

Misuse of Statistics

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Abstract

It was analyzed the incorrect or misleading use of the data analysis in the business making a business decision. The misuse of the statistics could be addressed by bias or inadequate tools, or the lower knowledge or expertise to develop the data analysis. Misleading statistics are recognized in six distinct categories: misleading data visualizations, selective bias, purposeful, using the small sample size, data fishing, and finally polling. We will describe each misleading of statistics, and we are going to analyze two cases. The first cases expose the misuse of small samples, and data fishing could provide the wrong view of business strategies and affect business decision-making. The second case explains how flawed correlations and faulty polling affect innovation and market surveys when companies introduce new products or services.

Keywords: competitiveness, decisions making, marketing strategies, organizational management, statistics analysis.

Introduction

Data Analysis provides innumerable benefits to managers to solve problems or establish new innovative ideas. The main objective of data analysis is to choose the right business decisions, but what happens when data analysis has misleading information. Sometimes these misleading data situations happen because the data information was not clearly selected to develop

the analysis. The data misuse was implemented in the statistics study to favor business decisions or market acceptance.

Misleading statistics refers to incorrect use of the statistics as an unethical approach of the data statistics tool to favor a business idea or social statement. According to Steele:

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“Many statisticians are uncomfortable with Huff’s title. We spend much of our lives trying to persuade others of the importance and integrity of statistical analysis, and we are naturally uncomfortable with the suggestion that statistics can be used to craft an intentional lie” (2005, p. 205).

Also, data misuses of statistics happen when the study is guided with lower standards of expertise; in this case, the statistical study fails since the study’s beginning because samples are wrong measured, or variables show the correlation between the factor to be evaluated.

Data misuse of statistics happens continuously in the different economic, social, political, education, and business areas. Many of the data misuses of statistics in the business market affect the reliability of the decision-making. We could see six types of misleading that affect direct or indirect business dynamic, such as Misleading data visualizations, purposeful and selective bias, using percentages in combination with small sample size, Data fishing, flawed correlations, and faulty polling. These types of data misuse occurred during each company’s business process, decreasing the reliability of the information, and minimizing the quality of the study.

The first type of misuse is the visual representation of statistics. Graphs and charts sometimes do not express valid analytical information. This type of misuse happens more frequently in the market area. It is used intentionally as a tool to present a product or service stronger and competitive to the adversary. The real intention of misleading is to attract more consumers and strengthen the company in the market.

The second type of misleading statistics is purposeful and select bias. Business ethical behavior is presented in this type of data misuse due to the data misuse present the human intention to change the data or avoid relevant information to influence the results in the way longed for the personal or corporate interest. According to Best (2012):

We need to understand that people debating social problems choose statistics selectively and present them to support their points of view. Gun-control advocates will be more likely to report the number of children killed by guns, while opponents of gun control will prefer to count citizens who use guns to defend themselves from attack” (2012).

For example, politics is one area that more implemented this kind of data lies

during campaigns. In the recent presidential campaign, we could see that both republicans and democrats said that their candidates were winning elections if they saw the report for each campaign. The campaign conducted surveys and omitted information that could affect their statistics numbers.

The third is data fishing. Shortcomings in the first step of data analysis happen. Again, this circumstance of data fishing could be intentional or not. Data fishing refers to the evaluation and determination of many variables with an unclear hypothesis. It creates a situation where all the variables are correlated and are not clear the logical variables to study. This data analysis is used to omit truth information and select the information that benefits from a direct perspective.

Correlation between variables regularly happens when misleading is present in the data analysis, but what happens when this correlation of variables is affected by causation conditions. These circumstances in the data misuse are called flawed correlations. Flawed correlations affect managers drastically in the decision-making process due to the information has been affected by causation. As a result, managers that

follow this kind of analysis fail in their business decisions. Most of the business decisions fail to happen for this statistic lie.

The use of small sample size percentages is one of the most data misuses presented in business decisions. The small sample size is another business failure that fails to determine business strategies to promote a new project, business idea, or procedure. Therefore, the data analysis in this kind of data lie or misuse changes the analysis's logical reasoning. If the analysis is elaborate without sample or not enough sample size, the result is incoherent and distorted. When companies are trying to determine a new market for a product or service, this kind of misleading happens frequently, and it is fatal for the correct market study.

Finally, faulty polling surveys are formulated with the intention of favoring an idea, product, or service. The main goal of this data misuse is to persuade favoritism through the survey questions indirectly. Faulty polling is also used to favor products or services between competitive opponents when companies implement surveys to show consumers that their product is better or offer more features than their competitors.

Methodology

The misuse of the business decision-making statistics happens more often than expected in small and large corporations. The actual business has many examples of misleading statistics. It was necessary to read and analyze meticulous details of misleading uses in Ford Company and Google to demonstrate accuracy with the information. Each company reflects a different type of misuse of the data. For this reason, in this paper, the following case studies show how the misunderstanding or misuse of statistics negatively affects the business in the market.

Case Study: Ford Sales Fail in 2017- Small Sample Size and Data Fishing

In 2017, Ford had to admit that their track sales were a failure due to the unaffordable prices. According to Muller, Ford present low sales in 2017: “Ford Motor’s revenues and earnings headed in opposite directions in 2017, as higher prices on fancy pickup trucks failed to translate into bigger profits” (Muller, 2021). According to Muller the company implemented modern technology in auto parts, which increases the cost of the pick-ups. Ford admitted that: “Ford said the average transaction price on its vehicles rose \$1,300 in 2017, proving

consumers didn’t flinch at sticker prices on F-series pickups that came close to \$50,000” (Muller, 2021).

Unfortunately, neither the USAA nor South America could fit the customer with unreasonable prices. The type of data misuse is the small sample of size and data fishing. The first type of data misleading happens in the marketing and production process of the pick-up vehicles. Since the prices were too high, the company’s sample implemented to implement the quantitative market analysis was too narrow and focused on only one characteristic of the studied variables - consumers with elevated income. The second type of this case is data fishing. Ford established many variables to evaluate for the data analysis, and at the end of the study, these variables present correlations. Since the company was trying to implement modern technology and the cost of the sources to produce fancy pick-up determines the main point to fail the market data analysis. These two types of data misleading incurred in the sales failure of pick-up for Ford in 2017. The numerical data collected for Ford pick-up vehicles with innovative technologies were not coherent and influenced the results with more significant sales expectations for 2017.

Case Study: Google Play Music is Dying- Flawed Correlations and faulty Polling

In 2020, Google announced that one of their apps were no longer be on the market. For a long time, google where advertising Google's music as one of the best music apps in the market. According to Curtis, 2020 "The real burn was Google Play Music. This service was replaced by YouTube Music on December 3rd" (2020, pg. 1-1). Google users were Google play music customers, and since December 2020, the company announces that the music app is going to take down. According to Curtis, 2020 "Sometimes we're aware of the existence of Google products as they are discontinued" (2020, pg. 1-1). Flawed correlations in the Google Play Music case happen because the company, during the market process, establishes many variables to evaluate the competitive market compared with the market needs and what the Google Music app offers. The information obtained by the data analysis was false, and the company could not establish a competitive strategy to attract more consumers. The survey that they elaborate on was influenced by the faulty polling type of data misuse without intention to favor their company app. Companies must review

this aspect in detail when they are implementing marketing surveys. Companies must be critical and avoid designing surveys with a persuasive intention to favor their product when competitiveness is on the table.

How managers could avoid incurred data misleading

Since every managerial decision is influenced by data analysis, it is crucial that managers must implement. Data analysis evaluates the following questions: from where the information is going to be collected and determine the hypothesis and variables of the study, the method that is going to be implemented to evaluate the information, and finally, clearly determine the real intention to develop a data analysis. These three aspects of data are misleading before elaborating a data analysis. The information evaluated produces valid and reliable information to develop a successful and truthful analysis.

Analysis of results

For both companies Google and Ford Co. The misuse of the statistics in their business decisions creates a failure and costly environment for the business that directly affects them. In the case of Google, the flawed correlations and

faulty polling data analysis implemented to put Google play in the market did not help the Company to update the app to be competitive with the new features for their competitors. They implemented too many variables to analyze the market strategies; this situation conditions the Company to see the need to implement innovation in their app. At the same time, the surveys strategies implemented were designed by faulty pulling misuse of statistics. This type of misuse often happens when companies favor the results of the study and do not want to be questioned.

On the Other hand, Ford company 2017 decided to implement high-quality technology in the Pickup in the F-series model. The price of the Pickup F-series model went too high; for this reason, the Ford sales for 2017 in this type of track were too low compared with the rest of their inventory. The variables used in the market study focused on implementing innovative technology but did not consider that the price of the vehicle increased. The Company did not pay attention to re-evaluated variables that directly affect the consumer interest to pay more for the same Pickup with some new technological features. Also, the features did not support the increase in the auto price. For this reason, pickup customers did not see the car attractive, and Ford

Company lost their sales in 2017 for the Pickup in the F-series model.

Conclusion

Data misleading plays a fundamental role in successful business decisions. The data misuse in business presents false information and makes a business fail in their goals. Data misleading could be used intentionally or not. When variables are not well determined, the hypothesis does not satisfy the analysis. The sample size is not insufficient to elaborate the study, and the survey intentionally biases to favor interests. All these types of misuse or data lies do not help companies to accomplish successful goals. Managers must avoid these types of data misuse by carefully evaluating all the variables used in the data analysis and avoiding the intentional misuse to fix data analysis.

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