

OPERATIONAL PERFORMANCE: TOOLS AND TECHNIQUES & RATIOS ANALYSIS

LALIT MOHAN

RESEARCH SCHOLAR, DEPTT. OF ABST, UNIVERSITY OF RAJASTHAN, JAIPUR,
RAJASTHAN, INDIA.

Abstract: *Operational performance Research is relatively a new discipline, which originated in World War II, and became very popular throughout the world. India is one of the few first countries in the world who started using operations research. Operations Research is used successfully not only in military/army operations but also in business, government and industry. Now a day's operations research is almost used in all the fields. Operational performance Research has a number of applications. Similarly it has a number of limitations, which is basically related to the time, money, and the problem involves in the model building. Day-by day operations research gaining acceptance because it improve decision making effectiveness of the managers. Almost all the areas of business use the operations research for decision making.*

Key Words: *Operational performance Research., Finance, Company, Programming.*

1. INTRODUCTION:

The term Operational performance Research has its origin during the Second World War. The military management of England called a team of scientists to study the strategic and tactical problems which could raise in air and land defence of the country. As the resources were limited and those need to be fully but properly utilized. The team did not involve actually in military operations like fight or attending war but the team kept off the war but studying and suggesting various operations related to war.

2. MEANING OF OPERATIONAL PERFORMANCE RESEARCH :

As started early the Operational performance Research does not mean to get involved in the operations but suggestion for better execution of operations. Suggesting strategy how the operations can be improved and get better results. The genesis of Operational performance Research is in finding better ways to solve a problem. Thus it is analytical not purely hard core action oriented. As we explore several option for the analysis of operations, we search and re-search the effects of operations. If one solution offers some result, try second solution and see and compare with previous and so on unless we satisfy ourselves. Therefore research term sounds to indicate that there would be enough thinking on the outcome of several results, Hence Operational performance Research. Firm's performance measured against standard or prescribed indicators of effectiveness, efficiency, and environmental responsibility such as, cycle time, productivity, waste reduction, and regulatory, compliance.

3. OPERATIONAL PERFORMANCE RESEARCH TOOLS AND TECHNIQUES :

Operational Performance Research uses any suitable tools or techniques available. The common frequently used tools/techniques are mathematical procedures, cost analysis, electronic computation. However, Operational Performance Research given special importance to the development and the use of techniques like linear programming, game theory, decision theory, queuing theory, inventory models and simulation. In addition to the above techniques, some other common tools are non-linear programming, integer programming, dynamic programming, sequencing theory, Markov process, network scheduling (PERT/CPM), symbolic Model, information theory, and value theory. There is many other Operational Performance Research tools/techniques also exists. The brief explanations of some of the above techniques/tools are as follows:

4. LINEAR PROGRAMMING:

This is a constrained optimization technique, which optimize some criterion within some constraints. In Linear programming the objective function (profit, loss or return on investment) and constraints are linear. There are different methods available to solve linear programming.

Game Theory:

This is used for making decisions under conflicting situations where there are one or more players/opponents. In this the motive of the players are dichotomized. The success of one player tends to be at the cost of other players and hence they are in conflict.

Decision Theory:

Decision theory is concerned with making decisions under conditions of complete certainty about the future outcomes and under conditions such that we can make some probability about what will happen in future.

Queuing Theory:

Choose the solution to be used. 'Sell' the decision to operating managers; get their understanding and cooperation. Manager Manager and Operational Performance Research Specialist MBA-H2040 Quantitative Techniques for Managers

This is used in situations where the queue is formed (for example customers waiting for service, aircrafts waiting for landing, jobs waiting for processing in the computer system, etc). The objective here is minimizing the cost of waiting without increasing the cost of servicing.

Inventory Models:

Inventory model make a decisions that minimize total inventory cost. This model successfully reduces the total cost of purchasing, carrying, and out of stock inventory.

Simulation:

Simulation is a procedure that studies a problem by creating a model of the process involved in the problem and then through a series of organized trials and error solutions attempt to determine the best solution. Some times this is a difficult/time consuming procedure. Simulation is used when actual experimentation is not feasible or solution of model is not possible.

Non-linear Programming:

This is used when the objective function and the constraints are not linear in nature. Linear relationships may be applied to approximate non-linear constraints but limited to some range, because approximation becomes poorer as the range is extended. Thus, the non-linear programming is used to determine the approximation in which a solution lies and then the solution is obtained using linear methods.

Dynamic Programming:

Dynamic programming is a method of analyzing multistage decision processes. In this each elementary decision depends on those preceding decisions and as well as external factors.

Integer Programming:

If one or more variables of the problem take integral values only then dynamic programming method is used. For example number of motor in an organization, number of passenger in an aircraft, number of generators in a power generating plant, etc.

Markov Process:

Markov process permits to predict changes over time information about the behavior of a system is known. This is used in decision making in situations where the various states are defined. The probability from one state to another state is known and depends on the current state and is independent of how we have arrived at that particular state. MBA-H2040 Quantitative Techniques for Managers

Network Scheduling:

This technique is used extensively to plan, schedule, and monitor large projects (for example computer system installation, R & D design, construction, maintenance, etc.). The aim of this technique is minimize trouble spots (such as delays, interruption, production bottlenecks, etc.) by identifying the critical factors. The different activities and their relationships of the entire project are represented diagrammatically with the help of networks and arrows, which is used for identifying critical activities and path. There are two main types of technique in network scheduling, they are: Program Evaluation and Review Technique (PERT) – is used when activities time is not known accurately/ only probabilistic estimate of time is available. Critical Path Method (CPM) – is used when activities time is know accurately.

Information Theory:

This analytical process is transferred from the electrical communication field to Operational Performance Research field. The objective of this theory is to evaluate the effectiveness of flow of information with a given system. This is used mainly in communication networks but also has indirect influence in simulating the examination of business organizational structure with a view of enhancing flow of information.

5. FINANCIAL PERFORMANCE AND RESOURCE REQUIREMENTS:

As discussed above, an analysis of financial resource requirements will include:

- a) At a minimum, an analysis of financial results, and possibly also
- b) An analysis of the Full Term Forecast, and
- c) An analysis of the Overall Financial Plan.

Whether a project includes b and c above will depend on its size and nature. As discussed earlier, an analysis of financial results looks at actual expenditure and income. A full-term forecast predicts income and expenditures over the contracted life of the project. An overall financial plan looks more broadly at what project needs will be and where additional funding might be secured. Although we are discussing three separate financial reports, in practice, it is much more efficient to keep track of all of your financial information in one place and then produce different reports for different needs. Thus, you ideally update your financial data in one place and then all reports generated should reflect this update.

6. OPERATING PERFORMANCE RATIOS:

Each of these ratios have differing inputs and measure different segments of a company's overall operational performance, but the ratios do give users insight into the company's performance and management during the period being measured.

These ratios look at how well a company turns its assets into revenue as well as how efficiently a company converts its sales into cash. Basically, these ratios look at how efficiently and effectively a company is using its resources to generate sales and increase shareholder value. In general, the better these ratios are, the better it is for shareholders.

In this section, we'll look at the fixed-asset turnover ratio and the sales/revenue per employee ratio, which look at how well the company uses its fixed assets and employees to generate sales. We will also look at the operating cycle measure, which details the company's ability to convert its inventory into cash.

This ratio is a rough measure of the productivity of a company's fixed assets (property, plant and equipment or PP&E) with respect to generating sales. For most companies, their investment in fixed assets represents the single largest component of their total assets. This annual turnover ratio is designed to reflect a company's efficiency in managing these significant assets. Simply put, the higher the yearly turnover rate, the better.

$$\text{Fixed Asset Turnover Ratio} = \frac{\text{Revenue}}{\text{Property, Plant and Equipment}}$$

7. JOB DESCRIPTION:

- IBM is seeking to hire a Financial and Operational Performance Management (FOPM) Specialty Sales Representative to join our team. We live in a moment of remarkable change and opportunity. Data and technology are transforming industries, society, and even the workplace—by creating professions that did not exist before the emergence of data, cloud, social, and mobile. As the largest technology and consulting employer in the world, IBM is a leader in this global transformation and just the place to continue one's career. IBM is expanding its Analytics Software Sales Team. The candidate will be focused on Financial and Operational Performance Management (FOPM) solution sales covering the Analytics Enterprise accounts in the North America market. Also, the candidate will engage directly with sales opportunities. Additionally, the candidate will develop long-term sales strategies, generate tactical and comprehensive solutions, prospect, develop, and close large-scale transactions, and manage relationships with extended internal team in a matrixed environment, as well as external partners. IBM's FOPM applications support planning, profitability

management, goal setting, financial and operational planning, and the end-to-end financial close and reporting process, all in an integrated “best of breed” solutions. Required Responsibilities*achieving assigned FOPM quota as assigned by the regional and segment leaders on a consistent basis *establishing and maintaining partnerships with external IBM business partners*defining and executing on sales plays and competitive differentiators*meeting and exceeding all internal controls, including reporting, and expenses*planning and forecasting with precision using IBM’s Finance Operations and Performance Management solutions that align finance and operations*accelerating the financial close and reporting process, all while providing greater transparency and confidence in numbers Required Skills:*demonstrated track record of consistent sales quota achievement*proven ability to penetrate accounts and meet with stakeholders within accounts*proven ability to manage sales through forecasting, build a pipeline, account resource allocation, account strategy, and planning*proven ability to initiate and close multiple deals simultaneously*exhibited knowledge of value solutions based selling, as well as account planning, prospecting, business development and strategy development*demonstrated communication and interpersonal skills with technical aptitude to deliver presentations at all levels of an organization.

8. LIMITATIONS OF OPERATIONAL PERFORMANCE RESEARCH:

Operational Performance Research has number of applications; similarly it also has certain limitations. These limitations are mostly related to the model building and money and time factors problems involved in its application. Some of them are as given below:

Distance between O.R. specialist and Manager

Operations Researchers job needs a mathematician or statistician, who might not be aware of the business problems. Similarly, a manager is unable to understand the complex nature of Operations Research. Thus there is a big gap between the two personnel.

Magnitude of Calculations MBA-H2040 Quantitative Techniques for Managers

The aim of the O.R. is to find out optimal solution taking into consideration all the factors. In this modern world these factors are enormous and expressing them in quantitative model and establishing relationships among these require voluminous calculations, which can be handled only by machines.

Money and Time Costs

The basic data are subjected to frequent changes, incorporating these changes into the Operational Performance Research models is very expensive. However, a fairly good solution at present may be more desirable than a perfect operations research solution available in future or after some time.

Non-quantifiable Factors

When all the factors related to a problem can be quantifiable only then operations research provides solution otherwise not. The non-quantifiable factors are not incorporated in Operational Performance Research models. Importantly Operational Performance Research models do not take into account emotional factors or qualitative factors.

Implementation Once the decision has been taken it should be implemented. The implementation of decisions is a delicate task. This task must take into account the complexities of human relations and behavior and in some times only the psychological factors.

9. CONCLUSION:

In order to evaluate financial condition and performance of a firm, the financial analyst needs certain tools to be applied on various financial aspects. One of the widely used and powerful tools is ratio or index. Ratios express the numerical relationship between two or more things. This relationship can be expressed as percentages (25% of revenue), fraction (one-fourth of revenue), or proportion of numbers (1:4). Accounting ratios are used to describe significant relationships, which exist between figures shown on a balance sheet, in a profit and loss account, in a budgetary control system or in any other part of the accounting organization. Ratio analysis plays an important role in determining the financial strengths and weaknesses of a company relative to that of other companies in the same industry. The analysis also reveals whether the company's financial position has been improving or deteriorating over

time. Ratios can be classified into four broad groups on the basis of items used: (1) Liquidity Ratio, (ii) Capital Structure/Leverage Ratios, (iii) Profitability Ratios, and (iv) Activity Ratios.

REFERENCES:

1. Hamdy A Taha, 1999. Introduction to Operational Performance Research, PHI Limited, New Delhi.
2. Sharma, J.K., 1989. Mathematical Models in Operations Research, Tata McGraw Hill Publishing Company Ltd., New Delhi.
3. Beer, Stafford, 1966. Decision and Control, John Wiley & Sons, Inc., New York.
4. Levin, Rubin, Stinson, Gardner, 1992. Quantitative Approaches to Management, Tata McGraw Hill Publishing Company Ltd. New Delhi.
5. Wagner, Harvey M., 1975. Principles of Operations Research, PHI, Englewood Cliffs, N.J.
6. Levin Richard I., "Statistics for Management", Prantice Hall of India Pvt. Ltd., New Delhi, 1979.
7. Metcalf, R. W. and P. L. Titard, "Principles of Accounting", W. B. Saunders, (Philadelphia) 1976.
8. Meigs, W. B. and others, "Intermediate Accounting", McGraw – Hill, New York, 1978.
9. Mirza, Sidra Ali and Attiya Javed (2013). Determinants of Financial Performance of a Firm: Case of Pakistani
10. Stock Market. Journal of Economics and International Finance, 5 (2).
11. Ou, J. A. and S. H. Penman (1989a). Financial Statement Analysis and the Prediction of Stock Returns, Journal of Accounting and Economics, 11.