Data - Diagrammatic Representation and Statistical Applications in Business.

Dr.M.S.R. Sesha Giri,

Professor.

Department of Management Studies

Gokaraju Rangaraju Institute of Engineering and Technology
Nizampet, Hyderabad-90

Dr.K. Sudesh Kumar,

Sr. Asst. Professor

GVP Engineering College.

Kommadi, Visakhapatnam

abstract

Statistics play a pivotal role in every bodies life and especially in Business front. The success of any decision largely based on how data is converted into useful information. In order to convert raw data into useful information one has to use many statistical methods. Use of statistics will give you central essence of the data. A Diagram is worth 1000 words and every researcher use diagrams as a part of their analysis. The study is purely based on secondary data. In this article we try to suggest what kind of diagram is suitable for a given data and where we can use statistics in business are discussed.

Key Words: *Statistics, Diagrams, Business and data.*

Data - Diagrammatic Representation and Statistical Applications in Business.

Definition:

"The practice or science of collecting and analysing numerical data in large quantities, especially for the purpose of inferring proportions in a whole from those in a representative sample."

"a branch of mathematics dealing with the collection, analysis, interpretation, and presentation of masses of numerical data"

Review of Literature:

- Ksenija Dumičić et.al. (2014) in "Statistical Methods Use in Small Enterprises: Relation to Performance" explored on the factors that are responsible for improved level of competitiveness and increased net income of enterprises. His study analyses the statistical methods on Croatian small enterprises and concluded that the enterprises which use statistical methods have had a greater net income than the enterprises that do not use statistical methods. This survey was conducted on 631 small enterprises in Croatia in the year 2012.
- Lincoln e Moses (1987) in his article, "Graphical methods in Statistical analysis" projects the usefulness of graphical presentation that partly arises the quantity of information that can be displayed compactly. He demonstrates how the accuracy declines over different perceptual judgements like length, angle, area, volume, color hue etc. His explains how the graphs are important tools for visualization of various aspects and emphasized on how to read, interpret and plan the graphs. This paper also shows how different graphs can be plotted for various types of data like single variable data, multi variate data, graphical multivariate data etc.
- G. J. Brackstone (1987) in his article "Issues in the use of administrative records for statistical purposes" projects the obstacles to the greater use of administrative records. He lists out various approaches to render the administrative systems for statistical purposes and emphasizes the need for information protection and record linkage aspects. He depicts different kind of records with their purposes, their shape and quantity and the way these

records can be represented into direct tabulation, indirect estimation, survey frames and survey evaluation methods etc. He worked on Statistics Canada to explore the bilateral relationships that exists within the administrative departments and projects the importance of administrative records for various political decisions.

- Pratiksha Saxena (2011) in the article, "Application of statistical techniques in market research: A sample survey" has done a survey on statistical techniques and their role in process improvement. She emphasized on the continuous quality improvement using the statistical techniques. The structure of sale, interrelationship between data variables and a business strategy to find maximum output by using minimum resources was the focus of this survey done using hypothesis testing. She collected the data from seven states of North India and depicted the results using pie charts.
- Muzammil Khan et.al. (2011) in their survey, "Data and Information Visualization Methods, and Interactive Mechanisms: A Survey" on different visualization techniques. Their focus was to present various visualization techniques, different steps in visualization process, the problems that are encountered during visualization, their advantages and disadvantages have been explored. They projected different kinds of visualization techniques used for various applications on par with the technology advancements.
- Barteld Braaksma et.al. (2014) in their article "Information management as tool for standardization in statistics" have described the role of information management in redesign programs. They explored its need using the Generic Statistical Information Model (GSIM) project, used in practice at Statistics Netherlands. They demonstrated the Information objects and their flows in the statistical value chain. The challenges of standardization and integration of their statistical production processes, and increasingly the challenge of international standardization and integration across NSIs were analysed. They concluded that GSIM is necessary for more extensive usage of big data sources, for interoperability of statistical tools and for sharing tools between NSIs.

Objectives of the study:

1. To know which diagram has to draw for different statistical data.
2. To study and know the applications of statistical methods in business.

Methodology: 100% secondary data is used like various articles form journals and from internet search engines.

Types of graphs used in Statistics in general:

Bar Graph

Bar graphs are used to compare things between different groups or to track changes over time.

Segmented Bar Graph

Also known as sub divided bar representation, when we want show 3 or 4 or more related factors in terms of percentage in a single bar, we use sub divided bars. But when you want relative evaluation its not advisable to use Segmented Bar Graph.

Column Graph

To rank of values from smallest to largest in order to focus on the largest value items and also compare values between items that have a specific sequence we use column graph**.**

Frequency Graph (Frequency Table)

Frequency indicates the number of occurrences of each numerical value in the data set. common methods of showing frequency distributions include frequency tables, histograms or bar charts. Frequency Tables. A frequency table is a simple way to display the number of occurrences of a particular value or characteristic

Cumulative Frequency Table

Cumulative frequency is used to determine the number of observations that lie above (or below) a particular value in a data set. The cumulative frequency is calculated using a frequency distribution table, which can be constructed from stem and leaf plots or directly from the data

Funnel Chart

- when the data is sequential and moves through at least 4 stages.
- when the number of "items" in the first stage is expected to be greater than the number in the final stage.
- to calculate potential (revenue/sales/deals/etc.) by stages.
- to calculate and track conversion and retention rates.
- to reveal bottlenecks in a linear process.
- to track the progress and success of click-through advertising/marketing campaigns.

Histogram

Histogram is only used to plot the frequency of score occurrences in a continuous data set that has been divided into classes, called bins

Line Graph

Line graphs can also be used to compare changes over the same period of time for more than one group.

Time plot

Time Series Plot and other time series analyses assume that data are collected at regular intervals, such as once a day, or once a month. If you collect data at irregular intervals, consider using Scatterplot.

Relative Frequency Histogram

A relative frequency histogram uses the same information as a frequency histogram but compares each class interval to the total number of items.

Pie Chart

Pie charts are best to use when you are trying to compare parts of a whole. They do not show changes over time. Pie charts are generally used to show percentage or proportional data and usually the percentage represented by each category is provided next to the corresponding slice of pie. Pie charts are good for displaying data for around 6 categories or fewer.

Statistics is a particularly useful branch of mathematics that is not only studied theoretically but used widely by researches in many fields to organize analysis and summarize data. Statistical methods and analyses are often used to communicate research findings and to support hypotheses and give reliability to conclusions. Statistics is highly useful subject for all and it plays a significant role in business.

- Any data relating to market, Competitors and consumers one has to use a questionnaire or schedule or personal interview and with the use of statistical tools one has to draw inferences.
- To predict demand in the market for product/ services.
- To record and find average sales, average wages, average production per day.
- Managers need to operate in difficult situations may take decision on probability based. (certainty or sure factor denotes 1 and as it moving towards zero risk and uncertainty are more)
- Statistics is concerned with the correlation of the data in such a manner to form a meaningful result. So, the previous data of the business relating to the manufacture, sales, packaging and promotional efforts are analysed. This is done to study the demand of the consumers in that particular period.

Conclusion:

Every researcher should know which kind of diagram has to draw for the data collected and statistics is inseparable to most of the business activities.

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