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Designing trust: The formation of employees’ trust in conversational AI in the digital workplace

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A R T I C L E I N F O

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A B S T R A C T

The COVID-19 pandemic accelerated the adoption and use of AI technologies to support the virtualisation of the workplace. While previous research showed that systems’ use critically depends on users’ trust, little is known about the development of trust in AI technologies. This research focuses on an AI chatbot as a type of organisational AI system and asks how and why employees’ trust towards an AI chatbot is formed and sustained. To answer the research questions, we conducted an interpretive single case study of a global organisation. The study identifies three types of trust experienced by AI chatbot users – emotional, cognitive and organisational – and develops a framework of experiential and sustained trust formation. It contributes to the information systems literature by demonstrating the critical importance of emotional and organisational trust in complementing cognitive trust, as well as the key design features that promote trust in AI chatbot use.

1. Introduction

The COVID-19 pandemic has had massive implications for the role played by technology in the workplace. First, it created an urgency for remote working and hence an organisational need to quickly develop and deploy different technologies for the virtualisation of work (Carroll & Conboy, 2020). Second, it broadened the scope of digital transformation from customer-focused to workplace and employee-focused in order to enhance the work experience (Gkinko and Elbanna, 2022a) and digitise the relationship between organisation and employees (Iansiti & Richards, 2020). As a result, many organisations have either accelerated their plans for technology adoption or widened their adoption of emerging workplace AI technologies, including AI chatbots (Sundareswaran, 2021). Consequently, the AI chatbot market has grown exponentially during the pandemic and is projected to reach USD 18.02 billion by 2027, with a growth of 21.02% from 2020 to 2027 (Research and Markets, 2020; Verified Market Research, 2021).

An AI chatbot is a form of user-centric AI application that exhibits conversational abilities utilising natural language processing and that learns from users based on machine learning to constantly evolve to fit its context. AI chatbots provide real-time, everywhere, 24/7 responses to queries, can compile information from different sources to answer queries and can be tailored to support different groups, including groups with special needs. In the workplace context, the interactive conversational capabilities of AI chatbots are transforming the way employees access, compile and use information and systems (Feine, Gnewuch, Morana, & Maedche, 2019; Gkinko & Elbanna, 2020; Zierau, Elshan, Visini, & Janson, 2020a). They provide employees with readily available direct access, anytime and anywhere, to interconnected work information and queries and a discreet source of information that allows them to avoid the embarrassment they feel, as reported in previous research, when asking colleagues at work for information (Gkinko & Elbanna, 2022a, 2022b). In addition, AI chatbots can reduce information overload and provide an efficient source of information that could increase employees’ productivity (Brachten, Brünker, Frick, Ross, & Stieglitz, 2020; Gkinko & Elbanna, 2021; Meyer von Wolff, Hobert, Masuch, & Schumann, 2020). The distinctive characteristics of AI chatbots, as a contemporary class of organisational information systems (IS) is in need of research attention (Wang, Lin, & Shao, 2022). Research on the internal use of AI chatbots in organisations is nascent, despite its proliferation and growth, and most of the available research focuses on their external use in marketing and customer service (Gkinko & Elbanna, 2022a; Lewandowski, Grotherr, & Böhmann, 2022).

One of the top priorities in AI -including AI chatbots- adoption and implementation is to integrate the technology into the workplace, convince users of the role of these new systems and encourage them to form a partnership with them (Kaplan & Haenlein, 2019; Zierau, Hausch, Bruhin, & Söllner, 2020b). To this end, trust in AI technology

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has been considered to play a significant role in human–AI partnership (Glikson & Woolley, 2020; Hoff & Bashir, 2015; Lee & See, 2004). Scholars have highlighted that trust not enables only the adoption of AI applications but also impacts users' behaviours and interaction (Liu & Weistroffer, 2022) enabling long-term use and the continuous improvement of the applications s (Lewandowski, Delling, Grotherr, & Böhmann, 2021; Stoeckli, Dremel, Uebernickel, & Brenner, 2020). Therefore, scholars have concluded that the successful adoption and diffusion of AI chatbots in the workplace hinges on its users' trust (Seeger, Pfeiffer, & Heinzl, 2017). Despite the critical role of users' trust, little is known about how it is formed in AI technology in general and for AI chatbots in particular. This study aims to fill this gap by providing an in-depth understanding of employees' lived experience of trust in their actual use of an AI chatbot at work. It answers the research questions: How and why employees' trust towards an AI chatbot is formed and sustained? The study focuses on understanding experiential trust, that is, as experienced and perceived by employees using an AI chatbot, in order to provide a rich account of the formation of users' trust in the actual context of use.

To answer the research questions, we collected rich qualitative data from employees working in a global organisation and followed an interpretive single case study approach to the data analysis (Creswell & Poth, 2016; Myers, 2019). Data was collected through walk-along interviews and documents review (Carpiano, 2009; Kusenbach, 2003; Mann & Stewart, 2002). The findings illustrate how employees develop three forms of trust towards the AI chatbot, namely emotional, organisational and cognitive trust. The findings demonstrate that: 1) cognitive trust contributed to the building of a contingent and temporary form of trust; 2) emotional and organisational trust supported employees in building a recalcitrant trust that is more persistent; and 3) it is through emotional and organisational trust that experiential trust is strengthened and sustained, which enables the continuing use of the AI chatbot and also its continuous improvement through use data. Accordingly, the study develops a framework of users' experiential and sustained trust formation.

The article proceeds as follows. After the introduction, section 2 reviews the literature on AI chatbot use and design characteristics. Section 3 presents the theoretical background related to the concept of trust and users' trust in technology. Section 4 describes the research methodology, including background to the case study, research approach and data collection and data analysis. Section 5 presents the research findings. Section 6 discusses the findings and their contribution to theory and practice before presenting the limitations of the findings and avenues for further research.

2. Conversational AI as a new class of intelligent systems in the workplace

AI chatbots are any software applications that engage with the user in a speech and/or written dialogue using natural language (Dale, 2016). In this regard, they are conversational agents that imitate human oral and/or written interactions in their engagement with users (Brandtzaeg & Følstad, 2017). At the same time, AI chatbots learn from users through their underlying machine learning capability. Indeed, AI chatbots can learn from use patterns, users' used language, users' intentions and other use data generated in their everyday use.

AI chatbots can be general purpose, such as Google's LaMDA, Apple's Siri and Amazon's Alexa, or domain-specific (Gnewuch, Morana, & Maedche, 2017; Janssen, Passlick, Rodríguez Cardona, & Breitner, 2020), such as the ones used in customer service, known as digital sales assistants, or in human resources to provide support for new employees (Diederich, Brendel, & Kolbe, 2019). They can be internally facing, serving employees, or externally facing, serving customers (Gkinko and Elbanna, 2022a).

Conceptual studies on the internal use of AI chatbots have considered their value co-creation potentials and emphasised that they need to be used by employees in order to generate business value and advance the technology through their use (Jarrahi, 2018). However, there is a very limited number of empirical studies on the internal use of AI chatbots in organisations, and in particular, users' experience of this unique type of technology in the workplace (Jang, Jung, & Kim, 2021; Marikyan, Papagiannidis, Rana, Ranjan, & Morgan, 2022). In this regard, Meyer von Wolff et al. (2020) identified usage scenarios of AI chatbots and categorised them into information gathering, process execution and information provision. Brachten, Kissmer, and Stieglitz (2021) examined employees' intentions to adopt an AI chatbot in their work and found that the intrinsic motivation of employees has a strong influence on their intention to adopt and use a chatbot at work. Gkinko and Elbanna (2022b) studied the actual use of AI chatbots in the workplace. They identified new classes of emotions arising when using an AI chatbot and found that the design characteristics of an AI chatbot have an influence on employees' emotions in the workplace. They unravelled new types of emotions experienced by users arising from the unique characteristics of AI chatbots, including connective and amusement emotions (Gkinko & Elbanna, 2022b). Brachten et al. (2020) conducted an experiment on the use of chatbots and concluded that the use of an AI chatbot can reduce and augment the cognitive load of employees and consequently improve their performance.

AI chatbots hold unique characteristics that distinguish them from traditional enterprise software (Gkinko & Elbanna, 2022a; Seeger et al., 2017). These can be summarised in four key characteristics (Gkinko & Elbanna, 2022b). *The first* is their ability to hold interactive communication exchange with users (Gnewuch et al., 2017) with contextual awareness and evolvement with the flow of the dialogue (Chaves & Gerosa, 2021; Jain et al., 2018). *The second* is their machine learning capability, which allows AI chatbots to learn, adapt and evolve to better handle context information or consider user preferences in future dialogues (Meyer von Wolff, Hobert, & Schumann, 2019). *The third* is their social presence and anthropomorphic features. Studies have found that AI chatbots can exhibit social presence through their appearance, language style, personality, degree of interactivity and assumed agency, which can influence users' perception and behaviour (Gnewuch et al., 2017; Nass & Moon, 2000) and contributes to the enhancement of experiential value (Hoyer, Kroschke, Schmitt, Kraume, & Shankar, 2020). *The fourth* is their personalisation capability, which scholars have found has potential to address the lack of service encounters (Gnewuch et al., 2017) and provides a discreet learning channel and source of information (Gkinko & Elbanna, 2022a, 2022b).

3. Conceptualising trust and users' trust in technology

3.1. Dimensions of trust

Trust is a key concept in organisations, teams and technology-related phenomena. Trust has been considered a cognitive phenomenon based on rational thinking and decision making (Kramer, 1999; Schoorman, Mayer, & Davis, 2007; Wilson, Straus, & McEvily, 2006). The traditional cognitive approach to trust maintains that it is formed gradually over time as the relationship develops between parties and the trustor cognitively assesses this relationship (Feng & Buxmann, 2020; McKnight, Carter, Thatcher, & Clay, 2011; Wang, Qiu, Kim, & Benbasat, 2016). In this regard, scholars have found cognitive trust to be knowledge-based, formed through the judgement of the history, behaviour and experience of the trustee–trustor relationship. More recently, scholars have identified another type of cognitive trust that is not based on historical interaction with the trustee, and they have named this 'swift trust' (Jarvenpaa & Leidner, 1999; Meyerson, Weick, & Kramer, 1996). Swift trust is based on categorisation, disposition and third-party recommendations in addition to roles (Robert, Denis, & Hung, 2009). This means that the cognitive correlates in swift trust are based on categorising the trustee and invoking disposition towards the category, or similarity between it and another experience, instead of relying on previous dealings and experiences of dealing with the trustee, as in knowledge-based trust (Kramer, 1999). It is also based on third-party recommendation and rolling over trust from a well-established relationship to another in which the trustor lacks sufficient knowledge and experience of the trustee (Burt & Knez, 1995; Robert et al., 2009). Moreover, swift trust can form based on trusting the role and responsibilities the trustee holds.

In addition to cognitive trust, research has found that trust can also be social and relational (Mayer, Davis, & Schoorman, 1995; Tyler & Kramer, 1996). Relational trust, then, is sociological, emphasising social relations 'rather than purely instrumental motives', as theories of cognitive trust suggest (Kramer, 1999, p. 574). In organisations, for example, the institution could motivate not only role-based and rule-based trust but also trust towards the organisation, its policies, decisions, structure and the people involved (Kramer, Brewer, & Hanna, 1996; Kramer, 1999). This form of relational trust towards the institution is known as organisational or institutional trust (Ellonen, Blomqvist, & Puumalainen, 2008).

Moreover, trust can be formed based on affect and emotions. It has been suggested that trust is an affective attitude of optimism about the trustee's goodwill and competence (Jones, 1996). Unlike cognitive trust, emotional trust is not calculative (McAllister, 1995). It is based on forming 'emotional bonds between individuals' that are grounded on expressions of 'genuine care and concern for the welfare' of the other party (McAllister, 1995, p. 26). Scholars have argued that emotions 'can influence what people think and that emotions can motivate people to act in opposition to what they believe' but that this 'is not to reintroduce the distinction between reason and emotion' (Steinert & Roeser, 2020, p. 304). Indeed, emotions are potentially recalcitrant and could be persistent even when they contradict evaluative cognitive judgement (Moors, Ellsworth, Scherer, & Frijda, 2013). Nguyen (2020) argued that trust is the formation of an unquestioning attitude towards an object. Emotional trust could drive this unquestioning attitude, as Steinert and Roeser (2020) suggested that emotions reflect concerns and values and may be recalcitrant because the underlying value or concern is very strong, despite explicit belief to the contrary. They argued that emotions can facilitate decision making by correcting potentially mistaken judgements (Steinert & Roeser, 2020).

The reason that the recalcitrant emotions are problematic relates to their apparent conflict with belief or judgement. 'While it seems irrational for emotions to persist in the face of contrary beliefs, that irrationality is something less than incoherence in judgment' (Helm, 2015, p. 420). In the case of emotions, conflicts with evaluative judgements are rational and impose pressure on the subject to revise their overall mental state in order to relieve that conflict; moreover, even recalcitrant emotions continue to rationally motivate us to act (Helm, 2015).

Research has found that both cognitive and emotional trust exist, and has further argue that cognitive and emotional trust complement each other (Lewis & Weigert, 1985; McAllister, 1995). Scholars have agreed that the concept of trust has been developed through the years to become multi-dimensional and that cognitive and emotional trust should be taken into account when studying trust (Toader et al., 2019; Wang & Benbasat, 2016).

3.2. *Trust in information technology*

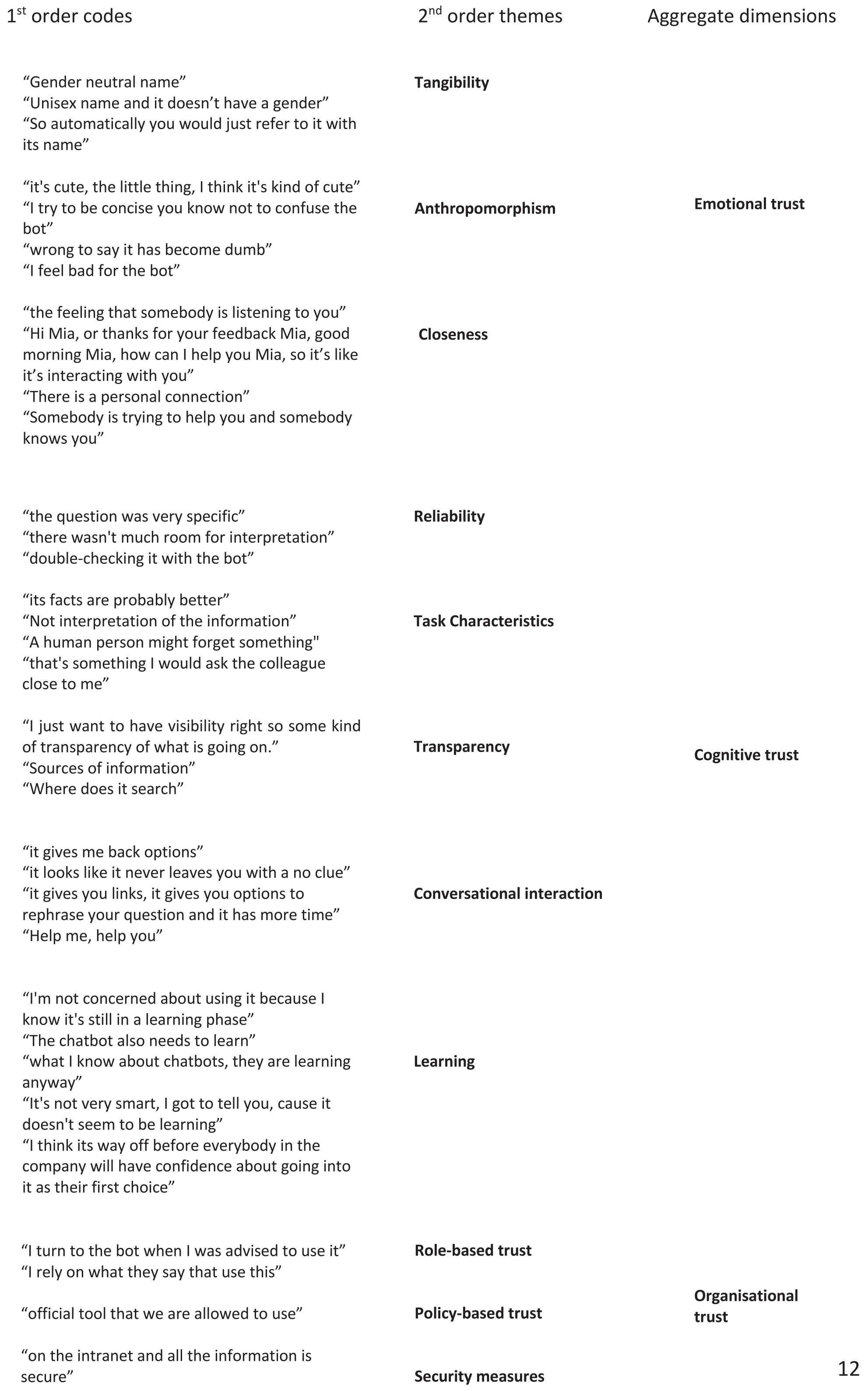
IS research has tended to focus primarily on cognitive trust when examining the effects of a particular technology on trust and the impact of trust on the adoption of technology, while paying little attention to emotional trust (Wang & Benbasat, 2016). In this context, cognitive trust refers to the functionality of the technology, such as its reliability, operation and helpfulness (McKnight et al., 2011) and its performance, such as the accuracy of results, reliability and perceived competence (Feng & Buxmann, 2020). Studies have also identified factors such as ability, integrity and benevolence as the basis of cognitive knowledge-based trust (Komiak & Benbasat, 2008; Lankton, McKnight, & Tripp, 2015; Robert et al., 2009). The research focus on cognitive trust has been critiqued for its limited focus on initial trust formation (Shareef, Kapoor, Mukerji, Dwivedi, & Dwivedi, 2020) and the fact that IS cognitive trust could be fragile and temporal (Jarvenpaa & Leidner, 1999). Nonetheless, there is a lack of research examining the elements in actual use that contribute to making such swift trust last beyond initial intentions and dispositions.

Studies have found that the success of integrating AI chatbots into organisations critically depends on employees' trust in the technology (Müller, Mattke, Maier, Weitzel, & Graser, 2019). Adopting a cognitive trust perspective, research on AI chatbots has found that a chatbot's ability to correctly respond to customers' queries and provide helpful suggestions is important in the development of trust towards chatbots (Følstad, Nordheim, & Bjørkli, 2018). In addition, research has unravelled that a chatbot's function and users' privacy and safety influence users' trust (Przegalinska, Ciechanowski, Stroz, Gloor, & Mazurek, 2019). Furthermore, system transparency has been found to impact employees' trust in chatbots (Laumer, Maier, & Gubler, 2019), and instituting an 'ethical code of conduct' could build trust in their usage (Seeber et al., 2020). It has also been argued that errors and inaccurate information in daily chatbot usage can lead to distrust of the system (Jain et al., 2018).

IS research has also examined emotional trust. Scholars have argued that trusting beliefs – the trustor's perceptions that the trustee has attributes that are beneficial to the trustor – alone are inadequate for explaining trusting decisions because these decisions involve both reasoning and irrational factors (Komiak & Benbasat, 2008). Hence, emotional reactions are considered a critical element of trust (Lee & See, 2004). Specifically, it has been argued that the anthropomorphic design of chatbots is an effective trust shield (Seeger & Heinzl, 2021) that might lead individuals to perceive attraction, which in turn influences trust (Chen & Park, 2021). Anthropomorphism is the attribution/integration of human-like characteristics and intentions to nonhuman objects. It is the level at which users feel the agent to be human-like and foster social connection (Moussawi, Koufaris, & Benbunan-Fich, 2021). Recent research has found that cognitive trust and emotional trust in chatbots are not aligned, with users experiencing cognitive trust in the chatbot but not emotional trust, and that this inhibits the use of the chatbot (Seitz, Woronkow, Bekmeier-Feuerhahn, & Gohil, 2021).

Furthermore, relational trust has been discovered to be important where institutions play a role in users' intention to adopt what is perceived to be unknown, risky technology. Institutional trust in relation to IS refers to individuals' confidence in the institution that provides the service, its institutional environment, its honesty, its safety net and the information security measures it undertakes (Bélanger & Carter, 2008; Gefen, Karahanna, & Straub, 2003). When the necessary institutional structures are in place, trustors are more likely to grant trust in general (McKnight, Cummings, & Chervany, 1998). Organisational factors have been observed to have a strong effect on initial trust with a novel system, while technological factors may not be a significant determinant of trust for some users (Li, Hess, & Valacich, 2008).

While research has continued its traditional focus on cognitive trust and extended it to AI chatbots, it is recognised that the social presence and humanness of AI technology could impact how trust is being formed (Lankton et al., 2015). Scholars have argued that AI visual representation and anthropomorphism could impact users' perception of AI technology. Anthropomorphic and social design features of AI chatbots can simulate various social cues experienced in interpersonal communications, which could invite users to extend human qualities to their interaction with the AI chatbot and hence trigger emotional trust (Glikson & Woolley, 2020; Radziwill & Benton, 2017).



1st order codes	2nd order themes	Aggregate dimensions
“Gender neutral name” “Unisex name and it doesn’t have a gender” “So automatically you would just refer to it with its name”	**Tangibility**	**Emotional trust**
“it's cute, the little thing, I think it's kind of cute” “I try to be concise you know not to confuse the bot” “wrong to say it has become dumb” “I feel bad for the bot”	**Anthropomorphism**	
“the feeling that somebody is listening to you” “Hi Mia, or thanks for your feedback Mia, good morning Mia, how can I help you Mia, so it’s like it’s interacting with you” “There is a personal connection” “Somebody is trying to help you and somebody knows you”	**Closeness**	
“the question was very specific” “there wasn't much room for interpretation” “double-checking it with the bot”	**Reliability**	**Cognitive trust**
“its facts are probably better” “Not interpretation of the information” “A human person might forget something" “that's something I would ask the colleague close to me”	**Task Characteristics**	
“I just want to have visibility right so some kind of transparency of what is going on.” “Sources of information” “Where does it search”	**Transparency**	
“it gives me back options” “it looks like it never leaves you with a no clue” “it gives you links, it gives you options to rephrase your question and it has more time” “Help me, help you”	**Conversational interaction**	
“I'm not concerned about using it because I know it's still in a learning phase” “The chatbot also needs to learn” “what I know about chatbots, they are learning anyway” “It's not very smart, I got to tell you, cause it doesn't seem to be learning” “I think its way off before everybody in the company will have confidence about going into it as their first choice”	**Learning**	
“I turn to the bot when I was advised to use it” “I rely on what they say that use this”	**Role-based trust**	**Organisational trust**
“official tool that we are allowed to use”	**Policy-based trust**	
“on the intranet and all the information is secure”	**Security measures**	

Fig. 1. Data structure.

4. Methodology

4.1. Case study description

The focus of this paper is to understand how and why employees’ trust towards an AI chatbot is formed and sustained. To answer these questions, we adopted a case study design approach in order to focus on employees’ experience of the same AI chatbot in the same organisation, reducing some of the contextual variations (Creswell & Poth, 2016; Yin, 2009) in order to understand employees’ use based on their lived experience. The case study site is a global organisation anonymised for confidentiality purposes as ‘Omilia’. The AI chatbot under study was developed in 2019 for the internal use of employees to enable them to have more freedom, be self-sufficient and have a seamless working environment. The AI chatbot, ‘Brainy’ (also anonymised but keeping the spirit of the original name), was developed in-house utilising Microsoft Azure Cognitive services. The development team selected a gender-neutral name and icon for the AI chatbot to avoid gender-bias problems (Ruane, Birhane, & Ventresque, 2019). Initially, the AI chatbot was developed to provide employees with IT support services, b was later extended to provide additional services such as translation in multiple languages, a dictionary for internal terms and acronyms, and other organisational and personal services, including holiday booking.

4.2. *Research approach and data collection*

The study adopts an interpretive approach to provide an in-depth understanding of the lived experience of employees with regard to their social construction, emphasising interactions and relationships (Myers, 2019; Quinlan, 2017). The interpretive approach is suitable for exploring how and why a phenomenon behaves in a particular manner as expressed and felt by those who experience it, and hence provides an understanding of the phenomenon in its natural setting (Creswell & Poth, 2016; Myers, 2019). It is recognised that the interpretive approach does not aim to discover universal laws that are applicable and generalisable to a population, but allows researchers to gain a deep, situated understanding of the phenomenon (Mariotto, Zanni, & Moraes, 2014).

This study is part of a wider research programme on the use of AI chatbots in organisations. The data collection was conducted with employees who were randomly selected from different teams within the IT department, which consists of more than 30,000 employees in total. The employees agreed to participate in the interviews on the basis of confidentiality and anonymous reporting. Interviewees were distributed globally, and all had a university degree. The data collection was based on semi-structured, virtual, go-along interviews and document reviews (Bell & Bryman, 2007; Myers & Newman, 2007). It involved different phases of the pandemic, including pre-pandemic, first wave, second wave and post-second wave from December 2019 to April 2022. The documents reviewed included project documents, internal corporate newsletters, organisational announcements and emails, and internal links, on a confidential basis.

Due to COVID-19 restrictions and the global distribution of the participants, we used online meeting platforms. We conducted 46 semi-structured interviews in total, including two email communications. Four interviews were conducted with the product owner, project manager and developers. The focus of these interviews was to understand the chatbot’s features, implementation decisions, technical aspects and organisational objectives. This was followed by 41 interviews with users that aimed to understand their lived experiences, how they used the chatbot in their day-to-day activities at work, how they experienced the different design features and how they built their trust in the chatbot. We adopted the go-along interview method. This method combines interviews with observations, which allows a researcher to ‘walk through’ an interviewee’s experience and assess aspects of their lived experience in situ as they happen (Carpiano, 2009; Kusenbach, 2003; Mann & Stewart, 2002). Following this method, we encouraged users to share their screens with us and walk us through their use of the AI chatbot and also exchange screenshots while conversing with us. This enriched the quality of the data collected and validated it as we observed their actual interactions and reactions to the AI chatbot in real time (Erickson, 2012; Yin, 2013). Online interviews tended to be shorter, as interviewees were more receptive to starting the conversation immediately, thus significantly cutting down on lengthy introductions; the online environment also provided a private space with many fewer office disruptions (Gkinko & Elbanna, 2022b; Gray, Wong-Wylie, Rempel, & Cook, 2020; Salmons, 2014). Data collection continued until saturation was reached within each interview and across the research data, and no new views were being expressed (Braun & Clarke, 2021).

4.3. *Data analysis*

Following the interpretive approach, we relied on inductive reasoning to systematically analyse the data without making prior assumptions (Quinlan, 2017; Thomas, 2006). We followed the recommendations of Gioia, Corley, and Hamilton (2013) for inductive analysis, which consisted of three stages (Gioia et al., 2013; Gioia, 2021). In the first order of the analysis, excerpts from the interviews served as a basis for identifying the emerging descriptive codes that best represented the participants’ voices. In the second order of the analysis, we grouped codes into themes. In the third order, we aggregated the resulting themes into three dimensions of trust – emotional, cognitive and organisational – benefiting from existing studies on trust. Finally, we revisited the codes, themes and aggregate dimensions to close the hermeneutical cycle of interpretation and ensure that no other code emerged (Myers & Klein, 2011). The data structure is shown in Fig. 1.

5. Research findings

This section shows that employees experienced emotional, cognitive and institutional trust towards the AI chatbot and demonstrates how and why these were experienced.

5.1. *Emotional trust*

Employees experienced emotions towards the AI chatbot, stemming from their feelings of closeness to the chatbot. Indeed, employees expressed affection towards its icon and animation. They found its moving icon appealing, with its ‘big eyes’ rolling when thinking, and its smiling; they also found it ‘funny’, bringing a ‘smile at work’, as they expressed it. Specifically, they felt that interacting with the AI chatbot gave them the feeling that someone was listening to them and that this resembled human–human communication. The following quote emphasises this aspect of closeness:

> *When you are actually communicating with somebody, when you are actually talking to somebody, even if it’s like AI, it’s much easier because, you know, you have the feeling that somebody is listening to you.* [Int 5]

The name of the AI chatbot also played a role in making employees feel close to it. They always referred to it by its given name, Brainy, and sometimes as ‘he’, ‘colleague’, ‘my bot’ and ‘my little cute thing’. Users found remembering the name of the AI chatbot to be ‘normal’; they said the name came to their mind easily and they ‘automatically […] would just refer to it with its name’. Employees also compared remembering the AI chatbot’s name to remembering the name of a colleague: ‘you remember it of course … as you remember the name of other colleagues’.

The tangibility of the embodiment of the AI chatbot, i.e. the visual representation of the AI chatbot, its name and its identity as a gender-neutral ‘funny creature’, allowed users to connect with the AI chatbot and build a personal bond with it:

> *It’s cute, the little thing, I think it’s kind of cute.[…] it’s a sort of simplistic little thing, but I think it’s cute, the little eyes* [Int 35]

The personal messages that accompany the AI chatbot consistently remind the user that ‘Brainy is learning’ and that employees could ‘teach the bot’ if they choose to. These messages were found to have complemented the embodiment of the AI chatbot to create a feeling of human-likeness towards it. This formed emotional trust towards the AI chatbot. Employees’ emotional trust became paramount and in many cases overshadowed their objective assessment and cognitive evaluation of its function and performance. For example, employees said that they ‘cannot blame the bot’ for faulty results and inability to answer queries. They also felt that they ‘should share duties’, ‘share responsibility’ and ‘give the bot a helping hand’. 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]

In this respect, employees were trying to 'collaborate' with the AI chatbot, finding ways to type their questions without 'confusing' it:

> *I think it depends on the question, and what I'm trying to find out. So sometimes I'm also convinced that the more you write the worse it is… I try to be concise you know not to confuse the bot, so I guess I will try to be as concise and avoid a long human question.* [Int 36]

In sum, the emotional connection that employees built with the AI chatbot allowed them to continue using it, despite the chatbot initially returning answers slowly, not finding answers, not being able to execute a task, and other types of functional mistakes. Users not only returned to use the AI chatbot for similar tasks, trying different wordings and different writing styles, but also extended its use to other tasks, experimenting with other possibilities for its use. This continuous and expansive use created critical use data that allowed for the AI chatbot's continuous learning. Through supervised machine learning, the development team continuously improved the performance of the AI chatbot and expanded its domains to suit its organisational environment and users' needs.

5.2. Cognitive trust

Employees also rationally evaluated the AI chatbot's performance. This cognitive evaluation was based on its performance, and was mixed with emotional evaluation in many cases, though in a few cases was exhibited alone. In the latter, employees considered the AI chatbot as 'like any other system'. When the AI chatbot executed tasks correctly, employees found it reliable and trusted its use for similar tasks.

Employees trusted the AI chatbot results when there was a single source of the required information, such as checking a human resources record or examining a particular profile. For example, when users asked about specific details regarding their employment status, they knew that this information came from their human resources record and did not feel the need to question or double check the information provided by the AI chatbot:

> *There is no mistrusting, because the chatbot doesn't answer, it provides me the source of the information, or sometimes it answers. If it says I have this entitlement, I believe it.* [Int 36]

Sometimes the exact source of the information might be hidden from the AI chatbot's results, particularly when it has extracted and compiled information from different sources. In these cases, users trusted the AI chatbot's results when it displayed a confidence percentage in the outcomes. The quote below from a user 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 at the figure:

> *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'm not sure what it checks … but it gave me 78.32% positive, so there's something negative, I'm not sure what, but anyways, yeah.* [Int 5]

Users also reported that their trust sometimes depends on having visibility and knowing where the AI chatbot is searching to find the information and how it searches. The following examples illustrate this:

> *As long as I have the visibility that I trust because I know that it's a machine. I know that it's not really making mistakes, but I just want to have visibility right so some kind of transparency of what is going on. And in which actually sources is it looking for this information.* [Int 26]

Another user highlighted that accuracy is crucial in order to build initial trust of the AI chatbot:

> *I think it could be a combination of both; could be me that I didn't raise it correctly or the chatbot that wasn't useful. I think that the accuracy of the answer is really important, especially for the first ones, as it builds up a bit of you know, trust and confidence.* [Int 20]

In addition, the specific characteristics of the required task influenced users' cognitive trust. For example, users reported that they would trust the chatbot more than a human in the case of a specific answer. The following quote highlights this tendency:

> *A good thing about the chatbot is that it gives facts probably better than a human. A human/person might forget something, misunderstand something – that's very unlikely with a chatbot, so I think that if the chatbot gives me information I can trust it that the information is more or the likelihood that they're up to date is more likely than with a human being. I would trust the chatbot more on pure information.* [Int 17]

In addition to knowledge-based trust, employees formed swift trust with the AI chatbot based on their experience, not of the AI chatbot itself but of what they perceived as similar technology. They also extended the trust they had from what they perceive as a reliable technology – including wikis, Google search, Yahoo search and Bing – to the AI chatbot:

> *The same as I would trust a wiki page or a wiki engine inside the company. The colleague, it's hard to compare it to a colleague, but I think, because it is information into this strict information, not interpretation of the information.* [Int 11]

For example, when a numerical result was expected based on previous experience of another technology and the AI chatbot returned a correct answer, it met employees' expectation of its performance and strengthened their knowledge-based cognitive trust in it. Hence, employees used the chatbot again for similar tasks. An example of this trust formation was expressed as follows:

> *It's a bit as if you are typing something in Google it's so clever these days and tries to figure out what you really want, what information you really need and the question [I asked the chatbot] was very specific, you know … There wasn't much room for interpretation for the algorithm to get it wrong.* [Int 18]

Employees also found that the use of the AI chatbot is trustworthy even when it does not give them the answer but instead provides options for possible answers and/or sources of information. This design feature gave them confidence that they would get closer to their query when they used the AI chatbot, even if it did not answer directly:

> *But it gives me back options. I mean I haven't challenged it so many times, but it looks like it never leaves you with a no clue.* [Int 6]

Users also cognitively trusted the possible future state of the AI chatbot and its expected future performance. Its learning capability gave users confidence that their use of it was not wasted and that the AI chatbot performance would improve over time:

> *Because from my assumption… that if a lot of people are using the bot so there's also the machine learning behind it that can be more efficient due to usage. Of course, we know that sometimes you need a learning curve and that this is also why I'm not critical about the stuff. I'm just taking and using what is provided by the bot.* [Int 20]

Some users formed swift distrust based on the availability of competing options with which they had had good experiences with in the past. For example, two employees mentioned that they were not yet confident in using it as a first option as they thought dealing with a person would be better, and that only a person would be capable of answering questions:

> *You have a chat session with a person, I think it would be better. So, it can answer your question or point you to the right direction.* [Int 12]

In summary, forming cognitive, knowledge-based and swift, trust encouraged users to repeat their use of the AI chatbot for the same use case and not to go beyond it. However, when employees experienced emotional trust towards the AI chatbot, they did not stop using it, even when it did not function according to their expectations. Instead, they continued to use it, trying different possibilities, expanding use to other different tasks, and hoping it would work for some tasks. Thus, they kept trying to use it with different combinations of words and different styles of writing for different types of tasks to learn more about what it could do and how it can help them.

5.3. *Organisational trust*

Another form of trust that was evident in the data but did not conform to either emotional or cognitive trust is organisational trust. In this regard, users relied on the chatbot because it is an 'internal tool'. This is illustrated in the following quotation:

> *Well, I would say it does not give me any bad feelings if the bot fails. Because I turned to the bot when I was advised to use it, then I rely on what they say that use this … I take it as an official tool that we are allowed to use.* [Int 6]

Users also trusted the organisation's security measures, as the AI chatbot is available on the intranet. They trusted the organisation's tight security and felt confident that their personal information was secure. The user below illustrates this view:

> *Use it here for work and it's on the intranet so all the information is secure, then I feel comfortable using it.* [int 7]

Moreover, users felt confident that the organisation would continue to improve the chatbot and that their current use is only a step towards a better :

> *Yes, I think it has improved in as much as you get more options. I think I noticed there are a few more options. It seems, I think, what I know about chatbots, they are learning anyway, so it looks like it's getting better because it has learned or has more data and the sequences it can follow.* [Int 12]

6. Discussion

This study focused on the use of AI chatbots in the workplace. It aimed to answer the question of how and why employees' trust towards an AI chatbot is formed and sustained. While previous studies showed that the lack of trust may prohibit users even from intending to use a technology, and hence hinder any productivity gains from its adoption (Liu & Weistroffer, 2022), the findings in the current study highlighted that employees experienced three complementary types of trust towards the AI chatbot – emotional, cognitive and organisational trust – and that trust at different stages is formed based on different factors and processes (McKnight et al., 1998). In the following sub-sections, we discuss the technological and organisational design features that enabled the formation of these types of trust and propose a framework of users' experiential and sustained trust formation that enables the continuous use of the AI chatbot and its continuous evolvement in its organisational setting.

6.1. *Design features and trust in AI chatbot*

Previous research has shown that cognitive trust is formed based on the performance of the technology, including its reliability, operation and helpfulness (Komiak & Benbasat, 2008; Lankton et al., 2015; McKnight et al., 2011; Robert et al., 2009). However, the exact design features that enable users' trust have remained obscure. Our study contributes to filling this gap by highlighting some of the key design features that facilitated employees' trust. It complements the previously identified performance aspects with consideration of the specific design features of the AI chatbot that users associate with trustworthiness. The findings showed that the display of possible options for the answer at the end of a conversation when the AI chatbot fails to give a direct answer gave users confidence in using it, as they trusted that they would 'get something back', even when it is not a direct answer to their query. The findings also showed that the AI chatbot's displaying a confidence percentage for its answers when it processes complex algorithmic tasks gave employees an indication of trustworthiness, which gave them the confidence to use the chatbot. Also, in line with Glikson and Woolley (2020), the study showed that users found that knowledge of the source of the information used by the AI chatbot to extract and process a query did, in some cases, enhance their cognitive trust. While previous research has asserted that cognitive trust is based on either knowledge and experience of the technology at hand or current expectations of its performance, the current study revealed that the machine learning capability of the AI chatbot gave users confidence that its performance would improve with more use. This built cognitive trust in a future state based on the future expectation of performance and not only the current performance of the AI chatbot.

While cognitive trust is based on the rational evaluation of the trustee's reliance and competence, emotional trust refers to the extent to which a user feels comfortable and secure about depending on the AI chatbot and building emotional bonds (Chen & Park, 2021). Our findings demonstrated that emotional trust is formed based on the AI chatbot's anthropomorphic features, including its name, animation and icon. Thus, this study supports previous research findings that the social presence and embodiment of the AI chatbot infuses employees' emotional attachment (Chen & Park, 2021; Troshani, Rao Hill, Sherman, & Arthur, 2021). However, the study also found that the message the AI chatbot displays to employees contributes to the creation of human-like feelings towards it. Messages such as 'Brainy is learning', 'do you want to teach Brainy?' and 'I am learning, teach me' continuously reminded the employees of the presence of the AI chatbot and enforced their sense of closeness and emotional attachment. Such messages also triggered a sense of forgiveness and willingness to extend a helping hand to the AI chatbot as they perceive it as a colleague (Gkinko & Elbanna, 2022b).

Organisational trust dimensions include the organisation's environment, honesty, safety net and the information security measures it undertakes (Bélanger & Carter, 2008; Gefen et al., 2003). Our study also showed that users trusted the institution with regard to its safety net and measures and gained confidence in using the AI chatbot. In addition, our research finds relational trust to be important, with organisational trust playing a key role in users' intention to adopt what is perceived to be unknown, risky technology. Users continued using the chatbot because they relied on the organisational security measures in terms of their personal data. This is in accordance with previous literature, which found that when the necessary institutional structures are in place, trustors are more likely to grant trust in general (McKnight et al., 1998). Furthermore, organisational factors have a strong effect on initial trust with a novel system and where technological factors are not a significant determinant of trust for some users (Li et al., 2008).

6.2. *Framework of employees' sustainable trust formation in AI chatbot*

The study found that cognitive trust is formed based on knowledge and that swift trust is contingent. It could initially be formed based on the performance of the AI chatbot and knowledge of other technologies that are perceived to be similar (Shareef et al., 2020; Wang & Benbasat, 2016). However, it could also fade away and might turn into distrust if the initial performance is not up to employees' expectations (Shareef et al., 2020; Wang & Benbasat, 2016).

Previous research has shown that distrust is based on users' high

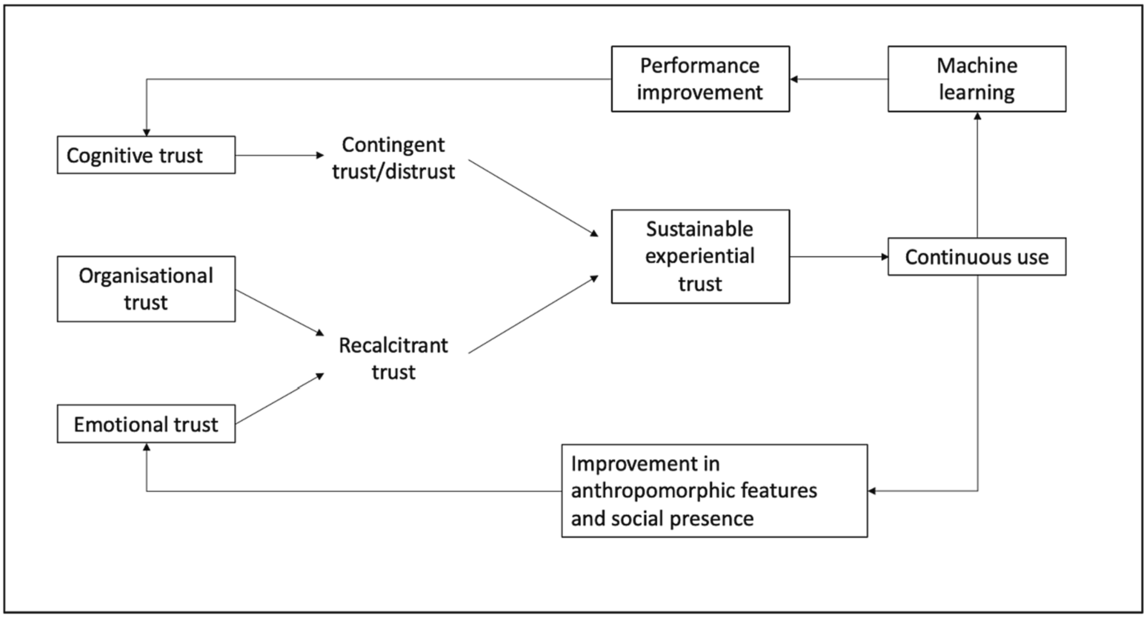


Fig. 2. Framework of users' experiential and sustained trust formation.

expectations of the recommendation agent that, after their interaction, were not ultimately fulfilled (Komiak & Benbasat, 2008). Unlike previous studies arguing that initial trust levels drop as a result of experience (Glikson & Woolley, 2020; Hoff & Bashir, 2015), our research findings indicated that users' trust advanced with their use of the chatbot, as they were emotionally engaged and felt committed to its development and further learning. This commitment was enhanced not only by the results it provided, since they could be erroneous, but mostly by the social cues of the chatbot, which created a personal interaction with it. Emotional and organisational trust are recalcitrant – once formed, they can last, despite poor initial performance. The existence of recalcitrant trust supports the contingent trust in forming a longer-lasting cycle of trust that enables the continuous use of the AI chatbot. Thus, it is through both recalcitrant and contingent trust that users maintained experiential sustainable trust that allowed them to continue to use the AI chatbot. In return, this continuous use gave opportunities for the AI chatbot to learn from its use data and hence improve its performance, which would impact consequent cognitive trust. Fig. 2 shows a framework of the proposed cycle of trust formation for the AI chatbot.

7. Conclusion, limitations and future research

This study contributes to the limited literature on trust in AI chatbots in the workplace, mainly by exploring the formation and sustainability of users' trust. It expands the literature of technology trust with the innovative use of AI chatbots in the workplace. It underlines the three complementary types of trust in this context – cognitive, emotional and organisational – and sheds light on the design features that enable them. It highlights the important aspect of the context in which the AI chatbot is applied and draws attention to the complementarity of the organisational context in supporting the cognitive and emotional trust. It also highlights the key role of emotional trust in the use of AI chatbots and the role that design characteristics and decisions play in this regard.

The COVID-19 pandemic influenced the way employees perceived the chatbot. Users' concerns about different trusting beliefs may vary according to the context in which information technology is applied (Wang & Benbasat, 2016). In a culture of working from home, employees interacted with the chatbot in the way that they would interact with a colleague sitting next to them in the workplace. During the initial onboarding of new employees, the managers would prompt the new joiner to use the chatbot for any questions they would normally ask in the workplace while they settled into their new role. Thus, the pandemic influenced the use of chatbots and created a form of organisational trust.

In terms of limitations, the proposed framework in this study assumes a positive cycle of trust formation. Future research might explore the existence of a negative cycle. It could investigate whether or not negative emotional trust will diminish the use of an AI chatbot. This research is qualitative and hence cannot generalise to the population, following the guidelines and limitations of this type of research. Future research could apply quantitative methods to test the proposed framework. We hope that our study provides a step towards a comprehensive model in this regard.

CRediT authorship contribution statement

Lorentsa Gkinko: Conceptualization, Data curation, Formal analysis, Methodology, Project administration, Writing - original draft. **Amany Elbanna:** Supervision, Conceptualization, Formal analysis, Writing - review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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