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A Systematic Review to Optimize Chatbot User Experience for Accessing Microservices and Microfinance in MSMEs

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ABSTRACT

The objective of this research is to investigate implementation of chatbots in the microfinance and MSME sectors for better user experience and accessibility of public services. Systematic Literature Review (SLR) is applied in this article to review related articles with strict inclusion and exclusion criteria. In this sense, it was identified in an investigation with the aim of finding "chatbot"."conversational AI". "website" and "user satisfaction", restricting that, while chatbots have been studied extensively in other industries, there is limited scale of use Chatbots are not widely used on or by websites. Some of the major challenges observed are low digital literacy, restricted financial access and lack of personalization in user experience. Suggested interventions are enhancing chatbot personalisation, and increasing digital literacy while embedding chatbots with microfinance services. The paper serves to inform on the potential of chatbots for accelerating MSME digitalisation and financial inclusion in Indonesia and other emerging markets.

Keywords: Chatbot, MSMEs, User Experience, Microfinance, Digitalization.

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INTRODUCTION

The development of digital technology has significantly influenced numerous industries such as microfinance and Micro, Small, and Medium Enterprises (MSME). Nowadays, globally, chatbots are gaining popularity in several sectors including e-tailing, healthcare and learning platforms. Improving efficiency and usability are the primary reasons for introducing these tools in their relevant sectors. Chatbots enable clients to easily seek information and get support faster. Although they are becoming more widely used in various industries, little has been seen in the use of chatbots for microfinance and MSME context. However, although uptake is low in microfinance and MSME sectors, they need technological upgradation for the betterment of financial access and customer service [1]. In Indonesia alone, challenges faced by MSME actors include low digital literacy skills, inaccessibility to financial services, and adoption of new technological advancements. The microfinance industry also struggles to meet demands since more than 50 million Indonesians lack financial services [2].

The microfinance industry faces challenges in meeting demands since over 50 million Indonesians lack financial services. The adoption of technological advancements such as chatbots would be significantly impactful in enhancing accessible and efficient services offered to microfinance and MSME actors. The author identifies from numerous past researches conducted that greater personalization of these services offered by such systems would improve their usability since it would allow systems to provide responses associated closer to clients' emotional responses [1]. Chatbots

developed to operate manually by employing Natural Language Processing (NLP) and Artificial Intelligence (AI) would be significantly impactful in allowing greater usability in their systems since they can naturally comprehend conversations in human language [3].

To determine how chatbots can enhance customer experience in the MSME and microfinance industry and look into the use of chatbots in the domain of public services, this research seeks to further this goal. This article will apply a Systematic Literature Review (SLR) methodology to examine relevant research regarding the use of chatbots in the e-commerce and health industries to enhance service delivery in the micro and MSME sectors. In the microfinance and MSME industries, the integration of chatbots can potentially provide innovative responses to the challenges experienced in digital literacy and access to financial services. Chatbots can offer simplified explanations of financial products, including microloans and saving services that can aid MSMEs. This aligns with available literature on the user experience and personalized service provision in the health care and customer service industry generated by AI powered chatbots [4]. Hence, this research will respond to a number of important questions on the role of chatbots in the enhancement of financial literacy and financial inclusion, the digitalization of MSMEs.

The research questions (RQs) to be answered in this study are:
1) What is the general user experience with chatbots?
2) How are chatbots applied in the context of public services?
3) What is the role of chatbots in the educational context?
4) Can chatbots help the MSME sector in microfinance and services?

This study should bring more clarification on the possible enhancement of microfinance and micro, small and medium enterprises (MSMEs) services on the incorporation of chatbots, as well as inspire innovative technology-driven solutions within these sectors in Indonesia and developing countries.

METHODOLOGY

In this research study, to ensure systematic search and evaluation of literature, it adopted the methodology of Systematic Literature Review (SLR), following PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses). The research study intends to investigate the application of chatbots in microfinance/MSME and reveal critical findings from existing literature. The purpose of this literature study research methodology is to conduct relevant literature search systematically.

Article search process

The search for articles was performed by using the Publish or Perish software program, and on September 25, 2025, the release year was restricted to between 2015 and 2025. The search was carried out using the following keywords:

("chatbot" OR "conversational AI") AND ("web site" OR online platform) AND ("user satisfaction" OR customer satisfaction).*

As a result of the search, 998 articles were found; these were then converted to CSV and processed further in Excel. The articles were selected and screened based on the eligibility criteria and research question.

Inclusion and Exclusion Criteria

The article selection process was conducted based on the following inclusion and exclusion criteria, which determined which articles were allowed to be included in the analysis:

Table 1. Inclusion and exclusion table

Inclusion	Exclusion
English-language articles; published 2015–2025; topics directly related to chatbots, user experience, MSMEs/microfinance; manuscripts completed (full paper).	Manuscripts in languages other than English; theses, dissertations, proceedings, books, literature reviews; articles that are not relevant to the title/topic; manuscripts that are not fully accessible.

Article Filtering (PRISMA)

Once the relevant academic papers were identified, we started the screening process using a PRISMA approach. The PRISMA approach is by now an established international standard for reporting systematic reviews and makes use of explicit systematic methods for study selection, transparency, and objectivity. Zierau et al. (2020) point to the structured PRISMA mechanism afforded researchers, as conducive to maintaining article integrity and relevance for their study [5]. The PRISMA diagram was presented to illustrate the procedures of selecting articles, from the search process until final documents for analysis.

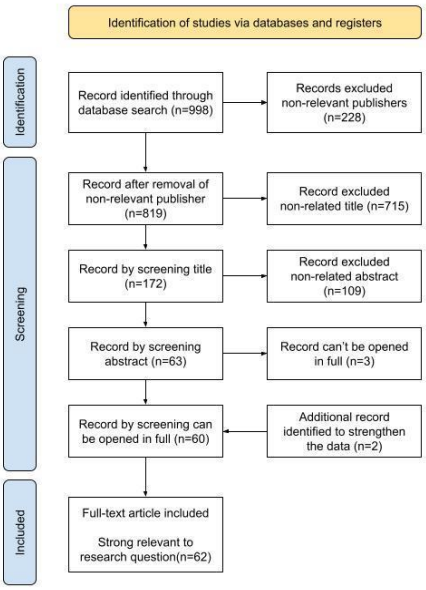

Figure 1. PRISMA Flow Diagram

The process of screening articles for inclusion is presented in this flow diagram:Title screen (n=172) Abstract screen (n=63) Full article review (n=60). Two articles were also added to fill the research gap, bringing the total number of articles involved in this study to 62.

Analysis Procedure

Once selected, articles underwent thematic analysis to combine findings. All the articles were categorized to a number of main clusters according to the pre-defined RQs, among which:

1) Financial Literacy and chatbots in aiding the understanding of Financial Services.
2) Micro finance and chatbots and their ability to enhance access for MSMEs.
3) Digitalisation of MSMEs and how chatbots can help drive the digital transformation of the MSME industry.

This paper seeks to deliver better understanding of the adoption of chatbots in microfinance and MSME to enhance user experience.

Bibliometric Analysis with Bibliometrix

To determine the trend and features of the literature available, a bibliometric analysis involving several critical elements was performed using Bibliometrix. The bibliographic analysis plays a critical role in analyzing data gathered from bibliographic information from literature relevant to this topic to determine trends related to literature development, literature use related to articles, and cooperation among authors. The subsequent stage of keyword analysis identifies key words used repeatedly in literature to discuss critical themes being explored [6]. The last stage of author cooperation identifies cooperation among authors related to this topic [6]. The following diagrams have been used to clarify research trend and research cooperation related to this topic:

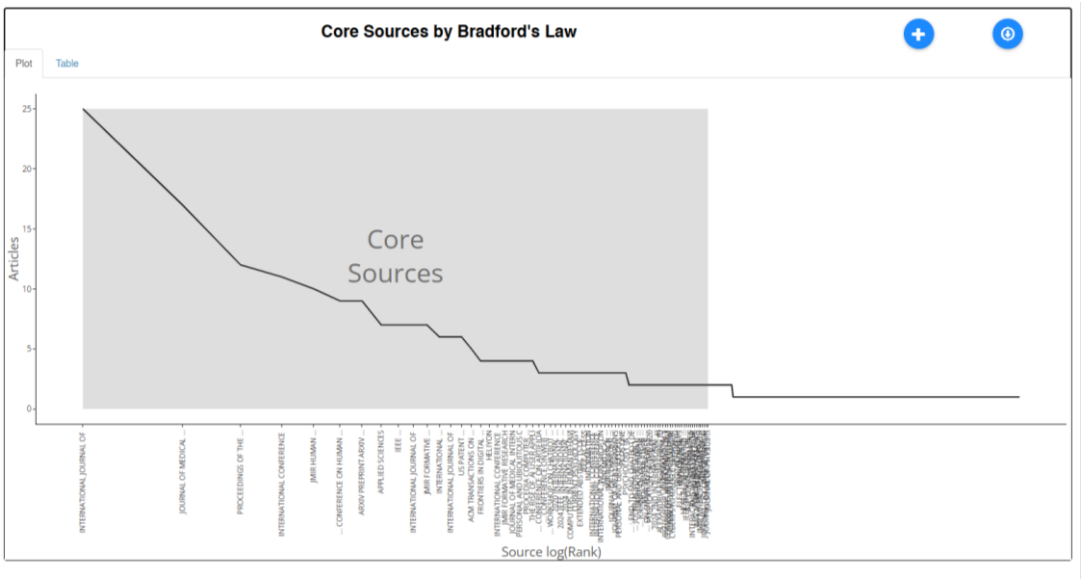

Figure 2. Core Sources by Bradford's Law

The relevant articles' primary source distributions shows the Law of Bradford which states that there are but a few primary sources. These are core zone primary sources meaning a few journals are the major contributors to the literature on this topic.

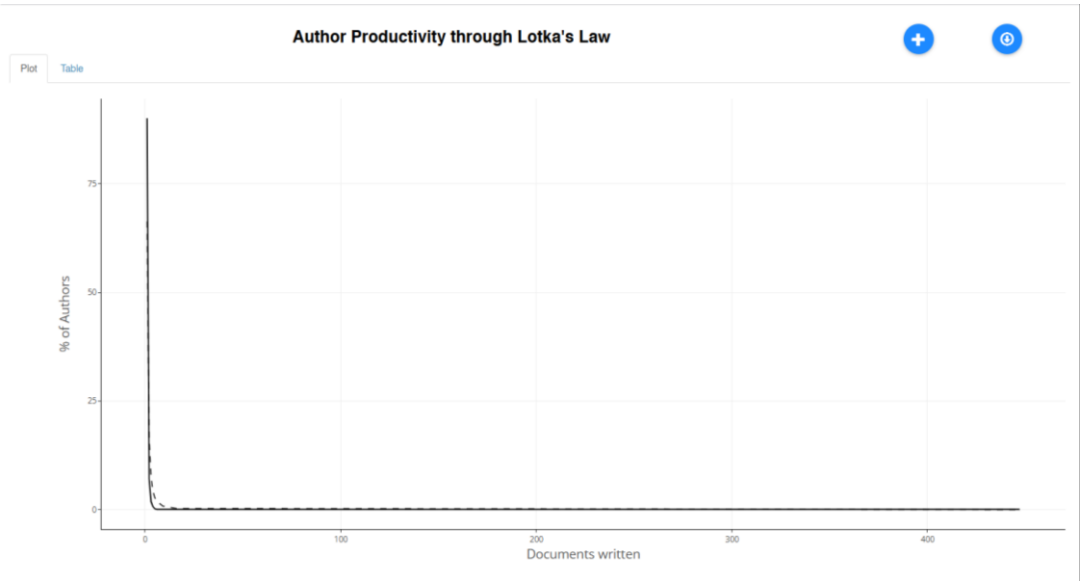

Figure 3. Author Productivity through Lotka's Law

The scattering of pertinent articles by main source displays Bradford's Law which stipulates that most articles come from a handful of main sources. These main sources are located in the core zone, implying that only a small number of journals are publishing substantial contributions to the literature of this subject.

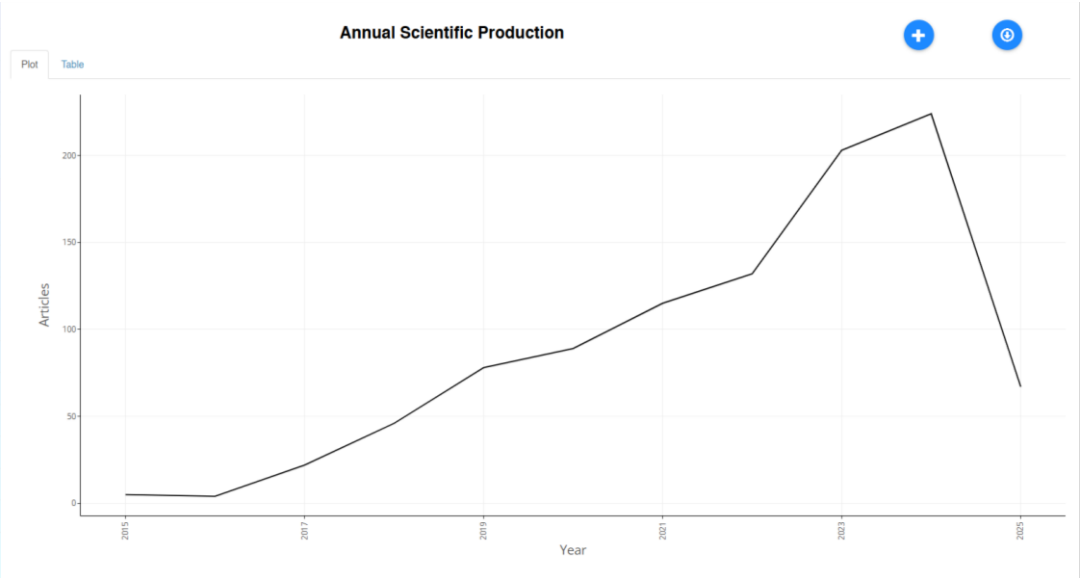

Figure 4. Annual Scientific Production

The information in the graph details the yearly output in the fields of chatbots and microfinance. Doing a close analysis of the years that fall within the range of 2020 to 2025, there was a sudden spike in the output of articles. This indicates that there was a substantial increase in the number of articles associated with this topic.

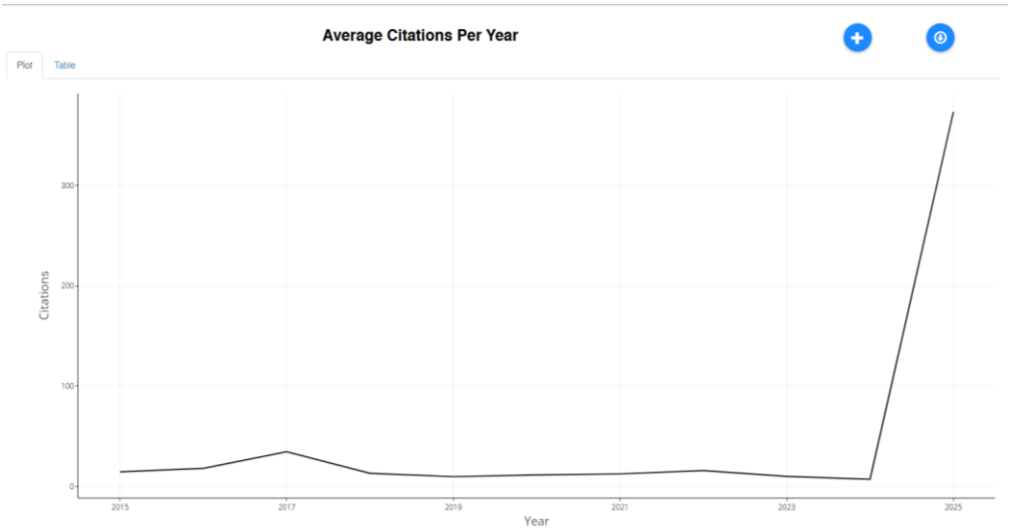

Figure 5. Average Citations per Year

This graph depicts the average annual citations for relevant articles. The upward citation trend indicates the growing influence of chatbots and user experience in the microfinance and MSME sectors.

Despite using a systematic approach to completing this research study, there come several constraints. First, the number of articles relevant to this study had to be restricted to articles fully available between 2015 and 2025. Second, articles available were mainly related to other industries like e-commerce and customer services; therefore, their application to the microfinance and MSME industry was related to a 'significant challenge.' The methodology applied to complete this study is known as SLR (Systematic Literature Review), PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses). The methodology applied ensures that articles selected and reviewed were of high quality and helped to answer research questions (RQ). The PRISMA methodology applied ensures that this research study contributes to achieving a 'better understanding' about how to apply

‘chatbots’ related to ‘microfinance and MSMEs; associated challenges related to ‘financial literacy in microfinance and microfinance access to MSME digitalization.

RESULTS AND DISCUSSIONS

The adoption of digital technology has led to major changes in several industries such as education, medical services, and customer service through Artificial Intelligence (AI) and Natural Language Processing (NLP)-based chatbots. The medical service industry, educational institutions, and customer service have utilized these chatbots to increase efficiency and speed up services to gain maximum customer satisfaction. In contrast to these industries, even though both MSME and microfinance industries encounter similar challenges related to digital technology adoption, these industries have not yet utilized these technological advancements to their full advantage. Hence, this paper will discuss and investigate how these chatbots can be utilized to overcome financial illiteracy issues related to microfinance services and digitalize the MSME industry in developing nations such as Indonesia.

Chatbots in the Education, Service, and Health Sectors

Chatbots have extensively been used in sector like (education, health and customer services) to substantially increase engagement with effectiveness. These regions have benefited greatly from chatbots as the process has been made faster and users can now even access better and cheaper services. Educational environment in particular has also seen a significant success of other chatbots like ChatGPT and other apps, in enhancing the student-level interaction there. Although there have been challenges associated with cumbersome conversations and learning materials, successes were shown in the promotion of more available and affordable learning materials to students. The effectiveness of integrating chatbots in education has brought a new perspective on the advancement of technology for teaching and learning to all students across different cultures. The activities have been accessible to all students; however, they have faced difficulties with sophisticated debates [7]. In the health field, these programs have been widely successful in promoting relaxation and obtaining relevant information regarding an individual’s health from patients. The app has been successful by providing relaxation to the users and empowering them regarding more access of health information. The utilization of health services by pregnant women provided a platform for pregnant mothers to have knowledge on infant growth and care. One of the successes that the study demonstrates is facilitating increased awareness about pregnant women for their healthcare issues [8]. The application also permits expectant mothers to obtain information regarding emotional relaxation and progress in their health. This research study demonstrates that they have had some successes in terms of expanding capabilities by enabling pregnant women to intercept discourses about their childbirth practices. The tool also offers functions to raise awareness of women's mental health symptoms. The app offers pertinent functions for mental health process developments understanding [9].

It also is true that in the world of call centers, chatboats have been put to good use: they can automate escape hatches for simple questions and requests such as “What’s the status of my order/product?. Even though chatbots are efficient when dealing with simple and repetitive scenarios, they can be ineffective for more complex conversations [10], [11]. Hence, the importance of creating more semantic and personalized chatbots that contribute to enhance user experience through a more natural and emotionally involved interaction. The deployment of chatbots in MSME and microfinance can also benefit from the successes realized in some other verticals. AI-driven chatbots in the fields of healthcare and customer service have demonstrated as an effective solution to improve user satisfaction and enable more customized interaction. In that way, chatbots may also enhance the user experience and visitor engagement leading to increased satisfaction by more accurate and personalized interaction [5], [12] in the case of MSMEs and microfinance. We learn from the education, heathcare and custome service domain that chatbots based on AI can improve user experience by giving handy and personal information to users in natural interaction. The success of these industries has laid the groundwork for chatbot intervention in the microfinance and MSME sector where similar challenges about digital technology readiness and access to information continue to persist.

Financial Literacy and Microfinance Access

Low financial literacy is one of the problems faced by Micro, Small and Medium Enterprises (MSMEs) players in Indonesia that do not even have access to appropriate and better relevant services for them. Indonesia has more than 50 million people who do not have access to formal financial services [13], [14]. This implies that a high proportion of MSMEs lack the knowledge about microfinance products such as microloan, saving account or insurance important for ensuring the sustainability of their businesses. Although microfinance has the capability to support MSMEs expand, low level of access to financial products is a significant challenge. AI-powered chatbots can contribute to enhancing financial literacy by explaining financial products in a way that is easier for people to understand. AI Bots could be employed to help MSMEs "better understand the nature of financial products" by offering easy-to-understand explanations [1]. Microloans, saving accounts, insurance can be explained by chatbots in a more organized and digestible way that is very important for the microfinance community. Through chatbots and natural language processing (NLP), MSMEs can also aid today to grasp the microloan application process, a task which demands technical skills that most small business owners do not possess. Chatbots might train users through applications for loans, educate them about interest rates and provide targeted advice to the segment it can most successfully tailor. This eases MSMEs to who may not be conversant with the complicated microfinance landscape, and hence unable to access the solutions. Also, chatbots can expand financial inclusion to MSMEs in remote areas where there is no physical presence of formal financial service providers. The medical use of chatbots in the context of maternal health has demonstrated that they can deliver improved access to key services, in a more affordable manner, for those who are geographically restricted [8], [15]. This can also be visualised in context of MSFI, where chatbots are regarded as virtual brokers who diffuse financial conversation across geographies, and to assist MSMEs reach near products at far flung.

AI-enabled chatbots have proved to be quite effective in providing a more personalized service and quicker access to financial services, this can be very profitable for MSMEs in areas where the provision of finance from formal financial institutions is scarce [16]. Use of new technologies like AI-based chatbots can mitigate the lack of information that MSMEs experience and improve their understanding of financial services available from financial institutions [17]–[21]. Customized use of AI-enabled chatbots can be highly beneficial for enhanced usability in microfinance services [1]. The capacity to respond in accordance with the requirements of users can enable MSMEs even quicker decisions and choices of financial products, tailored to what business situation demands from MSMEs. The use of contemporary technologies like chatbots could help users to gain a better understanding of the financial services provided by banks, even if full access is restricted [20], [21]. Digitization of MFS also creates a big challenge for microfinance clients in terms of digital illiteracy. Digital Divide is ubiquitous for the microfinance sector largely because of a low level of understanding and awareness about digital technology among microfinance clients [22], [23]. Hence, it is very important as the development of such modern technological services like these chatbots gain awareness about digital divides in their users to further make them even more user-friendly accessible but also make them spread the word on responsible use of such technological advancements [1], [11].

Hence, modern technological advancements such as these chatbots have immense capabilities to improve financial awareness and access to microfinance services for MSMEs. The application of these technological advancements can resolve issues arising from digital divides and restrictions associated with microfinance services' accessibility.

Digitalization of MSMEs and the Challenges Faced

This digital MSME is a big problem, especially in Indonesia economy. Max of the MSMEs are stuck to the old tradition in managing their business operations and this is a drawback for them to be competitive in digital world. The potential of AI-enabled chatbots in re-energizing the MSMEs in accelerating digital transformation including customer service and operational automation is massive. Relative advantage, complexity and cost also drive the adoption decision of MSMEs towards AI-based chatbots [2], [4]. Affordable and simple to deploy chatbots will make their way to the resource-strapped MSMEs. However, the biggest challenge in MSME digitalisation is lack of digital literacy. User's experience' mainly included the ease of usage, responsiveness and content quality provided by

chatbot [1]. Technology-shy people might be more skeptical of technology-that-is-supposed-to-be-complicated. Therefore, chatbot applications have to be more humanized and interactive to enhance acceptance from the users before technology adaptation in this field is considered.

Top management support and employee capabilities also play a crucial role in the success of chatbot adoption. MSMEs with management that supports digital transformation and employees with better digital skills tend to implement AI-based chatbots more quickly [4]. More in-depth digital literacy training is needed to enable MSMEs to utilize chatbots optimally. Furthermore, access to funding is a crucial factor, as MSMEs with easier access to funding are quicker to adopt AI chatbots as part of their digital transformation [4]. The biggest challenge remains limited access to technology and resources in remote areas. AI-chatbots can also be used for enhancement of (SSCP) in the MSSME sector by increased supply chain visibility (SCV) and innovation capability, important factors for SSCP and long-term efficiency, sustainability [24]–[26]. To this end, the advent of chatbots can be a boon for MSMEs to cope with competitive pressures in the digital markets. But the digital divide and confusion around how to use the technology is a major roadblock. So there is a need for inclusive training, so that all MSMEs, including the less digitally savvy, can make the most of AI-powered chatbots.

User Experience and Technology Acceptance Challenges

Harv Bus Rev 92(9):68–77 Google Scholar Innovations will be used & scaled only if they deliver a good user experience (UX) Journal of Creating Value. That also holds true for new technologies like AI-powered chatbots that are being introduced in MSMEs and microfinance. A great experience may speed the uptake of a technology, increase customer satisfaction, or achieve both; Conversely a bad experience can be a big barrier to adoption of new technologies. User experience is a major concern and may include aspects such as the speed at which the chatbot returned a reply, how easy it was to use and the usefulness of information shared by the chatbot type [1], [4]. Users are more likely to be satisfied with chatbots that offer quick, high-quality responses and a more human and personalized interaction. Adoption of AI chatbot technologies in the MSME space also opens the doors for better user experience through speed and ease of interaction. Easy-to-use chatbots can help avoid keeping customers waiting, while reducing transaction times and facilitating access to the information they require about the products or services [1], [4]. Nonetheless, despite the potential of chatbots to enhance service operations, user acceptance is significant challenge due to potential lack of perception of chatbot competence on systems unfamiliar and low literacy users to new technology. Low digital literate users often find it difficult to work with new technologies such as Chatbots [1], [4]. This can result in low user satisfaction and loss of technological compliance. Thus, to encourage MSMEs' adoption of this technology it is important to produce chatbots that are not only user-friendly but can also cater for users with various levels of digital literacy. A relevant e-learning strategy and educational marketing may help to enhance the user trust in it.

Nonetheless, the key challenge is still technology adoption by MSMEs who have limited resources in managing and integrating new technologies. It is consequently necessary to get training support, technological resources and the knowledge of the benefits and how to chatbots work in accelerating operations and enhancing customer service. Although chatbots can enhance customer service, the extent to which such systems may be adopted successfully is contingent on the ability of MSMEs to comprehend and use technology effectively [27]. There is also evidence that chatbots can improve the visitor experience by providing richer and more fun interactions, although research on user experience measurement is still scarce [12], [24]. This is further complicated for chatbot development in other domains including the MSME, that must be able to monitor and evaluate user experience variables over a larger scope. A CAservice taxonomy has been proposed to categorise the characteristics of CAs with respect to user experience (UX) in [5]. This classification classifies service cues into three categories: functional, mechanical, and humanistic. The functional dimension covers technical abilities and core functions of user models, the mechanical one refers to sensory and presentational aspects, and the humanistic one is for personal as well as interpersonal interactions. For better user experience, CAs are supposed to provide various sorts of speech acts in accordance with users' preferences and conversational context [5].

The ease of using the Self-service and highly dependable chatbots can enhance Customer satisfaction while focusing on customer empowerment, giving trusts to customers that result in better engagement and sustainable chatbot existence in the bank [17]–[19], [28]. AI-based chatbots have also been widely used for disseminating reliable health information and blocking misinformation during the pandemic with user experience highlighting importance of reliability and ease of use (factors pertinent to MSME sector, where prompt and reliable service is needed) 3 [29]. Adoption of chatbots by smartphone can also help create a more tailored museum visit experience by offer personalised interactions and more successful navigation, which SO technologies (including AI-based products as ChatGPT to encourage user engagement and provide interactive maps) [30]. Such a concept would also be of interest for SMCs aiming at improved customer service. Besides, chatbot marketing endeavors which incorporate meaningful communication, personalization and trouble-shooting can also enhance the quality of chatbot interactions as well as user satisfaction and repeat usage intention [14], [31]. It implies that chatbot communication quality and personalization are important for the user experience in MSME/microfinance.

Implication and Recommendation

AI-based chatbots are expected to revolutionise the MSME sector / Microfinance customer user experience and satisfaction. User-friendly personalized chatbots can enhance the quality of customer messaging [14], [31]. Trouble-free integration of chatbots can boost the speed at which services are delivered, reduce the burden on staff, and make for a more conversational experience for customers. But how to make this technology available for all, even people with a low digital literacy? Despite the advantages of chatbots, chatbot low digital literacy users are likely to be confused when using these technologies, and this could lead to lower user satisfaction [1]. Accordingly, it is important that developers consider the configurability of chatbots in addition to their usability in line with prior research [5].

Additionally, to ensure proper assimilation of chatbots, their capability for conversations that are both lengthy and complex while understanding the vagaries of human utterance must be enhanced. For a near human level chatting, chatbots need to be able to produce realistic and rich responses in order to not make the conversations boring [5]. Customers will enjoy chatbots that are capable of providing more precise and personalized responses. It AI -based Digital transformation ideasonce let chatbots also improve customer service and user engagement as well [6]. Chatbots as part of MSME systems (e.g., e-commerce, CRM) Combo chatbots and small business system can result in operational efficiency enhancement and productivity. Security [3], [32]–[35]) is arguably the most crucial aspect of chatbot acceptance and use, as trust and privacy are key factors to an individual's decision to interact with a service or system (reliability). To gain customers confidence and to stay date- with technology AMLOVESMSES have implemented strict security measures so that at least they can be king for adding another important Virtual fortress inside around their digital transactions.

CONCLUSION

This paper talks about the chatbot manifestation indicates enormous prospect in microfinance and Micro Small and Medium Sized Enterprise (MSMEs) sector at Indonesia that has digital technique applied less than other hand if we look at education, healthcare or costumer service, they have been using it. For instance, chatbots can play a pivotal role in increasing financial literacy, extending the scope of microfinance outreach and encouraging digital behavior for MSMEs. Usability, user experience and response time of the chatbot are becoming more significant to win as new technology. Through this research we demonstrate that in order to clear the obstacle for IT adoption, especially low digital literacy, regarding chatbots to provide more personalized and user friendly-info about financial products such as MSMEs' information access based all items published on their actual needs. However, to fully realize the potential of chatbot technology in the microfinance and MSME sectors, 2 more research work is required on even more adaptive and intelligent chatstrapping generation of a chatbot that should be willing to learn from these this kind of complex communication based on their conversation with MSMEs to get access with financial services. In addition, improvements in personalisation and user experience will be key to the adoption of digital technology in this industry. Advanced digital literacy and further training for MSMEs would be a blend of

introducing trends such as chatbots but also ensuring they are accessible and understood for effective use. More advanced use of chatbots could address the myriad of difficult issues about microfinance and MSMEs by, among other fixtures to such financial metric structures like aesthetics and transparency which has been so far very difficult to understand, access and use.

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