

“Decision quality in innovation process in biotechnology companies” develops a model and a comprehensive approach presenting detailed specification and conditions of the innovation process from the decision-making to increase the innovation process efficiency in biotechnology industry. The lack of comprehensive theoretical background impedes the efficient growth and implementation of permanent innovation process, therefore research in this area is of vital theoretical and practical importance. The present project innovatively sets the research in the decision theory. It builds on the current research on innovation processes and addresses the current research gaps such as 1) shared interpretation schemes among the participants of the innovation process, 2) rationality of the decision-making actors, 3) decision-making process participation, and 4) transactive memory.

Biotechnology is the use of living systems and organisms to develop or make products, or any technological application that uses biological systems, living organisms or derivatives thereof, to make or modify products or processes for specific use. Biotechnology has become the driving force of radical changes in innovation processes in various sectors that can provide numerous economic and social benefits, contributes to key EU policy goals, and is widely recognized to be the next wave of the knowledge-based economy, creating new opportunities for societies and economies [European Commission 2016].

The role of managers boils down to making appropriate decisions and thus innovation-related decision quality is crucial in increasing the innovation process efficiency. In this context, it's important to notice that in the representation of innovation process each stage is followed by the decisions to pass to the consecutive stage. Thus a novel representation of innovation process in biotechnology companies is proposed including key stages and decision points. At the same time numerous studies confirmed that nearly all businesses seek to increase innovativeness and create organizational and financial solutions leading to establishing the continuous innovation process. Innovation process is very complex and its different stages differ from each other in the approach to decision-making. It appears that decision-making within the innovation process is one of the most challenging issues for the majority of biotechnology companies. The lack of comprehensive theoretical background impedes the efficient growth and implementation of innovation process producing regular outcomes.

The research problem is contained in the following question: how does the improvement of decision-making quality affect the efficiency of innovation process in biotechnology industry? The main purpose of the present project is determine how the improvement of innovation-related decision-making quality affects the efficiency of innovation process in biotechnology industry. The main purpose is complemented by ten supplementary objectives. Project's main hypothesis is stated as follows: innovation-related decision-making quality affects the efficiency of innovation process so that higher decision-quality leads to more efficient innovation process.

The work plan of the project encompasses seven phases leading to the development of the comprehensive view of innovation process from the decision quality point of view. The first four stages are already completed. They covered systematic literature studies conducted with the use of specialised methods: SALSA, backward snowballing and meta-synthesis. Furthermore they included 24 semi-structured in-depth interviews (in 18 companies). The preliminary study was carried out in Central and Eastern Europe in the fourth quarter of 2016 and the first and second quarters of 2017. The research targeted senior management and research and development specialists. The fourth stage covered the impact of innovation process disclosure on market value of biotechnology companies. In the consecutive stages of the work plan the research will embrace surveys, case studies and advanced mathematical calculations. Case studies will cover the biotech companies in particular countries of European Union. Due to the interdisciplinarity of the project the interviews conducted within case studies will be handled with the senior management, biotechnologists and Research & Development department representatives. It will deliver the comprehensive picture of details in innovation process and decision-making. Ultimately 12 companies will be pointed to conduct a case study analysis. Moreover, about 100 surveys will be performed. The surveys will be divided into three substantial parts. The first will cover the data on the efficiency of innovation processes. The second will include the data on decision quality. The third will cover shared interpretation schemes, rationality, decision-making process participation and transactive memory. Quantitative and qualitative methods that will be employed in the project allow obtaining the comprehensive and detailed insight into innovation process from the decision-making point of view in biotech companies.