

Decision Making Methods

Department responsible for the course

or equivalent: Economics Faculty, Economics Theory Department

Lecturer: Anna Veniaminovna Ermishina, *AVermishina@sfedu.ru*

Semester when the course unit is delivered: Autumn semester

Teaching hours per week: 4

Level of course unit: First cycle – Bachelor level

ECTS credits: 5

Admission requirements: English course B.

Course objectives (aims)

The goal in the course is to introduce students in the knowledge of those aspects that help them to understand, first hand, (1) how to make decisions and (2) how to make them better.

Course contents

Module	Subject	Form of Lesson	Duration, hrs
1.	Decision Making Process	Lecture Seminar	4
2.	Decision Analysis	Lecture Seminar	4
3.	Decision Making Methods		
	3.1 Cost-benefit analysis	Lecture Seminar	4
	3.2 Elementary methods	Lecture Seminar	4
	3.3 MAUT methods	Lecture Seminar	4
	3.4 Outranking methods	Lecture Seminar	4
4.	Group decision making	Lecture Seminar	4
5.	Sensitivity analysis	Lecture Seminar	4

	Case study	Seminar	4
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Learning Outcomes

In this course students will learn:

- how to make effective individual & group decisions;
- how to get down to the true cause of typical project problems using root-cause analysis;
- how to apply spreadsheet techniques to project management;
- why the critical path may not always be the longest path;
- how to respond to imposed project completion dates which may be unrealistic;
- how to make critical project decisions under uncertainty conditions;
- how to make multi-stage decisions using decision trees;
- how to use AHP and KTA models to make multicriteria decisions.

Skills to be developed:

- the ability to make effective multi-criteria decisions using conventional spreadsheets, and the Analytic Hierarchy Process (AHP);
- the ability to deal with project schedule and cost uncertainty estimates which contain uncertainties using conventional spreadsheets;
- the ability to make multistage decisions using decision trees;
- the ability to conduct a root-cause analysis using Ishikawa diagramming techniques.

Planned learning activities and teaching methods

The following methods and forms of study are used in the course:

- Lectures
- Seminars
- Practical Classes
- Solve Problems
- Case Study
- Colloquium
- Essay Writing
- Self-study
- Use of different reference books and Internet resources

Assessment methods and criteria

During the session students are required to

- attend class lectures;

- participate in seminars;
- solve problems;
- case study.

There will be individual and group assignments in this course. The individual assignments will be four short analyses and critiques of actual decisions, either your own or those that are reported in the media. The group assignments will also be an analysis and critique of an actual decision, this time of a major organizational decision. The group assignment will be embodied in a group report and a presentation during the last class.

Student individual assignments should be a maximum of two typed pages in length. (Format should be Times Roman, 12 point font, 1.5 line spacing, 1 inch margins.) They should describe a decision that students have made in the past that did not go well or a decision that has been reported in the press that also did not go well. Students should then analyze and critique the decision using the material are covered in class and show how, in retrospect, the decision might have improved markedly.

Students should also form a group with 3 or 4 other members of the class. (Ideal group size is 4 people.) Student group assignment will be to select a current organizational decision and analyze it in depth. Student report should tell the story of the company, its decision, the background leading up to the decision, and what occurred following the initial decision. In addition to the story, students should present an analysis of the decision and how it could have been improved, either in the decision or the implementation phase, or both. In other words, students are blessed with the opportunity to use hindsight to identify how a company did well or went wrong with an important, risk-laden decision.

Course literature (recommended or required)

Core Reading

- Goodpasture John C., (2010) Quantitative Methods in Project Management Boca Raton, Florida: J. Ross Publishing
- Goodwin, Paul and Wright, George (2014) Decision Analysis for Management Judgment 5th ed. John Wiley and Sons
- Zeshui Xu (2015) Uncertain Multi-Attribute Decision Making: Methods and Applications. Springer

Additional Reading

- Baker, D., Bridges, D., Hunter, R., Johnson, G., Krupa, J., Murphy, J. and Sorenson, K. (2002) Guidebook to Decision-Making Methods, WSRC-IM-2002-00002, Department of Energy, USA.
- Figueira, J., Greco, S. and Ehrgott, M. (Eds.) (2004) Multiple Criteria Decision Analysis: State of the Art Surveys, Springer, New York.
- Gass, S. I. and Rapcsák, T. (2004) Singular value decomposition in AHP // European Journal of Operational Research, 154, 573-584.

- Leyva-López, J-C. and Fernández-González, E. (2003) A new method for group decision support based on ELECTRE III methodology // European Journal of Operational Research, 148, 14-27.
- Macharis, C., Springael, J., De Brucker, K. and Verbeke, A. (2004). PROMETHEE and AHP: The design of operational synergies in multicriteria analysis: Strengthening PROMETHEE with ideas of AHP // European Journal of Operational Research, 153, 307-317.
- Maxwell D. (2008). Decision Analysis: Find a Tool that Fits, OR/MS Today, Vol. 35. Issue 5.
- Figueira, J., Greco, S., Ehrgott, M. (2005). Multiple Criteria Decision Analysis: State of the Art Surveys Series: International Series in Operations Research & Management Science, Vol. 78, XXXVI, 1045 p.

Internet Resources

Decision Analysis Society <http://www.informs.org/Community/DAS>
Decision Making Techniques
http://www.mindtools.com/pages/article/newTED_01.htm
Group Decision-Making and Problem Solving
<http://managementhelp.org/groups/group-decision-making.htm>
Harris, R. Introduction to Decision Making, VirtualSalt.
<http://www.virtualsalt.com/crebook5.htm>