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Recommended Citation

Essaied, Khadija; Marsan, Josianne; Bazomanza, Wilfried Nzabandora; Tewamba, Harold Junior Nguengang; and Yombia, Steve Marius Kemayou, "Organizational Decision to Adopt Chatbot Technology: The Role of Organizing Vision and Technological Frame" (2020). *AMCIS 2020 Proceedings*. 17.
https://aisel.aisnet.org/amcis2020/adoption_diffusion_IT/adoption_diffusion_IT/17

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Organizational Decision to Adopt Chatbot Technology: The Role of Organizing Vision and Technological Frame

Emergent Research Forum (ERF)

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Abstract

This research project aims to explore the socio-cognitive determinants of the organizational adoption of artificial intelligence based chatbot by insurance companies. Technological frame and reception of organizing vision are used as conceptual foundations. A mixed method approach consisting of qualitative interviews and a quantitative questionnaire will serve as input to a Fuzzy set Qualitative Comparative Analysis. Main expected contribution is an understanding of the combined effect of technological frame and reception of organizing vision on organizational adoption of information technology.

Keywords

Chatbot, adoption, organizing vision, technological frame.

Introduction

A chatbot is an artificial intelligence (AI) application able to hold a written or oral conversation with a human being using natural language processing techniques (Abdul-Kader and Woods 2015). Eighty-four percent of managers believe that AI will enable their companies to gain or maintain competitive advantage and many organizations recognize that AI has a positive impact on their business (Ransbotham et al. 2017). Chatbot technology is also increasingly used by banks and insurance companies to manage communication with customers (Ranjan and Mulakaluri 2018). In the coming decade, the effects of AI will be amplified in several sectors, particularly in finance and insurance (Brynjolfsson and McAfee 2017).

The thought patterns of information technology (IT) users are important and must be taken into account for the success of any IT project (Orlikowski and Gash 1994), including those involving AI in general and chatbot technology in particular. Conflicts may arise in the selection, implementation and use of an IT if the different stakeholders of an organization do not share the same vision or *technological frame* (TF) (Orlikowski and Gash 1994). TF is defined as a "core set of assumptions, expectations, and knowledge of technology collectively held by a group or community" (Orlikowski and Gash 1994, p. 199).

Davidson (2002) suggests studying IT adoption using two concepts in a complementary fashion: the concept of TF and the concept of organizing vision (OV)—developed by Swanson and Ramiller (1997). From the birth of the idea for a new IT, a public discourse is created by "institutional entrepreneurs" who have a

stake in the diffusion of that IT (Swanson and Ramiller 1997). Thus, each IT is accompanied by its own OV through a discourse about its application in organizations (Swanson and Ramiller 1997). According to Ramiller and Swanson (2003), *reception of the OV* refers to the opinion that the organization's stakeholders have of an IT's OV. The OV plays a central role in the IT diffusion process by influencing the perceptions and decision-making of potential adopters of the IT (Ramiller and Swanson 2003). The decision to adopt an IT is usually preceded by a phase within which the organization tries to reduce uncertainties about the IT by acquiring information, mainly from the media—one of the important vehicles of OVs' discourse (Marsan et al. 2012).

Despite the current popularity of chatbots, we were unable to find studies about how decision-makers perceive and choose them for their organizations, let alone with the combined lens of OV and TF. Thus, our research question is: *Do the technological frame and the reception of the organizing vision for chatbot technology influence the organizational decision to adopt chatbot technology? If so, how?*

Through this question, we answer the call of Davidson (2002) and Wang (2009) to use socio-cognitive lenses in IT adoption studies. In addition, we answer Davidson's (2002) call to combine OV and TF to better highlight this phenomenon. These elements lend originality to our study and illustrate its contribution to the literature on IT organizational adoption in general, and more specifically on chatbots.

Literature review

Chatbots have been the subject of several studies over the past decades. The very first chatbot, called Eliza, was developed in 1966 to simulate a consultation with a psychotherapist (Weizenbaum 1966). Since chatbots can fulfill the role of service employees and are able to support consumers in their decision-making process, they can also act as referral agents or advisors (Qiu and Benbasat 2009). There is little research in Information Systems (IS) literature on organizational adoption of AI solutions. Some studies (e.g. Han and Yang 2018; Mahroof 2019) investigated the organizational adoption of AI in general, without focusing on any particular type of AI solution. As with most studies on IT organizational adoption, these studies use the Technology-Organization-Environment (TOE) framework (e.g. Damanpour et al. 2018) alone or combined with other theories.

A number of researchers are interested in the study of organizational IT adoption using socio-cognitive lenses such as OV and TF (e.g. Davidson 2002; Marsan et al. 2012) but there was never, to our knowledge, any study combining TF and reception of OV. Also, individual adoption of chatbots is increasingly investigated (e.g. Belanche et al. 2019), but we did not find any IS research on organizational chatbot adoption. Thus, our study has two important particularities regarding the type of IT studied and the theoretical lenses used. Indeed, we are interested in studying the organizational adoption of a particular AI solution, the chatbot, using socio-cognitive organizational adoption lenses, i.e. OV and TF.

Theoretical foundations

IT adoption decision

Decision-making consists of “evaluating and choosing among alternative actions” found or designed to suit chosen issues requiring attention (Simon et al. 1987 p. 11). An adoption decision reflects “evaluating the proposed ideas from technical, financial and strategic perspectives, making the decision to accept an idea as the desired solution, and allocating resources for its acquisition, alteration and assimilation” (Damanpour and Schneider 2006 p. 217). At the end of the decision-making process, the organization's managers decide to adopt or not an IT and to allocate, or not, the necessary resources for its adoption (Damanpour and Schneider 2006). In the context of our study, the main interest lies in the ultimate stage of the decision-making process: the *organizational decision to adopt chatbot technology*. It is therefore the choice made by the organization that interests us, either immediate adoption, eventual adoption (due to current lack of resources) or rejection of chatbot technology.

Technological Frame

The concept of TF was introduced in IS by Orlikowski and Gash (1994) who define it as a “core set of assumptions, expectations, and knowledge of technology collectively held by a group or community” (p.

199). Although they are held by each individual, TFs inherently have a social nature, since shared understanding underlies the enactment of a social reality (Orlikowski and Gash 1994). Orlikowski and Gash (1994) formulated a conceptual framework based on socio-cognition to understand the technological particularities of an IT artifact, its adoption, dissemination, and use.

Orlikowski and Gash (1994 p. 183) suggest that TF has three dimensions: 1) *Nature of IT* refers to “people’s images of the technology and their understanding of its capabilities and functionality”, 2) *IT strategy* refers to “people’s views of why their organization acquired and implemented the technology”, and 3) *IT in use* refers to “people’s understanding of how the technology will be used on a day-to-day basis and the likely or actual conditions and consequences associated with such use”. To these three dimensions, Shaw et al. (1997) added the *IT ownership* dimension that refers to “who actually owns the technology and who is responsible for the technology” (p. 454). Davidson (2002) added instead the *IT service delivery strategies* dimension referring to “generalized knowledge and expectations about how IT functionality should be developed or acquired and provided to a user/client organization, including assumptions about users’ and technical developers’, roles, alternatives for sourcing software such as purchasing packages, project phasing, coordination” (p. 337).

Reception of the organizing vision

The concept of OV is defined as a community discourse about the application of IT in organizations (Swanson and Ramiller 1997). This community includes all parties interested in a given IT, from detractors to supporters (Swanson and Ramiller 1997). OV influences the interpretation of the presence and purpose of the IT, the legitimization and justification of the IT, and the mobilization of forces for the development and implementation of the IT (Ramiller and Swanson 2003).

The *reception of OV* refers to an individual’s opinion of an IT’s OV and has four dimensions for which Ramiller and Swanson (2003) have developed a measurement instrument. Marsan et al. (2012) used and refined this instrument in the context of open source software, which resulted in some clarification in the names and definitions of the dimensions. The first dimension, *uncertainty*, is “the degree to which an individual finds representation of the OV in public discourse intelligible and informative” (Marsan et al. 2012, p. 261). As the second one, *plausibility* is “the degree to which an individual finds that representations of the OV in public discourse are free of distortions, misunderstandings, exaggerations and inappropriate assertions”(p.261). The third dimension, *discontinuity*, is “the degree to which an individual finds that the OV presents an innovation that requires a conceptual shift (conceptual discontinuity) or poses unprecedented implementation challenges (structural discontinuity)” (p. 261). Finally, *desirability* is “the degree to which an individual find that the public discourse demonstrates that the associated IT is desirable for better organizational performance” (p. 261). Based on these dimensions, Marsan et al. (2012) positioned respondents on a continuum from detractor to supporter of the OV.

Methodology

We favor a mixed method study. First, we have a qualitative component based on semi-structured individual interviews with decision-makers and influencers of chatbot adoption decisions in organizations to cover the dimensions of TF. Then, we have a quantitative component based on a questionnaire to be filled out at the end of each interview to measure the reception of the OV, since a validated quantitative instrument already exists for this concept.

We chose the insurance sector because chatbot technology is increasingly used there and it is one of the sectors where the effects of AI will be amplified in the coming decades (Ranjan and Mulakaluri 2018, Brynjolfsson and McAfee 2017). It is therefore an “extreme case” (Yin 2014) worth exploring. We focus on insurance companies based in Quebec City, Canada, since this territory holds an impressive number of insurance company head offices. In each company, we will first interview the person ultimately in charge of the adoption decision of chatbot technology, who will then be asked to put us in touch with other decision-makers involved and people who influenced their decision within the organization.

We will conduct a content analysis (Miles and Huberman 1994) of the interviews using QSR Nvivo software to develop a TF portrait of each interviewee. Each interviewee will also be positioned on the detractor-supporter continuum of the reception of OV. By congregating data from the same organization, we will

position each organization on the continuum and describe the common elements of the co-existing TFs. We will use Fuzzy set Qualitative Comparative Analysis (fsQCA) with the Quine-McCluskey algorithm to assess the complex configurations of causal conditions (Fiss 2011), here the adoption factors resulting from TF and the reception of OV that lead to the organizational decision to adopt chatbot.

Figure 1 illustrates the suggested methodology.

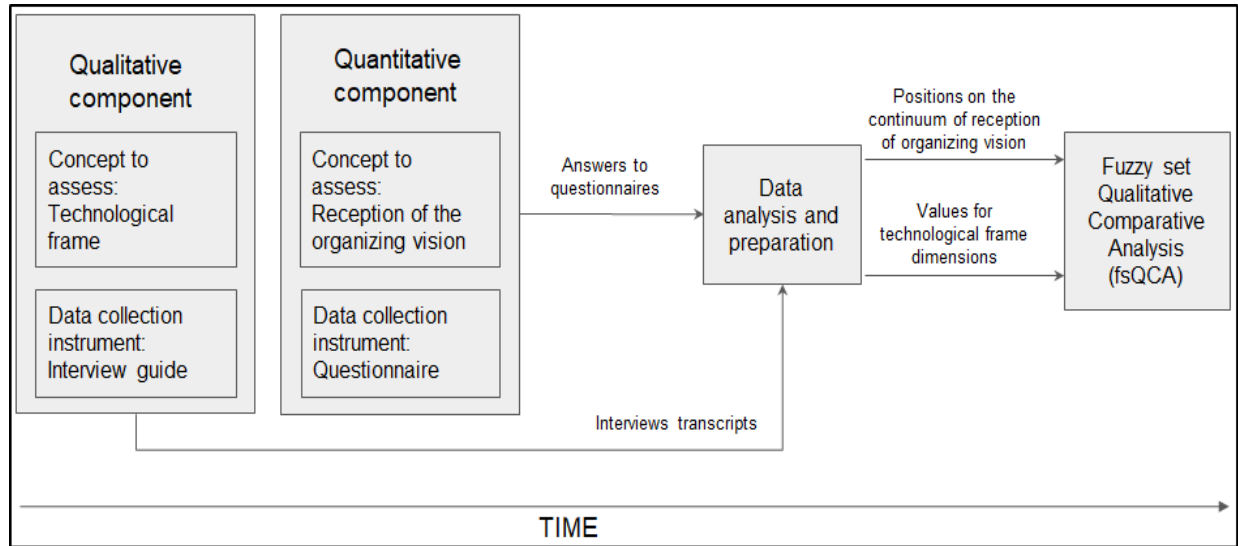


Figure 1. Details of the methodology

Expected contributions and limitations

Our objective is to explore the socio-cognitive determinants of the organizational choice of chatbot adoption by insurance companies, with a perspective combining the concepts of TF and reception of OV, using a mixed method approach. The specificity of the context, insurance companies in Quebec, is the main limitation of this study, as this specificity could limit the generalizability of the results to other sectors of activity or other geographic territories. Despite this limitation, we hope that this study will contribute to practice by highlighting the role of individual perceptions on the outcome of decision to adopt chatbot technology. We also hope it will contribute to IS research on socio-cognition by combining two key concepts, FT and reception of OV.

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