BIG DATA ANALYTICS INDUSTRY CASE STUDY:
HOW NIKE IS USING BIG DATA TO IMPROVE CUSTOMER EXPERIENCE

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ABSTRACT: Nike is a huge sportswear business that gets bigger every year. One of the reasons behind this fact is the great customer satisfaction at Nike. This essay aims to uncover how this company has used Big Data Analytics to rapidly grow and improve customer experience, the path that led to today, why is Big Data relevant and the impact that is had on the field. It includes insights and relevant information from a NOVA IMS alumni working at Nike, alongside research made by the group that explains the strategies Nike has implemented and used, how they have targeted and segmented customers, boosted their sales and overall improved with the usage of Big Data Analytics.

KEYWORDS: Nike, Big Data Analytics, Predictive Modelling, Forecasting, Hadoop, Databricks.

I. CONTEXT:
FROM SHOE DISTRIBUTORS TO MARKET LEADERS

Today, Nike's market cap (170.00 billion dollars) is more than triple the market cap of Adidas, Puma and Under Armour combined (50.27 billion dollars combined). And this is not just since the most recent years. The company founded in the 60s has been dominating its competitors since a long time ago. In 1962, Phil Knight had seen how Japanese cameras had replaced the dominant German cameras in the American market, and he wondered whether Japanese sports shoes could do the same to Puma and Adidas, the market leaders at the time. After his graduation from Stanford, Phil travelled to Japan and met with Onitsuka Tiger, and managed to secure the distribution rights of their shoes for the western United States. After receiving the first shoes, Phil went to his former track coach Bill Bowerman, at the University of Oregon, and they partnered up. Thus, Blue Ribbon Sports was born, the company that would later become Nike. Year after year, the sales were increasing exponentially, and Bill Bowerman using the knowledge he had about running, to try to improve the Onitsuka Tiger shoes. With the increasing popularity of the shoes in the USA, largely due to the changes implemented by the know-how of Bill Bowerman, Blue Ribbon Shoes couldn't keep up with the demand, and they realized that they would have to evolve beyond being just a simple distributor. As soon their contract with Onitsuka expired, they started to make their own shoes, and that happened in the perfect timing: just before the Olympics in Munich, in 1972. While Adidas was close to officials and putting their money on organizations like FIFA and the International Olympic Committee, Nike was close to athletes, rather invested in individuals than institutions. On the back of brilliant marketing, like the "Just do It" campaing, and by signing athletes, clubs, and federations, they became the largest sportswear company in the world. In 2008, Nike made a change to organize its structure based on sports instead of products. An approach they called "Category Offense". This change has proven very successful, as sales have grown exponentially. These organizational changes had repercussions in the stores, creating sections tailored to each specific sport, making the shopping experience

more convenient for the consumer. The change led to increases in overall spending for multi-sport consumers, who now had a large selection of merchandise for each of their sports. So, instead of owning one pair of shoes to use for both running and the gym, people now buy one pair of running shoes and one pair of training shoes. But what are Nike's plans for the future? After the "Category Offense" in 2008, Nike's leadership decided that it is time for another strategy change in 2017. They announced the "Consumer Direct Offense", with the goal "to better serve the consumer personally, at scale". They want to sell more online, via their own website, instead of selling to retailers. They want to create personalized shopping experiences for their customers. And all of this is being accomplished with the use of Big Data, since this is the tool that allows Nike to know its customers individually. Big Data analytics is the process of examining large amounts of data to uncover information such as hidden patterns, correlations and other insights. With today's technology, it's possible to analyse massive amounts of data and get answers from it almost immediately. Today, as we are going to see, Nike gathers a huge amount of data, from distinct sources, in order to create the better experience for the customers, while trying to make them hooked to the Nike environment of apps, clothes, shoes and services. The bottom line is that the company that started just as a distributor of Japanese shoes in the USA, keeps betting on the strengths that made them big. Besides the investments in world-class athletes, they are adapting the way they operate but, above all, they are in constant innovation, and the use of Big Data in the business is not just the future, but is already the present at Nike.

II. CASE-STUDY APPLICATION:

WHAT LEAD NIKE TO ENTER THE BIG DATA BUSINESS?

In 2017, Nike understood that in order to lead the market share in the sports sector, they needed to focus and tailer to the evolving needs of the costumers. Having that in mind, they decided to shape their mindset into a more consumer-focused one. They called it "Consumer Direct Offense" and, as said earlier, it was more focused on serving consumers personally by applying the power of the digital channels not only to cater to sales but also to help Nike on product creation. It is important to have in mind that, at this stage, Nike already had mobile apps that feed them great amounts of data, such as the Nike Run Club, that together with Fitbits (activity trackers) gave all the data about the consumers workout habits, and also the Nike App, where users could buy directly from Nike and benefit from the loyalty programs. However, despite having all this at its disposal, the company was still not exploring the potential of Big Data that it had at hand. With this new mindset and the enormous amount of data behind them, Nike decided to enter the Big Data and Predictive Analysis world, by buying 2 companies in the sector. Firstly, in 2018, *Zodiac*, a company known for its predictive customer analytics, that transforms all the data into specific marketing campaigns tailored to each consumer to make the experience personal and to retain them as much as possible. Secondly, *Celect*, which is more focused on using data to sense demand, in order to optimize the inventory hyper-locally.

Considering all this, the need to use Big Data analysis is crucial in making all the steps work, since not only there is a need to store all the data but also a way to work with these data in a useful and not so burdensome manner. According to the International Data Company, organizations in every industry are

increasingly turning to Big Data tools, such as *Hadoop*, and NoSQL databases to attain customer satisfaction, outperforming the competition and to gain actionable insights, and Nike is no exception. After all, with this new focus on data-driven sales, we can clearly see a shift in Nike's global sales, through the image on the right. We can observe the direct sales slowly taking over the wholesale customers, with almost 40% of all sales being made directly by Nike Direct. This also shows that the use of Big Data Analytics is the right path in the sector.

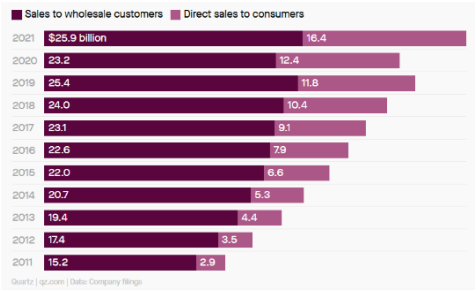

Figure 1 *- Nike brand global sales by channel (Bain, M., 2021)*

III. METHODOLOGY, TOOLS AND CHALLENGES:

INSIGHTS FROM A NIKE MARKETING SCIENCE INTERN EMPLOYEE

From Big Data analytics, social media data and shopping patterns, it is possible to identify correlations between different customer behaviours. Nike uses this information for different purposes in different areas. For example, at Nike's store by Melrose in LA, the products are restocked every fortnight. Naturally, some of the basic products are always present in the store, but Nike rotates a big part of the stock. Predictive analysis is what makes it possible. This store will be stocked with the model Nike Classic Cortez because the company's data shows that 1 in 50 sales of this model was made in an area close to Hollywood. Nike also uses this type of analysis in specific geographic areas, which helps the company decide where to build stores and what to put on the shelves. For example, a study found out that sport enthusiasts and fashion-conscious customers tend to overlap in Los Angeles neighbourhoods while they are completely separate in New York. Curiously, Nike has even used Big Data analytics in the chemistry field. Nike has analysed materials in its internal Materials Sustainability Index (MSI), in order to improve sustainability. The company has designed products that reduce manufacturing waste, developed a water-free dyeing technique and researched alternatives to cotton.

Nike collects data from numerous sources: from its various mobile apps (it currently has 7 apps available in the Play Store - "Nike", "Nike SNKRS", "Nike Run Club", "Nike Training Club", "Nike Adapt", "Nike Athlete Studio" and "Jordan Keyboard", each with different functionalities and different target audiences, but that together generate an abysmal amount of data and potential analysis and insights), to its website, and even IoT devices, such as Fitbits. According to Ricardo Peixoto, a NOVA IMS alumnus, currently, a Marketing Science Intern at Nike, the tools used by him to query databases are Python and Databricks, sometimes also using SQL. When it comes to the tools used to perform analysis, the former student confided that most analysts only use Databricks to extract data and then resort to Excel, since they have no knowledge of Python or Databricks. However, this is changing with the new generations of Nike employees. Even so, there is not one single default tool or set of tools that is used by all analysts at Nike, these are at the choice of the analyst. The student in question also stated that in a project, in which the goal was to make a predictive model, he resorted only to Databricks and MLflow. The direct access to the database, the extraction and treatment of the data was performed in Databricks, and then the rest of the work was performed with MLflow. According to Ricardo, one of the biggest difficulties they have with the implementation of Big Data

Analytics is the fact that, when performing some tasks, the queries are so heavy for the Databricks clusters, that the clusters go down several times because they can't handle the queries that are being performed. This is because there are few clusters in the company - practically 1 cluster per macro department, which leads people to stop using tools like Databricks and resort to tools like traditional SQL.

There is no doubt that Nike's investment in Big Data Analytics tools, impacts its consumers. For the company, the most important thing is the experience of its clients, because it is the experiences that generate loyalty, not the products themselves. Thus, it is imperative that customers have a better and better experience, unmatched in this market, and this is what Nike has focused on. By resorting to a vast amount of data about its customers, which comes from the most diverse sources (such as the website, or the various apps that Nike has, and in which users create their account and the company collects countless data), the company is constantly improving its customers' experience. For example, through Nike Fit, a digital image of the customer's foot is created, which is then used to generate consumer recommendations. These images are also used by the company as input for the creation of new models. Another example of the impact of the use of Big Data tools on consumers, is the almost total certainty that customers have that when they arrive at a Nike shop, they will find the products they want in stock. This is achieved through consumption forecasting models that are highly geographically localised, in order to anticipate the demand for certain products in each of the locations where the company is present. Like most companies today, Nike also uses the data it collects to present customers with more individualised offers, products and services, so that every consumer interaction with the brand is a highly personalised and engaging experience. Finally, the most cutting-edge example of the direct impact on customers of Nike's use of these kinds of tools are shops like the one on Fifth Avenue in New York. In this type of shop, a customer who has an account created in Nike's app universe, when entering the shop, will have a unique experience, as the company knows who he is, what products he prefers, what his favourite sports are, what sizes he wears and what colours he prefers. As said in 2019 by the then President of Nike Direct, Heidi O'Neil, the company ambitions that "one day (...) you have your very own personal store curated for you on our app experiences".

IV. DISCUSSION:

JUST DO IT WITH DATA SCIENCE AND BIG DATA ANALYTICS

The use of Big Data enabled Nike to have a more direct access to individual consumers and their needs, strategize and plan around production quantities. By having more insights on consumer behaviour, Nike has a competitive advantage when selling direct to the costumers compared to their wholesale partners. This kind of initiative might indicate an industry shift, where original manufacturers maximize margins by cutting intermediaries and offer a better and or more customizable product with less overhead than before. This paradigm shift has led to an astronomical increase of Direct-to-Consumer sales that represented, by the end of 2020, 35% of overall sales, or $12.4 billion, all this, as previously mentioned, with a reduced overhead. Aside from this, the data that Nike is already capturing might allow for personalized suggestions based on consumer

characteristics and preferences. A different take on it might also be a larger investment and improvement in digital products, such as workout programs, statistics and tracking, nutrition advice and complementary features in smart sports wearables. We believe that even as the market leader, there is still a long way to go, so that the full potential of the data that Nike captures is exploited. We also realize that if this happens in one of the largest companies in the world, it also can occur in many other places, so it is up to our generation to leverage the vast amount of data that companies have at their disposal, to improve and personalize more and more the customer experience. Right now, Nike has 720 job listings with the word "Data" in its title, which shows that Nike knows that although they are heading in the right direction, there is still a long way to go and a huge potential to be explored.

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