & Hyundai announced that they are temporarily halting production because they can't get parts from China.
- Apple announced that it has lowered its estimated quarterly earnings mainly due to a constrained global supply of iPhones and significant drop in demand in Chinese markets.
- Bridal gown manufacturing facilities in China were shut down which could lead to a significant supply shortage for the upcoming summer wedding season.
- Trade ports are witnessing scant activity – the number of departures from Chinese ports has decreased by 20% and the French port of Le Havre is expected to drop by 30% in the next two months.



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While the above were all negative impacts, there are some positive ones too:

- Amazon announced that it plans to hire 100,000 workers to support operations in this crisis because of a sharp spike in demand. Many customers are choosing online channels instead of traditional brick and mortar stores due to concerns around the spread of the virus [3].
- Activity levels spiked on social network sites like LinkedIn and Facebook and on entertainment content streaming provider Netflix. They are expanding their software infrastructure to support this unprecedented activity.



How can AI driven strategies help businesses?

With most of the historical data rendered unusable, it is easy to discard the entire domain on AI in the current circumstances. However, contrary to the popular perception that AI requires significant history of data, there are still models or frameworks within the AI domain that could prove invaluable to businesses as they try to recover from the current environment.

- **Anomaly Detection:** Current climate is a drain on time for senior executives. There are going to be a plethora of areas they need to focus on. However, when it comes to identifying which area of business they need to focus on, there are several statistical quality control tools and machine learning models that can be used to identify segments that are either over or under performing. Machine learning models at scale can help identify such immunity. If we believe in the Hawthorne effect, that which can be measured can be improved. If businesses can get behind key metrics, techniques exist which can help identify which segments are more impacted by the current environment than others and correspondingly which require more resources than others.
- **Scenario Planning Tools:** Most business plans are designed around a steady-state economic climate. Even the best in class companies would not have imagined the current scenario the world is facing and do not have contingency plans to combat a crisis at this magnitude. Blending the gap between descriptive and probabilistic tools, what-if scenario planning tools can be extremely effective to understand how key decisions can impact the long-term viability. Such models can be:
 - Simulation models: Machine learning and artificial intelligence embedded simulation models such as discrete event, monte-Carlo, and agent-based are typically used to design what-if planning tools. These simulation models provide useful insights to managers to make key decisions



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- Scenario driven optimization: Optimization under multiple scenarios can effectively employed for problems which cannot be modeled via simulation. Both deterministic and stochastic optimization methods can be used depending on the use case, however particular attention needs to be paid to assumptions in the model. One can choose to model multiple assumptions and can have the scenarios ready to go as the situation evolves.
- **Demand Forecast Methods**: Normal demand forecast methods that use several years of historical data will no longer be useful in a crisis. For example, one can see the unprecedented demand for sanitizers and cleaning supplies and on the other hand literally no demand for airline bookings, hotel reservations, and cruise line reservations. A normal forecast model could not have predicted this. In such a pandemic, short-term demand forecast models, which use data from most recent weeks and are nimble to adapt to emerging trends, should be utilized. It is important to pay attention to what the customer needs are in a crisis and factor it in the demand forecast.

The above listed tools and methodologies are few of several strategies that can be useful in a crisis like this. Taking the right action is important to avoid the negative effects of underreacting or overreacting to unforeseen events like a pandemic. At Kaizen Analytix we provide AI-driven solutions to provide business value to our clients. Reach out to us if you need help or guidance in navigating the current COVID-19 crisis.

References:

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