



The Role of Quantitative Techniques in Business and Management

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Abstract

A systematic approach to decision making is complex because today's business and environment in which it is functioning are for more complex than in the past. For large business a single wrong decision very painful but may also have ramifications in national economy. The objective of this paper is to discuss the various quantitative techniques and methods used in managerial decisions. Quantitative techniques are very powerful medium through which we solve uncertainty in decision making and enhance projectability and efficiency in the business. Therefore, these quantitative techniques evaluate planning factors and when these arise then provide meaningful solution to particular business problem.

Keywords: Business, tools, decision making, resources, mathematics, quantitative

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1. Introduction

Quantitative techniques include methods or tools, which focus on objective measurement, and analysing numbers in order to draw conclusion about given problems. It is scientific method or technique used by the business world for problem solving and decision-making. In simple words, these are bunch of those methods and techniques, which provide us a decision. The study of Quantitative techniques has been a new concept, which has its wide applications in business and other fields of life. These are more relevant to problems of complex business situations. These are supplement to judgement and intuition. Quantitative analysis now extended to several areas, which is widely designated as, OR, Management sciences, system analysis, decision making process or decision science and statistical methods etc. Quantitative Technique is a scientific approach to managerial decision-making. The successful use of Quantitative Technique for management would help the organization n

solving complex problems on time, with greater accuracy and in the most economical way. Today, scientific management techniques are available to solve managerial problems and use of these techniques helps managers become explicit about their problem areas

2. Functions of quantitative techniques

The following are the important reasons or functions of Quantitative techniques

1. To facilitate the decision making process.

2. to provide tools for scientific research.
3. To select an appropriate strategy.
4. To help in reduction of cost.
5. To have proper deployment of resources.
6. To help in minimizing the time required for completing the task.

3. Types of quantitative techniques

There are numerous quantitative techniques are available in modern times. The diagram 1 describes some of the important techniques that we discuss.

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4. Role of quantitative techniques in business

4.1 Solution for various business problems

With increasing competition and scarce resources, how manager can increase the profits of the organization are some examples of problems faced in today's business. Quantitative Techniques help in the field of production, marketing, finance and other activities of business. It is answer to such type of problems:

1. How to employ man and machine?
2. How much time customers wait for a service?
3. Can business deliver goods on time?
4. How effectively businesses use its resources?

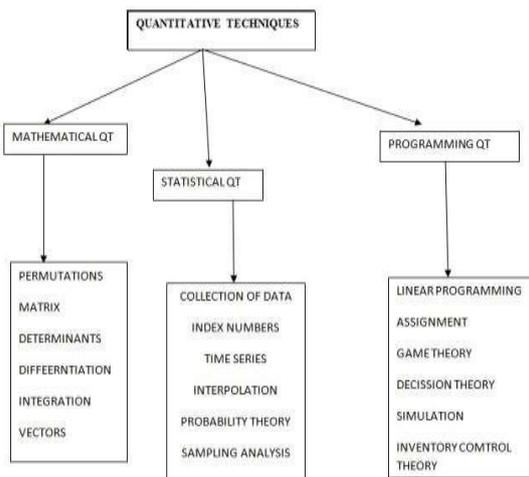


Diagram 1. Different types of quantitative techniques

Thus quantitative techniques provide a scientific base for meeting with uncertainty of future. No doubt, these uncertainties cannot be eliminated but quantitative techniques help in minimizing problems of the business.

4.2 Selection of an appropriate strategy

Every business is having a motive to increase its market share from its competitors by observing the strategies of the others. So game theory comes handy in this situation where businessman can minimize cost or maximize profit.

4.3 Base for scientific analysis

Quantitative techniques enforce disciplined thinking about organizational problems. They provide precise description of the cause and effect relationship and risk elimination. Quantitative techniques replace subjective and intuitive approach with analytical and objective approach.

4.4 Reduction in cost and minimizing waiting time

Time is essence in service industry. It is rightly said that a good decision if taken at right time then

outcome of that decision will automatically good. There is gap between service time and capacity so serve. So queuing theory helps in minimizing waiting time and wastage of resources. It provides a base for businessman to take a correct and profitable decision.

4.5 Proper allocation of resources

Quantitative techniques help in the proper allocation of resources which save time and cost of the businessman. PERT and CPM is first tool for proper allocation of resources to each and every activity in a proper manner. These techniques ensure completion of task with in time and with limited resources. These help managers to plan, schedule and control large and complex projects so resources wastage can e minimized.

4.6 Helpful in inventory management

The inventory management is deal with planning and control of inventory in the organization. If inventory holds for large time and in large quantity then this idle resource and create losses for the organization. On the other hand, if there is shortage of inventory then it also negative impacts on profitability of the organization. So quantitative techniques maintain balance between holding the inventory or not. These enables management to decide when to buy and how much to buy.

4.7 Facilities in decision making

Decision making is an essential part of management process. Thus, the decision maker in the present business must understand the scientific methodology of making decisions. In real life, some decision making situations are simple while other are not. The decision is multidimensional response which includes production, cost quality, price of the product etc. The quantitative techniques help in decision making process in the way that identify the factors which influence the decisions and quantify them. It becomes easier to resolve the complexity of the decision making. Some of the quantitative techniques such as decision theory and simulation work best in complex decisions.

4.8 Useful in production management

Quantitative techniques are useful to the production management due to:

1. Proper plant layout
2. Controlling the production movements
3. Compute the optimum product mix.

So quantitative techniques helpful in planning scheduling and controlling of plant layout and designing of production process.

4.9 Helpful in human resource

Human Resource is main asset of the business. Today, It becomes a challenge for business to find out best talent and how to retain this. Quantitative techniques helpful in studying personal recruitment process, selection criteria, accident rates and labour turnover etc. These useful to the Human resource management due to following reasons:

1. Proper manpower planning
2. How much work pool needed to cater labour absentism?
3. Routing and sequencing of HR in variety of jobs.

4.10 Other benefits

Quantitative techniques equally helpful in marketing and financial management. In marketing management with the help of quantitative technique we study consumer preferences, sales budget, advertising strategies for increasing market share. On the other hand, these are useful in financial management where estimate credit and investment risks, optimum replacement policies and capital requirements etc. Some other Quantitative techniques such as sampling theory helps in taking decision for whole universe on the basis of sample. In business estimation future planning, regression, correlation,

variance analysis, index numbers and time series analysis are very useful Quantitative techniques.

5. Conclusion

Therefore, Quantitative techniques are now extended to several areas of business and benefits with quantitative methods is exhibited in the way problems received and formulated. These techniques are very helpful in tackling the complex problems of modern business and industry. The tendency of today is to combine several of these techniques and form them into more sophisticated and advance programming models. Quantitative techniques are become integral part of the modern business.

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