Practical Applications of Statistical Concepts

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Statistics are objective measurements that describe a characteristic of a sample according to Lind, Marchal, and Mason (2002). Statistics provide useful information for observers involved in many different aspects of life such as sports, business, or politics to name a few. A thorough understanding of statistical concepts will allow managers to make informed decisions as they become skilled in identifying trends and predicting future outcomes thus, increasing their probability for success. Skilled managers will be better prepared to make informed business decisions as they learn to practically apply statistical concepts such as central tendency; mean, median and mode; sampling; and the empirical rule.

To begin with, statistics can be presented or measured in various forms. A measure of central tendency as defined by Lind et al. (2002) is a single value that summarizes a set of data by locating the center of the values. This typical single value can be used by managers to transform raw data into something useful. For example, knowing the average cost of hiring a new employee may prompt managers to explore less expensive retention programs among current employees to reduce costly turnover.

There are many different measures of central tendency and the most commonly used one is the mean. The mean is simply an average and is defined as the sum of all the values divided by the total number of values (Lind et al., 2002). Better business decisions can be made when managers use this statistical concept. For example, when managers are able to gather information about the mean monthly sales of a particular item they stock, they will be able to use this data to set inventory levels for merchandise that will reflect anticipated future sales to avoid stock-out situations.

Another more accurate measure of central tendency is the median. The median as defined by Lind et al. (2002) is, “the midpoint of the values after they have been ordered from the smallest to the largest, or the largest to the smallest” (p. 72). It is the middle number in a set of numbers and is unaffected by extreme values. It can be particularly useful for managers when interpreting data with a wide range of numbers. For example, an insurance company can process the median amount of days claims remain open so they can work on methods to reduce this number to save the company money.

The mode is yet another measure of central tendency. The mode according to Lind et al. (2002) is, “the value of the observation that appears most frequently” (p. 74). Managers who understand mode will be better able to determine work flows. For example, a hospital pharmacy can gather data about commonly dispensed medications. A mode can be established for each category of medicine and the medications that represent the mode for each category can be located close to the dispensing area thus improving work flow.

Next, another useful statistical concept is sampling. Sampling involves selecting some of the elements in a population in order to draw conclusions about the entire population according to Cooper and Schindler (2003). Many managers would find it useful to take advantage of the lower cost, greater speed of data collection and accuracy involved with sampling when dealing with an extremely large data set. For example, many large organizations send customer satisfaction surveys to a sample of customers to get an idea about satisfaction levels to identify areas for improvement.

Analyzing the entire data set of customers would be impractical, time-consuming and costly.

Finally, the empirical rule is yet another important statistical concept for managers to understand. The empirical rule states that for a symmetrical, bell-shaped frequency distribution, 68% of the observations will lie within plus and minus one standard deviation of the mean; 95% of the observations will lie within plus and minus two standard deviations of the mean; and 99.7% will lie within plus and minus three standard deviations of the mean (Lind, et al., 2002). The empirical rule helps explain dispersion about the mean and gives managers an easy way to relate means and standard deviations. It can be useful to managers in identifying manufacturing defects in order to set percentage goals for perfection.

In conclusion, statistical information is not very useful unless it has practical application. It is important for the business leaders of today to be able to use statistical concepts when interpreting data to be able to make successful business decisions.

References

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