Holonic Manufacturing Systems Research Group

Our research group conducts multidisciplinary studies at the intersection of engineering management, quality systems, strategic decision-making, and digital transformation. A significant portion of our work explores the integration of artificial intelligence tools into the design and planning phases of engineering projects, supported by case studies and practical frameworks. In parallel, we investigate quality management, optical quality control system optimization, and corporate governance within industrial small and medium-sized enterprises (SMEs), particularly through the lens of digital communication and "Test-Before-Invest" collaborative partnerships. Our research also extends to organizational resilience during crisis contexts—analyzing conflicting objectives and risk factors—as well as the critical role of stakeholder identification when conceptualizing sustainable development policies within public institutions.

Members

- dr. Bakos Levente

Partner institutions

- Budapest University of Technology and Economics, Hungary

Research Grants

Recent publications

1. Bakos, Levente, and Mihaela Bucur. "Stakeholder Identification as Risk Factor Within Public Institutions, in the Context of Conceiving Sustainable Development Policies." In *International Conference Interdisciplinarity in Engineering*, pp. 400-414. Cham: Springer Nature Switzerland, 2025.
2. Bakos, Levente, and István-Csongor Bakos. "A Case Study for Possible Applications of Artificial Intelligence Tools in the Design of Engineering Projects." *MŰSZAKI TUDOMÁNYOS KÖZLEMÉNYEK (EN)* 22 (2025): 1-9.
3. Bakos, Levente-Attila, Zoltán Forgó, and Erzsébet Egyed-Faluvégi. "Optical Quality Control System Improvement for an SME. A Case Study for Test-Before-Invest Partnerhips." In *2024 IEEE 6th International Symposium on Logistics and Industrial Informatics (LINDI)*, pp. 000189-000194. IEEE, 2024.
4. Bakos, Levente, and Dănuț-Dumitru Dumitrașcu. "Contradictions of Objectives During Organizational Crisis." In *Management, Innovation and Entrepreneurship in Challenging Global Times: Proceedings of the 16th International Symposium in Management (SIM 2021)*, pp. 15-27. Cham: Springer International Publishing, 2024.