

CONTEMPORARY APPROACH TO THE OPERATIONS MANAGEMENT AND RESEARCH



The importance of the module of operations management in the process of training managers and business administrators equals to the understanding of the very meaning of operations management and its importance in the activities of organisational systems. Based on this attitude, the book of professor Stanislava Stungurienė¹ dedicated to the systematic studies of new developments in the field has been published and has received much attention.

Any functional sphere of an organisation is closely related to operations management, which can be defined by two aspects: 1) operational management is an all-inclusive phenomenon, which is universally recognised for its unquestionably important input in the effective functioning of any organisational system, and 2) the essence of operational management is focused on it as the means for achieving effectiveness in everyday activities.

Historical roots of operations management as a branch of science could be dated back to the beginning of the twentieth century with the formation of systemic approach to production processes (Greene, C., 1956). The changes in business world, both functional and technological, bring about changes in operations management as well. Technological achievements show considerable impact on the function of operational management. With the help of information technologies, information about the majority of business entities, if not practically all of them, can be easily accessed, stored and analysed. This enables evaluating not only general trends but also the demands of every consumer. The automation of production and services provides for better possibilities to constantly improve the quality of consumer products. Operations management is also influenced by the rapid growth of the number of Internet consumers and services it provides.

¹ St. Stungurienė. Management of Operations (in Lithuanian: Operacijų valdymas). Vilnius universitetas. 2010.

Not only labor power but also consumers and suppliers are faced with the new demands originating from technological achievements. Universal technological progress brings changes to the quality of the transformation of resources as well. All these changes undoubtedly influence alterations in operational management. Not long ago, production organisations treated operations as exclusively internal function, which had to be shielded from the outside by other organisational functions, i.e. orders were generated by marketing function; supplies and raw materials were purchased by acquisition function; means for purchasing equipment came through financial function; labor power was supplied by human resources function; and the product was sold through distribution function².

Lately, the process of transformation has acquired closer links both with the suppliers and with the consumers. Due to this trend, the teaching of operational management as a subject in schools with different educational levels is of utmost importance not only in relation to the questions of how the product has been created but also due to the fact that the majority of the concepts of operations management can be directly applied in every functional sphere of an organisation.

In the process of training specialists in any sphere of management, due attention needs to be paid to the integrality of universal organisational systems which manifests itself through applying the concept of operations management in different fields³. The success of operations management can be achieved only if information is available in various fields. Conditions for such management can be created only by means of possessing an integral informational system based on modern technology. A number of researchers have studied a variety of innovative approaches used in teaching operations management. For example, some authors⁴ have assessed student experience of a virtual learning environment used in operations management course. In the decision support systems, the use the concept of operations management enables managers designing different possible variants and making the most acceptable choice based on the indicated criterion. Because of that fact, the integration of operations management and information technologies is the main factor determining the overall progress of management as a branch of science.

The importance of operations management module for training management and business administration specialists can be defined by the following aspects: 1) the concept of operations management can be actually applied in all spheres of management; 2) operations management cannot be isolated from other fields of activity, such as logistics, marketing, enterprise management, and business management; 3) operations management cannot be dissociated from information technologies; 4) in the decision support systems, the most important role is attached to the concept of operations management and information technologies.

² Davis, M. M., Aquilano, N. J. and Chase, R. B. (2003). *Fundamentals of Operations Management*. (4th ed.). McGraw-Hill/Irwin.

³ Naylor, J. (2002). *Introduction to Operations Management* (2d ed.). Pearson Education.

⁴ Greasley A., Bennett D., Greasley K. (2004). A Virtual Learning Environment for Operations Management. Assessing the Student,s Perspective. *International Journal of Operations Management*. Vol. 24 Issue 10, p974-993

In the process of training in operations management, the formation of the concept of the subject is dominated by two summands – theory and models.

In the theory of operations management, considerable attention is paid to the definition of the subject, its development trends, and its correlation with other scientific spheres.

Models can be defined as technically developed schemes for the solution of specific problems. Usually those are computer programmes that help solving operations management tasks by way of using a pre-known mathematical model. The biggest advantage of applying those programmes is that they can be reused many times with the alteration of the condition of a task. Thus, by using pre-developed computer programmes, different managerial situations can be designed, multiple problemsolving variants can be achieved, and, on the basis of an indicated criterion, the optimal solution can be chosen.

Models used in operations management are most often formulated precisely and accurately because, as a rule, they come from scientific operations research. Since operations research is considered to be an applied branch of the science of mathematics, often teaching the subject of operations management has an obvious mathematical orientation. This trend can be especially clearly traced in the textbooks published in Lithuania⁵. The contents of training tools world-wide tend to gradually merge the theoretical subject of operations management with management science.

The end of World War II saw the rapid development of research of mathematical operations used in management. Today, the result of operations research as a branch of science is being widely used in such diverse spheres as economics, psychology, and management. Specialists of these fields raise problems and look for answers by using quantity terms and by applying mathematical methods designed for finding optimal solutions. However, operations research is more closely related to the management science rather than to operations management⁶, so the usage of quantity methods cannot be identified with the essence of operations management.

Having in mind the high level of integrity of operations management with other sciences, it becomes more and more difficult to define the subject itself, its targets and tasks. According to Chart No.2, the subject of operations management can be adequately defined as the methodological basis for the management of different spheres of an organisational system. Since the concept of operations management is based on theory and specific models, it is only logical to associate theory with management science, while models relating to the results of the science of operations research. This approach helps maintaining adequate balance between teaching theory and practical problem solving (Chart 1).

⁵ Boguslauskas V., Stungurienė S. (2002;2003). *Operacijų valdymas*. Kaunas, Technologija

⁶ Davis, M. M., Aquilano, N. J. and Chase, R. B. (2003). *Fundamentals of Operations Management*. (4th ed.). McGraw-Hill/Irwin.

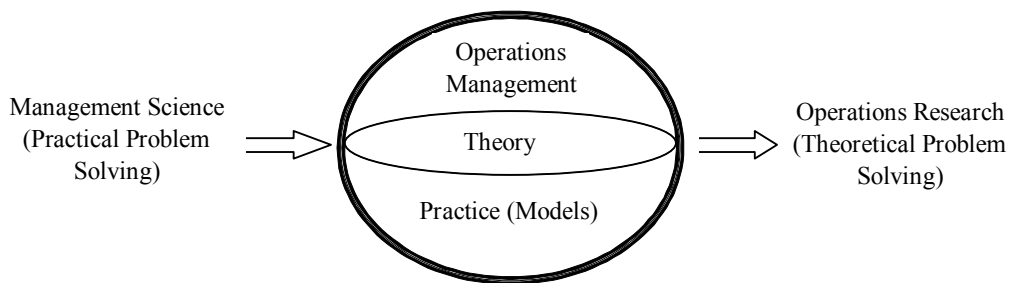


Chart 1. Correlation between theory and practice of operations management

Correlation between theory and practice of operations management in Chart 1 shows mutual proximity of this science with the sciences of management and operations research.

The models of organisational system study and management developed by the science of operations research are used for the solution of practical problems of operations management. Due to this, some authors try to interpret in their own way the symbiosis of operations management, the management science, and operations research⁷, they also present samples of practical application of the methods of optimal solution of management problems which correspond to the ideology of operations management, and mostly focus on the proof of mathematical precision of the given methods, rather than modeling various management situations.

Operations management models used in the process of business study can be treated as the application of quantity approach to the management decisionmaking⁸, even as teaching of the basics of econometrics with the interpretation of business management environment. For example, the tasks of the application and forecast of multiple regressions would be more compatible with the subjects of statistics and econometrics. However, such presentation of the matter should not be subject to critical evaluation: on the contrary, it only enriches general understanding of application of the methods of operational management in the training process of students of different levels and of various specialties.

As early as fifteen years ago, a number of contradictions in what was supposed to be taught as the subjectmatter of operations management were noticed. For example, American programmes of business administration studies included research of the differences in the contents of the operations management subject, which showed that the contents of the subject were being influenced by 3 factors: methods, roots of the subject, and new demands⁹.

Since the main focus should be on teaching of strategic aspects of operations management, undoubtedly close relation between methods and operations strategy should

⁷ Конюховский П. В. (2000). *Математические методы исследования операций в экономике*. СПб, «Питер».

⁸ Morris, C. (2003). *Quantitative Approaches in Business Studies*. (6th ed.). Harlow, Pearson Education

⁹ Bahl, H.C. (1989). Teaching production and operations management at the [MBA level – a survey. *Production & Inventory Management Journal*, Vol. 30 No. 3, Third Quarter, pp. 5-7.

be maintained. In addition, teaching methods of the subject should not limit to the contents of the subjects.

Since the subject of operations management is very wide, it requires the definition of its contents based on the main target – to give the utmost possible knowledge about the methods of operations management in various spheres of practical activities. In addition, the noticeable rapid changes in the subject should be reflected in the teaching contents of the subject. In addition, the risk of the subject of operations management becoming too extensive (Bregman and Flores, 1991) should also be taken into consideration. The conclusion, based on the analysis¹⁰ of the discussion going on in the literary sources, and on the experience acquired by teaching the subject of operations management, is as follows: the subject should be divided into parts of topics according to different subject areas, rather than into specific topics. For example, the departments of economics and management should study management operations and management methods of both economics and management. Furthermore, adequate proportions between the topics about production and about services should be observed (Chart 2).

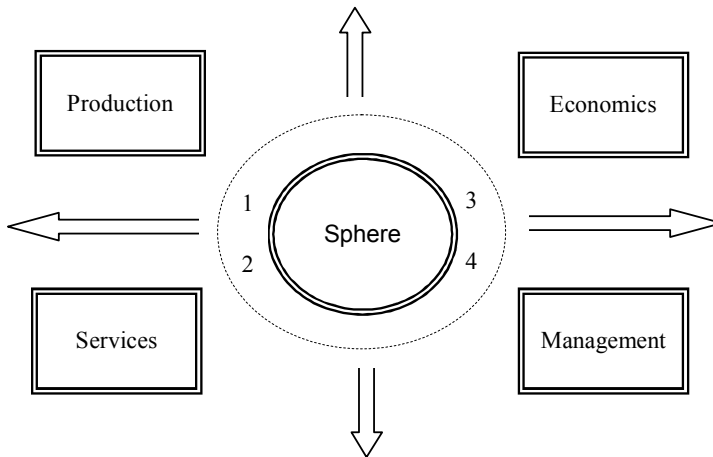


Chart 2. Structures of operations management contents

None of the topics dominates the structure of the operations management module, since the contents of all of them are of the same value. Production and services are defined as objects of operations management, while economics and management are defined as spheres of activity. While analyzing teaching tools, it has been noted that their contents may considerably vary due to the fact that they have been developed by different schools and authors with different goals. Even most diverse, by both their contents and teaching methods, teaching tools fall into six main topics: introduction to operations management, optimisation of the distribution of resources, calendar planning, systems of mass service, imitation modeling, and quality management.

¹⁰ Bregman, R. L. and Flores, B. E. (1991). OM curriculum: challenges for the 1990s, and beyond. *Operations management review*, Vol. 8 No. 2, pp.47-55.

The problems of integration of operations module with other teaching subjects are being solved as long as operations management is being taught¹¹. The schools of USA and Western Europe understand operations management as one of the spheres of management science. In Lithuania, operations management and operations research sciences are often identified with one of the disciplines of mathematical sciences and even are treated as one. Therefore, it is essential to analyse the integration of operations management with other teaching subjects in the light of the goals and the functions of the present system of teaching subjects of a specific school.

Based on our experience, we can maintain that any attempt to establish a connection between the teaching subjects usually remains debatable due to the large extent of perception of the concept of operations itself, therefore, we suggest evaluating the integration of the subjects through common points of specific topics of operations management with the contents of other subjects. An adequate audit of the modules of the research can also help bringing out common aspects of the topics of different modules, as well as grasping correlation between teaching subjects. Seemingly similar topics in different modules can only supplement each other due to different approaches towards the contents of the topic and especially towards different methods of problemsolving of the topic.

This approach to subject integration allows us not only more flexibly interpreting the distribution of operations management matter according to the topics, but also identifying the connection of other management subjects with the module of operations management, and especially to coordinate common goals of student training.

In the publication reviewed, the beginning of each topic briefly covers the importance of the subjectmatter and its goals to be achieved in the process of the studies, illustrated with numerous examples. Each topic ends with structure charts of computer models, supplemented by brief explanations, drawing attention to the characteristics of the application of these models. Thereby, students get the opportunity to model management decisions with the help of the most progressive information technologies.

Professor Stanislava Stungurienė has developed a unique methodology of teaching operations management, the theory and practice of which include methods most widely used in production and provision of services, and which are valuable both from the point of view of economics and management. We would like to note that the subject of operations management should also include teaching calendar planning, a matter omitted in the publication.

Antanas Buračas
Professor of IBS at Vilnius University

¹¹ Reviewed in: Goffin, K. (1998). Operations management teaching on European MBA programmes. *International Journal of Operations & Production Management*, Vol. 18 No. 5, 1998, pp.424-451.