Case Study

ANALYTICS IN INDUSTRY 4.0 – A CASE OF SPAIN

Keywords: *Analytics, Big Data, Industry 4.0,*

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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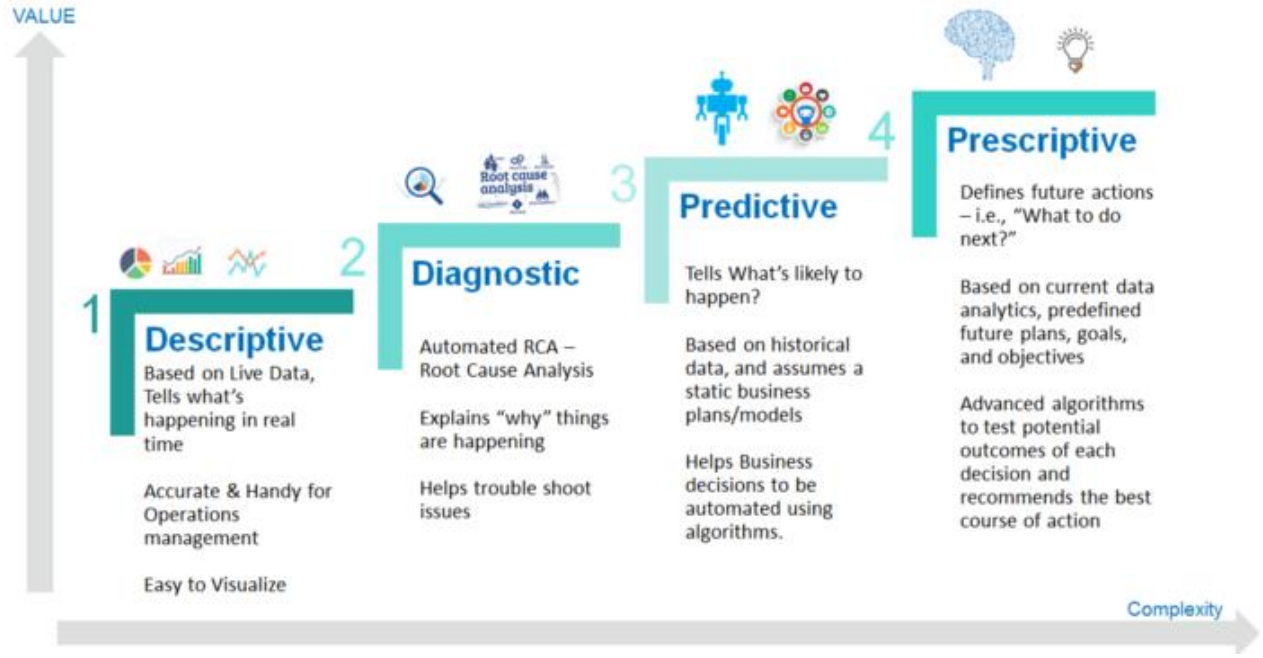
The Case Study and Industry 4.0 Elements: A Pictorial Overview



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The Element Explored within Industry 4.0 Application.

ZARA

The Spanish textile company Zara has managed to lead its market thanks to a pioneering technological strategy. Its adaptation to new tools, such as 'big data', has allowed it to distance its most direct competitors. Despite being one of the last companies in its sector to join e-commerce, it has achieved a universal shopping experience between its physical and online stores that other companies are trying to emulate, although without the same results.

Arteixo, in Galicia, has become the center of operations of the Spanish company. From this small municipality it centralizes most of the decisions and processes, including the technological one, for which it has built a building specifically for this purpose. In this headquarters, thanks to the technology it uses, Zara can know, among many other data, the temperature of each store or the energy it is consuming. This is precisely one of the keys to Zara: big data. Thanks to data analysis, it even knows the average weight of the inhabitants of the area where it has a store. With these figures, it incorporates more sizes of one type than another in each store. In short, it has a certain predictive capacity to know what can be sold more easily.

The most immediate translation of the good use of this new technology is the savings in stock, an element that drives up the expense accounts of many companies in the textile sector. This investment in big data also makes it possible to personalize the customer experience. In Madrid, for example, there are two stores that will hardly coincide in the garments they sell. In the one on Paseo de la Castellana, which is more business-oriented, there will be an abundance of suits and shirts; in the one on Gran Vía, on the other hand, fabrics for women in their twenties and forties. The rationale behind these strategies lies in data analysis. Zara knows what each area demands and what it offers. In the end, it achieves a user experience that is practically personalized and in full contact with their needs.

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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.* *- "El Gran Hermano que controla Zara" by M.García (2016) Available here.*
Further Reading:	*- Google Analytics for Beginners by Google Academy. Available here.*

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