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## e-Books: (c2007-c2014)

Bogetoft, Peter and Lars Otto. Benchmarking with DEA, SFA, and R. Springer New York, 2011.

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Martin, James William. Lean Six Sigma for Supply Chain Management: A 10-Step Solution Process, Second Edition. McGraw-Hill Higher Education, 2014.

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Planning Production and Inventories in the Extended Enterprise: a state-of-the-art handbook, vol.2. Springer New York, 2011

Ptak, Carol and Chad Smith. Orlicky's Material Requirements Planning, Third Edition. McGraw-Hill Higher Education, 2011.

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## Online Subscriptions:

Informs PubsOnline - provides professional and scientific publications in the field of operations research (O.R.), management science, and business analytics, published by the Institute for Operations Research and the Management Sciences (INFORMS).

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SIAM - a leading source for applied mathematics and computational science communities.

SpringerLink - an interactive database for Scientific, Technical, and Medical (STM) books, journals, and reference materials.

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### Disclaimer:

*This pathfinder contains suggested materials on Operations Research that are available at the College of Engineering Library I. However, some references were not included.*

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*We welcome suggestions for new pathfinder topics.*

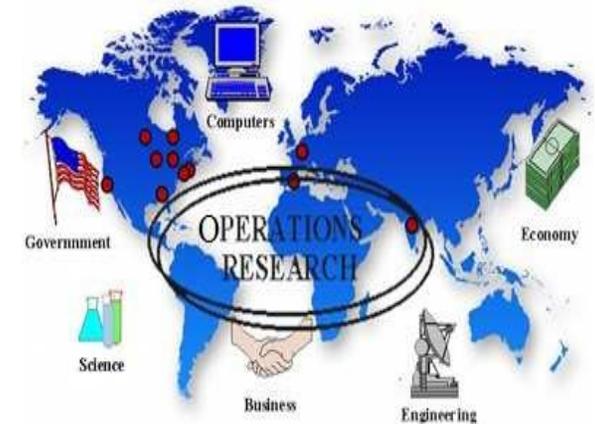
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# OPERATIONS RESEARCH

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# PATHFINDER



## OPERATIONS RESEARCH

Operations research involves “research on operations”. Thus, operations research is applied to problems that concern how to conduct and coordinate the operations (i.e. the activities) within an organization. The nature of the organization is essentially immaterial, and, in fact, OR has been applied extensively in such diverse areas as manufacturing, transportation, construction, telecommunications, financial planning, health care, the military, and public services, to name just a few. Therefore, the breath of application is unusually wide.

The research part of the name means that operations research uses an approach that resembles the way research is conducted in established scientific fields. To a considerable extent, the scientific method is used to investigate the problem of concern.

Source: Hillier, Frederick S. and Gerald J. Lieberman. "The Nature of Operations Research." *Introduction to Operations Research*. 9th Ed ed. New York: McGraw-Hill Higher Education , 2010. 2. Print.

Operations Research (O.R.), or operational research in the U.K, is a discipline that deals with the application of advanced analytical methods to help make better decisions. The terms management science and analytics are sometimes used as synonyms for operations research.

Source: Informs. "What is Operations Research?" *Informs*. Catonsville, MD , 2015. Web. 16 March 2015 <<https://www.informs.org/About-INFORMS/What-is-Operations-Research>>.



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## The Origins of OPERATIONS RESEARCH

The roots of OR can be traced back many decades, when early attempts were made to use a scientific approach in the management of organizations. However, the beginning of the activity called operations research has generally been attributed to the military services early in World War II. Because of the war effort, there was an urgent need to allocate scarce resources to the various military operations and to the activities within each operation in an effective manner. Therefore, the British and then the U.S. military management called upon a large number of scientists to apply a scientific approach to dealing with this and other strategic and tactical problems. In effect, they were asked to do research on (military) operations. These teams of scientists were the first OR teams. By developing effective methods of using the new tool of radar, these teams were instrumental in winning the Air Battle of Britain. Through their research on how to better manage convoy and antisubmarine operations, they also played a major role in winning the Battle of the North Atlantic. Similar efforts assisted the Island Campaign in the Pacific.

When the war ended., the success of OR in the war effort spurred interest in applying OR outside the military as well. As the industrial boom following the war was running its course, the problems caused by the increasing complexity and specialization in organizations were again coming to the forefront. It was becoming apparent to a growing number of people, including business consultants who had served on or with the OR teams during the war, that these were basically the same problems that had been faced by the military but in a different context. By the early 1950s, these individuals had introduced the use of OR to a variety of organizations in business, industry, and government. The rapid spread of OR soon followed.

Source: Hillier, Frederick S. and Gerald J. Lieberman. "The Origins of Operations Research." *Introduction to Operations Research*. 9th Ed ed. New York: McGraw-Hill Higher Education , 2010. 1-2. Print.

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Elizandro, David and Hamdy Taha. [Performance evaluation of industrial systems : discrete event simulation in using Excel/VBA](#). CRC, c2012. T 57.62 E45 2012

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Taha, Hamdy A. [Operations research: an introduction](#). Pearson/Prentice Hall, c2007. T 57.6 T3 2007