



Available research topics of BME Doctoral School of Business and Management

Academic Year 2020/2021

Description of selection and entrance examination process

Applicants must prove their comprehensive professional knowledge, skills and ideas regarding their doctoral work, previous professional activities and language proficiency personally or through an on-line interview. The Admission Committee evaluates the performance of the Applicants on a scale from 0 to 100, which score serves as a basis for ranking:

- qualification of degree certificate (0-25 points)
- language skills (0-15 points)
- professional skills (0-30 points)
- previous scientific activities (0-30 points).

Students have to reach a minimum of 60 points to be considered for admission, nonetheless passing the 60-point limit in itself guarantees neither admission nor eligibility for a scholarship (Stipendium Hungaricum).

Contact (regarding **non-scholarship** holders' administrative issues): Ms. Valéria BALOGH
admission@mail.bme.hu

Stipendium Hungaricum applicants

For submitting a valid application to Stipendium Hungaricum Scholarship programme, the Applicants are required to provide a statement from the future supervisor, declaring that the supervisor undertakes to supervise the Applicants' work within the doctoral programme. This statement is issued by the Head of Doctoral School of Business and Management. Please note, that the acceptance only takes effect if the Applicant has successfully passed the admission (as it is described below).

In order to obtain the above mentioned statement, the Applicant is advised to examine the research topics offered by the Doctoral School of Business and Management. If the Applicant's research topic fits into the given research areas, the Applicant has to send us (1) **the working title of her/his research**, (2) **the selected research area and topic (from the list)**, and (3) **the name of the supervisor**. A research plan and a CV also should be attached.





All these documents and information has to be sent to the International Students' Office by email to the following email address: iso@gt dh.bme.hu

The confirmation (including the statement) will be electronically mailed to the Applicant if the research topic is accepted and the statement is signed by the Doctoral School. All document must be submitted electronically (as the requirements stated there) and the application has to be completed in the Stipendium Hungaricum application portal.

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, in which Candidates are expected to give an account of their research interests and trainings, but also, to express their motivation for joining the programme.

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, December 2019

Prof. Dr. Tamás Koltai

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





SOCIAL ASPECTS OF MANAGEMENT AND BUSINESS ECONOMICS

Dr. Mária Szalmáné Csete: Sustainability and adaptation in different sectors and regions

The expected impacts of climate change are difficult to forecast with total certainty, creating challenges for the analysis of the capacity and willingness to adapt in different social and economic systems. Adaptation and sustainability are closely interconnected and reinforce each other. Innovating for sustainability and climate change can play pivotal role on global and local levels as well especially in the era of IoT. Globalization, urbanization processes lead to the development of more frequent and intense bottom up approaches in several communities worldwide also related to climate issues especially focusing on smart urban, rural and sectoral solutions. The possible impacts of climate change make the transition towards sustainability more complicated especially in the preparation for expected impacts, prevention, management and recovery. Climate change related consequences can also have significant influence on different sectors in a given area for instance related to the quality of life, innovation potential, competitiveness income, health etc., which can make up the basis for regional sustainability.

Dr. Gyula Zilahy: Business and sustainable development: the environmental and social aspects of business organisations

Businesses increasingly have to consider the environmental and social implications of their activities and adjust their strategies and business models to changing expectations. Research topics in business sustainability include the management aspects of internal operations, as well the whole supply chain; the CSR activities of companies; the strategies towards climate change and the business models of innovative businesses such as the sharing economy. The topic also includes the policy aspects of sustainability as well as issues relating to sustainable consumption.

Dr. Béla Janky: Social interactions, communication and culture in organizations

Human relations affect the efficiency of organizations and the well-being of employees. The aim of this research project is to analyze strategic "games", social networks and communication patterns in the selected organizations.





Dr. Annamária Orbán: Socio-cultural innovations, sustainable local/urban development and regional branding

The candidate has to study the role of socio-cultural innovations in sustainable and creative urban – and local - development, which have unfortunately received less attention than technical-architectural “smart” solutions and innovations, in general local/urban development as well as regeneration programs. The candidate will also examine their relation to the socio-cultural economy, social capital and social entrepreneurs, their impact on citizens’ quality of life and well-being and what are their role in regional and/or city branding. The candidate has to consider cities, as social laboratories, where these innovations can be tested.

QUANTITATIVE ANALYSIS IN MANAGEMENT AND BUSINESS ECONOMICS

Dr. Tamás Koltai: Quantitative analysis of the efficiency of production and service operations

The increase of 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 direction about improvement possibilities. Mathematical modelling of the operation may provide this information and may support the improvement of the management information system. The objective of the research is to develop models, which can take advantage of the new possibilities of advanced info-communication technologies and of big data methods.

Dr. Zoltán Sebestyén: Project Management Decisions with Quantitative Methods

Further development and new directions of operations management related project management techniques (eg., deterministic and stochastic network analysis, project crashing, resource analysis and allocation, monitoring etc.).

Dr. Imre Dobos: Linear models in production theory and production planning

The aim of the research project is to introduce doctoral students to the linear models and methods that can be applied in management and economics. Such models include Koopmans' linear activity analysis, which is also a theoretical basis for Data Envelopment Analysis (DEA), and Leontief's input-output model. These production theory models can then be applied to production planning.





Dr. László Á. Kóczy: Efficient allocation of resources (using apportionment techniques)

The efficient management of operations requires a good use of available resources. An optimal allocation is particularly difficult when the claims are not symmetric and the resource cannot be allocated arbitrarily. Examples include personnel or expensive tools. The purpose of this project is both to produce mechanisms based on appointment techniques and to consider applications.

Dr. László Á. Kóczy: Risk and liability allocation (using game theoretic methods)

The recent financial crisis is a painful example when inappropriate risk management causes widespread cascading damages. The increased attention to containing and managing risk has, on the other hand, increased the management costs. In this project methods from cooperative game are used to fairly allocate risk among subentities.

Dr. László Á. Kóczy: Cooperative traffic routing

Besides the benefits of GPS-based routing tools, the side effects are becoming clear too. These include heavy traffic in residential streets or traffic jam on the diversion route while normal traffic on the original alternative. In this project we propose models where routes are coordinated and are determined cooperatively avoiding the so-called tragedy of the commons. Besides theoretical results, the project may lead to industrial applications and patents.





BUSINESS MODELS AND INNOVATION METHODS IN MANAGEMENT AND BUSINESS ECONOMIC

Dr. András Nemeslaki: 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. Károly Hercegfi: User centered product management software

Studying the appearance, applications, benefits and efficiency of the human centered (primarily user centered) methods and approaches in development processes of software, web, and other smart products. (Excepted prior knowledge and experience of candidate cover software development processes and/or and/or agile project management techniques and/or user experience methods).

Dr. Károly Hercegfi: 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 of new methods. Assessing the expected effects of application of the new methods. Studying other user centered methods based on empirical usability testing techniques completing product management (or product development) methodologies: 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. Sarolta Tóvölgyi: The effect of gamification on user behavior

Understanding the benefits and limitations of human-centered design based on gamification. Implementing technologies and innovative motivational theories to support the modification of the user behavior, e.g. studying the behavior of users of software systems, mobile applications or other solutions. Analyzing the potential increase of work efficiency and other possible outcomes on a personal and organizational level.

