



ISSN: 0976-3031

Available Online at <http://www.recentscientific.com>

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research
Vol. 9, Issue, 1(B), pp. 22963-22966, January, 2018

**International Journal of
Recent Scientific
Research**

DOI: 10.24327/IJRSR

Research Article

A STUDY ON SURVEY OF THE NUMBER OF INDIAN COMPANIES USING OR (OPERATION RESEARCH)

Neha Jain¹, Neeta Saxena² and Priya Khandelwal³

¹Mathematics IITM College, Janakpuri, GGSIP University New Delhi

²Mathematics Amity University Madhya Pradesh Gwalior

³IITM Janakpuri

DOI: <http://dx.doi.org/10.24327/ijrsr.2018.0901.1370>

ARTICLE INFO

Article History:

Received 20th October, 2017

Received in revised form 29th

November, 2017

Accepted 30th December, 2017

Published online 28th January, 2018

Key Words:

Operations Research; Business
Organizations; Managers; Problem solving;
Decision making.

ABSTRACT

The Operations Research, Originally developed by the U.S. Department of Defense during World War II, is one of the employing technique used very much for make better decisions in the small business. It applies sophisticated statistical analysis and mathematical modeling to solve an array of business and organizational problems, as well as improve decision-making. Research has shown that majority of managers in small business organizations use of operations research techniques to As the business environment grows more complex, companies and government agencies rely on analysis to inform decisions that were once based largely on management intuition.

The objective of this paper is to discuss the principles and ideas of Operations Research which are very helpful in a dynamic, complex and competitive business environment. Operations research has helped many large companies and government agencies make better decisions, boost performance and reduce risk. To achieve the aim of the paper, this paper examines the nature of Operations Research, the Operations Research techniques available for managers and the various areas of operation where they can be applied. Therefore, this paper reviews the application of Operations Research to the small business organizations to take the effective and consistent decision making to achieve business excellence.

Copyright © Neha Jain et al, 2018, this is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Operational research is a discipline that applications and methods help us to make better decisions in business problems. Operations Research is one of the popular problem solving and decision-making science. It is a collection of managerial decision making and programmable rules that provide basis for the decision making to managers at all levels of small business. As the small business environment has become very much complex and competitive, Operations Research has gained paramount significance in applications like Lean production, world-class Manufacturing systems(WCM), Six-sigma quality management, Benchmarking, in industry as airlines, service organizations, military branches, and in government, Just-in-time (JIT) inventory techniques.

According to Akingbade et al (1991), it is a problem-solving science-based activity using analysis and modelling as a basis for aiding decision-makers in organizations to improve the performance of the operations under their control. It is dealing with analyzing complex business problems and assisting

managers work out the best to solve the problem & achieving objectives. According to Agbadudu, 2006, It can be said to have been in existence since the beginning of mankind. However, the concept actually emerged in 1940 during the time of world war II, when the military management of England and USA called upon the team of scientists to develop the strategies to make the most efficient and consistent use of limited military resources in the war.

This paper highlights the advantage of different techniques in operation research, and its importance in business practices. This paper indicates the importance of OR in finding the optimum solution of critical problems in business organizations. It helps in decision making process. Such a wide usages of operational research models used by the globe companies and industry would not only contribute to the make profit but also would contribute to enhance the quality of economic production.

*Corresponding author: **Neha Jain**

Mathematics IITM College, Janakpuri, GGSIP University New Delhi

Problem Solving Approach of Operations Research

There are many different problem solving techniques. Applications of operation research are the one of the unique problem solving approach. This step is characterized by research, data analysis, and creative application of the knowledge gained to scope and bound the problem. The major steps of a typical problem solving approach of operations approach are the following:

Identify Problem The first step of OR study is to identify the problem and the environment in which the problem exists. The Operations that involve some steps to understand the problem. With the help of such operations, the OR analyst gets sufficient knowledge and support to proceed and is better prepared to formulate the problem.

Define the Problem after identifying the problem, the problem is defined with its uses, objectives and limitations of the study that are stressed in the light of the problem. The end results of this step are clear grasp of need for a solution and understanding of its nature.

Model Construction The next step in problem approach as to construct the model which is representation the real or abstract situation of the problem. These models are mathematical models based on the operations representing problem, process or environment in form of equations having relationships or formulae. In this step need to define interrelationships among variables and formulating constraint equations, usually known as OR models or searching suitable alternate models. The hypothetical model must be tested in field and modified in order to need of work under given environmental constraints. A model may also be modified if the organization is not satisfied with the results that it gives.

Collection of Relevant Data It is a well known fact that without authentic and relevant data the results of the formulated models cannot be trusted. Hence, selection of right kind of data is a necessary step in OR problem solving process. The important part off this step is analysis of selected data and facts, collecting opinions from people and using computer data banks. Therefore, the purpose of this step is to have sufficient input data to operate and test the model.

Testing of Solution With the help of constructed model and collected data input, the problems is solved and its solution is obtained .This solution cannot be implemented immediately and this solution is used to test the model to find its limitations. If the solution is not reasonable, updating and modification of the model and solution that considered at this stage. The end result of this step is solution that is desirable and supports current organizational objectives.

Implementation and Find results This is the last step of the problem solving approach of OR study. In OR the decision-making is scientific but implementation of decision involves many behavioral issues. Therefore, organization has to resolve and think upon the behavioral issues related to the workers and supervisors to avoid conflicts in the future. The gap between organization and analyst may offer some resistance but must be eliminated before solution is accepted in totality. Both the parties should play positive role, since the implementation will help the organization as a whole.

Operations Research Model

A properly implemented solution obtained through OR techniques give the result of the problem in improved working conditions. It is the duty of OR expert to communicate his highly specialized, ideas and concepts into simple operations which can be easily understood by the managers and workers. For better understanding of operation research tools to solve the problem, we have constructed a Operations research model described as:

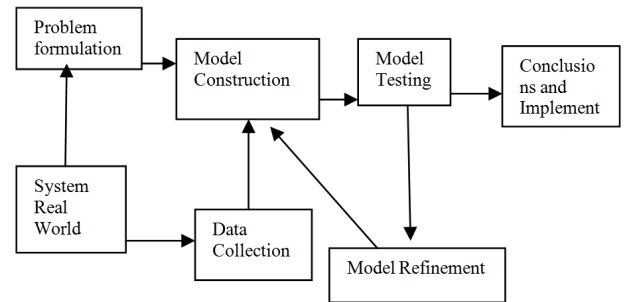


Figure 1 Operations Research Model

Operation Research applications in business

Using the above practices, the operations research has very importance in different sectors. These are based on the various techniques of the operations researches.

- Finance, Budgeting and Investment
- Marketing
- Purchasing & Physical Distribution
- Six-sigma quality management
- Anti-money Laundering
- Traffic flow optimization
- Retail planning, Merchandize optimization
- Research and Development
- Supply and chain management
- Inventory planning
- Product mix and blending
- Staff allocation and resource allocation
- Capital Budgeting

Decision Making In Operation Research in Small Business

Decision making in operation research leads with four parameters as:-

Effective Decisions: Operations Research (OR) helps the managers to take better and quicker decisions. It increases the number of alternatives. It helps the managers to evaluate the risk and results of all the alternative decisions. So, OR makes the decisions more effective.

Better Coordination: Operations Research (OR) helps to coordinate all the decisions of the organization. It coordinates all the decisions taken by the different levels of management and the various departments of the organization. For e.g. It coordinates the decisions taken by the production department with the decisions taken by the marketing department.

Facilitates Control: Operations Research (OR) helps the manager to control his subordinates. It helps the manager to decide which work is most important. The manager does the most important work himself, and he delegates the less

important work to his subordinates. Operations Research (OR) helps a manager to fix standards for all the work. It helps him to measure the performance of the subordinates. It helps the manager to find out and correct the deviations (difference) in the performance. So, OR facilitates control.

Improves Productivity: Operations Research (OR) helps to improve the productivity of the organization. It helps to decide about the selection, location and size of the factories, warehouses, etc. It helps in inventory control. It helps in production planning and control. It also helps in manpower planning. OR is used in expansion, modernization, installation of technology, etc. OR uses many different mathematical and statistical techniques to improve productivity. Simulation is used by many organizations to improve their productivity. That is, they try out many productions improvement techniques on a small scale. If these techniques are successful then they are used on a large scale.

Methodology of OR on Small Business

Small business is a term used in a wide verity of contexts and therefore it too has no generally accepted definition. Some authorities have suggested that small business can be generally described in term of quantitative consideration for instance:

1. The controlling owners are usually the manager.
2. Few, if any specialized professional staff members are available to execute separate management function.
3. Research facilities are lacking.
4. The business is self dependent (which is not entirely synonymous with independent) are some of the suggested characteristic of small business.

An organization can be defined as a purposeful system with four essential Characteristics:

1. Some of its components are human beings.
2. Responsibility for choices (alternative) acts is divided among two or more individuals.
3. The functionally distinct subgroups are aware of each other's choice either through communication or observation.
4. A subgroup of individuals in the organization has a control function normally an executive body.

This definition suggests that much small business would not be suitable subject for OR in that responsibility for choice is not divided and often the same individual or group that exercises the control function also makes all the decision. Indeed, complexity of system or organization is after held as an essential feature of operation research. In this study we can therefore concerned with those business which have a value added of less than five million dollars per year. But whose operating decisions are made by more than one person with the knowledge of each other's actions and with overall control exercised by a subgroup of the business management.

Survey's of the number of Indian companies using OR

- Companies to which questionnaire were sent = 50
- Respondents = 35
- Companies Using OR = 08
- Company planning to use OR = 18
- Percent range of OR users = 22.87%

- Subjective estimate of percent of OR user = 20%

The effectiveness of or in Indian companies

- Appreciable savings
- Too early to tell

Reasons for non use of OR

- "Inadequate access to appropriate equipment"
- "Lack of sufficiently competent personnel"
- "Lack of interest among operating managers"
- "Not applicable to this business at all"

Companies and Managers represented in the survey:

Company	Industry	Value added (in Rs Cr)	No. Of employees	Formally educated employees	Position of manager	Familiarity with OR
Mrs. Bectors Food Speciality LTD	Food	500	350	125	50	25
Luxor Int. Ltd.	Stationary	200	150	55	20	15
Eastman Industries Ltd	Bicycle Products	150	120	35	20	15
Adani Wilmar Ltd	Food	600	560	150	100	75
Somany Ltd	Building Material	2000	1000	800	500	300

CONCLUSION

The above finding indicates that small firms do not use operation research as extensively as large companies. The question arises – "Do they need operation research?" In an attempt to answer this question the literature was surveyed for information on productivity, profitability and failure rate as a function of size of firm. The apparent success of operation research as an aid to planning and control in large organization has created an interest in applying it to small business management. A recent statistical study shows that the profitability of small Indians firms essentially those with assets of less than 50% is significantly lower than larger companies.

Therefore, Operations research is the mathematical practice of applying methods to help make better decisions and optimal solution in the business organizations. Mathematical programming has been used to solve a considerable range of problems in business organizations - forming portfolios of equities, employee oriented, customer oriented product oriented and production oriented etc. Today's global markets and instant communications mean that customers expect high-quality products and services when they need them, where they need them. Organizations, whether public or private, need to provide these products and services as effectively and efficiently as possible by the OR mathematical tools at all.

References

1. "About Operations research", INFORMS.org. Retrieved 7January, 2012.
2. Akingbade, F., Luck, M. and Patal, N. (1991). Concepts and Applications of Operational Research in Development Management, Lagos: Centre for Management Development.
3. Agbadudu, A.B. (2006). Operations Research, Mathematics and Social Sciences: The Link, Inaugural Lecture Series 86 of the University of Benin, Uniben Press.

4. Anderson, D.R, Sweeney, D.J. and Williams, T.A. (1997). An Introduction to Management Sciences, New York: West Publishing Company.
5. IOSR *Journal of Business and Management* (IOSR-JBM) e-ISSN: 2278-487X. Volume 7, Issue 4 (Jan. - Feb. 2013), PP 01-13.
6. www.sciencemag.org > 7 February 1947.
7. www.ams.jhu.edu/~castello/625.
8. Hiller F. S. Hillier, G.J. Lieberman: Introduction to Operations Research, 7th ed., McGrawHill,2001.
9. Winston W.L. Operations Research: Applications and Algorithms, PWS-KENT Publishing Company, Boston, 1987.
10. www.newagepublishers.com/samplechapter/001948.
11. Operations Research Proceedings Volume 1990, 1992, pp 1-25.
12. Role of Operations Research in Business Decision Making, ISSN: 2277-8179. Volume 1, Issue6, 2012.
13. Bookman *International Journal of Accounts, Economics & Business Management*, Vol. 1 No 1 Sep. 2012 ISSN No. 2319-426X © Bookman International Journal.
14. SIM, self instructional material for ptu students 2009.issue 6 :
15. Chawla KK, Gupta Vijay, Operation Research quantitative Analysis for Management, 2008.
16. Munkres, James, "Algorithms for the Assignment and Transportation Problems". *Journal of the Society for Industrial and Applied Mathematics* Vol. 5, No. 1 (Mar., 1957), pp. 32-38.
17. CDAM Research Report LSE-CDAM-2001-09October 8, 2001 .Nov 2012 • ISSN No 2277 – 8179.
18. Agarwal & al.," Operations Research-Contemporary Role in Managerial Decision Making", IJRRAS 3 (2) May, 2010.

How to cite this article:

Neha Jain et al.2018, A Study on Survey of The Number of Indian Companies Using or (Operation Research).
Int J Recent Sci Res. 9(1), pp. 22963-22966. DOI: <http://dx.doi.org/10.24327/ijrsr.2018.0901.1370>
