

Role and Importance of Statistics in Business Management

Rashmy Moray

*Symbiosis Institute of Management Studies
Symbiosis International University (SIU), Pune*

Received: 19 August 2020; Revised: 31 August 2020; Accepted: 01 September 2020

Abstract

Things that are managed are always measurable and termed as statistics. Use of statistical techniques in business management is vital in the contemporary scenario of competitive environment of globalisation. The various functional areas of business like marketing, finance, production, operations and HR encounters ample statistical data that has to be collected, processed, recorded and transmitted to the various stakeholders. The spectrum of statistics is widely used by the business administrators to run the business. Applying and using various statistical methods, techniques help the managers to combat the business uncertainties. Considering this backdrop an attempt is made to highlight the role of statistics in business management.

Key words: Statistics; Business; Organisations; Finance; Marketing; HR.

1. Introduction

Envisioning the trade and industrial environment of the future is a key management function and statistics play a dynamic role in all the types of business dealings. Every commercial proposal starts with an extensive research and all the data collected is compiled into statistics for decision (Balaji, 2013). Facts, figures and statistics are connoted to exhaustively explain and measure uncertainty and allows the managers to predict the future. Organisations encounter abundant information across all the media platforms and produce database for strategic operations in the day-to-day functioning of their business. From the perspective of business operations, a financial analyst uses widespread financial information to guide their speculative avenues and draw conclusions whether the stock is under-priced or overpriced. Marketing managers using the electronic scanners at retail checkout counters collect data for a variety of marketing research applications. Statistics helps the business in producing goods with limited variations and minimum wastage and increase in the workers' productivity (Scott, 2017). Considering the operational value of the business, now-a-days all the trading concerns highly rely on information technology (IT) systems to manage data, facilitate remittances and run day to day operations. To overcome the obstacles, statistical algorithms are used. In process of steering the business direction statistics is used as device to forecast the future for strategic planning. Application of statistical models provides a base to predict the business future expenses and revenues which would help the business to adjust with new market developments and track the competitors' activities (Salleh, 2018). Against this backdrop let us look at a few details regarding the role and significance of statistics in the work of managing business. The objective is to portray the importance of statistics in business management.

2. Spectrum of Literature

According to Horace Secrist, Statistics is the science of collection, organisation, presentation, analysis and interpretation of numerical data. Various definitions are found to define statistics but it is universal in character when it comes to its application to the world of business and industry. What is measurable is always in statistics and the things that are measurable are always manageable. Fundamentally statistics is aggregate of facts collected in a systematic manner and that are affected by number of factors, numerically expressed, which can be estimated according to reasonable standard of accuracy and presented/placed in relation to each other for a pre-determined purpose.

In the olden days' statistics was considered as science meant purely for federal governance and used to collect data for law and order, defence strength, population wealth and welfare for formulating policies and practices. But statistics is a study which is pervasive in nature. It is the division of science dealing in gathering, assembling, analysing the data collated and depicting of inferences drawn from the samples to the whole population (Ryan Winters, 2010). It includes forecasting, planning, organising and decision making which are the primary activities under taken by the business manager.

Contemporary world of trade and commerce is more of art than science. The growing worldwide competitive race amongst the corporates compels business managers to address uncertainties by applying technical means and be objective decision makers. Elimination of uncertainties is inevitable but using statistics, business executives make informed decisions about their products, customers, operations by applying statistical thinking and methods. This demands the unravelling muscle of statistics for business administrators in the field of marketing, finance and operations. Largely, knowledge of statistics enables the business operational leaders to identify the problem, describe its nature of existence, estimate alternate course of actions, approximate errors, monitor methods and practices and allow them to compare actual results with standards and upon any deviations enables the managers to take appropriate corrective measures (Veena, 2014). Let us consider each of the functional areas of the business and deliberate how statistics discourses the need of business management.

Marketing research heavily relies on statistical techniques to bring in insights to the usual deliverables and volume of output. According to American Marketing Association (AMA) Marketing research is examining the company's marketing processes exhaustively and a marketing executive needs to collect and analyse ample volume of data related to market crescendos and target clientele. Marketing strategy developed by the marketing executives depends upon the significant results of bazaar investigations which involves numerical methods for collection, using sampling techniques, analysing data and assessing the effect of various marketing strategies. Sample customers from consumers' population are selected to understand the perception with respect to a particular product or service and their buying and spending behaviour. It also helps in predicting the future preferences and purchasing habits of the consumers. (Cremonesi, 2018). The inferences derived from the gathered information from these surveys tend to widen the aspect of the population. This in turn depends on the method and source of data collection which encompasses the basic areas of survey design and sampling. A poorly designed survey and insufficient sample may result in biased and misrepresenting outcomes affecting the business advertising and sales promotional strategies. In Marketing management statistics is used extensively in determining advertising expenditures influencing sales and increasing the bottom lines i.e. net operating profits of the business (Saxena Parikshit, 2011). Statistics in marketing help the

marketing executives to identify which consumer buys what product at what frequency, which consumer is an active complaint launcher, recognises the sales personnel level of productivity and which mode of media would help in reach out the consumers in the digital era.

From the perspective of production and quality control point of view statistics is very vital since the volume of output produced directly impacts the top line of the business that is gross revenues made from sales. A production manager uses statistical process control techniques to enhance efficiency and quality (Veena, 2014). To enhance the production efficiency, the production executives, depend on application of control charts, sampling techniques and probability distribution ensuring improved methods and produces leading to fall in manufacturing expenses (Cremonezi, 2018). Organisations who have always thrived onto continuous improvement or heavily relied on quality assurance programs such as, Six Sigma or Lean Manufacturing, understands the significance of statistics. Empirical evidence submits that diverse intensities of statistical quality control methods application exist in the organisations with ISO-certified quality management systems Statistics provides a platform to quantify and regulate manufacturing processes to reduce variations in the occurrence of errors leading to waste ensuring consistency in the process of production. This ultimately helps in reduction in direct costs of material and labour (Williams, 2019).

With the help of statisticians' promotion of statistical quality control and its integration into quality management systems is executed together at the micro and the macro level of the production management. Application of statistical controlling measures in production management provides a means of detecting error at inspection, creates a basis for attainable specifications, plugs blockages and concerned areas, reduces inspection costs leading to uniform quality of production. The use of statistics in quality improvements includes hypothesis testing regression analysis, statistical process control (SPC) that helps the production engineers and managers identify when methods and practices are beyond resistance, as a result of deviations caused by uncertain situations and that are not integral part of the procedures. Finally helps in designing and analysis of experiments. Further if considering the use statistics in finance, chomping fiscal data and using financial techniques is a vital measure undertaken by financial analyst who are none other than are the financial actuaries using financial data.

Deliberating the role of statistics in finance, statistical investigation has become an influential device for economic, industry and market valuation in the hands of financial managers. The explosive innovations in the complex financial instruments makes markets complex making more difficult for the investors, lenders and practitioners to value financial assets accurately. Statistical analysis has come to their rescue by offering the options to hedge the amount of risk associated with investment avenues. The best example of how statistics exponentially progressed is witnessed from the derivation and application of Black-Scholes formula (Black and Scholes, 1972 and Merton, 1973) for option pricing. These statistical tools have been used across all major funds analysis to forecast the performance and meeting the investment goals.

The behavioural aspects of investors are used in predicting the stock prices based on the current price statistics of the index and the individual stock movements. Technical analysis is a classic example of statistical data presented in the form of charts and bars used by investors and financial houses for decision making analysis. Finance main concern is related to the valuation of assets. It is related to future receipts and payments called as cash flows. Statistical data helps the organisations in predicting the futures with respect to these cash

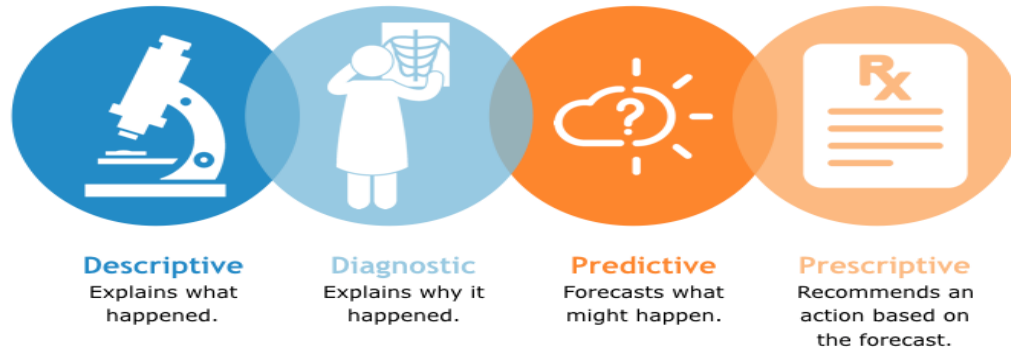
flows that impacts the earnings of the stakeholders. Practitioners use financial data for their own judgements regarding the investment positions in the stock markets (Gemeno, 2006).

The functional areas in accounting, like, financial accounting, managerial and cost accounting, auditing and taxation etc., includes the use of econometrics like regression analysis, time series analysis, discriminant analysis, probit, logit and Altman's Zeta analysis are of statistical nature. These offer various means and mode to gather, analyse and evaluate data for decision making on the part of financial managers to anticipate, acquire and allocate financial resources for the business operations. Statistics is pervasive in nature when it comes to accounting and finance as usually surveys research on investors use of bookkeeping data, capital market effects (stocks, bonds, options *etc.*) pension data, commodity markets and adjusting inflation rates to asset values. Using statistics knowledge of how firms' records, process and reports and constructed and transmitted to various stakeholders of the business. In finance the statistical procedures and estimation techniques attempt to minimise the occurrence of loss by quantifying the risk in returns over investments (Robert Hamada, 1998). At the economy level financial statistics is considered as an inclusive repository of stock and data on the financial assets and liabilities of all sectors of an economy. It highlights the statistical data that condenses past actions or projects future behaviour with respect to individual financial security, group of securities and markets in a widely spread geographical territory. The crux of presenting the balance sheet is merely the statistical record of presented in a systematic manners following an accounting process. The collective financial data of all the companies, industries and economic sectors are the resultant outcome of statistical process that is presented in the form of economic parameters to analyse the nation's economic performance.

Finally let us have a bird's view over the Human resource management (HR), another important functional area of business management. The discipline HR and relevance of statistics is age old since personnel at work that are men in concept of management play a vital role among the five Ms that is, men, material, machine, money and markets. The focus on HR in management is important as men is the first factor that assembles all the other remaining factors. HR leaders in the organisation always on the edge to identify the changing perception of the employees with respect to upgradation in pay package based on their contributed productivity to the profitability of the organisation. HRM is a phenomenon to manage people in an organisation. The focus of the discipline HR is to develop strategies to improve the workforce experience with the rising industry trends. The statistics of employees is all about the data of workforce employed in an organisation with respect to their demographics, educational qualifications, strengths, weakness, skills, experience role and responsibilities. The purpose of HR management in an organisation is to identify the training needs to upgrade the employee skills to enhance efficiency and contribute to the organisational development.

The use of statistics in HR is primarily to measure the employees level of satisfaction with respect to job performance. Ever since the concept of globalisation has emerged corporates are facing employee retention and engagement problems. Statistics as discipline helps these organisation in creating, maintaining and upgrading the data related to recruitment, contracts, payroll, performance, insurance and benefits and training needs of their staff and division/departmental heads. Statistical data in hand enables organisations to optimise engagement practices for the employee retention and motivation. The concept of HR analytics is receiving attention of business managers in large firms. It is a combinations of two terms analysis and statistics which means any analysis driven through the application of

statistics(Sengupta, 2020). Companies used several arrays of metrics to assess the effect of HR initiatives with the emergence of HR metrics and HR scorecard in relation to efficiency effectiveness and the impact on business performance. Over a period, the use of statistical tool gained significance over metrics, leading to the use of analytics. In the recent times application of quantitative techniques in HR has been prompted by the datafication of HR (Bersin, 2013).This is how the role of statistics is profound in the world of business management. Further the picture below helps us to understand how it enables the managers to apply statistics in business decision making through various approaches to analytics.



Source: <https://www.analyticsinsight.net/four-types-of-business-analytics-to-know/>

From the above depiction it can be comprehended that business enables managers to analyse past performance, predict future business practices and lead organizations effectively. And in the common parlance of statistics it can be in the form of descriptive; that summarises existing data showing cause and effect analysis which is usually used in functional areas of management, diagnostic that focuses on examining the past historical performance to identify and evaluate the causes behind the routines, predictive; using machine learning techniques, modelling an data mining that enabling the managers to predict future probabilities and trends based on historical data, *e.g.*, fraud detection and security, risk assessment *etc.*

3. Conclusion

From the above deliberation it is clear that in the age of technology statistics has wide range of applications. The discussion brings out clear deductions about the applications of statistics and its expediency in business managerial decision-making. Statistical methods used in day to day managerial aspects is a conspicuous reference for researchers, managers, consultants and academicians. In the fields of business, management science, operations research, supply chain management, financial econometrics and economics understanding statistical literature and applying quantitative practices is the need of the hour to combat business uncertainties and take smart decisions on a day to day front. To conclude researchers always are of the opinion that statistics enables the business managers to analyse past performance, predict future business practices and lead organizations effectively. In this entire process, descriptive analysis, predictive analysis and prescriptive analysis is key to success in business management.

References

- Balaji, R. (2013). Role of Statistics on Business Research. *International Journal of Engineering Research and Technology (IJERT)*, **2(10)**.
- Bersin, J. (2013). <https://www.forbes.com/sites/joshbersin/2013/02/17/bigdata-in-human-resources-talent-analytics-comes-of-age/#1a4ca3464cd0>. Retrieved from <https://www.forbes.com>
- Cremonezi, L. (2018). Introducing statistics in marketing research. *Ipsos Connect*.
- Gemeno, R. (2006). https://iase-web.org/documents/papers/icots7/5G2_GIME.pdf. Retrieved from <https://iase-web.org>.
- Radha, K. and Scott, E. (2017). <https://blog.essaycorp.com/importance-of-statistics-in-business/>. Retrieved from <https://blog.essaycorp.com/importance-of-statistics-in-business/>
- Robert Hamada, J. M. (1998). The role of statistics in accounting, marketing, finance and production. *Journal of Business Economics and Statistics*, **6(2)**, 261-272. doi:10.2307/1391563
- Ryan Winters, A. W. (2010). Statistics a brief overview. *Ochsner Journal*, **10(3)**, 213-216.
- Salleh, S. (2018). <https://yourbusiness.azcentral.com/importance-statistics-management-decision-making-25518.html>. Retrieved from <https://yourbusiness.azcentral.com/importance-statistics-management-decision-making-25518.html>
- Saxena, Parikshit (2011). Application of statistical techniques in market research: A sample survey. *International Journal of Applied Engineering Research, Dindigul*, 163-171.
- Sengupta, R. (2020). <https://www.analyticsinhr.com/blog/hr-analytics-statistics-introduction/>. Retrieved from <https://www.analyticsinhr.com>.
- Veena (2014). <https://iba.ac.in/statistics-for-managersb/>. Retrieved from <https://iba.ac.in/statistics-for-managersb/>
- Williams, J. T. (2019). *The Importance of Statistics in Management Decision Making*. Retrieved from <https://smallbusiness.chron.com>.