



Available research topics of the Doctoral School of Business and Management of BME

Academic Year 2025/26

Application

The BME Doctoral School of Business and Management provides doctoral training in the field of social sciences and in the discipline of business and management. The current research topics and supervisors available for supervision in English language can be found in this document. **The Doctoral School accepts proposals only in the below given topics.**

For submitting a valid application to the Stipendium Hungaricum Scholarship Program, the Applicants are NOT required to provide a statement from the future supervisor. The Doctoral School does not make pre-selection or evaluation during the application process, the application will be examined only during the admission process.

The applicants are strongly advised to contact the **International Student Office** (iso@gtk.bme.hu) with their questions. The International Student Office will answer the questions and provide the applicants with all the necessary information regarding the application and admission process.

The **deadline for submitting the complete application is** 15 January 2025 – 23.59 (CET). The online application system can be reached through <https://apply.stipendiumhungaricum.hu/>

Please carefully read the website of the Stipendium Hungaricum scholarship program for more information.

Admission

After the application deadline, Tempus Public Foundation and the sending partners will make a pre-selection. **Only applicants nominated by their sending partner will be assessed by the universities.**

As a first step of this process, the uploaded materials will be checked by our faculty to see if they meet the requirements. The relevant supervisors will thoroughly evaluate the uploaded materials. After that the applicants have to take an **on-line entrance examination**, consisting



of two parts. **Firstly**, an entry assignment will have to be completed and submitted in writing electronically, which needs to be reviewed before the second part of the entrance exam. **Secondly**, an interview will be conducted on-line: the interview inspects the applicant's motivation and aptitude for research. At the interview, the committee examines the proficiency of the Applicant in the research field, the feasibility of the research plan, and the commitment of the Applicant to the research.

The decision on admission will be based on the overall assessment of the Applicants, as well as on the number of vacancies in the related area.

Budapest, 12 November 2024

Dr Tamás Koltai

Head of Doctoral School of Business and Management
Budapest University of Technology and Economics

Quantitative Analysis in Management and Business Economics

Dr Imre Dobos, full professor
Department of Economics

Quantitative methods for economics and management

Within the framework of the topic, we apply mathematical and IT techniques used for economic analysis to certain economic areas, both macroeconomic and microeconomic problems. You can apply for two major methodological topics: operations research (optimization) and multivariate statistical analyzes with SPSS. The areas of application can be the digital development of countries, including their ranking, or the statistical examination of company data sets, even on lower measurement scales.

Dr Andrea Elekes, habil. associate professor
Department of Economics

International trade

International trade. International trade provides the opportunity to explore broad economic relationships. Research topics may cover the following areas: economics of regional trade agreements; hidden forms of protectionism; digital technologies and international trade; economic issues of international trade in agricultural products; trade finance; trade and development. The literature on the topic is quite extensive, but in addition to the overview and synthesis of the literature, there are also many opportunities for qualitative and quantitative analysis.

Dr Andrea Elekes, habil. associate professor
Department of Economics

International production

International production. In today's global world, most companies are present in some form on international markets. One form of this is when production or some of its processes are carried out abroad. This can take place in the form of FDI or contract manufacturing. The form of appearance on the foreign market is the result of a complex decision-making process, during which many factors (profitability, costs, economies of scale, risks, etc.) must be considered. That is why the theoretical and methodological approach to the topic is multifaceted. The following main areas can be investigated: economics of international technology transfer; the impact of international labour migration on wages and employment; economics of multinational and transnational companies.



Dr Andrea Elekes, habil. associate professor
Department of Economics

International capital flows

International capital flows. The topic covers three major subfields: international lending and indebtedness, portfolio investments (securities), and foreign direct investments (FDI). Entering a foreign market is the result of a complex decision-making process, during which many factors (profitability, costs, risks etc.) must be considered. These areas have a spillover effect, not only on the economy of the sending and destination countries, but also on the world economy as a whole. The literature on the topic is quite extensive, but in addition to the overview and synthesis of the literature, there are also many opportunities for qualitative and quantitative analysis.

Dr Béla Janky, habil. associate professor
Department of Sociology and Communication

Business Data Analysis Using Causal Machine Learning

This research aims to explore how causal machine learning can be applied to business data analysis. Instead of traditional mathematical-statistical methods, causal machine learning can more accurately identify cause and effect relationships, enabling deeper decision support when developing business strategies. In this PhD research, we will explore the role of causal algorithms in improving the accuracy of predictions and decision making, with a particular focus on the analysis of financial, marketing and operational data. The results may help to improve business data analysis methods and increase corporate efficiency.

Dr Tamás Koltai, full professor
Department of Management and Business Economics

Efficiency analysis of production and service operations

To increase the efficiency of production and service system is a continuing effort of management. Objective methods are required to explore the sources of inefficiencies, and to provide directions about improvement possibilities. Data Envelopment Analysis can provide an aggregate measure, which incorporates several input resources and output objectives. The method is widely used for the analysis of manufacturing and service operations in the private and public sector as well. The objective of the research is to develop efficiency models, which can take advantage of the possibilities of advanced information technologies and of big data methods.



Dr Tamás Koltai, full professor
Department of Management and Business Economics

Supporting production and operations management decisions with optimization methods

In most cases, the objective of production and operations management decisions is to allocate limited amount of resources considering several decision criteria. This type of problems can generally be described by mathematical programming models. The objective of the research is to explore new areas of application in production, service, and administration areas furthermore to solve the emerging theoretical and implementation problems. A further objective is to incorporate the models in management information systems (MIS) and to provide sensitivity and robustness information of the results for the decision maker.

Social Aspects of Management and Business Economics

Dr Emília Barna, associate professor
Department of Sociology and Communication

The platformisation of cultural production

The aim of the research is the analysis, through a selected case, of the role played by digital platformisation in the cultural industries, such as the music industry, the film industry, gaming, or the fashion industry. A potential focus is the emergence, and gaining power, of major “tech” companies such as Google, Apple, Amazon, or Facebook, or smaller new entrants, in cultural production, distribution, and consumption, as well as their role in shaping practices of cultural intermediation and gatekeeping, or in cultural labour.

Dr András Bethlendi, associate professor
Department of Finance

Financial Markets with Central- and Eastern Europe focus

The structure of financial intermediation in the region is characterised by bank-based rather than market-based financial systems, low level of intermediation and market capitalization and the lack of market-based banking. Research topics:

- Post GFC banking and/or capital market regulatory and institutional changes.
- Structure of financial intermediation and its real economy effects.
- The role of foreign ownership in banking and capital market firms, government policies towards foreign ownership.
- What are the barriers to the spread of securitization in the CEE region?
- Evaluation of venture capital in financing innovation.
- Digitalisation in banking and Fintech challenges.

Dr András Bethlendi, associate professor
Department of Finance

Sustainable/Green Finance from the Financial Structure and Regulatory Perspectives

As highlighted by the Paris Agreement, sustainable finance is pivotal for mitigating climate change. The EU is committed to sustainable finance. This necessitates a restructuring of the financial system. The research project will focus on sustainable finance within this context and concentrate on Europe while considering global perspectives when necessary.



Dr Gábor István Bíró, assistant professor
Department of Philosophy and History of Science

Big data. The new economics?

The aim of this interdisciplinary science and technology studies (STS) research is to analyze - through the theoretical, methodological and technical aspects of big data - whether this rising, technology-centric new field might be considered as science, and if yes, in which sense, and to what degree it might be considered as such. The research traces big data through various social spaces, historical, social and cultural contexts. The case of big data is special. First, because it might bring forward a whole new level - of historical scale - of using quantitative methodology to inquiry into economic and social matters. And second, because it might recruit its supporters and users from the domains of other explanatory traditions and practices.

Dr Gábor István Bíró, assistant professor
Department of Philosophy and History of Science

Imagination and economy in cooperation

One of the most important schools of science and technology studies (STS) emphasizes the cooperation of scientific and technological advances and their respective meanings. According to this school, the advances and the meanings attributed to them come into being at the same time, that is, being co-produced in a social space. The newest studies set off from this social space and introduce the term sociotechnical imaginary (STi) to analyze the vision of given communities based on a single technological advancement or scientific theory. In the current PhD research topic this approach should be applied to a relevant economic theory or technology.

Dr Gábor István Bíró, assistant professor
Department of Philosophy and History of Science

Economic knowledge and actor-network theory

The actor-network theory (ANT) spearheaded by Bruno Latour and Michel Callon addresses natural and social phenomena not as isolated parts of reality but as continuously changing networks that consist of human and non-human actors. This network is both material and semiotic. ANT intends to break with the human-centric explanatory traditions which makes it particularly suitable to study trending topics like sustainability or rewilding. In this current PhD research topic actor-network theory should be used to map and analyze a network around an economic theory, methodology or tool (e.g., a textbook).



Dr Attila Buzási, associate professor
Department of Environmental Economics and Sustainability

Analysis of urban transformations in the context of urban sustainability and climate adaptation

The intensive urbanization processes present decision-makers with permanent challenges in meeting sustainability requirements. Furthermore, the negative impacts of climate change are reinforcing trends that counteract urban sustainability. The aim of the research is to analyze the connections between urban sustainability and climate adaptation by applying quantitative and qualitative methods, paying particular attention to the differences between different sectors and the often data-scarce aspects.

Dr István Danka, associate professor
Department of Philosophy and History of Science

Methodological and Philosophical Presuppositions of Mainstream Economics

Critiques of mainstream economics theories claim the 2008 economic crisis to be an indicator of the deficiencies of those theories because the crisis could not be foreseen, managed, and even explained in the traditional conceptual and methodological framework. The project aims at investigating the philosophical presuppositions and methodological commitments (incl. idealisation, rational agents, transitive preferences, etc.) of rational choice theory as a background theory for mainstream economics, in order to explore the problems and develop a response to the criticism.

Dr Zsolt Gilányi, habil. associate professor
Department of Economics

Comparative analysis of business support macro policies and institutions

Enhancing and maintaining competitiveness is a priority for any economy integrated into global markets. The issue has many aspects. Here we examine how macroeconomic policies and/or economic, legal and political institutions can be designed to support and promote the competitive performance of firms, and how this affects the structure of the economy, distributional relations, employment, public finances and the exchange rate. The analysis assumes the use of various econometric methods.

Dr Zsolt Gilányi, habil. associate professor
Department of Economics

Economic aspects of sustainable growth

Market economies produced outstanding economic development with its positive and negative effects. Many theorists see a clear relationship between economic growth and negative effects. Ecologists questioned the sustainability of the system. They believe that even the present resource consumption is unsustainable, therefore zero growth would be necessary after a transitory degrowth period. This ecological problem induced by physical boundedness generated a theoretical debate in economic science: may market economic system exist with zero growth?

Dr. Béla Janky, habil. associate professor
Department of Sociology and Communication

Innovation models based on new theories of cultural evolution

The aim of the research is to explore how models of innovation can be developed and applied, drawing on recent developments in cultural evolution theory by Boyd and Richerson, in particular the work of Henrich and others. These models of cultural evolution will be used to examine the diffusion, adaptation and persistence of innovation in different social and organisational structures. Research will seek to better understand the mechanisms that determine the success and diffusion of innovations, thereby contributing to the effectiveness of corporate and organisational decision-making.

Dr habil. Anikó Kelemen-Erdős, associate professor
Department of Management and Business Economics

Marketing and efficiency in the supply chain

The framework of commercial activity is based on legal regulation, and the interconnectedness of individual companies, thus networks, which essentially determine the scope of traders. At the same time, the supply chain members participate in value creation processes in different ways and have different perceptions of the main methods and means of efficiency. From a scientific point of view, modeling the different pathways can contribute to the development of constructs that highlight the various strategies of traders and can contribute to improving traders' efficiency. The main aim of the research is to identify the factors that determine the efficiency of traders, to identify critical points and barriers to progress, and formulate proposals for further innovation.

Dr habil. Anikó Kelemen-Erdős, associate professor
Department of Management and Business Economics

Modelling service development and consumer behaviour

Developing services and consumer behaviour are fundamental determinants of company performance and market success. The marketing and management of service processes have a significant impact on consumer satisfaction and loyalty, which are crucial determinants of organisational performance and competitiveness. This research aims to explore, identify and model the cornerstones and factors influencing consumer behaviour, service processes and performance. The application of models in this area is widespread in academic and practical areas. The objective of this research is to analyse the possibilities for further development of these models and to develop a new theoretical and practical model.

Dr habil. Anikó Kelemen-Erdős, associate professor
Department of Management and Business Economics

The Role and Opportunities of SMEs in the Economic Ecosystem

In a rapidly changing global economic and technological environment, small and medium-sized enterprises (SMEs) need innovation and flexible solutions to remain competitive and contribute to the development of the economy. This research aims to analyse the role of SMEs in the economic ecosystem and to explore the toolkit that SMEs apply to support sustainable business development. The outcome of the candidate's research will be an analysis of the challenges faced by SMEs, recommendations on the incentive framework and the need for innovation to contribute to the development of the economy.

Dr Stefan Kovács, assistant professor
Department of Management and Business Economics

The convergence of communication and emerging technologies: Impacts on consumer relations and market innovations

The aim of the research is to explore how the development of communication and the latest technologies intertwine, and how this process impacts consumer relations and market innovations. The study will place special emphasis on the new communication opportunities and challenges created by technologies such as artificial intelligence, chatbots, smart devices, and virtual reality. It will also examine how these technologies transform interactions between companies and consumers, the brand experience, and how communication channels can be effectively utilized for the successful market introduction and acceptance of technological innovations.



Dr Annamária Orbán, associate professor
Department of Sociology and Communication

Socio-spatial dimensions and approaches of future-conscious regional and urban development

The topic, theoretical background and approach is interdisciplinary, covering interrelated socio-spatial fields, studies, disciplines of regional and urban development. Having a future-conscious, holistic theoretical view and applying innovative, participatory methodologies and techniques. Thus, doctoral students – future urban/local settlement planners – will be able to find and use all kind of resources - be natural, economic or socio-cultural, tangible or intangible - to develop liveable and loveable settlements both for the present and the future generations.

Dr Mariann Szabó, assistant professor
Department of Environmental Economics and Sustainability

Sustainability from sectoral and business perspective

The transition towards sustainability requires the formulation and implementation of different sectoral policies. In modern economies – either in the field of agriculture, forestry; industry and services – there are many solutions towards sustainability. The various EU policies no longer define measures towards sustainable development (environmental and social sustainability) as external requirements but envisage measures that naturally improve the shift along the environment-economic-social pillars. Science and research play an increasingly important role in monitoring policy changes, taking stock of results, identifying good practices and formulating future courses of action.

Dr Mária Szalmáné Csete, habil. associate professor
Department of Environmental Economics and Sustainability

Challenge-based Planning and Adaptation: Sectoral and Regional Assessments

The aim of the research is to investigate the interrelations of sectoral and regional adaptation possibilities, with special attention to their connections to the sustainability transition. After mapping the international and domestic literature on challenge-based planning, the research aims to classify different solutions and intervention options, with a particular focus on their socio-economic and environmental aspects. The research will also review the potential tools for specific sectors and/or regions and provide a comparative evaluation of applicable methods. The expected results will be interpretable from both sectoral and regional perspectives, providing a solid foundation for identifying and prioritizing sustainability-relevant solutions and efforts.



Dr Zsolt Ziegler, assistant professor
Department of Philosophy and History of Science

Ethical Imperatives and Behavioral Economics in Strategic Decision-Making: Incorporating Normative Ethical Theories into Sustainable Economic Models

The research aims to integrate ethical principles into behavioral economics and strategic decision-making. It examines the sustainability of economic models through various ethical schools, such as utilitarianism, virtue ethics, and contractualism. By analyzing behavioral biases, cognitive limits, and social preferences, it seeks to understand how moral considerations influence decision-making. The study evaluates the sustainability and cooperation impacts of economic models enriched with moral principles, contributing to addressing global challenges like climate change and resource depletion.

Business Models and Innovation Methods in Management and Business Economics

Dr Károly Hercegi, associate professor
Department of Ergonomics and Psychology

User centered product management of software

Studying the appearance, applications, benefits, and efficiency of the human centered (primarily user centered) methods and approaches in development processes (as practice of product and quality management) of software, web, and other smart products. The research aims to map the variability of organizational practice or studying values and positions of particular methods from management perspectives. (Excepted prior knowledge and experience of candidate cover software development processes and/or agile project management techniques and/or user experience methods).

Dr Károly Hercegi, associate professor
Department of Ergonomics and Psychology

Empirical usability evaluation methods in product management

Application of usability evaluation methods assessing real product-user interactions (usability testing) in product development processes. Studying the applicability and expected effects of new methods. Studying other user centered methods based on empirical usability testing techniques completing management of product development: from user experience assessment to studying user (or customer) behavior. (Excepted prior knowledge and experience of candidate cover (1) theoretical background of Human-Computer Interaction or Human Factors / Ergonomics and (2) practice in application of any usability evaluation method).

Dr András Nemeslaki, professor
Department of Management and Business Economics

Business model innovation as a result of digital transformation

This stream of research explores how ICT driven innovation - especially the complex phenomenon which is called the fourth industrial revolution - impacts industries, business functions, managerial areas and value creation.

Dr Zsuzsanna Novák, associate professor
Department of Finance

Monetary policy theories and the operational framework of central banks

The recent crises made it especially reasonable to reinterpret the scope and instruments of monetary policy. The theme proposal covers the following topics at a time:

- overview of monetary policy theories;
- confronting theoretical approaches to monetary rules and/or their investigation on practical examples;
- survey of the historical development and the current use of central bank instruments;
- evaluation of various crisis management solutions;
- examination of the relationship between macroprudential indicators, exchange rate policy and public finances, securities markets and central bank monetary policy.

Dr Zsuzsanna Novák, associate professor
Department of Finance

The economics and management of public debt

The high public debt levels of advanced economies and Hungary raises a series of debated questions concerning the optimal level of public debt and the alternative methods of its financing. Accordingly, the proposed topics are the following:

- the accounting-statistical questions of public debt
- theories of the causes and consequences of public debt accumulation
- the debate around the harmful level of public debt
- fiscal rules aimed at debt sustainability
- the structure of public debt
- alternative solutions of financing public debt

Dr Róbert Somogyi, associate professor
Department of Finance

The economics and finance of regulating BigTech firms

In the last decade, BigTech firms, also known as large digital platforms, have become increasingly important in the economy as a whole and in the financial sector. These include Google, Facebook, Amazon and Visa. These companies typically play an intermediary role, connecting two distinct groups (e.g. buyers and sellers). Visa, for example, has grown to become one of the world's largest financial



services companies by connecting cardholders with merchants. Regulation of these companies is on the agenda in several countries. There are many interesting open questions about how they differ from traditional firms, their impact on social welfare and whether and how they should be regulated by public authorities.

Dr Róbert Somogyi, associate professor
Department of Finance

Deceptive pricing practices in the financial sector

Deceptive pricing practices are ubiquitous in the economy in general, and in finance in particular. Examples include pressure selling tactics, hiding additional fees by drip pricing, and using very complicated contracts that make the comparison of offers hard. For instance, credit card contracts are notoriously complex. Competition authorities and consumer protection agencies around the world seem to be increasingly concerned by these practices. Game theory and industrial economics offer a toolbox that is very well adapted to studying such regulatory questions.

Dr Vivien Surman, associate professor
Department of Management and Business Economics

Challenges of service quality management

In the rapid-paced and ever-evolving business dynamics, the implementation and operation of efficient management processes to uphold service quality stand as an imperative prerequisite for sustaining competitiveness and perpetually ensuring customer satisfaction. The principal objective of this research is to develop a comprehensive overview elucidating the intricacies inherent to the preservation of service quality, modelling the information network guiding the strategic decisions. This research not only elucidates the multifaceted challenges associated with the preservation of service quality but also endeavors to craft a systematic model that encapsulates the complex decision-making processes underpinning these challenges. Ultimately, the overarching goal is the investigation of the contemporary relevance and enduring validity of state-of-the-art service quality models, all while remaining acutely attuned to the shiftings of 21st-century consumer behaviors and habits.

Dr Vivien Surman, associate professor
Department of Management and Business Economics

Quality management aspects in higher education

Higher education serves as both a direct and indirect catalyst for fostering improvements and innovations. It not only augments the knowledge base of its stakeholders but also cultivates their cognitive frameworks, enabling them to adeptly navigate risk and embrace lifelong learning. The judicious integration of artificial intelligence holds the potential to support the improvement of the quality and sustainability of institutional processes. The focal objective of this research endeavour lies in the meticulous exploration of the conceivable applications, attendant challenges, as well as the facets of quality and sustainability intrinsic to artificial intelligence within higher education. In addition, the research covers the identification of higher education-specific artificial intelligence-driven solutions that can define areas in need of improvement, optimize resource allocation, and promote sustainability initiatives in higher education institutions. Ultimately, the overarching goal is to enhance the overall educational quality and process efficiency, thereby fostering progress in the field.

Dr Zsuzsanna Szalkai, associate professor
Department of Management and Business Economics

B2B marketing: Analysing business relationships from interactive network approach

This topic deals with the challenges of business relationships from interactive, network perspectives of B2B marketing. Such major challenges that have effects on business relationships nowadays are digitalisation and Industry 4.0. However, most of the researches dealing with these challenges are company-centric. This research topic analysis among others the relationship between digitalisation and business relationships in specific industries or in specific contexts (e.g. innovation). The relevance of the topic is demonstrated by the growing number of publications in the field of business relationships and digitalisation in recent years. The candidate will also have the opportunity to contribute to international research.

Dr Zsuzsanna Szalkai, associate professor
Department of Management and Business Economics

Resource interaction and combination from the aspect of B2B marketing

Based on the approach of the Industrial Marketing and Purchasing (IMP) Group business relationships are emerged and maintained by the interactions between actors. Through the interactions between various organizations – and thereby in business networks – not only the existing resources are



exchanged, but they are combined and new resources are developed. The focus of this research topic is a deeper understanding of this resource combination, especially the analysis of knowledge as a resource both on conceptual and on empirical level. The candidate will also have the opportunity to contribute to international research.

Dr Mária Szalmáné Csete, habil. associate professor
Department of Environmental Economics and Sustainability

Climate Innovations for the Sustainability Transition: Regional and Sectoral Assessments

The environmental challenges, particularly climate change, represent one of the most significant and complex phenomena of our time, placing substantial pressure on society, the economy, and the natural environment alike. Addressing this multifaceted and far-reaching problem likely requires not conventional, traditional solutions but rather proposals with an interdisciplinary approach. The key to solving issues related to climate change lies, among other things, in bringing innovative enterprises to the forefront and effectively implementing related proposals. The primary objectives of the research include exploring the regional and sectoral aspects of climate innovations, with a special focus on the topics of climate change, entrepreneurial knowledge, sustainable business models, environmental education, and their specific characteristics, as well as identifying and evaluating the stakeholders and intervention opportunities, and measures to improve efficiency.

Dr Tamás Tófalvy, habil. associate professor
Department of Sociology and Communication

New business models and advertising formats in the digital content industry

One of the biggest current challenges for digital media and content provision is to develop a sustainable business model. As part of this process, several new forms of advertising have emerged and spread across the industry in recent years, such as native advertising and product placement. In addition to new advertising formats, business models based on paywalls or subscriptions directly targeting consumers, are becoming increasingly important. The aim of this research is to explore the scope for the use of new forms of advertising and the forms and types of new business models, their interconnection and sustainability.