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ELUCIDATING THE PROTAGONIST ROLE OF STATISTICAL ANALYSIS IN RESEARCH

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ABSTRACT

Statisticians have devised many tools for application and these are available to be utilized for general business improvement and industrial problem solving. However, there is a wide gap between the available tools and what are practiced in Commerce, Management, Accounting and industrial organizations. Thus it is important for statisticians to direct serious attention to bridging this gap if statistics is to be relevant particularly in Accounting and commerce and to the society at large. Current research endeavor is aimed to fulfill this grasp difference between utilization and applicability with present scenario of statistics in accounting and commerce. Current research paper is exploratory in nature and based on secondary research methodology. Data is collected from various Journals, books, Websites, Audit reports, and published data in any source. Research highlights the importance of statistics in accounting which mostly involves basic arithmetic, but when it comes to creating accounting reports, statistics plays a key role. Statistics is also used in accounting to create projections for the upcoming fiscal year. Much of economics depends on statistics. Economists use statistics to collect information, analyze data, and test hypotheses. Relationships between supply and demand and imports and exports are found using statistical information. The same can be said for figuring out the inflation rate, the per capita income, and even the national income account. Fortunately, with a few simple convenient statistical tools most of the information needed in regular laboratory work can be obtained: the "t-test, the "F-test", and regression analysis. Research concludes that, statistics are a tool, not an aim. The value of statistics lies with organizing and simplifying data, to permit some objective estimate showing that an analysis is under control or that a change has occurred. Equally important is that the results of these statistical procedures are recorded and can be retrieved. The key is to sift through the overwhelming volume of data available to organizations and businesses and correctly interpret its implications. Finally the paper acts as a torchbearer attempt to give a brief report or study on Statistical tools used in accounting research studies.

Keywords: *Accounting, Quantify Accuracy, Analytical Procedures, Quality Assurance, and Data Analysis Tools.*

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1. INTRODUCTION

In the modern world of computers and information technology, the importance of statistics is very well recognized by all the disciplines. Statistics has originated as a science of statehood and found applications slowly and steadily in Agriculture, Economics, Commerce, Biology, Medicine, Industry, planning, education and so on. As on date there is no other human walk of life, where statistics cannot be applied.[(1)]

The word '***Statistics***' and '***Statistica***l' are all derived from the Latin word ***Status,*** means a ***political state***. [(2)] The theory of statistics as a distinct branch of scientific method is of comparatively recent growth. Research particularly into the mathematical theory of statistics is rapidly proceeding and fresh discoveries are being made all over the world.

Statistics is a range of procedures for gathering, organizing, analyzing and presenting quantitative data. 'Data' is the term for facts that have been obtained and subsequently recorded, and, for statisticians, 'data' usually refers to quantitative data that are numbers. Essentially therefore, statistics is a scientific approach to analyzing numerical data in order to enable us to maximize our interpretation, understanding and use. This means that statistics helps us turn data into information; that is data that have been interpreted, understood and are useful to the recipient. [(3)]

All commercial firms, business houses, management companies and individual firms, howsoever small or large, produce extensive statistics on their operations. The annual reports of companies contain variety of data on sales, production, expenditure, inventories, capital employed, and other activities. These data are often field data, collected by employing scientific survey techniques. Unless regularly updated, such data are the product of a one-time effort and have limited use beyond the situation that may have called for their collection. [(4)]

Keeping this in backdrop the current ***research endeavor is formulated to analyze and evolve the significant importance of statistics in commerce and management fields***.

2. HISTORICAL LITERATURE CITED

Definition of Statistics: ***A.L. Bowley*** has defined statistics as: (i) statistics is the science of counting, (ii)Statistics may rightly be called the science of averages, and (iii) statistics is the science of measurement of social organism regarded as a whole in all its manifestations. [(5)]

Boddington defined as: Statistics is the science of estimates and probabilities. Further, W.I. King has defined Statistics in a wider context, the science of Statistics is the method of judging collective, natural or social phenomena from the results obtained by the analysis or enumeration or collection of estimates. [(6)]

In very broad terms, statistics can be divided into two branches – ***Descriptive and inferential statistics.*** [(7)]

(a) **Descriptive statistics** is concerned with quantitative data and the methods for describing them. ('Data' (facts) is the plural of 'datum' (a fact), and therefore always needs a plural verb.) This branch of statistics is the one that you will already be familiar with because descriptive statistics are used in everyday life in areas such as government, healthcare, business, and sport.

(b) **Inferential (analytical)** statistics makes inferences about populations (entire groups of people or firms) by analyzing data gathered from samples (smaller subsets of the entire group), and deals with methods that enable a conclusion to be drawn from these data. (An inference is an assumption, supposition, deduction or possibility.)

Inferential statistics starts with a hypothesis (a statement of, or a conjecture about, the relationship between two or more variables that you intend to study), and investigates whether the data are consistent with that hypothesis.

Because statistical processing requires mathematics, it is an area that is often approached with discomfort and anxiety, if not actual fear. Which is why this book tells you which statistics to use, why those statistics, and when to use them, and ignores the explanations (which are often expressed mathematically) of the formulae in which they tend to be articulated, though it does give advice on what you should bear in mind when planning your data collection.

One of the major problems any researcher faces is reducing complex situations or things to manageable formats in order to describe, explain or model them. This is where statistics comes in. [(8)]

Using appropriate statistics, any commerce or business enterprise make sense of the large amount of data entrepreneur has collected so that one can tell research story coherently and with justification. [9]

Different authors have highlighted the importance of Statistics in business. For instance, ***Croxton and Cowden*** give numerous uses of Statistics in business such as project planning, budgetary planning and control, inventory planning and control, quality control, marketing, production and personnel administration. Within these also they have specified certain areas where statistics is very relevant. [10]

Another author, ***Irwing W. Burr***, dealing with the place of statistics in an industrial organization, specifies a number of areas where statistics is extremely useful. These are: customer wants and market research, development design and specification, purchasing, production, inspection, packaging and shipping, sales and complaints, inventory and maintenance, costs, management control, industrial engineering and research. [11]

Much of everyday life depends on making forecasts, and business can't progress without being able to audit change or plan action. In your research, you may be looking at areas such as purchasing, production, capital investment, long-term development, quality control, human resource development, recruitment and selection, marketing, credit risk assessment or financial forecasts or others.

And that is why the informed use of statistics is of direct importance to you while you are collecting your data and analysing them. If nothing else, your results and findings will be more accurate, more believable and, consequently, more useful.

Some of the reasons why you will be using statistics to analyze your data are the same reasons why you are doing the research. Ignoring the possibility that you are researching because the project or dissertation element of your qualification is compulsory, rather than because you very much want to find something out, you are likely to be researching because you want to:Measure things; Examine relationships; Make predictions; Test hypotheses; Construct concepts and develop theories; Explore issues; Explain activities or attitudes; Describe what is happening; Present information; Statistics plays a vital role in every field of human activity. Statistics helps in determining the existing position of per capita income, unemployment, population growth rates, housing, schooling medical facilities, etc., in a country. [11,12]

Now statistics holds a central position in almost every field, including industry, commerce, trade, physics, chemistry, economics, mathematics, biology, botany, psychology, astronomy, etc., so the application of statistics is very wide. Therefore this current research endeavor is focused on *"**An Imperative Analysis of Statistical Importance In Commerce And Management**"*

3. OBJECTIVES OF RESEARCH

Current research endeavor is focused to ascertain following research objectives:

(a) To elucidate the role of Statistical methods in Commerce and Management.

(b) To examine the importance and current scenario of utilization of statistics in commerce and management organizations.

4. RESEARCH METHODOLOGY

Current research endeavor is aimed to fulfill this grasp difference between utilization and applicability with present scenario of statistics in accounting and commerce. Current research paper is exploratory in nature and based on secondary research methodology. Data is collected from various Journals, books, Websites, Audit reports, and published data in any source.

5. FINDINGS AND DISCUSSION

Today, there is hardly any business that functions without the use of statistics and statistical tools. Every business small or big uses statistics for its daily function. The use of tools like Microsoft Excel to store, organise, and present data is a typical example of the use of statistics in business. And this is only going to grow with new tools coming into the market. In the future, most business activity will be under the scanner of statistics. Therefore, it is high time that business and to be managers accustom themselves to statistics and its tools. Few important findings were Statistics are employed in facets are:

(a) Business:

Statistics plays an important role in business. A successful businessman must be very quick and accurate in decision making. He knows what his customers want; he should therefore know what to produce and sell and in what quantities.

Statistics helps businessmen to plan production according to the taste of the customers, and the quality of the products can also be checked more efficiently by using statistical methods. Thus, it can be seen that all business activities are based on statistical information. Businessmen can make correct decisions about the location of business, marketing of the products, financial resources, etc.

(b) Economics

Economics largely depends upon statistics. National income accounts are multipurpose indicators for economists and administrators, and statistical methods are used to prepare these accounts. In economics research, statistical methods are used to collect and analyze the data and test hypotheses. The relationship between supply and demand is studied by statistical methods; imports and exports, inflation rates, and per capita income are problems which require a good knowledge of statistics.

(c) Mathematics

Statistics plays a central role in almost all natural and social sciences. The methods used in natural sciences are the most reliable but conclusions drawn from them are only probable because they are based on incomplete evidence.

Statistics helps in describing these measurements more precisely. Statistics is a branch of applied mathematics. A large number of statistical methods like probability averages, dispersions, estimation, etc., is used in mathematics, and different techniques of pure mathematics like integration, differentiation and algebra are used in statistics.

(d) Banking

Statistics plays an important role in banking. Banks make use of statistics for a number of purposes. They work on the principle that everyone who deposits their money with the banks does not withdraw it at the same time. The bank earns profits out of these deposits by lending it to others on interest. Bankers use statistical approaches based on probability to estimate the number of deposits and their claims for a certain day. [13,14]

(e) State Management (Administration)

Statistics is essential to a country. Different governmental policies are based on statistics. Statistical data are now widely used in making all administrative decisions. Suppose if the government wants to revise the pay scales of employees in view of an increase in the cost of

living, and statistical methods will be used to determine the rise in the cost of living. The preparation of federal and provincial government budgets mainly depends upon statistics because it helps in estimating the expected expenditures and revenue from different sources. So statistics are the eyes of the administration of the state.

(f) Accounting and Auditing

Accounting is impossible without exactness. But for decision making purposes, so much precision is not essential; the decision may be made on the basis of approximation, know as statistics. The correction of the values of current assets is made on the basis of the purchasing power of money or its current value.

In auditing, sampling techniques are commonly used. An auditor determines the sample size to be audited on the basis of error.

As the main aim of the research endeavor was to evaluate imperative importance ***of statistics in commerce and management fields***. Following are three major findings in which any business enterprise uses the statistical methods are as follows: [(15)]

(i) The planning of operations: This may relate to either special projects or to the recurring activities of a firm over a specified period.

(ii) The setting up of standards: This may relate to the size of employment, volume of sales, fixation of quality norms for the manufactured product, norms for the daily output, and so forth.

(iii) The function of control: This involves comparison of actual production achieved against the norm or target set earlier. In case the production has fallen short of the target, it gives remedial measures so that such a deficiency does not occur again.

A worth noting point is that although these three functions-planning of operations, setting standards, and control-are separate, but in practice they are very much interrelated.

Statistical problems arising in the course of business operations are multitudinous. As such, one may do no more than highlight some of the more important ones to emphasis the relevance of statistics to the business world. In the sphere of production, for example, statistics can be useful in various ways.

Statistical quality control methods are used to ensure the production of quality goods.

Identifying and rejecting defective or substandard goods achieve this. The sale targets can be fixed on the basis of sale forecasts, which are done by using varying methods of forecasting.

Analysis of sales affected against the targets set earlier would indicate the deficiency in achievement, which may be on account of several causes: (***i) targets were too high and unrealistic (ii) salesmen's performance has been poor (iii) emergence of increase in competition. (iv) Poor quality of company's product, and so on.*** These factors can be further investigated.

Another sphere in business where statistical methods can be used is personnel management. Here, one is concerned with the fixation of wage rates, incentive norms and performance appraisal of individual employee. The concept of productivity is very relevant here. On the basis of measurement of productivity, the productivity bonus is awarded to the workers. Comparisons of wages and productivity are undertaken in order to ensure increases in industrial productivity.

Statistical methods could also be used to ascertain the efficacy of a certain product.

6. CONCLUSION

Today, there is hardly any business that functions without the use of statistics and statistical tools. Every business small or big uses statistics for its daily function. The use of tools like Microsoft Excel to store, organize, and present data is a typical example of the use of statistics in business. And this is only going to grow with new tools coming into the market. In the future, most business activity will be under the scanner of statistics. Therefore, it is high time that business and to be managers accustom themselves to statistics and its tools.

Application of statistics becomes necessary from the beginning i.e. from buying or estimating the cost of product to the end sales and earning profits. Statistical tests and formulae help business to do financial analysis using ratios, percentages, equations. The objective of minimizing cost & maximizing profit is achieved through linear programming and calculus. The estimation of future returns & profitability is done through probability distributions. It also helps in sale forecasting & risk evaluation. Matrices play important role in variety of solutions for consumer relationships and logistics management. Statistics helps in collection, presentation and analysis of data to arrive at conclusions Statisticians have developed many tools for application and which can be utilized for business improvement. Statistical Thinking and Methods need to become part of the knowledge base of an organization.

Thus it is important for statisticians to direct serious attention to bridging this gap if statistics is to be relevant particularly in Accounting and commerce and to the society at large. Fortunately, with a few simple convenient statistical tools most of the information needed in regular laboratory work can be obtained: the "t-test, the "F-test", and regression analysis. Research concludes that, statistics are a tool, not an aim. The value of statistics lies with organizing and simplifying data, to permit some objective estimate showing that an analysis is under control or that a change has occurred. Equally important is that the results of these statistical procedures are recorded and can be retrieved. The key is to sift through the overwhelming volume of data available to organizations and businesses and correctly interpret its implications.

In this study, author outlined several issues related to the implementation of statistical methods in business and industry. Well planned systems and training are necessary for implementation. Enhancement of university education is also necessary. In the light of above, we conclude that knowledge of statstics should be made compulsory for students of Commerce and Management as it plays a key role in any business. Finally the paper acts as a torchbearer attempt to give a brief report or study on Statistical tools used in accounting research studies.

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