Module Description, available in: EN

Market Analysis and Forecasting

General Information

Number of ECTS Credits

3

Module code

TSM_MarkFor

Valid for academic year

2024-25

Last modification

2022-01-05

Coordinator of the module

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Explanations regarding the language definitions for each location:

- Instruction is given in the language defined below for each location/each time the module is held.
- Documentation is available in the languages defined below. Where documents are in several languages, the percentage distribution is shown (100% = all the documentation).
- The examination is available 100% in the languages shown for each location/each time it is held.

	Lausanne			Lugano	Zurich		
Instruction					**X** E 100%		
Documentation					**X** E 100%		
Examination					**X** E 100%		

Module Category

TSM Technical scientific module

Lessons

2 lecture periods and 1 tutorial period per week

Entry level competences

Prerequisites, previous knowledge

Good knowledge of English.
Bachelor degree in Business Administration or Engineering.

Brief course description of module objectives and content

A proper understanding of the current state and probable future development of a market is key to any successful business development. The module Market Analysis and Forecasting provides the foundations of analysis of complex socio-economic systems. It puts students in place to autonomously plan, design and execute their own qualitative and quantitative analysis. Development of well-founded forecasts and scenarios completes the understanding of customer data, markets and the socio-economic environment. Tools for the definition and the analysis of company reactions to potential future market scenarios will complete the module, allowing for transformation of market inputs into strategic choices.

Aims, content, methods

Learning objectives and competencies to be acquired

Students have the knowledge and the ability to understand and analyze a market as a complex socio-economic system. They are able to identify the most relevant factors determining the market behavior, to identify the causal relation between these factors and to describe socio-economic systems by means of qualitative modelling. Students understand and apply key concepts of the theory of complex systems such as observability, controllability, time variance or invariance, randomness or determinacy of factors, linear or nonlinear, static or dynamic behavior and their impacts on the overall system behavior. Students apply qualitative and quantitative methods for model validation, including basic behavior analysis and statistics. In practical examples they learn to analyze, predict and steer such systems. Finally students are able to present the analysis results in terms of descriptive scenarios using different visualization techniques.

Module content with weighting of different components

The module includes the following topics:

1. Market modelling

- Understanding the market as a complex, socio-economic system
- Outlook: system modelling in a broader context
- Identification of key factors determining the dynamic, time variant and stochastic behavior of a market
- Systemic market analysis
- Experiencing complex market behavior, steering complex systems
- Model validation
- Developing scenarios describing the market future
- From qualitative to quantitative models
- Prospects and limits of modelling

2. Case studies on quantitative statistical market modelling

- Data structuring and cleaning
- k-Means clustering for customer feedback analysis
- rfm segmentation for customer segmentation
- Linear-multiple and non-linear regression for demand forecasting
- Time series analysis for demand forecasting

The use and benefits of each discussed topic will be explained, methods for solving the analysis tasks will be presented in an accessible and non-technical manner. The focus will be on the validity and generalizability of the results/conclusions and how they will be included in decision making.

Teaching and learning methods

The module is taught by theory inputs, case studies and a software tool.

Literature

[1] Sterman, J. D. (2000). Business Dynamics. Systems Thinking and Modeling for a Complex World. Boston: McGraw-Hill. ISBN 978-0071241076. (Recommended.)

[2] Rob J. Hyndman, George Athanasopoulos, Forecasting: principles and practice, OTexts, 2013. The book is freely available as an online book at www.otexts.org/fpp. Alternatively, a print version is available: ISBN # 0987507109. (Required.)

Assessment

Certification requirements

Module uses certification requirements

Certification requirements for final examinations (conditions for attestation)

A project ('case study') to be compiled through independent study.

The case study report accounts for 1/3 of the final assessment.

Basic principle for exams

As a rule, all standard final exams are conducted in written form. For resit exams, lecturers will communicate the exam format (written/oral) together with the exam schedule.

Standard final exam for a module and written resit exam

Kind of exam

Written exam

Duration of exam

120 minutes

Permissible aids

Aids permitted as specified below:

Permissible electronic aids

No electronic aids permitted

Other permissible aids

Self-written summary of 4 pages A4.

Special case: Resit exam as oral exam

Kind of exam

Oral exam

Duration of exam

30 minutes

Permissible aids

No aids permitted