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Good morning Chatbot, do I have any meetings today?

Investigating Trust in AI Chatbots in a Digital Workplace

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Abstract. The adoption and implementation of Conversational AI applications such as AI chatbots in the workplace is rapidly growing. The success of integrating AI chatbots into organisations critically depends on employees' use since AI technology evolves through machine learning and analysis of use data. Since trust is a key aspect that determines technology continuous use, this research questions: How employees experience trust in Conversational AI and how it impacts its continuous use? To answer the research question, we conducted qualitative inductive research using rich empirical data from a large international organisation. The findings highlight that employees developed three forms of trust, namely, emotional, cognitive and organisational trust. The theoretical and practical implications of the findings are discussed.

Keywords: Artificial Intelligence, Conversational AI, Trust, Workplace of the future

1 Introduction

Conversational Artificial Intelligence (AI) in the workplace is becoming increasingly important in organisations for the digitalisation of work processes. It is estimated that the market size of AI-enabled chatbots will reach \$2.4 billion by 2028 [1]. Its adoption and implementation was accelerated as a result of the COVID-19 pandemic [2, 3]. It is suggested that the volume of interactions handled by Conversational AI including text-based chatbots, and voice assistants has increased during Covid-19 by as much as 250% in many industries [4]. Conversational AI represents a novel and distinctive class of

smart information systems (IS) that differs from previously studied traditional enterprise systems [5]. They exhibit conversational abilities which allows users to explore data and services using natural language either via text or voice [6, 7]. It also exhibits anthropomorphic features that triggers users emotions [8]. This is in addition to its underlying machine learning technology that allows it to evolve with continuous use to better fit its organisational context and use patterns.

Conversational AI could be externally-facing serving customers or internally-facing serving employees. It could be text-based known as AI chatbot or AI-enabled chatbot or voice-based known as digital assistant or digital human. This study focuses on internally facing AI chatbot that is text-based. The use of internally-facing AI chatbot is an important development in enterprise systems [9]. It is considered a way to tackle employees' applications overload and provide them with a friendly interface to access and integrate corporate information from different sources based on employees' needs [8, 10]. It could promote employees' productivity [11] by taking over repetitive tasks and simplifying processes which could lead to employees' satisfaction.

Despite the key importance of use in the evolving performance of AI chatbots and the organisational growing investment in this technology, research on employees' actual use of AI chatbots in their organisational context is still in its infancy [12, 13]. This is particularly the case in AI applications where scholars argue that organisations achieve significant performance improvements when humans and machines work together [14]. Trust plays a key role in the formation of this partnership [15, 16]. Scholars agree that trust in technology is a fundamental construct and primary predictor of its use and continuous use [17, 18]. Therefore, Employees' trust in Conversational AI could affect not only its initial acceptance but most importantly its continuous use. Hence, it could enable or hinder the integration of the technology into the organisation [15, 19, 20].

Against this backdrop, this study examines employees experience of trust in their actual use of AI chatbots in their workplace. It is guided by the research question of: How employees experience trust in AI chatbots and how this impacts its use? To answer the research question, we collected rich qualitative data from a global organisation and followed an inductive approach to the data analysis. Our results provide insights to the foundation of employees' trust of the AI chatbot. They show that employees develop cognitive and emotional trust towards the AI chatbot, which is complemented by organisational trust. The findings reveal that cognitive-based trust, such as transparency mechanisms, enhances trust but is not adequate for the AI chatbot's continuous use and employees' engagement. Instead, emotional-based trust engages employees and could support its continuous use. This research theoretically contributes to the technology trust literature through examining employees' trust in new class of AI technology. It draws the attention to the elements of experiential trust and their reinforcing role of AI continuous use. Furthermore, it extends the mostly quantitative studies of trust on AI chatbots and highlights the role of trust in the collaboration between employees and Conversational AI.

The remainder of this paper is structured into five sections: Section two reviews the existing literature on Conversational AI and trust in technology. Next, we describe our

research methodology and data analysis. Subsequently, we present the research findings and conclude by discussing the contributions, implications, and limitations of our study.

2 Literature Review

2.1 Conversational AI

Conversational AI refers to a new mode of interaction with information systems where the user and the system interact in a human-like conversation using natural language while the system utilizes machine learning to improve its conversational and information retrieval and integration capability. Example of voice-based conversational AI systems include Alexa, Apple's Siri, Google Assistant. To realise the value of Conversational AI, organisations need to consider not only technical and organisational aspects but also use patterns and users' involvement [21, 22]. Employees' trust in Conversational AI could affect its acceptance and use and as a consequence, could hinder or enable the integration of the technology into the organisation [15, 19, 20]. Furthermore, the use is impacted by the expectations users have of the interaction are based on their mental model of how they believe the system works and are a driving factor for satisfaction when using information systems [23].

The adoption and use of AI chatbots has been studied mainly from a customer point of view to increase their satisfaction, engagement, and trust [24]. Moreover, productivity was found to be the main motivation for customers to use AI chatbots [25]. The effect of Conversational AI influences consumers' purchase intention [26, 27]. On the other side, customer's attitude toward the brand influences the likelihood to use and recommend the AI chatbot [28].

In addition to identifying the elements that affect customer satisfaction, research finds that the design elements of conversational AI play important role in users' trust and perceptions. For example, studies uncover that strengthening the hedonic quality in AI chatbots, and thereby overall user experience, has been to strengthen their human likeness [29]. Also, studies find that the use of human-like language or name are sufficient to increase perception of the AI chatbot as being human-like and plays a role in customer's satisfaction [30].

However, the design elements of the AI applications rely on the context of the application domain to perform different tasks. For example, researchers have classified the design elements into mechanical AI, which is ideal for service standardisation, thinking AI for service personalisation, and feeling AI for service relationalisation through social, emotional, communicative, and interactive tasks [22]. Research finds that Conversational AI that acts and reacts empathetically can be used to improve interactions and

deepen trust and as a result, this can also generate greater acquisition and retention rates among customers [31]. Therefore, scholars argue that Conversational AIs design should focus on the relation with the users attempting to build bonds with them, whether customers and employees in order to increase trust, enhance collaboration, and meet employees' needs for social and relational support in the digital workplace [32]. In addition, anthropomorphic features have been found to have a greater influence from the functional AI chatbot design features into users' perceptions [33].

Research has highlighted the importance of design in IS as it could have implications on users' perceptions of technologies and their encounters [34]. The characteristics of AI chatbots can be defined based on the two main design dimensions of function and form. The functional design elements of AI chatbots are characterized by their natural language processing and their ability to learn and adapt. The design elements of form - the aesthetic and behavioural elements of the AI chatbots- include the conversational interaction, social presence and embodiment as illustrated in Table 1.

The AI chatbot's tangible and intangible characteristics elicit positive aesthetic and affective responses [35]. However, stronger humanisation of AI chatbots, through the design element of form, does not necessarily result in higher user enjoyment [33]. Instead of influencing the hedonic share of technology acceptance, anthropomorphic design features have the strongest and most significant effect on utilitarian aspects of chatbot acceptance and trust [15, 33, 34].

Anthropomorphism (i.e., human likeness) which is embedded in the AI chatbot's design elements of form, defines the degree to which an intelligent agent like an AI chatbot is displayed with human characteristics, which in turn, increases users' trust in computer agents and influences adoption [36]. Anthropomorphic features may lead to the development of social and emotional bonds with the AI technology [33].

Table 1. Characteristics of AI chatbots adapted from [8]

Design dimension	AI Chatbot characteristic	Definition	References
Function	Natural language processing	The ability of an AI chatbot to communicate with natural language.	[37, 38]
	Learning agent	The ability of an AI chatbot to learn from a user's input.	[39, 40]
Form	Conversational interaction	Interactive two-way communication: user-driven (reactive) or chatbot-driven (proactive or autonomous).	[41, 42]

	Social presence	The feeling of virtual togetherness or “being with another”.	[34, 43, 44]
	Embodiment	AI chatbots could have virtual or physical representation or could be disembodied.	[30, 45]

Research investigating employees’ use of AI chatbots in their workplace is nascent. There is little understanding of employees’ trust of this new technology in their work context.

2.2 Trust in technology

Trust has been studied in various contexts throughout IS research, such as in business relationships, interpersonal organisational settings and e-commerce. More recently IS research has discussed trust in technology where the trustee is a technological artifact such as a recommendation agent [46]. It has been argued that trust affects technology acceptance and use [47]. It has been also treated as a significant element of human and computer partnership [17, 48, 49]. Trust has been conceptualized as a multidimensional construct comprising of dimensions of trusting beliefs namely, integrity, competence, and benevolence [50]. Each of these dimensions provides a particular perceptual perspective from which an individual contemplates the potential trustee namely; competence which is the ability to effectively perform, benevolence, acting in the user’s interest, and integrity, meaning that the technology adheres to principles like promise-keeping and honesty [51]. Previous IS studies examined the role of trust in technology adoption intentions mainly from a quantitative point of view [52]. They found that the social influence and facilitating conditions, defined as “the degree to which an individual believes that an organisational and technical infrastructure exists to support the use of the system” [53, p.453] were the main the strongest predictors of trust in the personal use of IoT in a medical context to address issues of personal data disclosure [54]. Similarly, trust was found to be the most significant factor predicting the customers’ intention to adopt mobile banking [55]. While, trust in AI chatbots has been mostly studied from a customer perspective [18, 20, 56] and in healthcare [57–59].

The success of integrating a technology such as AI into organisations critically depends on employees’ trust in the technology [47]. Research found that access to knowledge, transparency, explainability, certification, as well as self-imposed standards and guidelines to be important factors that increase overall trust in AI [60].

However, little is known about employees' actual use of AI chatbots in organisations even though employees play a key role in the chatbot usage [8].

Trust has also been conceptualised as being both cognitive, based on rational thinking and emotional based on affect [61]. According to McAllister [61], people develop social connections that provide support and comfort, denoting irrational factors as emotion-driven trust that complement cognitive trust which is based on perceptions of trustee reliance and competence. Specifically, the role of anthropomorphism has been highlighted for emotional trust and invite users to assign human qualities to their interaction with it. Affect-based trust relies on the emotional ties and personal ties with the individuals that act as a foundation for trust, while cognitive reasoning based on performance-relevant cognitions such as transparency, reliability, the specific tasks of the technology and personalisation and persuasion tactics for the context of AI is the basis of the cognitive-based trust [15, 62]. The form of AI representation and its level of machine intelligence influence the development of trust [15, 62]. The cognition-based trust positively influences affect-based trust [15, 62] and each one complements the other [61]. Furthermore, trusting beliefs, the trustor's perceptions that the trustee has attributes that are beneficial to the trustor, alone are inadequate to explain trusting decisions because these decisions involve both reasoning and irrational factors, such as emotions and mood [63]. In the context of AI chatbots, research finds that employees might experience mixed emotions from their use of AI chatbots and that positive emotions might counterbalance the negative, resulting in the continuous use of AI chatbots [8].

3 Methodology

The study adopted an interpretive case study approach in order to understand employees' experiences with the AI chatbot and how trust is formed. The interpretive approach was selected as it explores how and why a phenomenon behaves in a particular manner [49]. It is in line with the view that reality and the knowledge are socially constructed between researchers and respondents. It examines employees experiential trust of using AI chatbots in the workplace that can be understood through the meanings that participants assign to them.

3.1 Case Description

The global organisation Omilia, which is anonymized for confidentiality purposes, developed an AI chatbot in 2019 for the internal use of its employees to be self-sufficient and experience a seamless working environment. Initially, the AI chatbot was developed to provide IT support services, but later evolved from its initial use with additional services such as translation in multiple languages and dictionary for internal terms and

acronyms and sentiment analysis. The AI chatbot was developed based on the Microsoft Bot Framework utilizing the Azure Cloud Services. The utilisation of the cognitive services helps the AI chatbot to continuously learn based on users' input.

3.2 Data Collection

This study is part of a wider research programme investigating AI chatbots use in organisations. The data collection took place from December 2019-April 2022 and was based on semi-structured interviews, participant observations and document reviews. We conducted 46 semi-structured go-along interviews [64, 65] including two email communications with 2 directors, 1 project manager and 2 developers and 41 users. Users were selected randomly from different organisational levels and teams who agreed to participate in the interviews on the basis of confidentiality and were based in different locations globally. All interviews were tape recorded and transcribed verbatim. The focus of these interviews was on understanding employees' perceptions and experiences of use within the organisation. The interviews addressed themes relevant to the research topic, including people's experiences and challenges on their use of the AI chatbot in their daily work. Moreover, observations of use took place and the users shared screen shots with the researcher. All the data and the organisation's name and location have been anonymized to maintain confidentiality.

3.3 Data Analysis

The data was analysed inductively by using thematic analysis approach to identify patterns within data [66]. Inductive approach was deemed as suitable for the exploratory nature of the study [67], particularly when the phenomenon is new. During the initial stage of the analysis, we proceeded with a preliminary exploration of the data by identifying elements that conveyed trust and began with an open coding, followed by axial coding. During this phase, the identification of codes was approached by both data and theory for the emotional and cognitive elements of trust [68]. The codes were later distilled into the aggregate dimensions.

4 Research Findings

This section presents the main components of trust and how employees' formed perceptions about trust in the AI chatbot. It also shows that employees' trust in the AI

chatbot is both emotionally and cognitively driven by the technology while it is also influenced by their trust in the organisation and their colleagues.

4.1 Emotional Trust

Our findings indicate that users experience Emotional-based trust. This originates from the AI chatbot's design elements, namely the tangibility, anthropomorphism and closeness. The visual presence of the AI chatbot allows users to build a personal relationship and refer to the AI chatbot by its name as the following quote shows.

"It's cute, that little thing [pointing to the AI chatbot icon on the screen], I think [organisationally-given name of chatbot] is kind of cute" Int35

Anthropomorphism refers to the human-likeness, the perception of a technology as having human qualities. This AI chatbot characteristic invited users to share responsibility for the outcomes and not to directly "blame the bot", trusting that it is not the chatbot's fault. The following quote eloquently summarises this point:

"So, I mean, it might be wrong to say it has become dumb, it might be that I didn't come up with the right questions that the chatbot could answer." Int 5

4.2 Cognitive Trust

Reliability is critical to technology trustworthiness. When the behaviour of the AI chatbot meets the expectations of the users, it infuses cognitive trust in further use. Specifically, this is also the case when the AI chatbot provides the sources of the information:

"It's not mistrusting, because the chatbot doesn't answer. It provides me the source of the information (in addition to the answer), and sometimes it simply answers. If it says I have this entitlement, I believe it." Int 36

Even though sometimes transparency is related to how the AI chatbot achieves its results, users' trust displays a confidence percentage in the outcomes. The user below highlights that the percentage that the AI chatbot provided was a very specific number and this helped them to trust its result, without necessarily knowing how it arrived to it:

“It gives you a percentage. It ranges from 0% which is negative to 100% which is positive. I just did some analysis and it told me 75.27%, very specific number I’m not sure how it arrived there, but yeah. I just said, it’s basically, it checked Skype profile so, that is where it gave me this. I’m not sure what it checks, what emotion I have on the skype profile, but it gave me 78.32% positive, so there’s something negative, I’m not sure what, but anyways, yeah. Int 5

4.3 Organisational Trust

Another form of trust that was evident in the data is trust in the organisation and trust in colleagues. Users rely on the AI chatbot because of a colleague recommendation or because it’s an “internal tool”, implying that they trust the organisation and in return the AI chatbot. This is illustrated in the following quote:

“I turn to the bot when I was advised to use it. I rely on what they (the colleagues) say that ‘use this’ and I do, and then I use whatever comes out of it, or when I’m total clueless then I just give it a try. I take it as an official tool that we are allowed to use.” Int 6

Since the AI chatbot operates on the organisation Intranet, users feel comfortable with using it, mentioning that the information is secure. The user below, illustrates this view:

“When I use it here for work and it’s on the intranet and all the information is secure, I feel comfortable using it.” Int 7

5 Discussion

This study focuses on the use of Conversational AI and in particular AI chatbots by employees in the workplace. It aims to answer the question of how employees experience trust in an AI chatbot and how it impacts its use. The research follows an inductive approach. The study shows that trust, apart from being cognitive factor, is also influenced by emotions [50]. The findings show that users trust in the AI chatbot is not only emotional and cognitive but it is also impacted by the organisational setting and environment.

Employees’ trust in the AI chatbots is cognitively established through the functional and form characteristics of the technology. In line with previous research, anthropomorphic design features influence trust [49]. Specifically, the findings demonstrate that

the AI chatbot's social characteristics and the way it engages users, play an important role in the development of emotional trust. The social cues of the AI chatbot enhance emotional trust, even when cognitive trust is negatively impacted by receiving erroneous outcomes. Cognitive trust emerges primarily from the accuracy of the results it provides. Users were confident to use the AI chatbot for a new query due to successful previous positive encounters in the past, which led to increased trust. Unlike previous studies arguing that initial trust levels drop as a result of experience [15], our case study findings indicate that users' trust is advancing with their use as they get engaged with the AI chatbot and create a personal relationship with it. The closeness of the AI chatbot affects its emotional trust. This confirms that the virtual appearance and ways of interaction influences the likability and trust [15]. Also, users' understanding that they play a role in training the AI chatbot has infused emotional trust.

Employees' cognitive and emotional trust in the AI chatbot is complemented by their trust in the organisation and their colleagues. Users' engagement with the interactive AI chatbot allows for continuous use due to its learning capabilities. Their commitment is enhanced not only by the correct results it provides, since they could also be erroneous, but mostly by the social cues of the AI chatbot, which create a personal interaction with it and are represented by the design dimension of form. In addition, the interactive character of the AI chatbot, as it has been designed, provides agency to the users in many ways such as reporting mistakes, providing feedback, correcting results, which contribute to greater organisational commitment and users feel they play an active role on the AI chatbot's improvement.

6 Contribution, Limitations and Further Research

Our study has theoretical and practical implications. The study mainly contributes to the nascent research on AI technology use in the workplace and in particular AI chatbots. It also contributes to previous literature on the role of trust in technology use, by qualitatively exploring the elements that shape user's trust in AI chatbots at the workplace. It highlights the important aspect of the context in which the AI chatbot is applied and draws the attention to the complementarity of the organisational context in supporting the cognitive and emotional-based trust in the AI chatbot technology. It draws the attention to the key role of emotional trust in AI chatbots and the role the design characteristics and decision play in this regard. By using a qualitative interpretive approach, we gained an in-depth understanding to processes and social action that is not exposed through more formalized means, such as questionnaire surveys [69, 70]. The use of AI chatbots was examined in a natural setting to identify connections and allow for contextual exploration of the research phenomenon, which led to the uncovering of a new form of trust, namely the organisational trust and would have not been possible to identify by following a quantitative approach. Interpretive information systems research maintains that the social world is not given but constructed through actors' perceptions and actions [70, 71] In our research, this provides the key to understanding how employees experience trust in Conversational AI and how it impacts its continuous use.

Our research findings inform practitioners about the AI chatbot use. It shows that its continuous use is influenced by employees' trust in the technology and their organisation. To succeed in their AI chatbot implementation, practitioners should consider ways to infuse employees' cognitive and emotional trust in the AI chatbot in addition to building trust in the organisation.

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