Benefits of data-driven decision making

1) Data allows for informed, smarter, and faster decision-making

Accurate and high-speed data analytics allows businesses to make decisions in real-time, and confidently. Being able to make decisions on the go and efficiently helps save organizations precious time.

Example:
Let's think of an FMCG company that makes – let's say – pre-mix pancake batter. During the product process, a certain metric – say the temperature of the batter measured by a sensor being at a certain level may indicate that the batter is ready for packaging. The production line would then automatically move the batter to the packaging section, post which it would be ready to be put in boxed and subsequently shipped. With the sensor in place, as opposed to a person manually checking the temperature, the organization can reduce its lead time and make faster decisions on the go.

2) The second benefit is that data-driven decisions help an organization reduce its costs

When an organization starts to analyze its data its actual costs become evident. This visibility helps organizations get a better understanding of how the business is performing and make necessary adjustments to optimize costs. Often, the biggest challenge for any business is cost.

Example:
We would take the help of a leading Business Analytics company, which was working on a project to reduce costs for a leading American airline. It started its analysis by historically analyzing cost structures; which included salaries, cost of parking slots, cost of food & beverages provided onboard, cost of entertainment provided onboard, and fuel among other heads. It then looked at the areas of cost reduction, in combination with customer preferences concerning flight timings & services they preferred onboard. Many first-hand interviews and surveys were conducted and after making sense of the data collected and analyzed through analytics, a decision was taken to remove jalapenos from in-flight meals. Yes, you heard that right. This decision to remove jalapenos from in-flight meals was how the airline company started its cost reduction exercise.

3) The third benefit is that making decisions through data makes way for improved efficiency

Data analytics enables organizations to understand bottlenecks in the business and take action to simple processes. Operational efficiency can also be improved by analyzing customer behavior to identify behavior patterns and optimize the customer experience.

E.g., a problem statement for a business analyst that can be solved using data can be reducing wait time at the check-out kiosk of a supermarket.

From a product development perspective, making decisions through data helps to identify market trends.

Organizations can use data analytics to analyze trends and identify need gaps and areas of new product development or innovation. This helps to stay competitive through changing demand patterns and take necessary steps in anticipation of what customers may need in the future, or the direction the industry is headed towards. Do recall that in the first module; we spoke about how the newer trend in product development, which is to first study the market and then move towards the product.

Let's take the airline industry as a broad example here. Often, you might have observed that different markets have different tastes and preferences regarding what they want in the sky. Middle Eastern airlines like Emirates, Etihad Airways, and Qatar Airways have their core company philosophies in luxury and hence, they account for a full-service experience onboard. However, if you wanted to launch an airline in an emerging market like India, would you follow the same philosophy? The answer would most likely be no. One can easily use historical data and current industry patterns to analyze that in India, full-service carriers do not work, largely due to the price sensitivity of consumers, while booking tickets. A lot of full-service airlines like Kingfisher, Jet Airways, and Air India among others have struggled in the country. Access to their cost and sales data, which are publicly available, coupled with research on the insights that Indian fliers make their purchase decisions, would be suggestive of the trend of how low-cost budget carriers have been more successful in the country. Hence, this could be a case of how data can help you identify a market trend and enable better decision-making; while you craft your offerings.

Robust data monitoring systems are useful from a security perspective.

All businesses face security threats. Organizations can look into and diagnose the causes of abnormal behavior by analyzing the relevant data using diagnostic and predictive analysis. This helps to identify and address vulnerabilities and introduce monitoring systems that raise alerts in the future to ensure immediate action.

A common example of this is net banking. Let's say that you are on an online shopping site and you decide to pay for your order via net banking. When rerouted to your bank's page, you mistakenly key in the wrong password while logging in and hence, the login doesn't go through. You then go back to your cart and attempt the transaction again. This time, your key in the correct login ID and password, and now when you proceed ahead. You may observe that your bank will ask you for additional security authentication, maybe an OTP, or an answer to a security question. This is because, when you attempted logging in earlier, there was a deviation from your regular login pattern that was flagged by the system, and hence, an additional security authentication came in. Now this deviation could be anything – it could be keying in on a wrong password, or even perhaps forfeiting the login attempt when a wrong password was keyed in. Banks have created such systems, which monitor click data - to enhance their security.

Data Analytics allows for personalization.

Organizations have access to data across both online & offline channels. Analytics allows them to understand their customers better which helps to create extensive consumer profiles and gain specific consumer insights to tailor a personalized experience for each consumer. Using this information, predictive analytics can be used to identify product recommendations that are likely to boost sales.

An example of this could be an individual setting up a new home who goes on to purchase household items like drinking glasses, cutlery, and crockery from an online shopping website. The website can access this customer's order history, cart items, searches, reviews as well as clicks of products visited while on the website. Using analytics, the website can analyze the individual's behavior and decide which specific recommendations to pitch to the individual. For instance, the website may start recommending items like coasters, table cloths, or even electronic kitchen items to the individual.

A plethora of marketing benefits arise out of data-driven decisions.

Marketing and analytics go hand in hand. Marketing teams use data analytics regularly to gauge the success of marketing efforts and improvise if needed. It helps organizations get a better sense of their target audiences, provides useful insights into their behavior, enables methods like A/B testing, and even assists with pricing setup.

To understand this more in detail, you can take the example of an FMCG manufacturer, who has recently launched a new variant of cream biscuits and wishes to evaluate two website banner advertisement designs for the biscuit using A/B testing. A/B testing is an experiment that allows you to determine which option performs best and thus is likely to lead to more conversions.

Having shown the two design options at random to two different sets of viewers on Facebook, the manufacturer finds that option A is more effective in garnering click-throughs and eventual purchases.

Using this information, the manufacturer can now fully launch the more successful banner across various platforms.

Analytics allowed the FMCG player to gauge the success of their banners before launch, aiding their future marketing efforts.

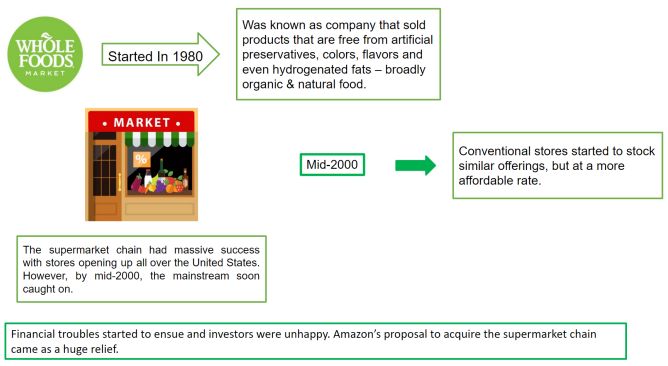
For our first case on data-driven decision-making, we would be looking at Amazon and its tryst with the grocery retail space in the US.

Amazon Case Study:

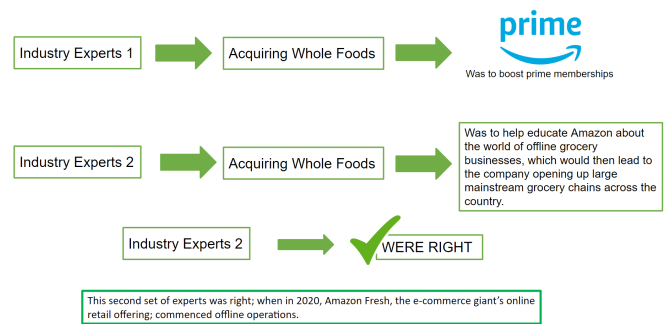
In 2017, Amazon forayed into the grocery space in the US after its acquisition of Whole Foods, a major offline retailer. This rang alarm bells for all major offline grocers in the country. Suddenly, these grocers were forced to bolster up their online ordering and delivery services, in an attempt to level the playing field. The acquisition allowed Amazon to finally tap into a huge space they had their eye on – offline grocery stores. Many speculated that this deal would allow Amazon to dominate grocery sales both online, which was via Amazon Fresh, and offline through Whole Foods. Some industry experts also wondered how Amazon Fresh and the newly acquired Whole Foods would stack up, in a way competing against each other.

Whole Foods was an American multinational supermarket chain started in 1980 and built its reputation as a brand known only to stock products that are free from artificial preservatives, colors, flavors, and even hydrogenated fats –

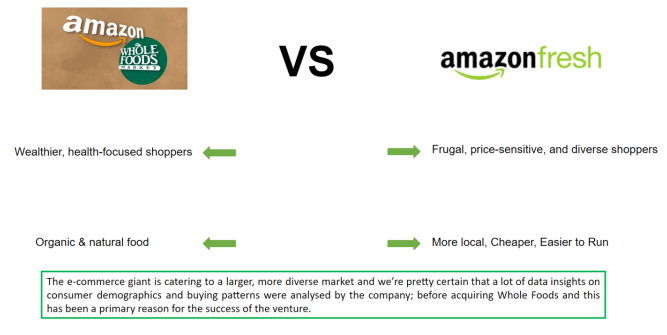
broadly organic & natural food. The supermarket chain had massive success with stores opening up all over the United States. However, by mid-2000, the mainstream soon caught on. Conventional stores started to stock similar offerings, but at a more affordable rate. Financial troubles started to ensue, and investors were unhappy. Amazon's proposal to acquire the supermarket chain came as a huge relief.



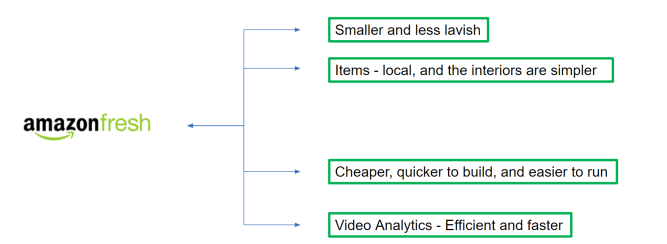
A set of industry experts believed that for Amazon, the Whole Foods acquisition was a way to boost sign-ups from Prime memberships in return for discounts on groceries. The second set of experts believed that the acquisition was to help educate Amazon about the world of offline grocery businesses, which would then lead to the company opening up large mainstream grocery chains across the country. This second set of experts was right; when in 2020, Amazon Fresh, the e-commerce giant's online retail offering, commenced offline operations. When Amazon purchased Whole Foods, many industry experts believed that Amazon Fresh and Whole Foods would compete against each other. However, research conducted across Amazon Fresh & Whole Foods stores tells us that Amazon Fresh customers represent a different demographic compared to that of Whole Foods. The former is more popular with frugal, price-sensitive, and diverse shoppers, while the latter is popular among wealthier, health-focused shoppers. Whole Foods is known for its broadly organic & natural food, which primarily meant - high prices.



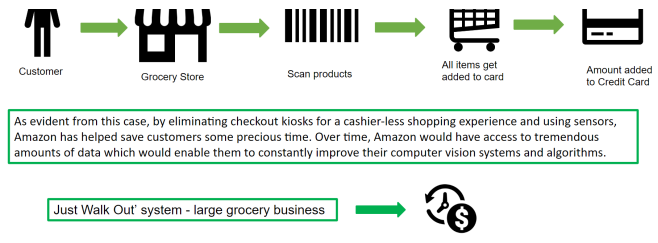
Therefore, with Whole Foods & Amazon Fresh, the e-commerce giant is catering to a larger, more diverse market and we're pretty certain that a lot of data insights on consumer demographics and buying patterns were analyzed by the company; before acquiring Whole Foods and this has been a primary reason for the success of the venture. Through the Whole Foods example, we saw how Amazon used data insights as part of its mergers & acquisitions strategy, with great success, in the grocery retail space.



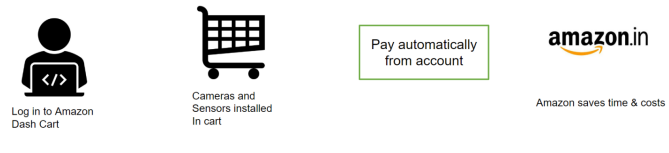
Now, let's look at how a video-based data generation is a form of unstructured data that enhances the experience of the customer. If we compare Amazon Fresh and Whole Foods as a store, the former comes across as smaller and less lavish compared to the latter. The items available at Amazon Fresh are more local, and the interiors are simpler, which makes them cheaper, quicker to build, and easier to run. Amazon Fresh stores have given rise to the use of video analytics like never before to make processes efficient and faster.



Amazon Fresh's 'Just Walk Out' enabled stores are one such example. In these stores, customers enter using their credit cards. They can then proceed to go about searching for the items they need, as they would in a normal grocery store – but here there's a big difference. As they pick up the items they want and place the items in their shopping bags, cameras and sensors detect these products taken or returned and ultimately placed in the shopping carts and keep track of them. When the customer is done shopping, they can simply 'just walk out and the total bill amount is charged to their credit cards used upon entry. As evident from this case, by eliminating checkout kiosks for a cashier-less shopping experience and using sensors, Amazon has helped save customers some precious time.



Over time, Amazon would have access to tremendous amounts of data which would enable them to constantly improve their computer vision systems and algorithms. As the technology gets better, the 'Just Walk Out' system can be used at several stores in their now large grocery business. By simply modifying existing stores to fit this new system, Amazon saves time as well as money that it would need for additional space & personnel. Another way through which Amazon is attempting to develop a cashier-less checkout is Amazon's Dash Carts. You log into the Dash Cart using your Amazon app, and the cart has cameras and sensors installed that detect and identify the items you drop into your cart. You can then automatically pay from your account without having to wait in line during check out.

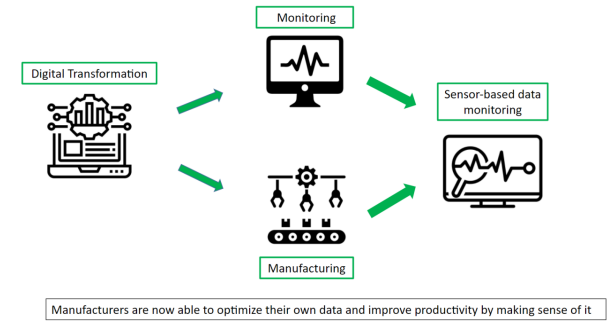


Therefore, we can see how – through the help of video-based data generation, Amazon is changing the way consumers shop in-store, while also saving costs.

Data-driven-decision-making in Manufacturing

McKinsey is a leading management consulting firm, which does sector agnostic work and has offices worldwide.

Traditionally manufacturing processes were done by staff manually checking and writing down production as well as operation and maintenance histories. These methods were - time-consuming, open to bias & lacked quality of Analysis. The current manufacturing process involves monitoring as a crucial aspect.

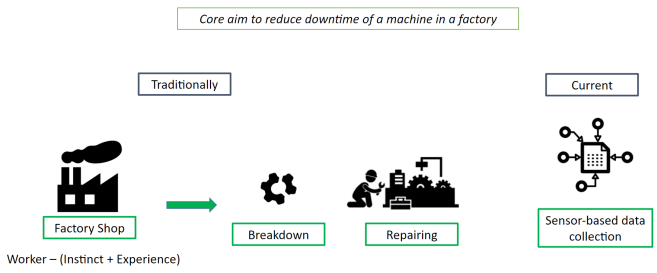


Applications of Data-driven-decision-making in Manufacturing

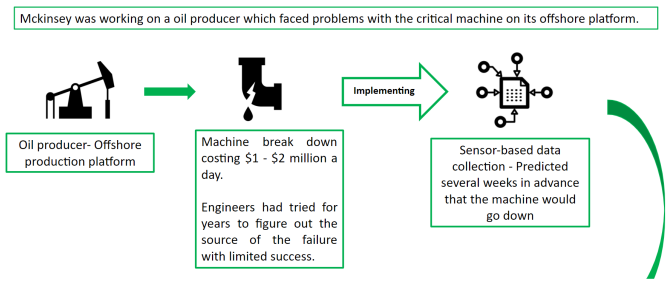
Three Main Applications:

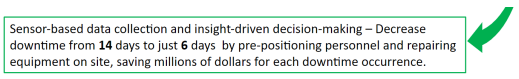
1) Predictive Maintenance:

Analyzing the historical performance data of machines to forecast when one is likely to fail, limit the time it is out of service, and identify the root cause of the problem.



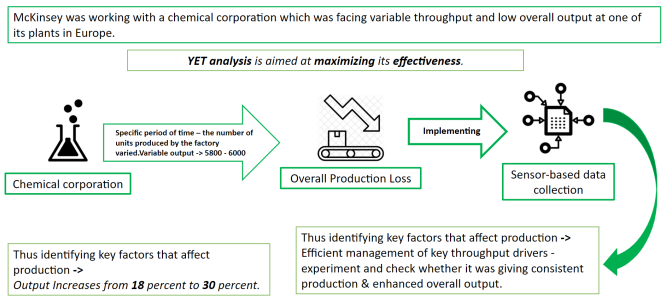
Data can be used by manufacturers by maximizing the operating time of machines by anticipating their failures and determining breakage of machines even before it happens ––or be ready to replace them when it does—thus Minimizing Downtime. Predictive maintenance through data typically reduces machine downtime by 30 to 50 percent and increases machine life by 20 to 40 percent.





2) Yield-energy-throughput analysis:

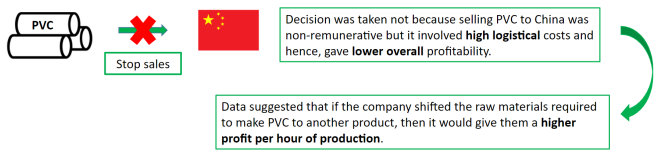
To ensure individual machines are efficient while operating, helping to increase their yields and throughput and reduce the amount of energy they consume.



3) Profit per hour maximization:

Scrutinizes parameters that have an impact on the total profitability of an integrated supply chain right from raw materials purchasing to final sales – providing intelligence on how best to capitalize on given conditions.

Profit-per-hour-maximization optimizes the interaction of machines and processes to dynamically maximize profit generation in production and supply chains. Encompassing every step from purchasing - production – sales. Dynamically maximize profit generation in production and supply chains.



This is a typical case of how data-driven decision-making helped a manufacturer maximize PPH by integrating sales and production.