

# AMCIS 2019 Cancun: Explainable Robotics Systems for the Knowledge Worker

*TREO Talk Paper*

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## **Abstract**

Robots are everywhere and proliferating our lives whether we choose to accept them or not. Businesses identify significant improvements to their bottom line when they employ robots in their systems, so workers must either embrace the new systems or risk being eliminated. As a project manager, I noticed for years robots were mostly isolated to the warehouse and production floors, but they have slowly crept their way into the offices of the knowledge worker. The knowledge worker may not see a physical robot as the warehouse and production workers, but they interact with virtual robotic systems daily, even at home. Tools used by the knowledge worker are starting to incorporate robotic systems in their upgrades. Salesforce now has Einstein to help with reporting needs, Microsoft Teams has chatbots to assist with collaboration, and Outlook has MyAnalytics to assist in managing time. These are a few essential tools knowledge workers use to do their daily jobs and now these tools include virtual robots. As more virtual robots in the form of personal assistants are added to computer applications and soon physical robots, will knowledge workers accept this change? If not, how can businesses or manufactures of the robots help make this transition smoothly? From a technological advancement standpoint, more physical robots will start to have a social aspect to them with human like motions and physical traits to help promote acceptance. Khan, Haibo, and Réhman (2016) explain how advances in robotics' human like motion increases sociability with humans. Piçarra, Giger, Pochwatko, and Możaryn (2016) describe how social robots are design to improve their physical and psychological traits to improve interaction with humans. Engineers can improve the look and sociability of the robots, what about the attitudes of workers towards robots? Most managers today use technology adoption methods for acceptance as it has been based on years of research. BenMessaoud, Kharrazi, and MacDorman (2008), define technology acceptance as "an individual's intentional or voluntary use of a technology." One of the early models introduced in 1982, technology acceptance model (TAM) "originated from the theory of reasoned action, a general social-psychological behavioral theory." They discussed other methods used to evaluate an individual's acceptance including TAM social influence model, Unified Theory of Acceptance and Use of Technology (UTAUT), and their modified UTAUT, which they recommend using for artificial intelligence studies. The modified UTAUT theory had six main areas of focus including, "Performance Expectancy, Effort Expectancy, Attitude Toward Using Technology, Social Influence, Facilitating Conditions, and Leadership."

Conversely, will technology acceptance models suffice to help knowledge workers accept physical robots in their environment? What if we add in an explainable robotic system feature in addition to technology adoption methods to promote knowledge worker's acceptance?

Based on a review of the literature, I am proposing a study that includes technology acceptance model and an explainable robot system. The intent of this research study is to assess participants' attitudes towards explainable robotic systems using the Technology Acceptance model as a baseline for survey questions. To gather the data for this research study, participants will be selected from four independent companies, whereas two companies will have manufacturing and knowledge workers and two will only have knowledge workers. Participants will receive a Likert 7-point scale survey consisting of questions on technology adoption model and explainable system characteristics. The practical implications of this study will benefit researchers in the area of explainable systems and businesses who plan to introduce robotic systems into the knowledge worker environment. In addition, the study will assess if knowledge workers who have been exposed to physical robots in their work environment are more susceptible to accepting robots in the office than those who have not.