WHY WOULD CITIZENS CONTINUE USING CHATBOT SERVICES?

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ABSTRACT

Until recently, scholarly focus on the post-adoption phase, specifically users' continued usage of chatbot services, has been notably limited. Recognizing this gap in the existing literature, the current research endeavors to develop an integrative model. This model extends the theoretical framework of the Expectation Confirmation Model (ECM) by incorporating key constructs related to chatbot service quality and anthropomorphism. Both of these concepts are deemed crucial in influencing the continuance usage of chatbot services. As an integral facet of a broader research undertaking, the model will be empirically applied to assess citizens' intentions regarding the continued use of chatbot services within context of the United Arab Emirates.

KEYWORDS

Chatbots, Post-adoption, ECM, Anthropomorphism, Chatbot service quality

1. INTRODUCTION

In the digital era, the rapid advancement of Artificial Intelligence (AI) technologies and Human-Computer Interaction (HCI) has led to significant improvements in conversational tools, making them more sophisticated and natural. This progress in AI has empowered chatbots to simulate human-like interactions effectively. A chatbot, also referred to as Artificial Conversation Entity, Interactive Agent, Smart Bot, or Digital Assistant [1], operates as a software-based system utilizing Natural Language Processing (NLP) and sentiment analysis to communicate through text or oral speech with humans.

Driven by the rapid evolution of AI, chatbots have found widespread applications in various fields, including healthcare, business, education, e-commerce, and banking [2]. Within a short timeframe, chatbots have become integral to various business sectors, particularly the service industry. A Business Insider survey of over 5,000 businesses across six countries revealed that 67% of companies employ chatbots for customer service [3].

While chatbots have witnessed widespread adoption in both private and public organizations in recent years, previous research has highlighted a significant gap in understanding why individuals are reluctant to continue using chatbot services [4] [5]. To address this gap and gain a deeper insight into the factors influencing user satisfaction and continuance intentions, further research is crucial. Consequently, by drawing on the Expectation Confirmation Model (ECM), chatbot service quality and the anthropomorphism constructs, this study aims to develop an integrated model to investigate the key determinants influencing users' continuance intentions towards chatbot services offered by public agencies within the United Arab Emirates (UAE) context.

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2. THEORETICAL BACKGROUND AND LITERATURE REVIEW

The next two sub-sections will provide a discussion of the theoretical background and a review of the existing literature.

2.1. Theoretical Background

The Expectation-Confirmation Model (ECM), proposed by Bhattacherjee [6], has gained significant recognition due to its robust theoretical foundation in explaining user satisfaction and the intention to continue using Information Systems (IS). The ECM theory has found extensive application in IS research, investigating post-adoption behavior, or continuous intention, in various contexts [6][7][8][9]. Recent extensions of this model have been applied to empirical studies focusing on the post-adoption behavior of chatbot services [2][10][11][12]. Given the widespread use of the ECM model in exploring post-adoption behavior across diverse research contexts and its solid theoretical foundation, it is reasonable to employ this model as the theoretical framework for investigating post-adoption behaviors (i.e. continuous intention) of chatbot services.

2.2. Literature Review

Prior research has predominantly focused on understanding user's intention to use chatbots across various sectors such as e/m-commerce [13][14], banking/fintech [15][16], customer service [17][18], tourism [19][20] and education [21][22]. A recent systematic literature review identified crucial factors afflicting adoption of chatbot services like performance expectancy, perceived usefulness, trust, effort expectancy, perceived enjoyment, perceived ease of use, perceived humanness, social influence, facilitating conditions, and anthropomorphism [23].

However, there is a noticeable gap in the literature, as most of prior literature primarily emphasizes the initial phases of chatbot acceptance or adoption, neglecting the subsequent post-adoption phase and users' continuous usage behavior [2][4][5] [10][24]. However, neither acceptance nor adoption alone is sufficient to ensure the success of chatbot services; rather, the continuous use or post-adoption phase plays a crucial role in determining their success [10]. Addressing this gap in the literature represents the main contribution of the current study.

3. RESEARCH MODEL AND HYPOTHESES

3.1. Research Model

This study proposes an integrative model by extending the ECM [6] through the integration of two significant predictors of chatbot continuance usage identified in the relevant literature: chatbot service quality and anthropomorphism constructs (See Figure. 1).

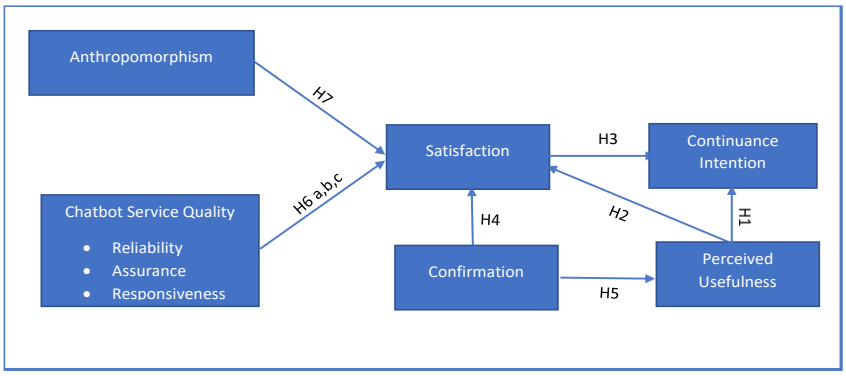

Figure 1. Research Model

3.2. Research Hypotheses

3.2.1. Hypotheses based on the ECM theory

The ECM serves as a robust framework, investigating the influence of user cognition, specifically perceived usefulness, and satisfaction on an individual's post-adoption behavior. Numerous studies rooted in the ECM have consistently identified perceived usefulness and user satisfaction as pivotal determinants shaping users' intentions to continue using information systems [6][25][26].

Perceived usefulness stands out as a potent predictor and precursor to users' continuous usage intention to IS across various studies [6][25][26][27][28]. In addition, previous studies have confirmed the significant impact of perceived usefulness on users' satisfaction with chatbot services [2][10] [11]. Moreover, satisfaction emerges as a crucial determinant, acting as a reinforcing factor for users' intentions to continue using an IS [6][25][26][27][29][30][31]. Thus, we propose the following hypotheses:

H1. Perceived usefulness positively affects continuance intention to use chatbot services.
H2. Perceived usefulness positively effects users' satisfaction with using chatbot services.
H3. Satisfaction positively affects continuance intention to use chatbot services.

Furthermore, the positive correlations among confirmation, perceived usefulness, and satisfaction have been recurrently validated in empirical studies, emphasizing that satisfaction is influenced by the level of confirmation [9][26][32][33]. Numerous ECM-based studies across diverse contexts have also consistently confirmed positive relationships among confirmation of expectations and perceived usefulness [2][28] [34]. Hence, the following hypotheses are suggested:

H4: Confirmation positively affects users' satisfaction with using chatbot services.
H5: Confirmation positively affects the perceived usefulness of chatbot services.

3.2.2. Impact of Chatbot Service Quality on Satisfaction

Reliability, responsiveness, and assurance, as service quality dimensions identified by Parasuraman et al. [35], are key considerations in our study due to their significance in the context of chatbot-related smart services. According to Li et al. [36], reliability is crucial, reflecting a user's perception of a chatbot's ability to consistently and accurately perform promised services. In the realm of chatbots, Chung & Park [37] and Li et al. [36] emphasize the

importance of delivering reliable performance and information. Recent research by Yun & Park [38] confirm that chatbot reliability positively affects customer satisfaction. Considering this, we propose:

H6a: Perceived reliability positively affects users' satisfaction with chatbot services.

Assurance, defined by Li et al. [36] as a user's perception of a chatbot's knowledge and ability to inspire trust, is traditionally associated with human agents' service quality. However, Li et al. [36] assert its relevance in the context of chatbot services. Users expect chatbots to behave like humans, providing reliable replies to instill confidence in the services they offer [36]. Assurance is particularly crucial in script-based conversational chatbots in e-commerce [39] and has a significant impact on satisfaction in the financial services sector [40]. Research by Yun & Park [38] support the positive influence of chatbot assurance on customer satisfaction. In light of this, we propose:

H6b: Perceived assurance positively affects users' satisfaction with chatbot services.
Responsiveness, defined by Li et al. [36] as a user's perception of a chatbot's willingness to provide timely service, is essential in an online environment. Chatbot-enabled service agents are expected to function like humans, responding promptly to user requests [36]. Quick and immediate responses significantly contribute to meeting users' expectations, positively impacting satisfaction [36][41]. Therefore, we propose:

H6c: Perceived responsiveness positively affects users' satisfaction with chatbot services.

3.2.3. Impact of Anthropomorphism on Satisfaction

Anthropomorphism, as defined by Epley et al. [42], involves attributing human-like characteristics, feelings, and traits to non-human objects. This psychological concept, highlighted by Blut et al. [43], fosters social connection between humans and non-humans. Moreover, Schanke et al. [44] emphasize the crucial role of anthropomorphism in the success of AI artifacts, influencing user behavior during human-AI interactions. This concept has broad applications across disciplines, such as psychology, marketing, and computer science [45].

In various contexts, several studies found a correlation between customer satisfaction and the degree of anthropomorphism [46][47][48][49]. Similarly, the findings of Blut et al. [43] supported the enormous potential of anthropomorphic cues in virtual assistance systems like chatbots and demonstrated their positive association with customer satisfaction. Hence, the following hypothesis is proposed:

H7: perceived anthropomorphism positively effects users' satisfaction with chatbot services.

4. CONCLUSION

While the majority of studies on chatbots have concentrated on Western countries, only a few have explored their usage in Arab countries, such as the UAE. Moreover, there is a limited number of studies investigating the continuous usage intention of chatbot services. To address this gap, the present study introduces a conceptual model to scrutinize the continuance intention to use chatbot services. In future research, an extensive empirical survey will be conducted in the UAE to empirically validate the proposed research model.

REFERENCES

[1] Adamopoulou, E., & Moussiades, L. (2020). Chatbots: History, technology, and applications. Machine Learning with Applications, 2, 100006.

[2] Nguyen, D. M., Chiu, Y.-T. H., & Le, H. D. (2021). Determinants of continuance intention towards banks' chatbot services in Vietnam: A necessity for sustainable development. Sustainability, 13(14), 7625.

[3] Beaver, L. (2017). Chatbots are gaining traction. Business Insider. Retrieved form https://www.businessinsider.com/chatbots-are-gaining-traction-2017-5.

[4] Jiang, H., Cheng, Y., Yang, J., & Gao, S. (2022). AI-powered chatbot communication with customers: Dialogic interactions, satisfaction, engagement, and customer behavior. Computers in Human Behavior, 134, 107329.

[5] Li, M., & Wang, R. (2023). Chatbots in e-commerce: The effect of chatbot language style on customers' continuance usage intention and attitude toward brand. Journal of Retailing and Consumer Services, 71, 103209.

[6] Bhattacherjee, A. (2001b). Understanding information systems continuance: An expectation-confirmation model. MIS quarterly, 351-370.

[7] Hsu, M.-H., Yen, C.-H., Chiu, C.-M., & Chang, C.-M. (2006). A longitudinal investigation of continued online shopping behavior: An extension of the theory of planned behavior. International Journal of human-computer studies, 64(9), 889-904.

[8] Kang, Y. S., Hong, S., & Lee, H. (2009). Exploring continued online service usage behavior: The roles of self-image congruity and regret. Computers in Human Behavior, 25(1), 111-122.

[9] Limayem, M., & Cheung, C. M. (2008). Understanding information systems continuance: The case of Internet-based learning technologies. Information & Management, 45(4), 227-232.

[10] Ashfaq, M., Yun, J., Yu, S., & Loureiro, S. M. C. (2020). I, Chatbot: Modeling the determinants of users' satisfaction and continuance intention of AI-powered service agents. Telematics and Informatics, 54, 101473.

[11] Eren, B. A. (2021). Determinants of customer satisfaction in chatbot use: evidence from a banking application in Turkey. International Journal of Bank Marketing, 39(2), 294-311.

[12] Kasilingam, D. L. (2020). Understanding the attitude and intention to use smartphone chatbots for shopping. Technology in Society, 62, 101280.

[13] de Cosmo, L. M., Piper, L., & Di Vittorio, A. (2021). The role of attitude toward chatbots and privacy concern on the relationship between attitude toward mobile advertising and behavioral intent to use chatbots. Italian Journal of Marketing, 2021, 83-102.

[14] Song, S. W., & Shin, M. (2024). Uncanny valley effects on chatbot trust, purchase intention, and adoption intention in the context of e-commerce: The moderating role of avatar familiarity. International Journal of Human–Computer Interaction, 40(2), 441-456.

[15] Mogaji, E., Balakrishnan, J., Nwoba, A. C., & Nguyen, N. P. (2021). Emerging-market consumers' interactions with banking chatbots. Telematics and Informatics, 65, 101711.

[16] Sugumar, M., & Chandra, S. (2021). Do I desire chatbots to be like humans? Exploring factors for adoption of chatbots for financial services. Journal of International Technology and Information Management, 30(3), 38-77.

[17] Cai, D., Li, H., & Law, R. (2022). Anthropomorphism and OTA chatbot adoption: a mixed methods study. Journal of Travel & Tourism Marketing, 39(2), 228-255.

[18] Huang, Y.-S., & Kao, W.-K. (2021). Chatbot service usage during a pandemic: fear and social distancing. The service industries journal, 41(13-14), 964-984.

[19] Jiménez-Barreto, J., Rubio, N., & Molinillo, S. (2021). "Find a flight for me, Oscar!" Motivational customer experiences with chatbots. International Journal of Contemporary Hospitality Management, 33(11), 3860-3882.

[20] Mostafa, R. B., & Kasamani, T. (2022). Antecedents and consequences of chatbot initial trust. European Journal of marketing, 56(6), 1748-1771.

[21] Annamalai, N., Ab Rashid, R., Hashmi, U. M., Mohamed, M., Alqaryouti, M. H., & Sadeq, A. E. (2023). Using chatbots for English language learning in higher education. Computers and Education: Artificial Intelligence, 5, 100153.

[22] Malik, R., Shrama, A., Trivedi, S., & Mishra, R. (2021). Adoption of chatbots for learning among university students: Role of perceived convenience and enhanced performance. International Journal of Emerging Technologies in Learning (iJET), 16(18), 200-212.

[23] Gatzioufa, P., & Saprikis, V. (2022). A literature review on users' behavioral intention toward chatbots' adoption. Applied Computing and Informatics(ahead-of-print).
[24] Gkinko, L., & Elbanna, A. (2023). The appropriation of conversational AI in the workplace: A taxonomy of AI chatbot users. International Journal of Information Management, 69, 102568.
[25] Bhattacherjee, A. (2001a). An empirical analysis of the antecedents of electronic commerce service continuance. Decision support systems, 32(2), 201-214.
[26] Li, H., & Liu, Y. (2014). Understanding post-adoption behaviors of e-service users in the context of online travel services. Information & Management, 51(8), 1043-1052.
[27] Islam, M. T., Talukder, M. S., Khayer, A., & Islam, A. N. (2021). Exploring continuance usage intention toward open government data technologies: An integrated approach. VINE Journal of Information and Knowledge Management Systems. 53(4), 785-807.
[28] Mishra, A., Shukla, A., Rana, N. P., Currie, W. L., & Dwivedi, Y. K. (2023). Re-examining post-acceptance model of information systems continuance: A revised theoretical model using MASEM approach. International Journal of Information Management, 68, 102571.
[29] Bölen, M. C. (2020). Exploring the determinants of users' continuance intention in smartwatches. Technology in Society, 60, 101209.
[30] Hsiao, C.-H., Chang, J.-J., & Tang, K.-Y. (2016). Exploring the influential factors in continuance usage of mobile social Apps: Satisfaction, habit, and customer value perspectives. Telematics and Informatics, 33(2), 342-355.
[31] Limayem, M., Hirt, S. G., & Cheung, C. M. (2007). How habit limits the predictive power of intention: The case of information systems continuance. MIS quarterly, 705-737.
[32] Bhattacherjee, A., Perols, J., & Sanford, C. (2008). Information technology continuance: A theoretic extension and empirical test. Journal of Computer Information Systems, 49(1), 17-26.
[33] Thong, J. Y., Hong, S.-J., & Tam, K. Y. (2006). The effects of post-adoption beliefs on the expectation-confirmation model for information technology continuance. International Journal of human-computer studies, 64(9), 799-810.
[34] Chong, A. Y.-L. (2013). Understanding mobile commerce continuance intentions: an empirical analysis of Chinese consumers. Journal of Computer Information Systems, 53(4), 22-30.
[35] Parasuraman, A. B. L. L., Zeithaml, V. A., & Berry, L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. 1988, 64(1), 12-40.
[36] Li, L., Lee, K. Y., Emokpae, E., & Yang, S.-B. (2021). What makes you continuously use chatbot services? Evidence from chinese online travel agencies. Electronic Markets, 31(3), 575-599.
[37] Chung, K., & Park, R. C. (2019). Chatbot-based heathcare service with a knowledge base for cloud computing. Cluster Computing, 22(1), 1925-1937.
[38] Yun, J., & Park, J. (2022). The Effects of Chatbot Service Recovery with Emotion Words on Customer Satisfaction, Repurchase Intention, and Positive Word-Of-Mouth. Frontiers in Psychology, 13. 922503.
[39] Pereira, J., & Díaz, Ó. (2018). Chatbot dimensions that matter: Lessons from the trenches. In Web Engineering: 18th International Conference, ICWE 2018, Cáceres, Spain, June 5-8, 2018, Proceedings 18 (pp. 129-135). Springer International Publishing.
[40] Lee, M. K., & Park, H. (2019). Exploring factors influencing usage intention of chatbot-chatbot in financial service. Journal of the Korean Society for Quality Management, 47(4), 755-765.
[41] Meyer-Waarden, L., Pavone, G., Poocharoentou, T., Prayatsup, P., Ratinaud, M., Tison, A., & Torné, S. (2020). How service quality influences customer acceptance and usage of chatbots? SMR-Journal of Service Management Research, 4(1), 35-51.
[42] Epley, N., Waytz, A., & Cacioppo, J. T. (2007). On seeing human: a three-factor theory of anthropomorphism. Psychological review, 114(4), 864.
[43] Blut, M., Wang, C., Wünderlich, N. V., & Brock, C. (2021). Understanding anthropomorphism in service provision: a meta-analysis of physical robots, chatbots, and other AI. Journal of the Academy of Marketing Science, 49(4), 632-658.
[44] Schanke, S., Burtch, G., & Ray, G. (2021). Estimating the impact of "humanizing" customer service chatbots. Information systems research, 32(3), 736-751.
[45] Cheng, X., Zhang, X., Cohen, J., & Mou, J. (2022). Human vs. AI: Understanding the impact of anthropomorphism on consumer response to chatbots from the perspective of trust and relationship norms. Information Processing & Management, 59(3), 102940.

[46] Jiang, H., Cheng, Y., Yang, J., & Gao, S. (2022). AI-powered chatbot communication with customers: Dialogic interactions, satisfaction, engagement, and customer behavior. Computers in Human Behavior, 134, 107329.

[47] Klein, K., & Martinez, L. F. (2023). The impact of anthropomorphism on customer satisfaction in chatbot commerce: an experimental study in the food sector. Electronic commerce research, 23(4), 2789-2825.

[48] Rhim, J., Kwak, M., Gong, Y., & Gweon, G. (2022). Application of humanization to survey chatbots: Change in chatbot perception, interaction experience, and survey data quality. Computers in Human Behavior, 126, 107034.

[49] Seo, S. (2022). When Female (Male) Robot Is Talking To Me: Effect of service robots' gender and anthropomorphism on customer satisfaction. International Journal of Hospitality Management, 102, 103166.

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