**CASE STUDY- WALMART**

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Figure https://www.businessoffashion.com/articles/professional/walmart-amazon-lord-taylor-fashion-ambitions

**WHO:**

Walmart is an American multinational retail corporation that handles a sequence of hypermarkets, discount department stores, and grocery stores. The Walmart was established by Sam Walton in 1962 but was a part of Sam’s Club from October 31, 1969 [1]. Walmart has various stores and clubs which runs under 59 different names in 28 different countries. The primary purpose of Walmart is to increase its sales turnover to make better customer emotional intelligence with the help of big data.

Walmart retail corporation which makes one of the most substantial revenues among the other retailer companies with a revenue of more than 500 billion dollars according to the Fortune Global 500 list in 2018 [1].

Walmart is one of the biggest retailer company having branches all over the world. Some of the countries in which their branches are situated include Canada, Brazil, China, India, South Africa, United Kingdom and many other with united states being their main base [2]. Walmart was the largest U.S. grocery retailer in 2016 and with 62.3% from U.S. operations. In a few countries, Walmart stores have more than 260 million customers with 2.3 million employees from all over the world [2] [3].

**NEED:**

Walmart sells billions of products and has millions of customers who come to the store to buy products to meet their everyday needs. For all these sales, Walmart does millions of transactions, and all these transaction details recorded along with its customer details for further improvement of their sales, turnover and they are handled with the help of big data.

Other uses of big data in Walmart are:

* To make Walmart pharmacies more efficient
* To improve store checkouts
* To control the steps of a supply chain
* To optimize product assortment
* To personalize the shopping experience

As Walmart handles a series of hypermarkets, discount department stores, and grocery stores simultaneously, it is difficult to handle the increase in customers and their transactions. So, to fulfill the customer needs and maintain the business they are required to answer the following questions through big data.

* How to increase the number of customers thereby increasing the sale and the growth of the business?
* How to increase the number of customers keeping in mind the products frequently bought by them?

**Data sources:** Walmart generates and collects a vast amount of data from billing and registration systems, customer details, customer transaction details by analyzing credit and debit card details, product details. Walmart generates and collects extensive data regarding petabytes from more than one million customers every hour that is analyzed by a separate department called Walmart Labs based on every action performed in Walmart’s online site. The analysis of this company is based on the purchases made online and in store.

Walmart has a team of associates who help in protecting the security of the data or information. Whether it is shopping on the websites, through mobile services, or in stores, Walmart uses security measures including physical, administrative, and technical safeguards [4]. These measures may include security access controls or other physical security safeguards, information security technologies and policies, procedures to help ensure the application disposal of information and training programs. Walmart also uses an encryption method called Secure Sockets Layer to keep the data secure.

**CHALLENGES:**

**Organizational Challenges:** Increase of sales is one of the biggest challenges for Walmart. To attain this challenge, Walmart keeps track of the products which are on demand and the products that are frequently bought by the customers [5]. They provide some good deals on those products to attract customers thereby increasing the sales. Another challenge is maintaining a good reputation and quality of the products from the customer’s point of view.

**Technical challenges:** One of the technical challenges is the traffic issue that usually encountered when we access information from online websites leading to issues like server hang. Another technical challenge is maintaining privacy and protecting the data from breaching [6].

**BIG DATA PROBLEM:**

**Volume:** Since Walmart handles a series of stores, it contains a lot of structured and unstructured data. All these data from customer transactions, customer details, etc generate more than 2.5 petabytes of data in a single day [3]. To store this huge amount of data, big data is used.

**Velocity:** Since Walmart has more than 11000 stores and clubs in different countries a large amount of data generated at a high speed [3]. There is also data coming from online websites, social media, and mobile application, as Walmart maintains online websites for customer’s ease. So, the amount of data coming in per hour is vast, and it needs to collect resources for a rate of time.

**Variety:** Walmart stores different varieties of data such as structured and unstructured generated from different data sources such as social media, customer transactions details, customer details, product details, employee details, etc., It requires large data warehouses to store 1000 terabytes of data and analyze the generated data [3].

**REQUIREMENTS:**

Hardware and software resources:

ERP is the software used by Walmart which helps in bringing the company and management functions together [5].

Management function includes:

* Accounting
* Human resources
* Customer relationship management

Walmart is one of the largest retailer stores, in the USA has huge amount of data which is generated from multiple sources, i.e., petabytes of data in different formats say the structured, unstructured and semi-structured type of data. Such large and the vast amount of data needs to be stored using Hadoop and NoSQL technologies which could process and analyze such large data and produce the desired outcome.

**PROJECT PLAN:**

Walmart mainly uses data mining algorithm - to observe different patterns in the sales data, to provide a proper recommendation to the customers based on the customer interests as what type of products are in high demand [6]. All these are taken into consideration, and then the supply of products to the respective customers need to start which will increase the sales of the customers and simultaneously increase the profits of the business.

**SOLUTIONS:**

**Social media websites**-Social media sites like Facebook, Twitter, Instagram, and the Walmart online site could be helpful in giving the information about the products, reviews and ratings of the products that could be helpful in making suitable recommendations to the customers which will be helpful in increasing the sales of the customers.

**SHOPY-CAT recommendation**- This is one of the best application that is used to recommend gifts for friends or loved ones based on the social data that is extracted from data sources. This provides links to the Walmart product which will help the users in purchasing the products without any trouble.

Walmart application is also beneficial in viewing the products, their ratings, and reviews which could be helpful in purchasing products. This application could also be helpful in the search for any deals. Through this way, there could be a chance of an increase in profits which will let the business run in high profits gaining much money.

**RESULTS:**

From the overall case study, it is very evident that there is an increase in sales from the year 2006 to 2017 and global net sales of Walmart accounted for nearly 481.32 billion dollars. It indicates that this project is very successful [7].

The use of ERP in Walmart is where the different systems or processes, accounting, and personnel all together are integrated into one software solution. With the help of ERP company, management could function adequately to make shopping easier and enjoyable for all the customers.

Apache Traffic Control which is a highly scalable, distributed, and redundant solution is mainly used to overcome the traffic hangings [4] that usually occur when shopping online or when the users want to order or purchase through online Walmart application they tend to experience traffic hangings which will reduce the server load and bandwidth.

**CRITIQUE:**

The project could be improved to increase a higher number of users to run the company in profits. Walmart needs to focus on certain things- it needs to deliver quality products to customers to retain the trust of the customers. If the products delivered are of excellent quality, then most of the customers tend to visit and shop at Walmart. Though the price of the goods is higher when compared to another store, quality is essential. Proper customer service also needs to be provided which will help the project run successfully.

**LESSONS LEARNED:**

From the overall case study, the main lesson learned is the strategies applied to retain the customers and to increase a more considerable number of new customers by supplying quality products. Also, the use of apache traffic control to avoid traffic hangings which will also improve the customer service online. Also, it is known that Walmart’s hefty prices on goods and discount offers have resulted in a decline in sales.

**DEFINE TERMS:**

**Apache Traffic Control**-It allows building a large content delivery network using an open source. It functions like a traffic router, traffic monitor, traffic portal and traffic stats [8].

**ERP**- Enterprise Resource Planning is a business process management software which is focused on using the same database through the entire organization to store a different amount of data for different computerized functions [9].

**HADOOP**- it is not a type of database but is a software system that allows for massively parallel computing [10].

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