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Broken supply chains have become a sad business reality. How to manage a business in these uncertain times?

COVID-19, the war in Ukraine, the Suez Canal blocked by the EverGiven container ship... This is just the tip of the iceberg of events that also affect supply chains, yet are difficult to anticipate, plan for and take into account when managing a business.

The pandemic has forced manufacturers, retailers and e-commerce business owners to make irreversible changes that they were unable to prepare themselves for before March 2020. While economists and business experts predicted “some sort of” a crisis, no one could have predicted series of lockdowns, failing businesses, or a sudden surge in demand for fast moving and hygiene goods. Until recently, that was our daily reality.

Business situation requires adjustment

Data shows that **52 percent of companies have accelerated their plans to implement artificial intelligence** due to the pandemic crisis. Nearly 86 percent of respondents have said AI would become a mainstream technology in their companies. In times of uncertainty, entrepreneurs are becoming convinced that supply chains and business should be flexible and digitized. At the same time, however, taking such an initiative requires them to prepare data, change their organizational culture and face the challenges of implementing new technologies and tools, which raises serious concerns.

Running a business in the current unstable and difficult-to-predict economic and business situation is challenging in many ways. After all, in the whole process one must remember about the end customer, who always has the option of buying from a competitor if faced with product shortages, order problems or poor service.

Nowadays, manufacturing companies must face constraints such as **stoppages and closures, as well as the unavailability of raw materials**. Another challenge is the transportation of goods. A trend that has significantly affected retail is also the shift of consumers toward online shopping. This trend is bound to stay, as e-commerce, delivery and convenience stores are gaining popularity, mainly due to convenience and comfort of delivery.

With the prolonged crisis caused by the COVID-19 pandemic, companies have made efforts and taken measures which have resulted in **increased interaction with customers in online channels**, shifting of sales to the Internet and implementation of digital payments. It is clear that the pandemic has redirected the attention of SMEs and consumers to the virtual world, which must have resulted in increased online exposure.

The move toward the virtual world and the use of new technologies is no longer an extravagance, but a **necessity**. Retail companies that have quickly adapted to the new reality or had made investments in digital development even before the pandemic broke out, had and still have today the ability to operate with **intelligent demand and sales forecasts**, can develop unmanned sales, as well as intelligently manage the supply chain, human resources and deliveries from warehouses to stores.

In challenging business times, artificial intelligence and machine learning allow companies **to navigate complex risk scenarios, observe AI-generated demand and sales patterns, and detect and account for changes in consumer behavior** to ultimately optimize costs and manage the supply chain in an automated manner.

The development of machine learning algorithms has coincided with a big drop in data storage prices and improvements in computing power. In turn, this allows companies to move **from planning to actually implementing solutions**. The financial barrier to entry for AI and ML into retail and manufacturing should no longer be a negative argument - SaaS services can be used in the market, and **deploying AI does not necessarily require investment in data centers or expansion of machine parks**. The fast-growing market has made innovation accessible to smaller companies, as well.

With artificial intelligence, machine learning and qualitative demand and sales forecasts generated with their help, it is possible to monitor prices more easily, more smoothly and without human involvement, set them dynamically in real time and optimize the supply chain. What is more, artificial intelligence can detect pricing anomalies and billing errors, and it allows minimizing overstocks and out-of--stocks, enabling identification of changes in consumer behavior and making quick adjustments to adapt to external circumstances.

You cannot learn to predict the future

We cannot assume that machine learning models can predict the future flawlessly. It should be made clear that they will not "sense" a possible increased demand for food or hygiene products, **if such a phenomenon did not occur in the past**. With artificial intelligence and machine learning models that **rely on historical data**, there is no way to predict what will happen in the future. If a tool - in order to function correctly and generate accurate forecasts - requires specific, tightly selected historical data, it will be impossible to forecast an interrupted supply chain, just as it will be impossible to forecast increased demand due to a global crisis.

It should be equally clear, however, that such models and algorithms are able to **detect anomalies much more quickly and flexibly, and signal the problem in advance** to allow a response to the new challenge.

In the event of an unforeseen situation, regardless of the type of business, the category of products offered and the duration of the crisis, **artificial intelligence makes it possible to adapt to the new reality almost overnight**. Platforms that generate automatic forecasts can adjust to the situation almost in real time and in the very next hours **generate new data and forecasts based on the most recent sales history**, taking into account only crisis times. This, in turn, is a huge competitive advantage over businesses that plan their demand and sales planning, warehouse deliveries and all logistics manually, using Excel.

Help yourself with tools

Relying on the potential of staff whose main task is to analyze data from spreadsheets **should be a ghost of the past**, especially in times when the quantity of data, as well as the number of products and customers, is growing, so analysis and demand and sales planning for individual goods are becoming tedious, time-consuming and increasingly inefficient tasks.

Using artificial intelligence-based planning tools, a trained **machine learning model takes on that part of the responsibility of finding regularities and repeatability in the data for sales and logistics processes**. At the same time, forecasts take into account historical data, which is fed by variables such as weather, marketing actions, the time of the season or special offers, as well as the demands of specific stores or warehouses, lead-times and the entire logistics process.

Forecasts made using AI and ML can be delivered, depending on business needs, even on a daily basis. In addition, employees whose potential is released will be able to focus on strategic and creative tasks, while simultaneously having access to the forecasts at any time and **being able to change the settings or demand and oversee their value**.

Thus, in unexpected, random and crisis situations that the machine learning model will not anticipate, **we are able - with its use - to react immediately**, detecting almost overnight potential demand according to consumer needs. Manufacturers can therefore respond to the challenge by making adjustments to demand and production line settings, and retailers will get ahead of the competition by generating more relevant orders faster and bypassing possible bottlenecks and shortages throughout the entire supply chain.

The machine learning model can be taught - through data - **unusual situations that have occurred more than once in the past**. While it is impossible to obtain data from upcoming crises and challenges, it is possible to collect production, demand and sales data from past crises and **base the operating model on what had happened before**. By doing so, one can learn from mistakes and past processes to improve the crisis operation strategy in the future.

When forecasting during a period of crisis, the ML model can take into account only **information coming from equally difficult business times**. At any time, for even more qualitative results, such forecasts can be aided and optimized by externally inputted data crucial to the type, duration and magnitude of the crisis.

In the end, although we do not know exactly how the future will shape up, **we have tools that will help us cushion the business for the crisis**, point out regularities, problems, bottlenecks, limitations, and also possible opportunities.

Remember about your employees

In times of crisis and uncertainty, companies must, on the one hand, meet the demands of the market, customers and market competition, and on the other hand, **ensure and consider employee health protection in the context of transportation strategies, sales planning and contact with suppliers**. Most existing supply chains are not amenable to rapid change. Staff quarantines, production stoppages, trade restrictions and consumer uncertainty have torpedoed them with tremendous force, causing them to break.

Sick or quarantined employees, as well as interruptions in the supply of production components, posed a huge challenge in the context of the pandemic, but **they are also a very sensitive area to manage in the context of the uncertain current business situation**.

Meanwhile, tools that digitize production lines enable automation of part of the process and, for example, **allow keeping more physical distance between workers**, while demand forecasting platforms make it possible to direct workers' activities to tasks that require their input and knowledge, **relieving them of duties that artificial intelligence will perform with high quality**.

In addition, companies are increasingly struggling to hire production and warehouse workers. Many industries are experiencing **staffing shortages**, as well as staff deficits in specific occupations - **from drivers to warehouse workers or restaurant personnel**. There is also an increasing shortage of qualified experts. In this situation, it is wasteful to have workers perform the simplest, repetitive tasks that could be easily automated.

Improve your supply chain

In order to become immune to crisis, companies need to adapt to the new business situation and responsibly manage risks. In the context of supply chains, **locality and the shortest possible chain, with as few intermediary elements as possible between seller and buyer**, play an important role in difficult business circumstances. Liquidity and adequate response to business needs are made possible by taking into account the data flowing from transactions and contact with each customer, which is usually ignored in the traditional supply chain approach.

Recalling the COVID-19 crisis, companies that have invested in a smart supply chain have had the ability to track the spread of the coronavirus, **being able to analyze processes in real time, shift orders and make deliveries dependent on the regional situation, local issues and possible economic, social and economic crises.**

Unlike the digital supply chain, the traditional one **is not equipped with the ability to plan and analyze potential scenarios and current situations**, and, as a result, it cannot rapidly analyze the impact of a crisis on procurement and distribution. The visualization of risks and the certainty of digitized processes allows prioritization and strategic decision-making in terms of efficiency, inventory planning, supply and logistics.

The ability of machine learning models to learn and work on demand and sales forecasts on a daily basis **allows them to respond to the changing reality almost in real time**, thus increasing the competitiveness of the supply chain by simplifying and accelerating decision-making. At the same time, AI and ML-based demand and sales forecasting platforms are able to observe market trends, as well as internal and external factors, leaving room for employee manual intervention in automatically generated forecasts.

The effects of the COVID-19 pandemic continue even as the economy returns to high gear - we have problems with products ranging from semiconductors to wood. At the same time, it is important to keep in mind that the goal of implementing artificial intelligence in business is not to improve revenue and process quality by 100 percent. In fact, such a qualitative leap would be impossible. The key is to **improve performance by a few percent and add other benefits of such implementation**.

Analytics and artificial intelligence help companies to **anticipate, prepare for and spot problems** that could disrupt their ability to deliver products and services. Yet enterprises still rely too often on manual methods to monitor their supply chains and forecast sales. Those that will apply artificial intelligence in the coming months or years have the **opportunity to become leaders and build a strong position in the market**.

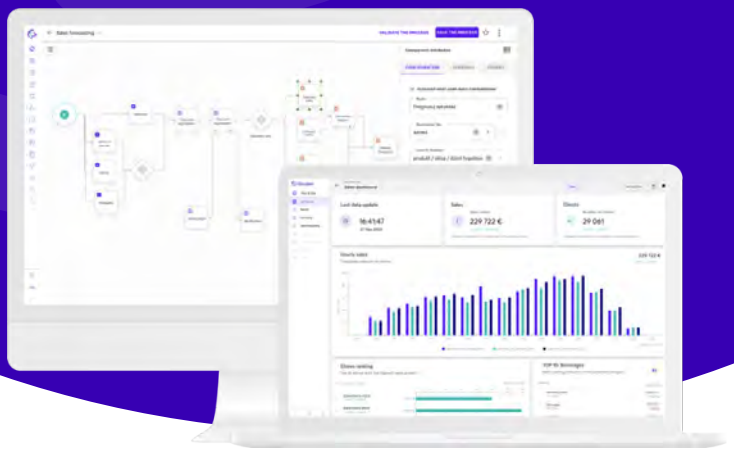
Occubee platform allows you to automatically collect sales data, train Machine Learning models, forecast sales and demand, and generate picking orders and orders to suppliers to optimally replenish stores and warehouses.

Based on data and Artificial Intelligence, Occubee allows to increase sales by increasing product availability in stores and the online channel.

Using Occubee improves the entire supply chain: from store replenishment, to optimal stock levels for offline and online sales channels, to orders to suppliers and production plans.

Short-term sales forecasts for each product and store individually are the starting point for the automatic generation of order picking lists in the warehouses. This makes it possible to optimally replenish the stores and avoid out-of-stocks and overstocks.

Medium- and long-term demand forecasts for the market are used to ensure optimum stock levels, optimize logistics or work in the warehouse and automatically generate orders for suppliers and plan production.



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