

UNDERSTANDING THE FACTORS THAT AFFECT THE SUSTAINED USE OF CHATBOTS WITHIN ORGANIZATIONS

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ABSTRACT

Conversational user interfaces also known as chatbots have become widely adopted within the banking sector, as they present numerous advantages such as cost reduction, increased efficiency and quicker servicing of customers. However, these benefits only materialize if organizations ensure the sustained use of these technologies. Hence, identifying the main factors that drive the sustained use of these services is critical to assess new technology adoption given that a very high number of IT implementations fail. Researchers have relied on technology acceptance models to analyze the adoption of these new technologies within organizations; however, little is known about the factors that ensure their sustained use. The concept of sustained use is considered by researchers not simply as an extension of adoption behavior, but rather as having a long-term focus and as being determined by different sets of antecedents. Using a qualitative methodology based on in-depth interviews with employees of a leading bank operating in a number of developing economies, this research addresses the gap in the literature by investigating the factors that contribute to the sustained use of conversational user interfaces. Findings reveal that eight main internal and external factors are essential to promote the sustained use of chatbots, the most prominent of which are: a positive human-technology relationship, a favorable corporate culture, an adequate regulatory framework and the technology's high perceived efficiency.

KEYWORDS

Technology, Sustained Use, Chatbots, Perceived Efficiency, Organization

1. INTRODUCTION

The use of digital technologies including chatbots are shaping the banking industry and facilitating the transition from traditional to conversational channels for servicing customers. They represent the current market trend and are increasingly being utilized as communication channels that can provide automated services in a personalized way (Wilson et al., 2017). According to a survey conducted by Oracle, 80% of decision makers participating in a US

survey confirm that they have already used or plan to use chatbots by 2020 (Business Insider, 2016).

The use of chatbots presents numerous advantages to banks and financial institutions. These benefits include cost reduction, increased efficiency and quicker servicing of customers. Adopting conversational user interfaces might therefore enrich the performance of an organization as this channel can offer advanced customer care and personalized services while saving time and costs. However, significant cost reduction and increased efficiency due to the adoption of conversational interfaces can only materialize if this technology is continuously used.

Previous studies in the literature have carried prolific research and developed theories that explain the acceptance and adoption of a new technology such as (Venkatesh & Davis, 2000), Venkatesh et al. (2003) and Rogers (2003). However, none of these studies investigate the factors that drive the sustained use of a new technology. Although initial acceptance and use of new technologies can depict its success rate at the beginning, an information technology's long-term success rate and viability largely depends on its sustained and continuous use (Ratten, 2016; Wang et al., 2008).

The concept of sustained use is different from first time acceptance as instead of investigating the initial use behavior of a new technology, it has a long-term focus and analyzes a person's or organization's use behavior and interaction with this system over a longer period of time (Bhattacharjee, 2001). Furthermore, research on IS continuance or sustained use confirms that it is not simply an extension of adoption behavior. While to date only a few studies have been dedicated to this area, the existing evidence suggests that adoption and continuance usage behavior are determined by different sets of antecedents (Limayem, Hirt & Cheung, 2007). Sustained use behavior is therefore considered an interesting stream of research to study within the IS field, particularly given that some researchers advocate that almost 70% of all IT implementations fail (Balogun, & Hope Hailey, 2004).

Hence, this study aims to determine and understand the significant factors that affect the sustained use of chatbots within an organization. To answer the research question, this study adopts an organizational perspective to conduct the qualitative analysis. Data collected from ten semi-structured interviews performed with employees from a leading bank that has been continuously using chatbots and which operates in several developing economies is examined using thematic analysis. Findings derived from the study identify eight internal and external factors that promote the sustained use of conversational user interfaces.

To the best of the authors' knowledge, this study is considered among the first studies to examine factors that influence the sustained use of chatbots within the banking environment context and to classify these factors as internal and external drivers for the continuous use of a new technology.

The rest of the paper is organized as follows, section two presents a summary of the concepts of conversational user interfaces and chatbots and a review of the literature on technology acceptance, use and sustained use, section three develops the research methodology, section four reports and discusses the findings and section five concludes and portrays contributions, limitations and future research directions.

2. THEORETICAL BACKGROUND

2.1 Artificial Intelligence and Chatbots

Chatbots a contraction of the words ‘chat’ and ‘robot’ are defined as machine agents that serve as natural language user interfaces for data and service providers (Dale, 2016). The introduction of the chatbot technology is not new, it started in 1966 with a computer program known as ELIZA, a virtual psychotherapist based on a simple rule-based keyword matching mechanism. In recent years, gradual improvements in information, computing, communication and connectivity technologies have enabled new technical possibilities and has led to growing interest in chatbots across diverse sectors such as healthcare, tourism and education (Winkler & Söllner, 2018). Numerous financial institutions including banks have begun to introduce within their activities various types of new technologies namely those based on voice and text such as chatbots.

These conversational user interfaces present the advantage of combining historical interactions with current real time information as well as internal and external data. Hence, this process makes the individualized engagement by a machine or a robot possible using big data. Most importantly, this technology offers the advantages of reducing costs while making organizational processes more efficient which in turn enhances the value to both organizations and customers (Pannu, 2015).

The use of chatbots by companies has two major types of consequences: On one hand, chatbots change the way of informing, communicating and transacting between the company and its customers or other external stakeholders. On the other hand, internal chatbots may strongly influence and change the organization, communication and collaboration within the company itself (Zumstein & Hundertmark, 2017). Therefore, the use of chatbots implies not only a change in the interface between users and technology; but also implies changing user dynamics and patterns of use (Brandtzaeg & Følstad, 2018).

Several factors encourage the adoption of chatbots by banks, the most important factor being the reduced cost of data storage, the development of powerful analytical tools and the advancements in machine learning which permit the automation of repetitive customer support tasks and will eventually allow the processing of more complicated interactions at lower costs. Furthermore, as more firms and consumers use chatbots, the increased demand for this technology will trigger additional development of chatbots, making the implementation process easier for organizations. Additionally, chatbot features are improving thus making mass personalization possible due to innovations in artificial intelligence and machine learning technologies, big data analysis, improved analytics as well as predictive models. As a result, the number of financial institutions using chatbots and consumers that adopt this channel of communication will increase as the quality of delivered services improves across industries. Even though chatbots are being used in several segments such as marketing and payments, they are most frequently employed for servicing customers and providing information to them (Nguyen, 2017).

While the use of chatbots presents various advantages to banks and financial institutions, in order for these organizations to leverage this inexpensive and wide reaching channel of communication and engage with a larger number of customers, it is important to depict the factors that are essential to ensure the sustained use of this technology within the organization. Identifying these factors is of major importance given that the use of these conversational user interfaces can face many challenges both internally and externally.

2.2 Technology Acceptance, Implementation and Use

2.2.1 Theoretical Models

Previous studies in the literature discussed the concept of technology acceptance and adoption. These studies primarily focused on the issues of technology acceptance explaining the technical aspects of design and implementation in a particular ICT infrastructure; among others we cite, Kane (2016) and Dahiya, (2017). Theories such as the technology acceptance model, TAM (Venkatesh & Davis, 2000), the unified theory of acceptance and use of technology, UTAUT (Venkatesh et al., 2003) have been widely used to investigate the intention to adopt and use a new technology. At the organizational level, the Technology, Organization, Environment (TOE) Model proposed by Tornatzky, Fleischer & Chakrabarti (1990) along with the theoretical constructs of the Diffusion of Innovation (DOI) theory of Rogers (2003) and the Theory of Planned Behavior (TPB) of Ajzen (1991) have created a structural framework which explain the factors influencing the adoption of information systems innovations from a technological, organizational and environmental level of analysis (Rodríguez Cardona et al., 2019).

These theories are nevertheless primarily concerned with the initial adoption of a technology and not its continuous and sustained use. They have been criticized for focusing on the exploitation stage and trying to forecast and model the behavior of the users that take the decision to adopt the technology or reject it based on the way in which they initially behaved (Aizstrauta et al., 2015).

Studies that proceed to further analyze the factors that ensure the sustained use of a technology are important because interiorized usage cannot be predicted by studies based solely on concepts such as acceptance and adoption or short-term use (Al-Sharafi et al., 2017). Sustained use also called continued use by some authors (Jennex & Olfman, 2006) has a long-term focus and analyzes the use behavior and interaction with a particular system over a long period of time (Bhattacharjee, 2001). Especially since a given technology is not considered successful unless its usage is sustained by users who are supposed to benefit from this use (Bhattacharjee & Lin, 2015). However, the literature tackling this issue is very scarce and to the best of the authors' knowledge none of the previous studies explored the factors that affect the sustained use of chatbots within an organization.

2.2.2 Sustained Use

To explore the sustained use behavior, this study draws on the technology adoption and use literature to identify possible internal and external factors that might influence the continuance of a new technology. Particularly, among the internal factors that could affect the adoption of a new technology is its expected ability to fulfill the organization needs (Kim et al., 2013) and to improve the job performance (Venkatesh et al., 2003). In addition, some advocate that the use of a new technology such as the conversational interface could replace human-based customer service capabilities, hence threatening the job security of the organization's employees. It is

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known that the use of a new technology within the organization will modify several organizational processes and tasks, hence affecting the nature of jobs (Dewett & Jones, 2001; Taylor, 2004). Findings from the literature reveal that the success of the implementation of a new technology and the use of this technology by employees depends on their perceptions of how it might affect their jobs (Bhattacharjee & Premjumar, 2004; Owen & Demb, 2004). Employees who perceive that the new technology will enhance their ability to accomplish their job tasks are more willing to adopt it and use it and might help to strengthen the technology adoption-performance link (Schraeder et al., 2006). Inversely, those who feel threatened by this new technology and are unwilling to embrace change will hinder its implantation and use.

Moreover, previous studies identify organizational culture as one of the factors that have a large influence on innovation within an organization as it could both stimulate or restrain the development and use of this innovation (Naranjo-Valencia et al., 2016). Organizational culture affects employees' behavior and can lead the staff to consider innovation as a fundamental value of the organization and to feel more engaged in it (Hartmann, 2006). Stakeholders and leaders have also been considered to play an important role to facilitate the transition phase and transfer people from one state to another (Elrod & Tippett, 2002), which might drive the sustained use of a new technology. Another important factor is the degree to which the new technology is considered to be efficient, for example to which extent do chatbots help employees save time or offer a better customer service (Brandtzaeg & Følstad, 2018). Finally, as the degree to which a technology is used is determined by the sum of its use by individual users, another factor that influences the transition to conversational engagement and sustained use of this channel is the consumers' acceptance for this conversational interface. Hence, it is fundamental to continuously adjust, change and modify the processes within the organization when using a new technology to meet the expectations and the needs of the users (Bouwman et al., 2005).

Several external factors could also affect the use of a new technology, some of which are directly linked to the industry or market regulations (Bouwman et al., 2005). In fact, the adoption of a new technology would be promoted under the existence of a favorable macro-policy, detailed regulations and rules that do not hinder the development of this technology (Shen et al., 2015). The way a technological product is used is also highly affected by the technical and social contexts. The technical context could restrain what the technology can achieve, while the social aspect establishes what will be acceptable in a given social system (Liebenau & Harindranath, 2002). In addition, the decision to adopt a new technology could be either specific to the individuals or organizations that chose to adopt this technology or associated with environmental factors and characteristics specific to this innovation (Rogers, 2003; Frambach & Schillewaert, 2002).

3. METHODOLOGY

The aim of this research being to understand the factors that lead to the sustained use of technology, a qualitative research approach was chosen. Qualitative studies capture the reality in substantial detail and are particularly useful when focusing on contemporary subjects (Chan and Ngai, 2007).

For this purpose, ten face-to-face semi-structured interviews with managers and employees within a bank that has implemented and is currently using a chatbot were conducted. The bank which is the object of this study operates in several developing economies and is considered to have a high level of experience with the chatbot as it has been continuously used for over two

years and currently carries out 3,500 successful conversations every month. By using the chatbot, the bank has been able to receive inquiries 24 hours a day, 7 days a week, independent of working hours and has been able to offer a better service to its customers (Zumstein & Hundertmark, 2017).

Interviewees were selected based on their experience as decision makers, implementers and users of the chatbot within the bank. Five of the employees which were interviewed are involved in the project as managers and strategic decision makers and the other five are implicated at the operation level and have a daily contact with the chatbot.

The guiding conceptual framework used during the interviews revolved around understanding the interaction between the organization itself, employees, the technology and the environment (Linton, 2002). The questions included in the interview guide aimed to determine the socio-technical factors that impacted the way the chatbot technology was developed, implemented and maintained within the organization as well as the way in which this contributed to the continuous use of this technology.

Data collected through the ten interviews was then thematically analyzed. Thematic analysis can be widely used across a range of epistemologies and research questions. It is a method for identifying, analyzing organizing, describing and reporting themes found within a data set (Braun and Clarke, 2006). Within the context of this paper, a six-step analysis approach was adopted. Firstly, all the collected data was carefully read, and the sections which are of interest to the research were identified and captured. Secondly, initial codes were manually generated from the data by the two authors. Thirdly, the coded data extracts were sorted and collated into potential themes using an inductive approach. During the fourth step, themes were refined; those with not enough data to support them were merged into other themes and others which were too broad were broken down into separate themes. During the fifth step, the authors determined the aspects of the data each theme captured. The final step consisted of analyzing each theme and transcribing the findings (Braun and Clarke, 2006, Nowell et al, 2017).

4. FINDINGS AND DISCUSSION

Following the collection, coding, collation, refinement and analysis of the data derived from the ten face-to-face interviews, the resulting themes along with their corresponding verbatims were reported. All themes were derived from the data and were chosen both for the frequency of their occurrence within the interviews and their perceived utilitarian significance. Some themes which were not adequately supported were excluded or integrated into other themes such as: the contribution to employees' job enhancement, top management support, and having realistic expectations about the technology.

4.1 Conceptual Framework

4.1.1 Favorable Corporate Culture

When studying the sustained use of chatbots, interviewees considered the company's corporate culture as a key factor to take into account. A corporate culture that fosters and supports innovation helps to integrate new technologies more readily and easily within companies' operations. In the case of the bank, the prevailing corporate culture encouraged the use of new technologies as shown in the following quotes:

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*“We are a bank which loves to innovate and try new things”
“The technology culture is there and has always been there”*

Furthermore, the evolution of the bank’s corporate culture and its increased tolerance to failure were also considered as instrumental for the adoption and use of chatbots as employees no longer feared making mistakes and took bolder positions with regards to the use of new technologies, as reported by one of the interviewees:

“The culture change that now accepts failure has led us to unleash our innovation capabilities”

4.1.2 Perceived Efficiency

In general, the adoption of new technologies has a significantly positive impact on efficiency (Melville, Kraemer, & Gurbaxani, 2004), which explains why the practical and utilitarian outcomes are so important when considering to adopt a new technology, this was clearly mentioned by one of the interviewees who stated that:

“The chatbot enhances both the efficiency and the customer experience at the bank”

Furthermore, efficiency in interaction is seen as a decisive factor which will determine the future use of this technology. As according to Følstad et al. (2018), the chatbot needs to be seen as a more efficient channel of support than other available options and should allow employees to save time while offering a better service to customers. This was clear in the discourse of the interviewed employees who found that the chatbot allowed them to improve the service offered to customers in a shorter amount of time.

*“Chatbot use has increased customer satisfaction”
“The chatbot allows us to save time”*

4.1.3 Positive Human-Technology Relationship

The adoption and use of chatbots within organizations is closely linked to the quality of the relationship which will be built between employees and this new type of technology. In the case of the bank, the chatbot was given an identity and a name but retained a low level of humanness which made it clear to employees that it was not a human agent and did not possess human characteristics similarly to Apple’s Siri or Amazon’s Alexa (Smestad, 2018).

“Our chatbot was given an identity, a name ‘Andi’... I spend a lot of time working with ‘Andi’, it is a project that is dear to my heart”

This distinction allowed employees to have realistic expectations towards the chatbot and although negative feelings appear during some interactions, the overall relationship is positive as mentioned by an interviewee:

“We are very happy to have ‘Andi’, but he sometimes makes us angry as he is a machine which is still learning.”

Likewise, the positive relationship whereby employees help the chatbot to learn, develop and grow inevitably leads to an attachment from their part and contributes to the continued use of the chatbot within the organization, as stated by one of the interviewees:

*“We are helping ‘Andi’ to become better by teaching him new things”
“We see ‘Andi’ as part of the bank’s future”*

Furthermore, this relationship extends to the interaction between the chatbot and the bank’s customers which have readily accepted to use the chatbot as a means of communicating with the bank. This acceptance further consolidates the legitimacy of the chatbot and secures its continuous use as pointed out by an interviewee:

“We have received a very positive reaction towards ‘Andi’ from our customers this pushes us to continue developing it”

4.1.4 Employee Empowerment

One of the greatest fears of adopting and using new technologies within organizations is their ability to replace human labor. Since chatbots are quicker at some tasks previously performed by humans, they represent a massive change within the organization and threaten the continued existence of some employees’ jobs. In the case of the bank, employees did not perceive chatbots as potential threats, but rather as a technology which allowed the creation of new jobs as stated by an interviewee:

“No jobs were lost, no threats...On the contrary new jobs were created”

Furthermore, the adoption and use of the chatbot allowed employees to liberate themselves from repetitive tasks and take over bigger responsibilities thus securing their place within the organization and allowing them to grow, as mentioned in the quote below:

“Since the arrival of the chatbot, my responsibilities have evolved, and my skill sets have been enhanced to fit a different type of job”

4.1.5 Continuous Improvement

The sustained use of a chatbot can only be guaranteed if organizations constantly invest in developing and enhancing the chatbot’s capabilities, as stated by one of the interviewees:

“We have a roadmap of enhancements...we are continually working on improving the chatbot”

Furthermore, any improvements should take into account the feedback gathered from the chatbot’s end users as their input is essential for developing the technology and ensuring its future use, as shown in the below quote:

“Technology enhancements cannot only be done from the company’s side; we need to know what customers require”

4.1.6 Multi-Stakeholder Implication

As with any new technology, the successful transition from adoption to implementation and subsequently use of chatbots requires the joint effort of a multitude of stakeholders both from within the company and outside of it (Elrod & Tippett, 2002), as indicated by one of the interviewees.

“We need to have a buy-in from different parties”

This implication is even more necessary when it comes to continuously using the technology, as the heightened involvement of the different departments within the organization along with the concerned external partners ensures the long-term validation and development of the project.

“People from different departments are constantly solicited to be involved in the project”
“Our vendors have to understand how we work, they have to be part of the team”

4.1.7 Compliance with Regulations

Numerous interviewees considered that the current regulatory framework represents an important barrier to the development and diffusion of chatbots. They pointed out that legislators have failed to keep up with innovations and therefore, it is often hard to know whether new technologies comply or not with regulations as mentioned below:

“Regulations remain however a hurdle to developing chatbots further especially that they can sometimes be difficult to interpret”

Moreover, different laws and policies pertaining to data privacy, banking secrecy and transfer of information have had an adverse effect on the development of technologies such as the chatbot and may pose a threat to its future use as discussed by one interviewee:

“The scope and functionalities of the chatbot are being blocked because of the regulatory framework”

4.1.8 Technological Advancement

The development of the chatbot technology and its wider availability across different sectors were strong drivers that pushed the bank to adopt and use this technology as stated by an interviewee:

“There is a general trend towards using chatbots around the world”

However, in order to ensure that customers would willingly embrace this new technology the bank waited until its customers were ready before deciding to adopt the chatbot, as mentioned by an interviewee:

“Once the chatbot technology became accessible to end users we thought it was time to start using it”

With regards to the future, an interviewee considered that the sustained use of the chatbot within the bank is linked to the progression of this technology and that as long as chatbots are being enhanced and developed further, the bank will continue to use them:

“The chatbot can grow as far as technology allows it”

4.2 Discussion

After reviewing the resulting eight themes, a distinction appeared between factors that could be controlled by the bank and those that are the product of its environment. Results are presented in Figure 1 below. For instance, when discussing the technological advancement, it appeared clear that the bank was dependent on the evolution of this particular technology as a whole and that in this case the sustained and continuous use of the chatbot was tied to how fast and far the technology would progress. Likewise, the prolonged use of the chatbot relies to a great extent on the regulatory environment and can be hindered in case stricter laws are passed.

In terms of factors that could be controlled by the company which are favorable to the continuous use of chatbots, firstly, the corporate culture appears as a key factor, given that a culture which fosters innovation will inevitably help in sustaining the use of new technologies. Secondly, the perceived efficiency of chatbots and its ability to support and speed up the work of employees was considered to be decisive in determining the continuous use of this technology within the organization. Thirdly, if the chatbot use is not seen as a threat to human jobs but at the contrary considered as a mean to liberate employees from tedious tasks and which allow them to take on bigger responsibilities it will continue to be used within the organization. Fourthly, the implication of a large number of stakeholders in the project was found to be crucial to ensuring the continuance of the technology as it brings about increased interest and appropriation of the project by employees working in different departments and reduces the risk of resistance in the long term. The fifth factor to consider was the continuous improvement of this technology. Therefore, to ensure the successful long-term use, the chatbot has to be permanently enhanced and its functionalities should be upgraded on a regular basis.

The final key factor which appeared was a positive human-technology relationship where not only employees and technology work side by side, but also customers have readily accepted and are satisfied with using this technology. Figure 1 below summarizes the study main results.

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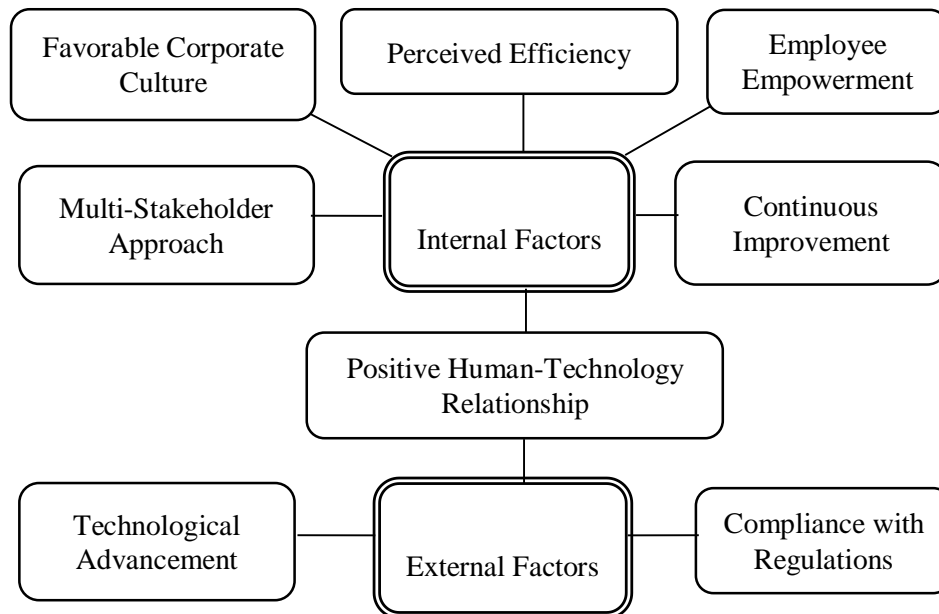


Figure 1. Factors affecting the continuous use of chatbots

Furthermore, among the noteworthy findings of the study was identifying which of the eight factors initially appear during the adoption phase of the technology and continue to play a crucial role in maintaining the continuous use of this technology. The first of these factors is strategic alignment, as mentioned by Lin & Chen (2012), who considered that a key factor affecting cloud computing adoption is the technology’s compatibility with the company’s business model and customer demands. Another such factor is the perceived efficiency, which proved to be a motivator for travel and tourism companies adopting robots as it translates into a reduction of costs and an increase in productivity (Ivanov & Webster, 2017). Finally, the technology’s compliance with regulations is considered as a vital factor which determines its adoption, given that any new technology would be promoted under the existence of a favorable macro-policy, as well as detailed regulations and rules that do not hinder its development (Shen et al., 2015).

5. CONCLUSION

The present study contributes to the literature on the use of technology by including the sustained use behavior and identifying eight main internal and external factors that are considered essential to ensure the sustained use of chatbots within an organization. Semi structured interviews were conducted and a thematic analysis was adopted to select and validate eight main themes which are considered crucial internal and external factors that affect the sustained use of conversational user interfaces like chatbots.

The findings can be used both by academics and practitioners. For academics, it enriches the current models by including a long-term view into the use of technology, particularly chatbots. And as such, it opens new research streams. For practitioners, the paper which is based on a

case study highlights the essential factors managers should take into account to ensure sustained use when adopting a new technology. Identifying these factors is crucial as it will help decision makers within an organization to increase expertise, decide on the suitability of a new technology adoption and whether this technology can be continuously used or not. It stems from the authors' belief that acceptance and adoption are not enough to justify the substantial investments made by companies in the field of technology.

Even though the organization chosen to conduct this study operates in different developing countries, the findings of this research will have the typical limitations and threats to validity of a case study research, particularly with respect to generalization of results to other regions. Other limitations relate to the sector of activity of the studied organization which might also make the generalization of results difficult for organizations which are not in the banking sector.

As a future work, it would be interesting to include a larger number of organizations operating in different geographical regions and in different sectors of activity to increase the validity and generalizability of the results. Moreover, the next step could entail an in-depth quantitative analysis to hypothesize on the relations between the identified factors and their impact on the sustained use of chatbots within organizations. These hypotheses will constitute the basis for a new testable research model.

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