

Appendix 1 Measures of the Dean No. 300E/2026 Suggestions of outline topics of dissertation thesis

prof. RNDr. Tomáš Mrkvička, Ph.D.

Recommender and Personalization Models in Online Marketing

The main objective of this dissertation is to conduct a **comparative analysis** of selected machine learning algorithms—ranging from classical **collaborative filtering models** (such as **k-NN** and **Matrix Factorization**) to advanced **Deep Neural Networks** (specifically **Autoencoders**)—for the tasks of **product recommendation** and **content personalization** in online marketing. The student will design and implement a **comprehensive evaluation framework** that compares the models not only based on traditional prediction accuracy metrics (e.g., **RMSE**, **F1-Score**) but also from the perspective of **business impact** (conversion prediction, **CTR** enhancement) and **model interpretability**. The empirical validation will be carried out using real-world e-commerce datasets. The primary goal is to identify the **most effective and practical architecture** for the dynamic optimization of the customer journey.

doc. Ing. Jaroslav Vrchota, Ph.D.

Wellbeing as a Performance Management Tool

Employee wellbeing is gradually moving from a benefit to a performance management tool in modern organizations. Well-designed wellbeing programs not only reduce stress and turnover, but can also contribute to higher productivity, innovation and long-term stability of work Teams. The aim of the thesis should be to explore which dimensions of wellbeing (physical, psychological, social or work environment) most influence employee performance and how wellbeing interventions can be designed to generate a measurable and sustainable impact. The student should examine the differences between companies that use wellbeing as part of their HR strategy and those that use it only marginally. To achieve the goal, a combination of quantitative and qualitative methods is expected: questionnaire surveys monitoring the level of well-being and engagement, HR data on performance, absence or fluctuation and interviews with HR managers. The practical part of the work should include the implementation of a selected wellbeing intervention and its subsequent evaluation based on changes in performance, satisfaction and employee workload. The contribution of the work will be the identification of key factors of successful wellbeing strategies and the design of an implementation model usable in practice.

Project management and ESG — integrating sustainability into project management

In recent years, the concept of ESG (Environmental, Social, Governance) has begun to gain traction in the field of project management, expanding the traditional project triple imperative (time – cost – quality) to include the dimension of sustainability. ESG allows projects to be evaluated not only in terms of their economic outcomes, but also according to their impact on the environment, social responsibility and ethical management. The aim of the thesis should be to analyse how different organisations implement ESG principles into project management and how these principles influence the success of projects. The student should work with quantitative data from project outputs, sustainability reports and measurable indicators (resource consumption, carbon footprint, stakeholder profile), supplemented by qualitative interviews with project managers, ESG specialists or sustainability departments. The output of the practical part should be a proposal for a methodology for integrating ESG into project management — for example in the form of evaluation metrics, scorecards or decision-making tools that will enable the project to be evaluated not only economically but also sustainably. The contribution of the thesis will be the creation of a specific framework for ESG project management and the identification of barriers and success factors that can help organisations manage their projects more responsibly and sustainably.

Talent Management in Innovation-Oriented Companies

Talent management is one of the HR tools that strive for long-term innovation performance and competitiveness of the company (Ibrahim & Omari, 2020; Kumari et al., 2025). The ability to acquire, develop and retain highly qualified employees is a crucial factor of success, especially in industries that are built on research, technological development or rapid response to market changes (Min et al., 2025). The aim of the thesis should be to evaluate and compare talent management approaches in selected innovative companies and at the same time define which factors contribute most to the higher innovation capacity of the organization. The student should work with a combination of quantitative data (performance indicators, talent fluctuation, development outputs, number of patents) and qualitative data (interviews with employees, HR experts and R&D managers). At the same time, he should analyze selected company strategies, talent development processes and methods used for their retention. Within the practical part, it is appropriate to create your own model of strategic talent management, focused on the innovation environment, and then pilot test it in a real organization. The expected benefit of the work will be the determination of factors that most influence the development of talents in innovative companies, and the proposal of measures to increase innovation performance in organizations that want to build a knowledge-based competitive advantage.

doc. Ing. Tomáš Šubrt, Ph.D.

Efficiency of Data-Driven Logistic Systems - A Quantitative Analysis of Predictive and Adaptive Logistics

The proposed dissertation addresses a critical gap between the rapid adoption of data-driven logistic systems (e.g., predictive analytics, real-time tracking, adaptive routing) and the limited empirical evidence on their **economic efficiency**. The objective is to provide a **quantitative assessment of the economic performance of data-driven logistic systems** compared to traditional logistics approaches. The analysis focuses on key performance dimensions, including logistics costs, service levels, inventory turnover, and overall supply chain profitability. The empirical study is based on firm-level or project-level logistics data from sectors such as manufacturing, retail, and e-commerce. The expected contribution of the dissertation lies in providing robust empirical evidence on the conditions under which predictive and adaptive logistic systems generate economic benefits, as well as in offering an analytically grounded framework for evaluating investments in logistics digitalization.

Research Contribution

The dissertation aims to:

- provide **causal empirical evidence** on the economic effects of data-driven logistics,
- integrate **logistics management with applied econometrics and operations research**,
- develop a replicable quantitative framework for evaluating logistics system investments.

prof. PhDr. Miloslav Lapka, CSc.

Socio-economic context and ethical issues of the bioeconomy from the perspective of the concept of sustainability

A critical view at the bioeconomy as a scientific concept responding to global issues, such as those expressed in the 17 Sustainable Development Goals. A critical look at the socio-economic implications and ethical issues related to the actual functioning of the bioeconomy from the perspective of selected regional and national institutions.

This topic deliberately avoids developing the traditional economic discourse of sustainable development (SD) in its familiar three pillars of economic, social and environmental, and instead focuses on a critical evaluation of the discourse in terms of the bioeconomy as a universal tool for further economic and social development. The need for regulation of the bioeconomy.

In the analytical part, the student will focus on a region or a country close to him/her, depending on his/her focus. In the synthesis, he/she will try to critically evaluate the economic, social and ethical limits of the development of the bio-economy and to bring a scientifically based perspective to this problem in relation to energy, the Green Deal and many other current issues in Europe.

European Green Deal - Ambitions and concessions from the perspective of selected companies and institutions

The European Green Deal - inspiration from economic history and ambitious targets Europe as the first CO₂-neutral continent by 2050.

A critical perspective of selected companies and institutions on the EGD from an economic, social and environmental point of view. The research method will be mixed with mainly quantitative research. How is the EGD an innovation for customers, management and strategy setting?

Recommendations for a communication strategy on EGD.

doc. Ing. Eva Cudlínová, CSc.

New EU strategy for the bioeconomy from 2025 in a historical context

The development of the European approach to the bioeconomy in the context of EU strategies (first bioeconomy strategy 2012, renewed strategy 2018, and new strategy 2025) Comparison of the strengths and weaknesses of individual strategies and the impact of their changes on the role of the bioeconomy in the EU in terms of its share in GDP and employment in the economies of selected countries.

Biogas stations and bio methane production role within the energy mix

To avoid financial penalties, EU countries have to end landfilling of recyclables and biodegradable waste by 2030 at the latest. Sorted kitchen and catering waste should be used to produce biogas and especially bio methane, which is one of the solutions to replace natural gas. The new type of biogas plants can also process food waste or sewage sludge. The way to improve the economic function of biogas plants is, instead of biogas, which has limited use, to evaluate the function of biogas plants by converting them to bio methane production. The work will focus on mapping the potential of biogas plants in the Czech Republic in terms of bio-methane production and its possible inclusion in the energy mix of the energy sector. In addition to the potential, the thesis will also assess the barriers and possible ways to improve the use of bio methane in the Czech Republic in a broader European context.

Plastics recycling – economic and legislative opportunities and obstacles

Plastic packaging accounts for up to 40 % of all plastics ending up in landfills and its recycling rate is still very low. However, the situation is changing with technological innovation and legislative change. The so-called EU waste reform obliges Member States to recycle 55 % of municipal waste by 2025. The work should concern new recycling technologies and the conditions of their use in the Czech Republic and selected EU countries. It is mainly about comparing the legislative, economic and social conditions of new recycle production and proposing improvements to the situation in the Czech Republic based on the experience of selected EU countries.

doc. Ing. Milan Jílek, Ph.D.

Municipal capital expenditure

Municipal capital expenditure (CAPEX) is an essential factor of gross fixed capital formation. Therefore, obstacles in CAPEX realisation negatively impact economic growth. According to the fiscal federalism theory, decentralised municipal CAPEX brings a high degree of allocation efficiency. Therefore, it is essential to understand the factors influencing municipal CAPEX.

Baumol cost disease

The Baumol model of unbalanced growth and the Baumol cost disease might help to explain differences in the dynamics of some economic sectors. The dissertation empirically verifies the validity of the assumption for selected national economic sectors and industries (i.e. culture, health, social services or education).

Causes and Effects of Public Capital Expenditure

The dissertation focuses on factors of public capital expenditure development and the effect this development has on economic growth. The study will analyze the causes and consequences of public investments. The aim of the work is to identify the key factors that influence the development of public capital expenditure and to analyze how this development affects economic growth. The research will utilize data from various countries and time periods to conduct a quantitative analysis. The results of the study should provide a better understanding of the role of public investments in supporting long-term economic growth and offer recommendations for budgetary policy-making.

doc. Ing. Kamil Pícha, Ph.D., MBA

The impact of modern marketing communication tools on customer perception and behaviour

The ongoing digital transformation is leading to the emergence of new tools and communication platforms in the field of marketing communication. The availability of large amounts of data and advances in data analytics enable marketers to make data-driven decisions and adapt the content and form of their communications accordingly. Developments in this area are also influenced by developments in other areas, such as social media, mobile communications, e-commerce, and sustainability and environmental and social responsibility requirements. The aim of this dissertation is to evaluate the impact and potential of modern marketing communication tools on customer behaviour and the possibilities for measuring this impact. This work will examine various tools and channels used in marketing communication and assess their effectiveness in engaging and influencing customers. The research may focus on B2B or B2C communication.

prof. Ing. Luboš Smutka, Ph.D.

Regional Integration and Its Impact on the Development and Structure of Agrarian Trade

Regional integration groupings, such as the EU, NAFTA, or ASEAN, significantly influence agrarian trade both within and outside their member states. This research focuses on analyzing the impact of these integrations on the trade of agricultural commodities. It examines the advantages and disadvantages of integration for domestic producers and consumers. A key part of the study is evaluating trade barriers, tariffs, and quotas, which are reduced or completely eliminated within integration blocs. The research also analyzes changes in production chains and the relocation of production within regions. A significant issue is the impact of integration on food prices, availability, and quality. The research also includes an analysis of trade disputes between members of integration groupings and third countries. The work may include case studies of specific regions or commodities. The outcome will be a proposal for policies supporting sustainable agrarian trade within integration groupings. The research also examines how the position of farmers and agrarian businesses changes as a result of integration processes.