

Abstract

Digital coworker. Human-AI collaboration in work environment, on the example of virtual assistants for management professions.

Artificial intelligence surrounds people in everyday life. Even though one might not see it, not feel it, or not understand it, AI is there and it makes things simpler. From guarding mailboxes with spam filters to supporting doctors in curing cancer, relevance of artificial intelligence is bound to keep increasing, as no one can stop technological advancement, especially when the technology has such a broad application. A dominant opinion in the general public is that automation will presumably hold negative societal implications, such as job loss, which often causes fear and misunderstanding. Contrarily to such attitude, an approach assumed in the dissertation was that people will experience positive effects due to collaboration with artificial intelligence.

The goal of the dissertation was to explore synergies between human workers in managerial roles and AI-powered computer systems, and to verify the assumed hypothesis. Specific focus was put on application of artificial intelligence in a form of virtual assistants. Key research questions for the first part covered perception of artificial intelligence and virtual assistants, their characteristics, design, functionalities and use-cases, enabling effects of synergy and increased productivity. The underlying hypothesis for the second part of the study was that a collaboration between humans and artificial intelligence in a form of virtual assistants increases productivity in management-related tasks.

Collaboration of human workers with virtual assistants was explored in a qualitative phase of the study – 6 semi-structured in-depth interviews with managers in white-collar jobs. Interviews resulted with varying designs of assistants – from software-looking tool, to humanly looking and behaving peers. Managers expressed excitement about working with virtual assistants, especially about a possibility of them taking over mundane tasks, thus gaining time to do more valuable things, like working with other people. Interviewees stated that their productivity would be boosted thanks to such collaboration.

The second, quantitative phase of the study was an experiment simulating a business situation. The assumed hypothesis was that collaboration between humans and artificial intelligence in a form of virtual assistants increases productivity in management-related tasks. A total of 20

people participated in the experiment, being randomly assigned to experimental or control group. In the simulation, all participants were asked to perform the same set of management-related tasks in the same time limit. Participants of the experimental group collaborated on those tasks with a virtual assistant created specifically for the purpose of the experiment. A relevant difference between groups was observed, $t(18) = 5.25, p < .001$. Participants collaborating with a virtual assistant achieved 55% higher productivity (measured by tasks done) than those working on their own. Furthermore, they assessed their productivity higher and were more satisfied with their performance. Results confirmed the hypothesis, proving that, within the experiment, collaboration with AI increased productivity.

The author urges a debate about a field of Human-AI Interaction. Such discussion would allow for broad and focused studies of problems arising in the area and seems to be very much needed at this particular moment in development of artificial intelligence.