How to Make chatbots productive – A user-oriented implementation framework

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ABSTRACT

Many organizations are pursuing the implementation of chatbots to enable automation of service processes. However, previous research has highlighted the existence of practical setbacks in the implementation of chatbots in corporate environments. To gain practical insights on the issues related to the implementation processes from several perspectives and stages of deployment, we conducted semi-structured interviews with developers and experts of chatbot development. Using qualitative content analysis and based on a review of literature on human computer interaction (HCI), information systems (IS), and chatbots, we present an implementation framework that supports the successful deployment of chatbots and discuss the implementation of chatbots through a user-oriented lens. The proposed framework contains 101 guiding questions to support chatbot implementation in an eight-step process. The questions are structured according to the people, activity, context, and technology (PACT) framework. The adapted PACT framework is evaluated through expert interviews and a focus group discussion (FGD) and is further applied in a case study. The framework can be seen as a bridge between science and practice that serves as a notional structure for practitioners to introduce a chatbot in a structured and user-oriented manner.

1. Introduction

In recent years, chatbots have become increasingly popular (Brandtzaeg and Følstad, 2018; Benner et al., 2021) due to major developments in machine learning (ML), and natural language processing (NLP), which have enabled new forms of chatbots (Seeger et al., 2018). The hype surrounding chatbots has led many companies in different fields to introduce them to show their technological prowess or to just offer a new channel for client interaction. Chatbot consultancies promote the ease of developing chatbots within a short timeframe (e.g., *"FAQ Chatbot In a Day"*[1] and *"Learn how to build a Facebook chatbot – in just one day!"*[2]), typically focusing on the use of a specific development tool rather than the full development process. In this regard, previous research has focused primarily on specific aspects of chatbot implementation, e.g., design elements such as "technical, situational and knowledge features" (Janssen et al., 2020, p.213), design principles

(Lewandowski et al., 2022) and tasks within chatbot introduction (Lewandowski et al., 2022; Meyer von Wolff et al., 2022) or specific prototypes developed through case studies (Laumer et al., 2019; Seeger et al., 2018).

While chatbots are increasingly being improved, they may be prone to functional failure. This has been noted as a concern in research and practice as it may lead to a loss of credibility and frustration among users (Benner et al., 2021; Brandtzaeg and Følstad, 2018; Janssen et al., 2021a). One of the main reasons why chatbots currently fail, is that user expectations do not match their functionalities (Janssen et al., 2021a). In a rapidly changing and increasingly digitized world, where people are constantly confronted with new technological changes, a key success factor within the design, implementation, and evaluation phases is to gain a deep understanding of how people interact with the technology being developed (Adam et al., 2021). Zierau et al. (2020) emphasize that task context and user characteristics have barely been studied in the

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