Terms Summary

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Assignment 1 – Summary

Introduction

This document aims to summarize basic terms and concepts within the landscape of business analytics, and more broadly analytics as a whole. Analytics as a field can contain many a buzz word, but most analytical processes can be boiled down to simple terms and ideas which are understandable by almost anyone. Within this document we will discuss a core aspect of analytics, data, and how it can make or break the process of business analytics if not used properly. We will also discuss the process of analytics itself, and what purpose it has within an organization. Lastly, basic descriptors of analytical datasets will be discussed.

Terms

Data

In the terms of analytics, data is any quantifiable value which can be measured. This definition is the same in the business analytics subdomain of analytics. Data can be anything from hard numbers like the number of customers or the cost of goods, to softer values like customer satisfaction ratings.

Since anything quantifiable is too broad a definition to be entirely meaningful, there are various categories that data is generally lumped into, depending on its potential use: nominal, ordinal, interval, and ratio. Data in the nominal scale is the most basic category, only requiring that the data have discrete values and be named, without necessitating any quantifiable relationship between the values. Data in the ordinal scale is the second most basic category, requiring discrete values and a relationship between those values, but without necessitating uniformity in the values. The third data scale is interval scale, which adds the requirement of a uniform distance between values to the requirements of ordinal scale. Lastly, the most holistic data measurement scale is ratio, which requires discrete values to be relative to one another, positioned along uniform intervals, as well as contextually related to a zero point

(QuestionPro, 2021). These four scales of measurable data determine in part the potential uses for data, as some data is more or less suited to be analyzed with certain methods.

Another important aspect of data is its overall quality and scope. Incomplete data, be it from a too limited a number of samples or from a lack of accurate samples, can make analysis difficult or impossible, or worse possible but yielding invalid results. Inconsistent data, either from unreliable gathering or non-uniform handling over time, significantly increases the need for data processing before the information can be used to meaningfully draw conclusions (Kwon et al., 2014).

Analytics

Analytics is the process by which solutions to problems and usable insights are drawn from data (Gavin, 2019). Data that is analyzed without a purpose is not analytics, only when data is analyzed with the purpose of distilling meaning or informing a decision does the process become analytics. Analytics can serve many different functions within an organization, but primarily within business analytics the purpose is to increase revenue one way or another.

There are various categories of analytical processes, generally three, which are loose buckets based on the purpose of the process. First is descriptive analytics, the simplest and most reliable process, but also the least likely to yield actionable results. Descriptive analytics aims to answer questions about historical data, identify patterns, and examine trends. These results do not yield direct actionable results, but can feed into decision making processes. Second is predictive analytics, a more complex and less reliable process, but one which has the potential to yield directly actionable results. Predictive analytics aims to answer questions about future data based on the patterns exposed within historical data. The results of predictive analytics can be used to guide decision making based on statistical expectations. Lastly is prescriptive analytics, the most complex and actionable form of analytics. Prescriptive analytics aims to identify patterns within data, test and confirm those patterns,

and then generate optimized results based on those patterns. The results of prescriptive analytics are answers to complex questions which can directly drive business decisions. (Gavin, 2019)

Problems

The purpose of analytics is to solve problems. Those problems might be a lack of insight into the patterns inherent to the collected data, or the need to identify the optimal staffing to maximize customer satisfaction. Analytics enable businesses to identify potential answers to these problems based on historical data and test those answers using controlled methods, then drive business decisions based on the results.

Descriptors

Data is all well and good, but in order to be acted upon it needs to be analyzed. There are hundreds of ways of analyzing data depending on the type, quantity, and expected result. The most basic measures of data analysis are those which are familiar to most with a passing grade in mathematics.

Mean, median, and mode are all ever-present within analytical analysis. The mean (the average), median (the middle), and mode (the most frequent) values of a dataset can summarize a large dataset into clear and simple terms. Due to their simplification of data, from tabular to scalar values, these three operations when taken on their own can result in a lack of significant context required to be usable. Taken together, these three values can quickly identify meaningful information about the dataset, such as the existence of outliers and very simple patterns within the data.

Standard deviation is a very important measure when analyzing sets of data. The standard deviation is the measure of a dataset's variance from the dataset's average value. A low standard deviation means that the dataset's values are very consistent with low variation, and vice versa with a

high standard deviation. Combining information about a set's standard deviation with other measures of the data can yield valuable results quickly.

Conclusion

We have discussed the basic terms of business analytics within this document, and it should be clear that the general complexity of analytical analysis arises not from its definition but from its execution. Datasets for the analytical process need to be properly gathered, cleaned, and vetted; an analytical process needs to be identified and applied to the data; and a problem needs to be identified that analysis can help to solve. Lastly, analytics without a known problem to solve are nothing more than exercises in futility.

References

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