Case Study

ANALYTICS IN INDUSTRY 4.0 – A CASE OF EEUU

Keywords: *Predictive Analytics, Big Data, Industry 4.0, Costumer Experience.*

Background to Case Study

A few years ago, it was unthinkable to conceive of complex algorithms and analytics in general as a fundamental pillar of digital transformation companies. However, today, thanks to the increased availability of data along the entire industry with the increase in storage capacities and the new possibilities of analysis and data processing through more powerful and complex algorithms, multiple application opportunities arise with great impact in different sectors such as, for example, in the area of manufacturing. This area has only managed to capture between 20% and 30% of the estimated potential for this area in 2011, which means that there are still great opportunities for the deployment of analytics in the industry.

Another important lever in favor of the implementation of analytics in industry has been the advent of high capacity computing as an asset available to all. This capacity makes it possible to unravel knowledge from massive ingestions of sensor data and new sources of unstructured data (images, text, video, etc.). All these new functionalities are a perfect fit in a sector with such varied needs as industry. Different types of industry have a different appetite for different solutions due to their idiosyncrasies. The attractiveness of the various applications depends, to a large extent, on the availability of data in the industrial environment and the critical business factors present in each of the sectors.

Introduction to the Case Study and it's growth within Industry 4.0

Advanced analytics is a very fashionable resource in the industrial field today. Its evolution and conquest of markets is unstoppable, as is its increasing presence as a fundamental tool in industry. The different applications based on advanced analytics can be grouped into three main areas:

- *Descriptive analytics: its function is to describe, diagnose and discover what trends and patterns are occurring in a given process from the study of historical or real-time data.*
- *Predictive analytics: It is based on more advanced mathematical methods that include statistical analysis, data mining, predictive modeling, machine learning, among others. Its function consists of forecasting events that will occur in the future thanks to the development of a predictive model.*
- *Prescriptive analytics Its function is to define what actions to take to obtain the best results in a process. It relies on predictive models, scenario simulation, localized rules and optimization techniques to transform data into recommended actions to reach a desired result. This level of analytics is the most complete and robust. It uses techniques such as complex event processing, neural networks, heuristic learning, machine learning, among others.*

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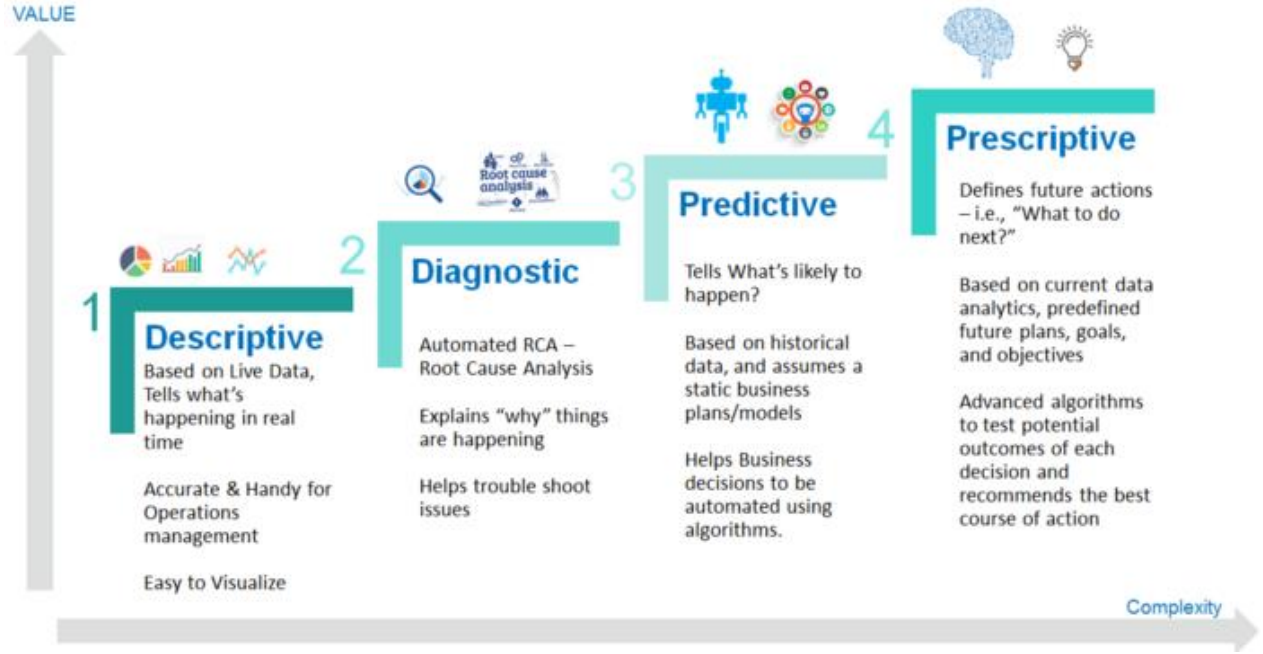
The Case Study and Industry 4.0 Elements: A Pictorial Overview



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The Element Explored within Industry 4.0 Application. amazon	*Amazon, a global Ecommerce giant and increasingly in more and more sectors, is the clearest example of how a company can gain significant competitive advantages when it comes to using technological advances to better understand the customer and offer a fully personalized experience, thereby increasing sales and building a solid foundation around the consumer.* *The company, through Big Data, the collection and analysis of all available information (more than 152 million accounts), has managed not only to capture more purchases but also to build customer loyalty by attracting them with their own tastes.* *Its algorithms are able to get into the market trends and therefore empower consumers to find the products they are looking for and those related to them. Each experience within the platform is unique to each user based on their shopping history, interactions, searches and tastes. The company has not only been able to use Big Data to deeply understand its customers, but that strategy is based on continuous innovation using the latest trends to connect with consumers and even ship before they make a purchase.* *In this case, Amazon, along with other leading global companies such as Netflix, uses predictive analytics to build a recommendation system that continuously suggests products related to their tastes to platform visitors. According to Forrester, predictive apps leverage predictive analytics on large volumes of data to deliver the right functionality and the right content on the right device at the right time to the right person.* *In generating these reports, they look at behaviors such as items the customer has put in the cart, items they have been looking at or have purchased in the past, or even recommendations centered on behavior that customers of a similar profile have had. Amazon uses a technique they call "item-by-item collaborative filtering". This allows consumers to spend just a moment on the platform to be in front of products they are actually considering buying.*

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Application Target Audience	*The results of the case-study are intended for use by SMEs, Enterprises and Entrepreneurs.*
Resources Used:	*- "Building an Industry 4.0 Analytics Platform. Practical Challenges, Approaches and Future Research Directions" by C. Gröger (2018) Available here.* *- "Service Innovation and Smart Analytics for Industry 4.0 and Big Data Environment" by J. Lee, H.Kao & S. Yang (2014). Available here.* *- "4 Types of Data Analytics Every Analyst Should Know-Descriptive, Diagnostic, Predictive, Prescriptive" by V. Kachchi & Y. Kothiya (2021). Available here.* *- "Best Amazon Predictive Analytics Tips You Need to Follow in 2022" by D. Vamanan (2022). Available here.*
Further Reading:	*- Google Analytics for Beginners by Google Academy. Available here*

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