Report from the workshop

"Socio-technical approaches in practical application"

Virtual webinar, December 03, 2020

Within the framework of the research project "Work and process-oriented digitization in industrial enterprises" ("Arbeits- und prozessorientierte Digitalisierung in Industrieunternehmen (APRODI)", the Institute for Work, Skills and Training (Institut Arbeit und Qualifikation IAQ), University of Duisburg-Essen, and the Federal Institute for Occupational Safety and Health (Bundesanstalt für Arbeitsschutz und Arbeitsmedizin, BAuA) jointly held an expert webinar on December 3, 2020, entitled "Socio-technical approaches in practical application". It was the third workshop within a series of events on socio-technical approaches of work and organization design. The workshop was primarily aimed at scientists from Germany and neighboring countries.

In the first part of the workshop, comprehensive and conceptual contributions were presented. Nick Kratzer (Institut für Sozialwissenschaftliche Forschung ISF, Munich) dealt with the topic "Work design in the enterprise - problems that come and remain. Insights from projects in the field of work organization" (own translations). He focused on the challenges of application-oriented work research and argued for analysis-based, multidimensional, multi-perspective and participation-oriented research approaches. Against the background of increasingly dynamic organizations, he emphasized the provisional character of project planning and the normative basis of work design approaches. In her lecture "Meta-analysis in a different way: from project analysis to new approaches to system design" Swantje Robelski (BAuA) presented an analysis of several research projects on flexible work in different locations. She investigated into 11 selected projects of the research program "Innovations for Production, Services and the Future of Work" funded by the German Federal Ministry of Education and Research (BMBF). She could show that the solutions for mobile working developed there particularly address the social and organizational level of companies, but less the individual level. In addition, occupational safety and health is rarely explicitly considered and these aspects often remain marginal or isolated.

The second part of the workshop was dedicated to practical experiences with STS-oriented research and design approaches. For example, Sandra Rothenbusch (TU Braunschweig) presented in her lecture "A socio-technical approach to implementing 'virtual twins': Implications from two R&D projects" an extended 3-level model (process level, methods & tool level and competence level) for the planning and implementation of digitalization projects. It is important to keep all three levels and their interactions in mind when analyzing and designing work systems. Based on current project experiences, she presented an MTO (Man, Technology, Organization)-based approach extended with a SWOT analysis. Felix Thewes (Ruhr-University, Bochum) outlined his doctoral thesis in his lecture "Employee-centered approaches to heuristic evaluation of socio-technical systems". His approach of the application of socio-technical heuristics is based on semi-structured interviews in which the interviewees (e.g. employees) evaluate work systems with regard to improvement potentials. The strengths of the interview-based approach are the in-depth investigation of possible problem areas, the exploration of the organizational context and a holistic view of the experienced work situation.

In the third part of the workshop Alexander Bendel (IAQ, Duisburg) presented in his lecture "A socio-technical work design process in the context of the APRODI project at the DuBay Polymer GmbH" results and experiences of an intervention-oriented case study on the introduction of a digital information and communication system. The socio-technical process model applied is characterized by the participation of the users in the system design as well as by an iterative procedure. Prototypes of the information and communication system were successfully evaluated with socio-technical evaluation criteria and improvement potentials could be developed. Ralf Kopp and Tobias Wienzek (Sozialforschungsstelle Dortmund) concluded the presentations with their lecture "Compass Digitalization: A Socio-Technical Design Tool for Managers". They presented the research and design approach of their project on 'good leadership' and work in socio-digital transformation. Based on an MTO analysis, which was supplemented by concepts of interaction-based leadership, first results from the analysis were shown, based on the tool "Compass Digitization" designed by IG Metall (German Metal Workers Union).

The workshop ended with an input by Prof. Thomas Herrmann (Ruhr-University Bochum) on perspectives of the socio-technical design of artificial intelligence. He emphasized that for the development and introduction of such systems, it is necessary to create the technical and organizational prerequisites to enable improved knowledge management in the organization, learning progresses for users and AI systems as well as better traceability of system decisions, and thus contribute to the development of hybrid intelligence systems.

It is intended to continue the workshop series in the future. One of the aims is to further network with international experts* in the field of socio-technical system design.

Alexander Bendel & Erich Latniak