The Effect of Emerging Technologies' Infusion in Organizational Frontline on Trust

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Abstract:

One of the foremost challenges in the future is technology, particularly the accelerating integration of artificial intelligence (AI) with existing services. AI's influence on organizational frontlines is revolutionizing businesses and empowering frontline employees. Customers increasingly interact with entities that are not human, however, they display intelligence and other human-like behaviours. These interactions challenge us to reconsider the nature of trust in AI technological world.

Keywords: *Trust, Organizational Frontlines, AI-Empowered Technology*

Track: *Services Marketing*

1. Introduction:

Customers are at the cutting edge of technology within most contemporary business contexts. Technology surrounds us and is already affecting everything from simple to complicated and now going to substitute humans with machines. In the business world technology poses the challenge that revolutionized the organizational frontlines (OF), especially in the service sector. Where people are going to interact with machines that are becoming similar to humans physically and intellectually. Singh et al. (2017, p. 4) conceptualized OF as "the study of interactions and interfaces at the point of contact between an organization and its customers that promote, facilitate, or enable value creation and exchange." previous research investigates OF in human-human context and concentrate more on employees and the organizational context they work in (Schneider & Bowen, 2019). But emerging technologies and at the first line artificial intelligence (AI) have changed the organizational context to be more digital and virtual. The nature of OF has been transformed regarding interactions and interfaces because of the Highly accepted AI-empowered technologies in today's business world, robots and chatbots, that can learn and adapt (Marinova et al., 2017). AI progresses, and its integration with the service delivery process by organizations demonstrates it is the perpetual component of OF (Gursoy et al., 2019). Studies that investigate AI-empowered device acceptance in the service delivery process are most based on technology acceptance models and theories. These technology acceptance models studied the non-intelligent technologies in the service domain whereas, AI technologies have human-like intelligence. There might co-exist supportive and preventive factors which influence AI-empowered technologies acceptance behaviours of customers (Gursoy et al., 2019). Replacing frontline employees with AI-empowered technologies has been a controversial matter (Wirtz et al., 2018). Customer expectations of AI-empowered technologies, frontline employees, and service quality affect the intention of customers to use AI-empowered technologies (Gursoy et al., 2019). Although, the disappointing fact is that many customers don't trust the output of AI-empowered technologies (Davenport, 2018). But, trust irrespective of the context is the most important component of every relationship (Hancock et al., 2011). Frontline employees have continuous contact with customers, co-create value with them and support value creation of customers (Karlsson & Skålén, 2015) and in high-touch, low-tech, low level of automation and a high level of personal interaction, encounters accounts as a driving agent to be successful because of communicating and creating satisfying social relations (De Keyser et al., 2019). While now, AI substitutes humans with machines, which have intuitive features of humans, in

OF. Frontline service technologies, machines, will take human's roles. Machines apply the intuitive type of AI to learn from their past experiences and improve their abilities over time by interacting with other machines in world wide web net (Abrams, 2017). AI-empowered technologies need vast database to refer it for finding answers and learn from it. However not all of these databases are reliable (e.g. bias data). For AI-empowered technologies, the quality of the output depends on the quality of the input. With bias and bad data, applications with AI capabilities will produce results that are inaccurate, incomplete or incoherent as algorithms cannot recognize data rationality. It is questionable how customers can trust to such machines with the probability to learn and do wrong things. In the AI context, ethical and technical issues get different aspects to trust subject compare with the human-human relationship. Technical issues are unpredictable and inevitable in human-machine interactions due to the artefact nature of machines. The ethical issues also are proposed regarding the moral and legal consequences of machines' decisions, machines' accountability for their actions, perceived security and privacy and controlling the machines when their learning capabilities don't work as they set up (Følstad et al., 2018). For customers to give the necessary support it is required to trust in intelligent machines as the nature of human-machine interaction requires bilateral trust between human and intelligent machines (Andras et al., 2018). In human-human interactions trust can be considered as a mental attitude and emotion (AlSheikh et al., 2019). Emotional trust involves an individual's evaluation from cognitive faith, strong feeling and beliefs and emotional reactions to the trustee. Also, benevolence based trust shaped on the feeling of the interpersonal cares and concerns of another party(Ozmen, 2018). While these kinds of trust are built on human features, substituting humans with machines how influence trust, in human-machine and/or machine-machine interactions, in moral context. Moral trust, benevolence based trust, is based on shared values that the trustor will behave in an accepted way towards the trustee (Andras et al., 2018). In the AI context shared values return to autonomous designed AI-empowered machines that their goals and behaviours can be compatible with human values through their operation. After all, the issue of penetrating AI in OF leads to having differentiate trust is the central concern of this paper.

2. Development in Literature on Organizational Frontlines

The word "frontline" comes from its application in the military around the middle ages. Later, it entered to the management field and expanded through the time. The first introduction of "frontline" to the service field was returned to the outstanding role of frontline employees as a point of customer contact and service (Singh et al., 2017). The OF is the study of interactions

and interfaces at the contact point that promotes, facilitates, or enables the exchange of valued resources between an organization and its customers (Singh et al., 2017). These interactions and/or interfaces can include people, technology, AI or even a combination of those. AI-empowered technologies have transformed these unique compositions and in turn effective subjects on human-machine interaction. In this new digital era, the nature of human-machine interaction needs mutual trust between humans and intelligent machines (Andras et al., 2018).

2.1 Frontline employees

Frontline employees are the employees who are the first port of customer contact that have continues contact with customers, co-create value with them and support value creation of customers (Karlsson & Skålén, 2015). Both the customer's and the firm's prospects can be demonstrated by front-line employees (Karlsson & Skålén, 2015). AI replaces humans with machines as a frontline employee and World Wide Web as an additional source of information for them. Organizations by applying intuitive AI-based frontline employees can reduce human errors and answering time and in turn affect customer response behaviours positively (Reshmi & Balakrishnan, 2018). AI-based assistants not only answers customer questions but also manage a conversation and imitating human behaviour. Hence customers may have feeling of interacting with a real human (Reshmi & Balakrishnan, 2018). It affects their interaction and its bases such as trust.

2.2 Frontline service technology

Another remarkable subject regarding organizational frontline is the omnipresent frontline service technology which causes to modifying and transforming interactions between customers and frontline employees (De Keyser et al., 2019). Also, the swift improvement of technology will change all service dimensions particularly in combination with big data, artificial intelligence, digital devices and cloud technology, sensors and etc. (Wirtz et al., 2018). Froehle and Roth (2004) regarding to importance of technology in face-to-face and face-to-screen encounters presented five conceptual service encounter archetypes: technology-free customer contact; technology-assisted customer contact (i.e. technology supports frontline employees); technology-facilitated customer contact (i.e. technology supports frontline employees and customer); technology-mediated customer contact (i.e. frontline employees and customers connect to each other by technology); and technology-generated customer contact (i.e. self-service technology). In the customer/technology-substituted frontline employee encounter, frontline employee being substituted by technology and customers interact with a technological interface without having direct human interaction. The development of artificial

intelligence can be a privileged point to raise this archetype. This kind of encounter brings cost-savings for the organization, and convenience and satisfaction resulted from participating actively for the customer (De Keyser et al., 2019). Intelligent chatbots are the masterpiece of this category. Chatbots are presented as a source of customer service and render service as a front line of support for organizations (Følstad et al., 2018). For customers who use it for this aim, it is crucial trust to chatbots for giving the necessary support.

2.3 Frontline interaction

Today's modern communication arena represents infinite ways to interact and support customers to organizations. Interaction, in ancient market literature, considered as a mechanism to facilitate the exchange process. Interactions always influence involved resources in that and fulfilling activities. It usually includes costs and benefits for engaged actors in that (Ford & Håkansson, 2013). Growing relational interactions have had a positive impact on the dimensions of the relationship quality as trust, commitment, and satisfaction in human-human interactions (Alnsour, 2018). But in the new world that the digital revolution is bringing the nature of human-machine interactions will need reciprocal trust between human and machine or machine and machine. There is a bulk of literature that works on human-human trust or machine-machine trust (Andras et al., 2018). As regards, to what extent these achievements can be attributed to human-intelligent machine interactions and machine-machine commitment. In addition, lack of human presence in machine-machine interactions distinguishes it from other kinds of interaction and from this viewpoint, must be investigated that is it applicable to generalize human-human, or even human-machine, interactions' knowledge to intelligent machine-machine interactions.

2.4 Frontline interface

Interfaces act as a means of interaction between human-human or human-machine or machine-machine to transfer information or services and the required instrument to actualize the interaction, which is practically information processing between human and machine (Kirisci & Thoben, 2018). Frontline interfaces are classified to face-to-face or face-to-screen. Kind of face-to-screen interfaces, user interfaces, is known as an online interface. This is a platform for representing customers value propositions and resources that, the more powerful in the technology functionality able customers to integrate more resources from the interface (Li et al., 2018). In contrast, off-line interfaces will be considerably different for instance in face-to-face interfaces, the customer-employee relationship's closeness influences customer behaviour positively about purchasing or recommending (Lee, 2017).

Interfaces as a part of service encounters determine the delivery time or waiting time in exchange process that replacing human interactions via machines with learning power causes to eradicate human errors and accelerate interaction phenomenon between frontline employees and customers when time plays a significant role in today's life. Utilizing emerging technologies for providing service to customers through technology-based interfaces prepares customers interesting benefits as efficiency and convenience, some more control, hedonic and social benefits(increasing self-images) (Lee, 2017). AI plays an advanced and innovative role within technology-based interfaces as it makes interfaces simpler and smarter. Deploying AI interfaces causes customers easily use interfaces, talk to, or touch the AI that controls it, instead of understanding complicated technology.

2.5 Trust in organizational frontline

There is not any comprehensive definition of trust in various fields. Most of the different definitions of trust compiled of three components: trustor, trustee, and expectations. The trustor builds his/her expectations according to outcomes from the trustee instead of controlling (AlSheikh et al., 2019). Trust also conceptualize as a combination of cognitive and emotional trust, according to the presumption which decisions regarding trust include both feeling and reasoning. Emotional trust is explained as the extent to which an individual feels security and comfort in relying on the trustee (Komiak & Benbasat, 2006).

Regarding Plutchik viewpoint the human experiences eight basic emotions which are the base of other emotions. According to that, trust is one of the basic eight emotions along with anger, anticipation, disgust, fear, joy, sadness and surprise. Each basic emotion has two statuses; weak or strong. As to trust's weaker state is acceptance, while its stronger state is admiration (AlSheikh et al., 2019). Considering cognitive trust without emotional trust as a factor that causes people trust in something or someone is inadequate (Komiak & Benbasat, 2006). The emotion in emotional trust noted to trustor's perception towards the behaviour that the trustee relies on. Trust can be relied on both rational evaluations of the other party's reliability and competence, and feelings of concern and attractiveness (Komiak & Benbasat, 2006).

Anthropomorphism is defined as attributing specific human characteristics to nonhumans particularly rational thought capacity and conscious feeling. According to this conceptualization of anthropomorphism, it will increase trust in another party's competence. People are more willing to trust anthropomorphized technology to perform its intended function (Waytz et al., 2014). People trust more in technology that has more humanlike mental capacities as it would perform its intended function competently according to common relationship among

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person's perceptions of mental states and competent action of others. Also attributing human mind features to a machine causes it seems better capable to control its own action and able to perform its duty more competent. The humanlike appearance of machines increases attribution of humanlike qualities to the machines which affect human's feeling. Anthropomorphism, as induce humanlike features, will increase physiological, behavioural, and psychological measures of trust in intuitive intelligent machines. Therefore, we propose the following:

Proposition 1: Anthropomorphism, the degree to which an agent exhibits human characteristics, helps building emotional trust in relationship between human and intuitive intelligent machines.

In the digital realm, trust is the confidence in a trustee to gather, store, and utilize the trustor's digital information in a way that benefits and protects expectations to whom the information pertains (AlSheikh et al., 2019). To generate trust in online services visual, reputational, and contextual factors are important (Kuzheleva-Sagan & Suchkova, 2016).

Trust's level is explained as the possibility of meeting the expectations of trustor by the trustee (AlSheikh et al., 2019). Previous literature determined three levels of trust: inductive trust, social trust, and moral trust.

The inductive trust which is based on previous personal experience. People trust someone or something as it has acted in an expected way. A person tries it her/his self or has similar experience or someone who trusted suggests it. While, in the human-machine interaction, inductive trust is based on the estimation and expected outcomes (Andras et al., 2018). As soon as the inductive trust is built, the next decision to trust system or not, becomes unconscious (Andras et al., 2018).

From the one hand, regarding the emergent technologies that there is not any experience about them, for instance intuitive AI-empowered technologies with learning power, it is proposed that:

Proposition 2: Technological output accuracy enhance inductive trust in human-machine interaction.

On the other hand, when customers have past experience regarding applying special intuitive AI-empowered technologies, learning power from past experiences and adapting power of such technologies can deeply affect their experience and in turn intensify the inductive trust. Intelligent technologies enable organizations to create more informed customer experiences by personalization and customization. Personalization can build a good cycle, creating value for customers and building a more trusted relationship.

Customers are expecting personalized and customized experiences more than ever. Now, availability of bulks of data and AI-empowered technologies make it possible to anticipate customer needs to offer tailored, personalized experiences. AI-empowered technologies can personalized customer experiences on the individual level based on their interests and behaviour patterns. This discussion leads to the following:

Proposition 3: personalization resulted from intuitive AI- empowered technologies increases inductive trust in human-machine interactions.

Social trust is relied on shared values and social relationships. it shows how a person is trustful toward another party in human-human context (Verberne et al., 2012). However, social trust in human-machine interactions is attributed to machine's goal-directed behaviour. Machines have their especial goals that are programmed to achieve this goal in a strategic way. As the goals between humans and humans or humans and machines might be different, deciding about trust in another party or not, depends on trustor's strategic reasoning (Andras et al., 2018). Most of previous research on social trust in system are more about reliability of the system (Verberne et al., 2012). Perceived risk and customer acceptance of intuitive AI-empowered technologies as a frontline employee affect trust in these technologies; as customer risk perception and concerns of using intuitive AI-empowered technologies, as an organizational frontline, primary are related to the uncertainty and the possible undesirable consequences to achieve customer's goal such as the privacy and security of personal data and interaction with machine in an online interface. Thus, we propose the following:

Proposition 4: Technology acceptance enhance social trust in artificially intuitive intelligent OF in human-machine interaction.

In human-human interactions, moral trust is relied on benevolence. Benevolence based trust is based on shared values that the trustee will behave in an accepted way towards the trustor. It is correspond with common sense of obligations and rights (Andras et al., 2018).

In human-machine relationship benevolence based trust returns to technical standpoint of designing the machine. AI-empowered machines have greater tolerance and adaptation for moral judgment and reasoning. As it is applicable to teach right from wrong and human morality by machine-learning.

In human-machine relationships benevolence perception can be updated whenever new information becomes accessible (Wang, 2018). Also, rising intelligence in machines will result to more moral behaviour, as the more instrumental rationality in machines could better apply cooperative practices (Fox & Shulman, 2010). Intelligent machines with developing their knowledge and capabilities would be able to modify their performance to be more moral.

Rising intelligence and knowledge of the AI-empowered technologies, causes AI to recognize instrumental merits to benevolent behaviour. Also, the reflection of it as a consequence of the action may lead to desire of AI to benevolent behaviour intrinsically independent of instrumental concerns for human ethics. So, it is proposed that:

Proposition 5: Benevolence based trust facilitates information sharing in human-machine interactions.

3. Conclusion:

Humans are delegating ever more aspects of their daily routines to machines (mostly intelligent machines) and this trend is going to continue in the future as technology poses the challenge that substitutes human with machines specially in OF. In this technological world, the nature of human-machine interaction will require bilateral trust between humans and intelligent machines.

Trust plays an important role in many contexts. In traditional human-machine contexts trust is mostly considered inductive. However, with AI becoming more prevalent it has changed. Machines are becoming more similar to humans physically and intellectually. The anthropomorphism, the attribution of human traits, emotions, or intentions to non-human entities, influences interactions with machines in new ways. Humans can experience more forms of trust than never before. Human-machine interaction elicit those kinds of trust such as moral and emotional previously reserved for only human to human interactions.

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