

BDM 1043: Assignment 1

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The goal of any analytics solution is to provide the enterprise with actionable insights for smarter decisions and better business outcomes. Different types of analytics provide different types of insights. It is important for managers to understand what each analytics type delivers and how it matches analytics functions to the enterprise's operational capabilities. Analytics solutions are of four types: -

- Descriptive, which is to ask: "What has happened?"
- Predictive, which is to ask: "What could happen?"
- Prescriptive, which is to ask: "What should we do?"
- Diagnostics, which asks: "Why did it happen?"

In this assignment, you are going to shed a light on the four analytics solutions, how they use Big Data to benefit organizations. What tools/technologies they adopt to achieve objectives. Do the four types rely on each other in every scenario at which an organization wants to make a decision? If yes, in which order; if no, depending on what criteria one is selected/excluded? You may support your findings and conclusions with a realworld scenario. (There are tons of information on the internet about this topic !). Showing case studies are required for this assignment.

Answer: When the whole business analytics cycle is observed it is seen that the application of the data will fall into four different categories and it helps to answer the different questions.

- Descriptive [Describe past results]
 - Predictive [Predict what might happen in the future]
 - Prescriptive [Recommend actions for the organization's next steps]
 - [Diagnostics] Diagnose why past results occurred
- (Michigan State University, 2019)

Descriptive Analytics

It is the simplest form of analysis. Big data is large enough to be beyond human comprehension. So the obvious first step is to narrow them down to the understandable parts. The goal of this analytics solution is to summarize the data and develop an understanding of what is happening. Business intelligence or advanced statistics is often used as jargon for basic descriptive statistics such as mean, median, maximum, percentage. Making the raw data understandable to stakeholders and those affected is an important step. The main techniques used are aggregation and data mining,

which are used to analyze customer behavior and improve services. The tools used for these analyzes are MS Excel, MATLAB, SPSS. (Mehta, 2017)

While working on real world scenario it is recommended not to rely only on the descriptive analytics for decision making purpose, rather combine it to other types of analytics to make informed decisions.

Predictive Analytics

Predictive analytics tells what is going to happen. It utilizes the findings of descriptive and diagnostics analytics to detect clusters and exceptions and helps in forecasting the future trends. To predict these future trends and patterns, machine or deep learning are often used. The prediction made by such analytics are always an estimate and heavily relies on accuracy and stability of situation so utmost care should be taken performing ETL tasks. (Bekker, 2019)

The largest field to implement predictive analysis is retail. The field is continuously looking to improve the sales and build better relations with customers. Amazon's recommendation engine is one of the common examples of the predictive analysis. Whenever a purchase is made, it recommends other similar merchandise that the customer might want to buy. (Patrizio, 2019).

It is seen that findings from descriptive analysis are feed to predictive analysis which describes the order in which these two analyses are carried out. (i.e., descriptive analysis → predictive analysis)

Prescriptive Analytics

Descriptive analysis tells what happened and predictive analysis says what will happen and then prescriptive analysis tells what could be done. Offer a solution to the problem. These analyzes are the third or final step of advanced business analysis. Prospective business owners and stakeholders are supported by these steps to make an informed decision. Solutions to the problem found are offered with the help of machine learning algorithms and statistics, managers or decision-makers are supposed to make decisions based on the data that is revealed to them. This is the most complex phase of business analytics processes and therefore requires analytics expertise. (UNSW sydney, 2020)

According to Insider Info, one of the commonly used prescriptive analytical tool is GPS technology. It provides the recommended routes to the user to get to their desired location. It is based on the different parameters such as time and shortest path and provides the optimal path considering these factors. (Johnson, 2018)

Diagnostics Analytics

Diagnostic Analytics describe the techniques which will answer the question "Why did this happen". It is a further step carried out usually after descriptive analysis which involved diving

deep into your data to search for meaningful insights. Diagnostics analytics take a further step to explore more about some results. Tools most used for diagnostics analysis are data mining, drill-down and co-relations. Drill down involves focusing in specific set of data while mining refers to an automated process to get insights from massive amount of raw data. (sisense, n.d.)

Besides discovering hidden correlations and patterns diagnostic analytics also helps to detect anomalies, isolate patterns and indicate a potential problem. For example, A diagnostics analysis can assist a retail store to discover sales based on the weather, location, traffic, parking, and other variables. (whatagraph, 2021)

Case study

Problem statement

The data was dispersed in multiple sources. Different teams and functions used different data sets for the same reporting purposes. This could lead to anomalies in the data sets used for analysis and to problems with data collection. All data must be consolidated in a central repository.

GPIL (Godfrey Phillips India Limited) wanted to integrate their data across the company and create a single source of information from which multiple internal stakeholders and decision makers could easily access new consumer demand signals, leverage new insights and monitor sales on real-time, develop advanced analytics and make decisions-based on reality. GPIL also wanted to enable integrated data management services across the enterprise so teams can easily create analytics critical to sales program performance from unstructured data from disparate applications, and external sources

Solutions

GPIL identified the need for real-time information to help to make decisions and inform the sales team about the further steps to be taken. The organization was searching for a cloud solution because an agile methodology was used throughout the company and the scalability of the solution was the highest priority. Based upon increasing and decreasing nodes on the project the Cloudera's platform provides the user the flexibility to select environment.

GPIL adopted Cloudera's enterprise solution to make a centralized repository of different kind of data (structured and unstructured) from various application and sources. The platform is robust and allows analytic capabilities and data science projects relying on open-source architecture. With focused dashboard it displays status of the system performance.

Results

The company-wide data repository was created which acted as a central source of information. From the conclusion of the analytics, decisions were made leveraging open-source frameworks.

Now the team on the site could use those visualizations and insights to perform quick decisions leading to effective work. (Cloudera, n.d.)

Here, to solve the problem, the team effectively used big data analytics. Predictive and prescriptive analysis were adopted to increase sales, smoothen day to day operations. Daily generated report, supply chain visibility, inventory management and computer assisted ordering was optimized. The data inconsistency between the system was removed. Using Hadoop data lake internal data science potential to run algorithms was enhanced.

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