

Doctoral studies at the Department of Information and Service Management

Aalto BIZ



Aalto University
School of Business

Eeva Vilkkumaa

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Department of Information and Service Management (ISM)

Three disciplines:

1 Information systems science

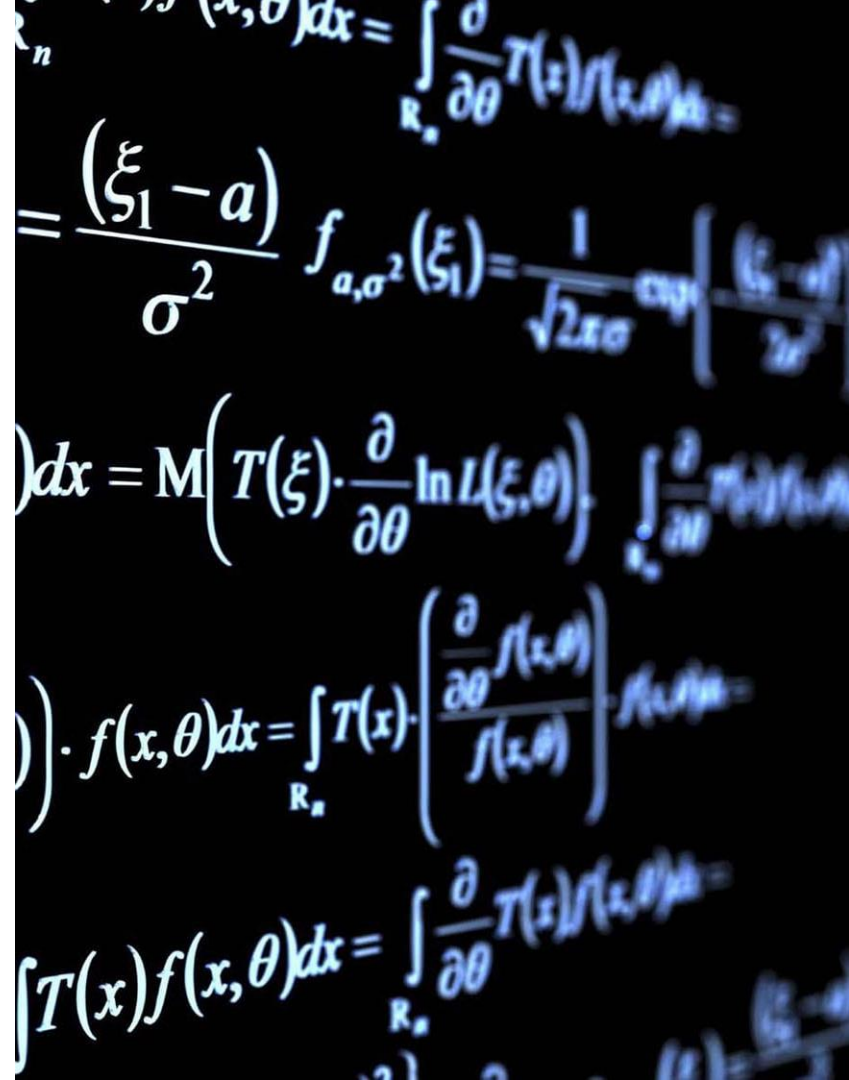
2 Logistics

3 Management science (\approx Operations research \approx Business Analytics)

Management Science

Management Science covers a wide range of problem-solving and **mathematical modelling techniques** that help managers to **improve decision-making and efficiency**.

Examples of these techniques include **mathematical optimization, econometrics, simulation, data analytics, statistics, machine learning, and decision analysis**.



Management science group



Professor Pekka Malo
Statistical machine learning theory
Data science
Statistics
Stochastic optimization
Artificial intelligence



Assistant professor Eeva Vilkkumaa
Multicriteria decision analysis
Portfolio decision analysis
Multi-objective optimization
Behavioural decision theory



Professor Juuso Liesiö
Prescriptive analytics
Portfolio and spatial decision analysis
Optimization under incomplete preference information
Axiomatic foundations of preference models



Assistant professor Lauri Viitasaari
Mathematical statistics
Statistical machine learning theory
Stochastics



Assistant professor Ilkka Leppänen
Computational decision science
Behavioural decision theory
Game theory
Operations

Doctoral degree at ISM: basics

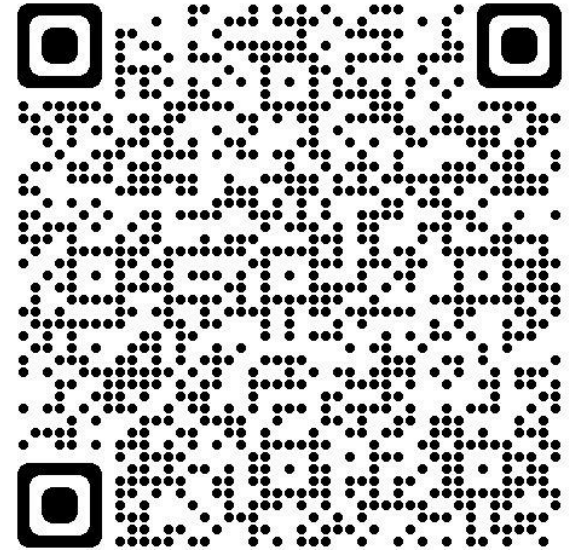
Degree: Doctor of Science (Economics and Business Administration)

Duration: 4 years, full-time (usually a bit longer)

Eligibility: Master's degree* in management science, operations research, mathematics, statistics, business analytics, computer science, or related fields

Admission period: 12 Dec 2024 – 9 Jan 2025

Funding: Provided for the first 1-2 years; rest covered by personal grants / project funding



Recent doctoral theses from the group



Philipp Back (2022)

Thesis title: “AI for optimal and sustainable forest management”

Supervisor: Pekka Malo

Current position: Specialist (Impact Data) at The Upright Project



Ellie Dillon (2024)

Thesis title: “Model-based approaches to health care delivery”

Supervisor: Eeva Vilkkumaa

Current position: Health economist at AstraZeneca



Peng Xu (2022)

Thesis title: “Advances in model-based decision support”

Supervisor: Juuso Liesiö

Current position: Assistant Professor in Business Analytics at Essex Business School

Other examples of thesis titles:

“Text-mining methods in information systems domain”

“Change-point analysis in predictive relationships”

“Semantic content filtering and sentiment analysis”

“Supporting decision making in complex multiobjective problems: Practical tools and experiences from the healthcare context”

“Essays on novel methods and applications of portfolio optimization”

“Behavioral issues in multiple criteria decision making”

Affiliations of our doctoral students:

Finnair, Kone, Relex, Afry, Cambri, Stanford University, Finnish Competition and Consumer Authority, University of Queensland...

Doctoral studies in management science at ISM department

Total: 60 credits	General research studies, 18-24 cr	Compulsory courses, 7 cr	Courses on research ethics, grant application writing, and scientific writing + seminar
		Elective courses, 11-17 cr	Courses on responsible conduct of research, scientific communication, and scientific community & working life skills
	Research field studies, 36-42 cr	Mathematical optimization, ≥ 5 cr	E.g., Linear / Combinatorial / Dynamic optimization
		Statistics and stochastics, ≥ 5 cr	E.g., Multivariate statistical analysis, Bayesian data analysis, Probability theory, Discrete event simulation, System dynamics simulation
		Decision theory and analysis, ≥ 5 cr	E.g., Business analytics 2, Decision analytics for consulting, Decision analysis, Riskianalyysi, Topics in game theory
		Machine learning, ≥ 5 cr	E.g., Data science for business II, Special course in machine learning, data science and artificial intelligence, Supervised machine learning
		Elective courses	From above categories / other Aalto schools / other universities

Doctoral thesis requirements at Aalto BIZ

1. **Three scientific articles / unpublished scientific essays**
 - One of the articles / essays must be written by the doctoral candidate alone
2. **An independent summary article** laying out
 - The scientific problem
 - Goals of the research
 - Review of the subject
 - Research methods, materials, and findings



Application process

Application period: 12 Dec 2024 – 9 Jan 2025 through an electronic application system

Application documents*:

- Copies of academic degrees, CV, and a copy of valid passport
- Statement of purpose (max 1000 words) describing your motivation for PhD studies and your career objectives
- Selected independent academic work (e.g., copy of your Master's thesis)
- Two letters of recommendation



Contact a professor working in your field of interest



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Check out our Google Scholar profiles for more details!

Thank you!

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