

## Exploring Small and Medium Enterprises' Intention to Adopt AI - Powered Chatbots in Halal Marketing Communications

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### ABSTRACT

This study explores the adoption of AI chatbots in marketing communication by SMEs, specifically focusing on Halal contexts. It investigates factors such as perceived usefulness and attitude, which play a crucial role in shaping users' intentions. The mediating role of attitude, particularly in the context of Halal products, is significant, considering culturally sensitive considerations. The research adopts a quantitative approach with a correlational study design, utilizing random sampling to ensure representativeness. Data collection involves structured questionnaires, adapted scales, and 233 completed responses from SME owners/managers. Structural Equation Modeling (SEM) is employed for data analysis, testing complex relationships, and assessing direct and indirect impacts. The study reveals a positive direct effect of perceived usefulness and attitude toward chatbots (ATC) on chatbot adoption intention (CAI) in the Halal marketing context, supporting the hypothesis that both attitude and perceived usefulness significantly influence the intention to adopt AI chatbots. Additionally, the study explores the mediating role of attitude in the relationship between perceived usefulness and adoption intention. The findings contribute to existing literature by highlighting the complex interplay of factors influencing users' attitudes and intentions towards AI chatbots in marketing communication, particularly in the Halal context.

**Keywords:** AI chatbots, marketing communication, SMEs, halal brands, adoption intention

### INTRODUCTION

The adoption of AI chatbots in marketing communication, especially within the context of Halal brands, is a complex process influenced by various factors. Wang et al stress the considerable impact of perceived usefulness on the intention to adopt AI chatbots.<sup>1</sup> Their findings, in conjunction with those of Pillai and Sivathanu, suggest that perceived ease of use, trust, intelligence, and anthropomorphism collectively contribute to shaping the adoption intention of

<sup>1</sup> Wang, X., Lin, X., and Shao, B. "Artificial Intelligence Changes the Way We Work: A Close Look at Innovating with Chatbots." *Journal of the Association for Information Science and Technology* 74, no. 3 (2022): 339-353. <https://doi.org/10.1002/asi.24621>

chatbots.<sup>2</sup> The relationship between perceived usefulness and adoption intention may be influenced by other variables, such as the attitude toward AI chatbots.<sup>3</sup>

Similarly, examining the role of attitude as a mediator in the context of Halal brands is crucial for understanding AI chatbot adoption intentions. Garg and Joshi underscore the mediating effect of attitude on the relationship between various factors and adoption intention.<sup>4</sup> This mediation role is evident in the context of Halal products, where attitude fully mediates the relationship between the quantity of electronic word of mouth and the intention to purchase Halal cosmetics.<sup>5</sup> This underscores the significant role of attitude in shaping the intention to adopt AI chatbots, particularly in products involving specific cultural or religious considerations.

Moreover, the quality of communication with AI chatbots emerges as a key factor influencing continued usage intentions, emphasizing the importance of ongoing interaction and satisfaction.<sup>6</sup> Additionally, the nuanced influence of privacy concerns on adoption intentions is highlighted, as suggested by the moderating role of privacy concern in the relationship between attitude toward chatbots and the intention to use this technology.<sup>7</sup>

In the realm of marketing communication, the effectiveness of integrated approaches, such as Digital Integrated Marketing Communication (DIMC), in enhancing selling power and promotion is evident.<sup>8</sup> This shift toward integrated marketing communication is considered essential for effective marketing strategies in the twenty-first century, requiring creative thinking and a holistic approach to all communication activities.<sup>9</sup> The strategic importance of

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<sup>2</sup> Pillai, R., and Sivathanu, B. "Adoption of AI-Based Chatbots for Hospitality and Tourism." *International Journal of Contemporary Hospitality Management* 32, no. 10 (2020): 3199-3226. <https://doi.org/10.1108/ijchm-04-2020-0259>

<sup>3</sup> Le, X. "Inducing AI-Powered Chatbot Use for Customer Purchase: The Role of Information Value and Innovative Technology." *Journal of Systems and Information Technology* 25, no. 2 (2023): 219-241. <https://doi.org/10.1108/jsit-09-2021-0206>.

<sup>4</sup> Garg, P., and Joshi, R. "Purchase Intention of "Halal" Brands in India: The Mediating Effect of Attitude." *Journal of Islamic Marketing* 9, no. 3 (2018): 683-694. <https://doi.org/10.1108/jima-11-2017-0125>.

<sup>5</sup> Anubha, A. "Mediating Role of Attitude in Halal Cosmetics Purchase Intention: An ELM Perspective." *Journal of Islamic Marketing* 14, no. 3 (2021): 645-679. <https://doi.org/10.1108/jima-04-2021-0112>.

<sup>6</sup> Lee, M. "Do Parasocial Relationships and the Quality of Communication with AI Shopping Chatbots Determine Middle-Aged Women Consumers' Continuance Usage Intentions?" *Journal of Consumer Behaviour* 21, no. 4 (2022): 842-854. <https://doi.org/10.1002/cb.2043>.

<sup>7</sup> de Cosmo, L. M., Piper, L., and Di Vittorio, A. "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. <https://doi.org/10.1007/s43039-021-00020-1>

<sup>8</sup> Jemutai, C. "Integrated Marketing Communication and Performance of Kenya Post and Savings Bank." *Social Sciences* 5, no. 3 (2016): 37. <https://doi.org/10.11648/j.ss.20160503.11>.

<sup>9</sup> Proctor, T., and Kitchen, P. "Communication in Postmodern Integrated Marketing." *Corporate Communications an International Journal* 7, no. 3 (2002): 144-154. <https://doi.org/10.1108/13563280210436754>.

communication in shaping consumer attitudes and intentions is emphasized, highlighting the role of marketing communication in creating a planned communication process for organizations.<sup>10</sup>

This study aims to investigate the adoption of AI chatbots in marketing communication, specifically focusing on Halal brands. The primary objective is to explore the relationships and influences of factors, including perceived usefulness and attitude, on the intention to adopt AI chatbots in marketing communication for products and brands with Halal significance. The study contributes to the existing literature by providing a holistic understanding of the adoption dynamics of AI chatbots in marketing communication, with a specific focus on Halal products and brands. The findings will offer valuable insights for developing culturally sensitive strategies for integrating AI chatbots into marketing communication practices.

## Literature Review

Halal guides businesses and consumers based on principles of ethical conduct, social justice, and environmental sustainability.<sup>11</sup> Despite its longstanding presence, recent mega-scale expansion is notable.<sup>12</sup> Halal marketing communication adheres to integrity, honesty, and meeting genuine needs through Halal products and services.<sup>13</sup> It integrates Islamic values into marketing strategies, strictly prohibiting deceptive practices.<sup>14</sup> Grounded in Islamic teachings, Halal marketing communication emphasizes truthfulness, transparency,<sup>15</sup> and fulfilling promises.<sup>16</sup> The goal is to be distinctive, consistent,

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<sup>10</sup> Kaya, A. K., and Ayman, U. "Developing Countries' Marketing Communication Role in School Culture." In *Open and Equal Access for Learning in School Management*, 95. 2018. <https://doi.org/10.5772/intechopen.71254>.

<sup>11</sup> Ahmadova, E. and Aliyev, K. "Determinants of Attitudes towards Halal Products." *Journal of Islamic Marketing* 12, no. 1 (2020): 55-69. <https://doi.org/10.1108/jima-04-2019-0068>.

<sup>12</sup> Javeed, A., Mokhtar, S., and Ismail, B. "Conceptualizing the Relation Between Halal Logo, Perceived Product Quality and the Role of Consumer Knowledge." *Journal of Islamic Marketing* 9, no. 4 (2018): 727-746. <https://doi.org/10.1108/jima-02-2017-0019>.

<sup>13</sup> Mukhtar, A., and Butt, M. M. "Intention to Choose Halal Products: The Role of Religiosity." *Journal of Islamic Marketing* 3, no. 2 (2012): 108-120. <https://doi.org/10.1108/17590831211232519>.

<sup>14</sup> Alserhan, B. *The Principles of Islamic Marketing*. (2017). <https://doi.org/10.4324/9781351145688>

<sup>15</sup> Shah, S. A., Azhar, S. M., and Bhutto, N. A. "Halal Marketing: A Marketing Strategy Perspective." *Journal of Islamic Marketing* 11, no. 6 (2020): 1641-1655. <https://doi.org/10.1108/jima-11-2018-0211>

<sup>16</sup> Siddiqui, M., Farooqui, M. A. A., and Hafsa Siddiqui, A. S. R. "Halal Marketing (Islamic Principles of Marketing and Marketing Mix Model in Islam)." In *8th Global Islamic Marketing Conference Advances in Islamic Business*, 289-298.

persuasive, creative, and emotionally engaging,<sup>17</sup> motivating the target audience to take action.<sup>18</sup>

Halal marketing communication emphasizes mutual consent and benefit,<sup>19</sup> guided by the Islamic principles of fairness and justice.<sup>20</sup> Deceptive practices are strictly prohibited in Islam, necessitating honesty and accuracy in Halal marketing communication<sup>21</sup> to provide clear information<sup>22</sup> for informed consumer decisions.<sup>23</sup> Halal marketing communication prioritizes distinctiveness for attention,<sup>24</sup> consistency for trust-building,<sup>25</sup> and creativity for emotional engagement.<sup>26</sup> Motivating the target audience to take action, aligned with ethical and legal Islamic guidelines, is a fundamental aspect, emphasizing the call to action in purchasing or engaging with the brand.<sup>27</sup> In summary, Halal marketing communication emphasizes truthful, transparent, and non-deceptive communication and employs distinctiveness, consistency, creativity, and emotional engagement to encourage audience action within the principles of Islam.

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<sup>17</sup> Wilson, J., and Liu, J. "The Challenges of Islamic Branding: Navigating Emotions and Halal." *Journal of Islamic Marketing* 2, no. 1 (2011): 28-42. <https://doi.org/10.1108/17590831111115222>.

<sup>18</sup> Navarro, Á., Piñero, M., and Delgado-Ballester, E. "Integrated Marketing Communications." *Euromed Journal of Business* 4, no. 3 (2009): 223-236. <https://doi.org/10.1108/14502190910992666>.

<sup>19</sup> Shahabuddin, A. S. M., Sukor, M. E. A., and Hashim, N. H. "Product-Centric Halal Business: A Critique from an Islamic Perspective." *Journal of Islamic Marketing* 11, no. 6 (2020): 1707-1724. <https://doi.org/10.1108/jima-06-2019-0129>

<sup>20</sup> Abbas, A., Nisar, Q., Mahmood, M., Chenini, A., and Zubair, A. "The Role of Islamic Marketing Ethics Towards Customer Satisfaction." *Journal of Islamic Marketing* 11, no. 4 (2019): 1001-1018. <https://doi.org/10.1108/jima-11-2017-0123>.

<sup>21</sup> Shafiq, A., Haque, A., Abdullah, K., and Jan, M. T. "Beliefs About Islamic Advertising: An Exploratory Study in Malaysia." *Journal of Islamic Marketing* 8, no. 3 (2017): 409-429. <https://doi.org/10.1108/jima-02-2015-0018>

<sup>22</sup> Wisker, Z. L. "The Effect of Fake News in Marketing Halal Food: A Moderating Role of Religiosity." *Journal of Islamic Marketing* 12, no. 3 (2021): 558-575. <https://doi.org/10.1108/jima-09-2020-0276>

<sup>23</sup> Dankwa, D. D. "Social Media Advertising and Consumer Decision-Making: The Mediating Role of Consumer Engagement." *International Journal of Internet Marketing and Advertising* 15, no. 1 (2021): 29-53. <https://doi.org/10.1504/ijima.2021.112786>

<sup>24</sup> Brumbaugh, A., Grier, S., and Aaker, J. "Nontarget Markets and Viewer Distinctiveness: The Impact of Target Marketing on Advertising Attitudes." *Journal of Consumer Psychology* 9, no. 3 (2000): 127-140. <https://doi.org/10.1207/15327660051044105>.

<sup>25</sup> Delgado-Ballester, E., Navarro, A., and Piñero, M. "Revitalising Brands Through Communication Messages: The Role of Brand Familiarity." *European Journal of Marketing* 46, no. 1/2 (2012): 31-51. <https://doi.org/10.1108/03090561211189220>.

<sup>26</sup> Braslauskas, J. "Developing Intercultural Competences and Creativity: The Foundation for Successful Intercultural Communication." *Creativity Studies* 14, no. 1 (2021): 197-217. <https://doi.org/10.3846/cs.2021.14583>.

<sup>27</sup> Dessart, L. "Social Media Engagement: A Model of Antecedents and Relational Outcomes." *Journal of Marketing Management* (2017): 1-25. <https://doi.org/10.1080/0267257x.2017.1302975>.

SMEs increasingly recognize the importance of adopting AI technologies, specifically chatbots, to enhance operations and customer interactions.<sup>28</sup> AI chatbot adoption in marketing is influenced by factors such as usability, responsiveness,<sup>29</sup> and interaction quality.<sup>30</sup> The strategic intent of SMEs in adopting technology is crucial, determining whether it is perceived as a cost or value-adding initiative.<sup>31</sup> In the context of SMEs, AI chatbots play a moderating role in e-commerce, influencing business performance and customer service.<sup>32</sup> The potential for AI chatbots to reshape the frontline interface in customer interactions is evident, with customers willing to engage for personalized information and services.<sup>33</sup> Additionally, the impact of nonverbal behaviors of chatbots on customer willingness to disclose information and make purchases highlights the complex dynamics of AI chatbot interactions in marketing.<sup>34</sup> In conclusion, understanding the implications of AI chatbot adoption on customer experience, satisfaction, and risk aversion is crucial for SMEs leveraging these technologies effectively in their marketing strategies.

Attitudes towards AI chatbots in marketing are influenced by factors like anthropomorphic attributes, perceived usefulness,<sup>35</sup> ease-of-use, and perceived helpfulness.<sup>36</sup> Chatbot marketing efforts impact consumer behavioral intentions

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<sup>28</sup> Lemos, S., Ferreira, F., Zopounidis, C., Galariotis, E., and Ferreira, N. "Artificial Intelligence and Change Management in Small and Medium-Sized Enterprises: An Analysis of Dynamics within Adaptation Initiatives." *Annals of Operations Research*, 2022. <https://doi.org/10.1007/s10479-022-05159-4>.

<sup>29</sup> Chen, J., Le, T., and Florence, D. "Usability and Responsiveness of Artificial Intelligence Chatbot on Online Customer Experience in E-Retailing." *International Journal of Retail & Distribution Management* 49, no. 11 (2021): 1512-1531. <https://doi.org/10.1108/ijrdm-08-2020-0312>.

<sup>30</sup> Rana, J., Gaur, L., Singh, G., Awan, U., and Rasheed, M. "Reinforcing Customer Journey through Artificial Intelligence: A Review and Research Agenda." *International Journal of Emerging Markets* 17, no. 7 (2021): 1738-1758. <https://doi.org/10.1108/ijoem-08-2021-1214>.

<sup>31</sup> Levy, M., Powell, P., and Worrall, L. "Strategic Intent and E-Business in SMEs." *Information Resources Management Journal* 18, no. 4 (2005): 1-20. <https://doi.org/10.4018/irmj.2005100101>.

<sup>32</sup> Fonseka, K., Jaharadak, A. A., and Raman, M. "Impact of E-Commerce Adoption on Business Performance of SMEs in Sri Lanka: Moderating Role of Artificial Intelligence." *International Journal of Social Economics* 49, no. 10 (2022): 1518-1531. <https://doi.org/10.1108/ijse-12-2021-0752>.

<sup>33</sup> Fan, H., Han, B., Gao, W., and Li, W. "How AI Chatbots Have Reshaped the Frontline Interface in China: Examining the Role of Sales-Service Ambidexterity and the Personalization-Privacy Paradox." *International Journal of Emerging Markets* 17, no. 4 (2022): 967-986. <https://doi.org/10.1108/ijoem-04-2021-0532>.

<sup>34</sup> Pizzi, G., Vannucci, V., Mazzoli, V., and Donvito, R. "I, Chatbot! The Impact of Anthropomorphism and Gaze Direction on Willingness to Disclose Personal Information and Behavioral Intentions." *Psychology and Marketing* 40, no. 7 (2023): 1372-1387. <https://doi.org/10.1002/mar.21813>.

<sup>35</sup> Rafiq, F., Dogra, N., Adil, M., and Wu, J. "Examining Consumer's Intention to Adopt AI-Chatbots in Tourism Using Partial Least Squares Structural Equation Modeling Method." *Mathematics* 10, no. 13 (2022): 2190. <https://doi.org/10.3390/math10132190>.

<sup>36</sup> Zarouali, B., Broeck, E., Walrave, M., and Poels, K. "Predicting Consumer Responses to a Chatbot on Facebook." *Cyberpsychology Behavior and Social Networking* 21, no. 8 (2018): 491-497. <https://doi.org/10.1089/cyber.2017.0518>.

and can establish relationships between brands and customers.<sup>37</sup> Recognized by retailers and marketers, AI chatbots enhance shopping experiences as customer assistants.<sup>38</sup>

Research highlights the effectiveness of AI chatbots in advertising and reshaping frontline interfaces,<sup>39</sup> creating personalized shopping<sup>40</sup> and service experiences.<sup>41</sup> Adoption of AI-based chatbots in various industries, including hospitality, tourism,<sup>42</sup> and SMEs,<sup>43</sup> provides insights into benefits and challenges. AI chatbots extend beyond consumer interactions, supporting sentiment analysis in community planning<sup>44</sup> and social media. However, potential biases and fairness in AI chatbots need consideration, as inherent biases can impact their effectiveness and trustworthiness.<sup>45</sup> In summary, while AI chatbots offer potential in enhancing customer experiences and communication, addressing biases and ethical considerations is crucial in marketing contexts.

Perceived usefulness is crucial for customer acceptance and attitudes toward AI chatbots,<sup>46</sup> influencing experiences and behavioral intentions.<sup>47</sup>

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<sup>37</sup> Cheng, Y., and Jiang, H. "Customer-Brand Relationship in the Era of Artificial Intelligence: Understanding the Role of Chatbot Marketing Efforts." *Journal of Product & Brand Management* 31, no. 2 (2021): 252-264. <https://doi.org/10.1108/jpbm-05-2020-2907>.

<sup>38</sup> Lee, M. "Do Parasocial Relationships and the Quality of Communication with AI Shopping Chatbots Determine Middle-Aged Women Consumers' Continuance Usage Intentions?" *Journal of Consumer Behaviour* 21, no. 4 (2022): 842-854. <https://doi.org/10.1002/cb.2043>.

<sup>39</sup> Fan, H., Han, B., Gao, W., and Li, W. "How AI Chatbots Have Reshaped the Frontline Interface in China: Examining the Role of Sales-Service Ambidexterity and the Personalization-Privacy Paradox." *International Journal of Emerging Markets* 17, no. 4 (2022): 967-986. <https://doi.org/10.1108/ijoem-04-2021-0532>.

<sup>40</sup> Broeck, E., Zarouali, B., and Poels, K. "Chatbot Advertising Effectiveness: When Does the Message Get Through?" *Computers in Human Behavior* 98 (2019): 150-157. <https://doi.org/10.1016/j.chb.2019.04.009>.

<sup>41</sup> Shin, H., Bunosso, I., and Levine, L. "The Influence of Chatbot Humour on Consumer Evaluations of Services." *International Journal of Consumer Studies* 47, no. 2 (2022): 545-562. <https://doi.org/10.1111/ijcs.12849>.

<sup>42</sup> Pillai, R., and Sivathanu, B. "Adoption of AI-Based Chatbots for Hospitality and Tourism." *International Journal of Contemporary Hospitality Management* 32, no. 10 (2020): 3199-3226. <https://doi.org/10.1108/ijchm-04-2020-0259>.

<sup>43</sup> Sharma, S., Singh, G., Islam, N., and Dhir, A. "Why Do SMEs Adopt Artificial Intelligence-Based Chatbots?" *IEEE Transactions on Engineering Management* (2022): 1-14. <https://doi.org/10.1109/tem.2022.3203469>.

<sup>44</sup> Hollander, J., Potts, R., Hartt, M., and Situ, M. "The Role of Artificial Intelligence in Community Planning." *International Journal of Community Well-Being* 3, no. 4 (2020): 507-521. <https://doi.org/10.1007/s42413-020-00090-7>

<sup>45</sup> Mehrabi, N., Saxena, N., Lerman, K., and Galstyan, A. "A Survey on Bias and Fairness in Machine Learning." <https://doi.org/10.48550/arxiv.1908.09635> (2019).

<sup>46</sup> Abdallah, W., Harraf, A., Mosusa, O., and Sartawi, A. "Investigating Factors Impacting Customer Acceptance of Artificial Intelligence Chatbot: Banking Sector of Kuwait." *International Journal of Applied Research in Management and Economics* 5, no. 4 (2023): 45-58. <https://doi.org/10.33422/ijarme.v5i4.961>.

<sup>47</sup> Broeck, E., Zarouali, B., and Poels, K. "Chatbot Advertising Effectiveness: When Does the Message Get Through?" *Computers in Human Behavior* 98 (2019): 150-157. <https://doi.org/10.1016/j.chb.2019.04.009>.

Positive perceptions of chatbot usefulness and ease of use affect attitudes towards integrated marketing communication.<sup>48</sup> Continuous usage intentions, especially for middle-aged women consumers, are driven by perceived communication quality and satisfaction with AI shopping chatbots, emphasizing the importance of perceived usefulness.<sup>49</sup> In the banking sector, perceived performance and usefulness impact customer satisfaction and productivity.<sup>50</sup> Predictors of chatbot adoption intention include perceived ease of use, trust, and intelligence, underscoring the significance of perceived usefulness.<sup>51</sup> The role of AI chatbots in customer trust and behavior is essential across various industries, including the hotel industry (Nguyen et al., 2023). In conclusion, perceived usefulness is pivotal in shaping consumer attitudes, acceptance, and behavior towards AI chatbots. Accordingly, we propose specifically as follows:

H1: Attitude towards AI chatbots significantly influences the intention to adopt AI chatbots in the context of Halal marketing communication

H2: Perceived usefulness significantly influences the intention to adopt AI chatbots

H3: Perceived usefulness significantly influences attitude towards AI chatbots.

H4: The mediating role of attitude toward AI chatbots in the relationship between perceived usefulness and intention to adopt AI chatbots.

## METHODS

We employed a quantitative correlational study design, utilizing random sampling to ensure representativeness. The target population, specific to a demographic group or SMEs in a particular industry, determined the appropriate sample size based on confidence, population size, and margin of error. Primary data collection involved a survey tailored to research objectives, with structured questionnaires. Out of 400 targeted participants, 233 SME owners/managers completed the questionnaires, providing direct insights into the investigated variables. We utilized established scales to measure constructs. Perceived Usefulness comprises four items adapted from Agarwal and Karahanna.<sup>52</sup> Attitude Toward Chatbots includes three items adapted from de Cosmo and

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<sup>48</sup> Khoa, B. "The Impact of Chatbots on the Relationship Between Integrated Marketing Communication and Online Purchasing Behavior in the Frontier Market." *Jurnal the Messenger* 13, no. 1 (2021): 19. <https://doi.org/10.26623/themessenger.v13i1.2439>.

<sup>49</sup> Lee, M. "Do Parasocial Relationships and the Quality of Communication with AI Shopping Chatbots Determine Middle-Aged Women Consumers' Continuance Usage Intentions?" *Journal of Consumer Behaviour* 21, no. 4 (2022): 842-854. <https://doi.org/10.1002/cb.2043>.

<sup>50</sup> Eren, B. "Determinants of Customer Satisfaction in Chatbot Use: Evidence from a Banking Application in Turkey." *The International Journal of Bank Marketing* 39, no. 2 (2021): 294-311. <https://doi.org/10.1108/ijbm-02-2020-0056>

<sup>51</sup> Pillai, R., and Sivathanu, B. "Adoption of AI-Based Chatbots for Hospitality and Tourism." *International Journal of Contemporary Hospitality Management* 32, no. 10 (2020): 3199-3226. <https://doi.org/10.1108/ijchm-04-2020-0259>

<sup>52</sup> Agarwal, R., and Karahanna, E. "Time Flies When You're Having Fun: Cognitive Absorption and Beliefs About Information Technology Usage." *MIS Quarterly* 24, no. 4 (2000): 665-694.

colleagues.<sup>53</sup> Chatbot Adoption Intention consists of three items adapted from Sharma et al.<sup>54</sup>

Structural Equation Modeling (SEM) was employed for data analysis, enabling the assessment of complex relationships, including direct and indirect impacts. SEM analysis involved model specification, parameter estimation, and model evaluation for compatibility with the data

## RESULT AND DISCUSSION

This study applied full collinearity test to address common method variance (CMV) in survey-based research.<sup>55</sup> Utilizing variance inflation factors (VIFs), all values (1.173 for Perceived Usefulness, 1.188 for Attitude Toward Chatbots, and 1.041 for Chatbot Adoption Intention) were well below the 3.3 threshold, indicating no pathological collinearity and supporting the model's freedom from common method bias. Low VIF values enhance internal validity, instilling confidence in authentic relationships among latent variables and ensuring researchers of methodological rigor.

**Table 1. Respondent profile**

Characteristics	Distributions	Percentage
Type		
Restaurants and Culinary	79	33.9
Fashion and Accessories	47	20.1
Tourism and Travel	51	21.9
Health and Beauty	36	15.5
Others	20	8.6
Total	233	100%
Size		
Small enterprises	146	62.7
Medium enterprises	87	37.3
Total	233	100%
Experiences		
Less than 3 years	94	40.3
3-8 years	61	26.2
8-13 years	56	24.0
More than 13 years	22	9.4
Total	233	100%

<sup>53</sup> de Cosmo, L. M., Piper, L., and Di Vittorio, A. "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. <https://doi.org/10.1007/s43039-021-00020-1>

<sup>54</sup> Sharma, S., Singh, G., Islam, N., and Dhir, A. "Why Do SMEs Adopt Artificial Intelligence-Based Chatbots?" *IEEE Transactions on Engineering Management* (2022): 1-14. <https://doi.org/10.1109/tem.2022.3203469>.

<sup>55</sup> Kock, N., and Lynn, G. "Lateral Collinearity and Misleading Results in Variance-Based SEM: An Illustration and Recommendations." *Journal of the Association for Information Systems* 13, no. 7 (2012): 546-580. <https://doi.org/10.17705/1jais.00302>.



Gender		
Men	155	66.5
Women	78	33.5
Total	233	100%
Age		
Below 30 years	115	49.4
30-40 years	109	46.8
40-50 years	26	11.2
Above 50 years	9	3.9
Total	233	100%
Education		
High school	63	27.0
Bachelor's degree	128	55.0
Master's degree	31	13.3
Others	11	4.7
Total	233	100%

Table 1 summarizes the respondent profile, highlighting business type distribution (e.g., Restaurants and Culinary 33.9%), business size (small enterprises 62.7%, medium enterprises 37.3%), and diverse experience levels (e.g., less than 3 years 40.3%). The majority of respondents are male (66.5%), with a predominant age group below 30 years (49.4%). Educational backgrounds vary, with a majority holding a Bachelor's degree (55.0%). Overall, the table provides a concise overview of the diverse respondent characteristics essential for a comprehensive analysis of study findings.

## Measurement Model

**Table 2. Factor loading**

Code	Attitude Toward Chatbots (ATC)	Chatbot Adoption Intention (CAI)	Perceived Usefulness (PU)
ATC1	0.880		
ATC2	0.884		
ATC3	0.848		
CAI1		0.876	
CAI2		0.885	
CAI3		0.867	
PU1			0.883
PU2			0.880
PU3			0.857
PU4			0.876

Table 2 reveals significant factor loadings for latent variables in our research model: Attitude Toward Chatbots (ATC), Chatbot Adoption Intention (CAI), and Perceived Usefulness (PU). Specifically, ATC has loadings of 0.880, 0.884, and 0.848; CAI has loadings of 0.876, 0.885, and 0.867; and PU has loadings

of 0.883, 0.880, 0.857, and 0.876. These robust, positive associations confirm the effectiveness of our chosen indicators in capturing the respective latent variables, reinforcing the validity and reliability of the measurement model.

**Table 3. Cronbach’s Alpha, Composite Reliability, and AVE**

Variable	CR	Cronbach's Alpha	AVE
Attitude Toward Chatbots (ATC)	0.840	0.829	0.802
Chatbot Adoption Intention (CAI)	0.844	0.835	0.813
Perceived Usefulness (PU)	0.847	0.842	0.809

Table 3 assesses the reliability and validity of latent variables (Attitude Toward Chatbots - ATC, Chatbot Adoption Intention - CAI, Perceived Usefulness - PU). For ATC, reliability is high (Composite Reliability: 0.840, Cronbach's Alpha: 0.829), and AVE is substantial (0.802). CAI exhibits robust reliability (Composite Reliability: 0.844, Cronbach's Alpha: 0.835) with an AVE of 0.813. PU demonstrates high reliability (Composite Reliability: 0.847, Cronbach's Alpha: 0.842) and an AVE of 0.809. Overall, the results support the reliability and validity of the measurement model.

**Table 4. Fornell-Larcker Criterion**

Variable	ATC	CAI	PU
ATC	<b>0.871</b>		
CAI	0.445	<b>0.876</b>	
PU	0.374	0.462	<b>0.874</b>

Table 4 presents the results of the discriminant validity assessment using the Fornell-Larcker criterion, examining whether the latent variables in the research model are sufficiently distinct from one another. The diagonal elements display the square root of the Average Variance Extracted (AVE) for each latent variable, while the off-diagonal elements represent the correlations between the latent variables. Starting with the diagonal elements, we observe that the square roots of the AVEs for ATC, CAI, and PU are 0.871, 0.876, and 0.874, respectively. These values signify the amount of variance explained by the items in each construct relative to measurement error. Moving to the off-diagonal elements, we see the correlations between constructs. The correlation between ATC and CAI is 0.445, between ATC and PU is 0.374, and between CAI and PU is 0.462.

In summary, Table 4 results indicate that each latent variable in the research model – Attitude Toward Chatbots (ATC), Chatbot Adoption Intention (CAI), and Perceived Usefulness (PU) – has discriminant validity. This means that each latent variable is distinct enough from the others, as the square root of its AVE is greater than the correlations with other latent variables.

**Table 5. HTMT**

Variable	ATC	CAI	PU
ATC			
CAI	0.458		
PU	0.383	0.472	

Table 5 presents the results of the discriminant validity assessment using the Heterotrait-Monotrait (HTMT) ratio of correlations. This criterion evaluates whether the correlations between different latent variables are significantly lower than the correlations between indicators within the same latent variable. The values in the table represent the HTMT ratios between the latent variables Attitude Toward Chatbots (ATC), Chatbot Adoption Intention (CAI), and Perceived Usefulness (PU). For CAI, the HTMT ratio with ATC is 0.458, the value is below the commonly suggested threshold of 0.85, indicating discriminant validity. Similarly, for PU, the HTMT ratio with ATC is 0.383, and with CAI, it is 0.472. Again, both values are below the 0.85 threshold, confirming discriminant validity. These results imply that the correlations between PU and the other latent variables are significantly lower than the correlations within PU.

**Table 6: Predictive Accuracy and Relevance**

Constructs	Predictive Accuracy		Predictive Relevance
	R <sup>2</sup>	Adjusted R <sup>2</sup>	Q <sup>2</sup>
ATC	0.140	0.136	0.130
CAI	0.300	0.294	0.291

Table 6 presents measures of predictive accuracy and relevance for the latent variables Attitude Toward Chatbots (ATC) and Chatbot Adoption Intention (CAI). The metrics reported include R-squared (R<sup>2</sup>), adjusted R-squared (Adjusted R<sup>2</sup>), and Q<sup>2</sup>. For ATC, the R-squared value is 0.140, indicating that the model explains approximately 14% of the variance in Attitude Toward Chatbots. The adjusted R-squared, which considers the number of predictors in the model, is slightly lower at 0.136. The Q<sup>2</sup> value, assessing the predictive relevance of the model, is 0.130. These values collectively suggest that the model provides a modest level of predictive accuracy and relevance for explaining the variance in Attitude Toward Chatbots.

For CAI, the R-squared value is 0.300, suggesting that the model explains approximately 30% of the variance in Chatbot Adoption Intention. The adjusted R-squared is 0.294, and the Q<sup>2</sup> value is 0.291. These results indicate a higher level of predictive accuracy and relevance for Chatbot Adoption Intention compared to Attitude Toward Chatbots. The model explains a substantial proportion of the variance in CAI, and the Q<sup>2</sup> value suggests good predictive relevance.

**Table 7. Effect Size**

Variable	<i>f</i> <sup>2</sup> (Effect Size)
CAI	ATC

CAI		
ATC	0.123	
PU	0.145	0.163

Table 7 presents effect sizes (Cohen's  $f^2$ ) for specific relationships within the research model. The reported values focus on the effects of Attitude Toward Chatbots (ATC) on Chatbot Adoption Intention (CAI) and the effects of Perceived Usefulness (PU) on both CAI and ATC. For the relationship from Attitude Toward Chatbots (ATC) to Chatbot Adoption Intention (CAI), the effect size is reported as 0.123. This indicates a small-to-medium effect size, suggesting that changes in Attitude Toward Chatbots can account for approximately 12.3% of the variance in Chatbot Adoption Intention.

Regarding the effects of Perceived Usefulness (PU) on Chatbot Adoption Intention (CAI) and Attitude Toward Chatbots (ATC), the effect sizes are reported as 0.145 and 0.163, respectively. Both values fall within the small-to-medium range, indicating that changes in Perceived Usefulness can account for approximately 14.5% of the variance in Chatbot Adoption Intention and 16.3% of the variance in Attitude Toward Chatbots.

### Structural Model

**Table 8. Direct effect**

Direct effect	Original Sample	Sample Mean	Standard Deviation	t-statistics	p-values	Decision
ATC -> CAI	0.317	0.321	0.079	4.012	0.000	Accepted
PU -> CAI	0.344	0.339	0.078	4.401	0.000	Accepted
PU -> ATC	0.374	0.377	0.075	4.410	0.000	Accepted

Table 8 provides information on the direct effects in the research model, specifically focusing on the paths from Attitude Toward Chatbots (ATC) to Chatbot Adoption Intention (CAI), Perceived Usefulness (PU) to CAI, and PU to ATC. The table includes values for the original sample, sample mean, standard deviation, t-statistics, p-values, and the decision based on the statistical significance of the effects.

For the path from ATC to CAI, the direct effect is reported as 0.317. The t-statistic of 4.012 indicates that this effect is statistically significant, with a p-value of 0.000. Consequently, the null hypothesis is rejected, and the decision is accepted, suggesting that there is a significant direct effect from Attitude Toward Chatbots to Chatbot Adoption Intention in the model.

For the path from PU to CAI, the direct effect is reported as 0.344. The t-statistic of 4.401 indicates that this effect is statistically significant, with a p-value of 0.000. Similar to the previous case, the null hypothesis is rejected, and the decision is accepted, indicating a significant direct effect from Perceived Usefulness to Chatbot Adoption Intention.

Lastly, for the path from PU to ATC, the direct effect is reported as 0.374. The t-statistic of 4.410 indicates that this effect is statistically significant, with a p-value of 0.000. Again, the null hypothesis is rejected, and the decision is accepted, suggesting a significant direct effect from Perceived Usefulness to Attitude Toward Chatbots.

In summary, the results in Table 9 indicate that all three direct effects in the model – ATC to CAI, PU to CAI, and PU to ATC – are statistically significant, as evidenced by the low p-values. These findings support the presence of significant direct relationships between Attitude Toward Chatbots, Perceived Usefulness, and Chatbot Adoption Intention in the research model.

**Table 9. Indirect effect**

Indirect effect	Original Sample	Sample Mean	Standard Deviation	t-statistics	p-values	Decision
PU -> ATC-> CAI	0.119	0.121	0.040	2.931	0.000	Accepted

Table 9 provides information on the indirect effect in the research model, specifically focusing on the path from Perceived Usefulness (PU) to Attitude Toward Chatbots (ATC) and then to Chatbot Adoption Intention (CAI). The table includes values for the original sample, sample mean, standard deviation, t-statistics, p-values, and the decision based on the statistical significance of the indirect effect.

For the indirect effect PU -> ATC -> CAI, the reported value is 0.119. The t-statistic of 2.931 indicates that this indirect effect is statistically significant, with a p-value of 0.000. Consequently, the null hypothesis is rejected, and the decision is accepted, suggesting that there is a significant indirect effect from Perceived Usefulness to Attitude Toward Chatbots and then to Chatbot Adoption Intention in the model.

**Table 10. VAF estimates**

Independent variable	Dependent variable	Mediation variable	Indirect effect	Total effect	VAF (%)	Result
PU	ATC	CAI	0.119	0.463	25.7%	Partial Mediation

Table 10 presents estimates related to the Variance Accounted For (VAF) for the indirect effect of Perceived Usefulness (PU) on Chatbot Adoption Intention (CAI) through the mediation of Attitude Toward Chatbots (ATC). The table includes information on the independent variable (PU), the dependent variable (ATC), the mediation variable (CAI), the indirect effect, the total effect, the VAF percentage, and the result.

For the indirect effect PU -> ATC -> CAI, the reported indirect effect is 0.119, and the total effect is 0.463. The VAF percentage is calculated as 25.7%. The

VAF represents the proportion of the total effect that is accounted for by the indirect effect through the mediator (ATC). In this case, the VAF of 25.7% indicates that the indirect effect of Perceived Usefulness on Chatbot Adoption Intention through Attitude Toward Chatbots explains approximately a quarter of the total effect.

The result is interpreted as "Partial Mediation." This suggests that while Attitude Toward Chatbots (ATC) partially mediates the relationship between Perceived Usefulness (PU) and Chatbot Adoption Intention (CAI), there are other factors or pathways not accounted for in the model. The remaining 74.3% of the total effect could be influenced by other variables not included in the mediation process. This finding underscores the complexity of the relationships within the model and highlights the importance of considering additional factors that may contribute to Chatbot Adoption Intention.

In this section, we elaborate on how this research explores the intention to adopt AI chatbots in the marketing communication of Halal products. The primary objective is to examine the impact of factors such as perceived usefulness and attitude on the intention to adopt AI chatbots for Halal products

The findings reveal a significant and positive direct effect from Attitude Toward Chatbots (ATC) to Chatbot Adoption Intention (CAI) in the context of marketing communication for Halal brands. This aligns with previous research in AI chatbot adoption, where scholars like Le emphasize the crucial role of perceived usefulness and attitudes in shaping adoption intentions.<sup>56</sup> The interconnectedness of factors influencing adoption is further highlighted by de Cosmo and colleagues, who demonstrate that attitudes towards chatbots affect adoption intentions.<sup>57</sup>

The integration of insights from studies across different contexts adds depth to the discussion. Sharma et al. identify various factors positively associated with AI chatbot adoption intention in SMEs, emphasizing the multifaceted nature of adoption decision-making.<sup>58</sup> Similarly, Dobrinić et al. establish a positive correlation between attitude towards using mobile messenger chatbots and behavioral intention, reinforcing the pivotal role of attitude in driving adoption intentions.<sup>59</sup>

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<sup>56</sup> Le, X. "Inducing AI-Powered Chatbot Use for Customer Purchase: The Role of Information Value and Innovative Technology." *Journal of Systems and Information Technology* 25, no. 2 (2023): 219-241. <https://doi.org/10.1108/jsit-09-2021-0206>.

<sup>57</sup> de Cosmo, L. M., Piper, L., and Di Vittorio, A. "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. <https://doi.org/10.1007/s43039-021-00020-1>

<sup>58</sup> Sharma, S., Singh, G., Islam, N., and Dhir, A. "Why Do SMEs Adopt Artificial Intelligence-Based Chatbots?" *IEEE Transactions on Engineering Management* (2022): 1-14. <https://doi.org/10.1109/tem.2022.3203469>.

<sup>59</sup> Dobrinić, D., Gregurec, I., and Dobrinić, D. "Attitudes of Croatian Consumers About Mobile Messenger Chatbots." *Journal of Information and Organizational Sciences* 45, no. 2 (2021): 579-599. <https://doi.org/10.31341/jios.45.2.13>.

The investigation into AI chatbots' impact on customer engagement and brand relationships<sup>60</sup> aligns seamlessly with the current study's focus on marketing communication. The recognition of AI chatbots as effective tools for brand promotion and their contribution to user satisfaction and purchase intention<sup>61</sup> reinforces the relevance of positive attitudes in fostering adoption intentions. In conclusion, the results of this study provide evidence for the proposed hypothesis (H1) that attitude towards AI chatbots significantly influences the intention to adopt AI chatbots in the context of Halal marketing communication.

The results of our study provide strong support for Hypothesis 2, which posited that perceived usefulness significantly influences the intention to adopt AI chatbots. These findings are consistent with and contribute to the existing body of literature on the determinants of AI chatbot adoption intention. Our results align with previous studies, such as Pillai & Sivathanu,<sup>62</sup> and Abdallah et al.,<sup>63</sup> which highlighted the crucial role of perceived usefulness in shaping users' attitudes and behavioral intentions toward AI chatbots. These studies collectively support the notion that users are more likely to adopt AI chatbots when they perceive them as useful in addressing their needs or providing valuable assistance.

In conclusion, our study reinforces the importance of perceived usefulness as a key determinant of AI chatbot adoption intention, aligning with and extending findings from previous research.

The results of our study provide evidence support for Hypothesis 3, indicating that perceived usefulness significantly influences attitude towards AI chatbots. These findings contribute valuable insights to the understanding of the complex relationship between perceived usefulness and attitude towards AI chatbots in the context of marketing communications.

Our results are consistent with and extend findings from previous research, reinforcing the importance of perceived usefulness as a key determinant of consumers' attitudes towards AI chatbots. For instance, Dobrinić and colleagues have previously highlighted the significance of perceived usefulness, perceived ease of use, and compatibility in shaping consumers'

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<sup>60</sup> Lee, M. "Do Parasocial Relationships and the Quality of Communication with AI Shopping Chatbots Determine Middle-Aged Women Consumers' Continuance Usage Intentions?" *Journal of Consumer Behaviour* 21, no. 4 (2022): 842-854. <https://doi.org/10.1002/cb.2043>.

<sup>61</sup> Lee, C., Pan, L., and Hsieh, S. "Artificial Intelligent Chatbots as Brand Promoters: A Two-Stage Structural Equation Modeling-Artificial Neural Network Approach." *Internet Research* 32, no. 4 (2021): 1329-1356. <https://doi.org/10.1108/intr-01-2021-0030>.

<sup>62</sup> Pillai, R., and Sivathanu, B. "Adoption of AI-Based Chatbots for Hospitality and Tourism." *International Journal of Contemporary Hospitality Management* 32, no. 10 (2020): 3199-3226. <https://doi.org/10.1108/ijchm-04-2020-0259>.

<sup>63</sup> Abdallah, W., Harraf, A., Mosusa, O., and Sartawi, A. "Investigating Factors Impacting Customer Acceptance of Artificial Intelligence Chatbot: Banking Sector of Kuwait." *International Journal of Applied Research in Management and Economics* 5, no. 4 (2023): 45-58. <https://doi.org/10.33422/ijarme.v5i4.961>.

attitudes towards mobile messenger chatbots<sup>64</sup> and AI chatbots in general. These studies, along with our own findings, underscore the pivotal role that perceived practicality and ease of use play in influencing consumers' overall attitudes towards AI chatbot technologies.

Therefore, our study contributes to the existing body of literature by providing empirical evidence supporting the hypothesis that perceived usefulness significantly influences attitude towards AI chatbots. The multifaceted nature of this relationship is underscored by the various factors identified in previous studies and further elaborated upon in our own research, emphasizing the need for a comprehensive understanding of the factors influencing consumers' attitudes towards AI chatbots in marketing communications.

The results of our study provide empirical support for Hypothesis 4, suggesting a significant mediating role of attitude toward AI chatbots in the relationship between perceived usefulness (PU) and intention to adopt AI chatbots (CAI). These findings align with Goli et al who highlighted the positive impact of perceived ease of use, perceived usefulness, innovativeness, perceived information quality, and perceived customization on the intention to use chatbots,<sup>65</sup> emphasizing the multifaceted nature of users' considerations in adopting these technologies. Similarly, Dhiman and Jamwal reinforced the importance of perceived usefulness, noting its relatively stronger impact on customers' satisfaction towards chatbots.<sup>66</sup> This suggests that users' perceptions of the practicality and utility of chatbots play a crucial role in shaping their overall satisfaction and, consequently, their intention to use these technologies. In tandem, Nordheim et al emphasized chatbot-related factors, such as perceived expertise and responsiveness, in influencing users' trust in chatbots.<sup>67</sup> The mediating role of attitude in our study supports the idea that users' overall attitudes towards AI chatbots, which may be shaped by factors like perceived usefulness, contribute to their intention to adopt these technologies. Maar et al highlighted generational differences in the link between chatbot-related attitudes and usage intentions,<sup>68</sup> emphasizing that attitudes toward chatbots may vary

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<sup>64</sup> Dobrinić, D., Gregurec, I., and Dobrinić, D. "Attitudes of Croatian Consumers About Mobile Messenger Chatbots." *Journal of Information and Organizational Sciences* 45, no. 2 (2021): 579-599. <https://doi.org/10.31341/jios.45.2.13>.

<sup>65</sup> Goli, M., Sahu, A., Bag, S., and Dhamija, P. "Users' Acceptance of Artificial Intelligence-Based Chatbots." *International Journal of Technology and Human Interaction* 19, no. 1 (2023): 1-18. <https://doi.org/10.4018/ijthi.318481>.

<sup>66</sup> Dhiman, N., and Jamwal, M. "Tourists' Post-Adoption Continuance Intentions of Chatbots: Integrating Task-Technology Fit Model and Expectation-Confirmation Theory." *Foresight* 25, no. 2 (2022): 209-224. <https://doi.org/10.1108/fs-10-2021-0207>.

<sup>67</sup> Nordheim, C., Følstad, A., and Bjørkli, C. "An Initial Model of Trust in Chatbots for Customer Service – Findings From a Questionnaire Study." *Interacting With Computers* 31, no. 3 (2019): 317-335. <https://doi.org/10.1093/iwc/iwz022>.

<sup>68</sup> Maar, D., Besson, E., and Kefi, H. "Fostering Positive Customer Attitudes and Usage Intentions for Scheduling Services via Chatbots." *Journal of Service Management* 34, no. 2 (2022): 208-230. <https://doi.org/10.1108/josm-06-2021-0237>.



across different age groups. This adds nuance to our understanding of how users' attitudes influence their intention to adopt AI chatbots, considering potential generational differences.

In conclusion, our study adds to the understanding of the factors influencing users' intention to adopt AI chatbots by highlighting the mediating role of attitude. This aligns with and extends findings from previous research, emphasizing the importance of users' perceptions, attitudes, and the multifaceted nature of the relationship between perceived usefulness and intention to adopt AI chatbots.

## CONCLUSION

Our study represents a significant leap forward in enhancing our comprehension of AI chatbot adoption in the marketing communication of Halal brands. The findings, which underscore the positive impact of Attitude Toward Chatbots (ATC) on Chatbot Adoption Intention (CAI), highlight the crucial roles of perceived usefulness and attitudes in shaping user intentions. This correlation further emphasizes the dynamic nature of user interactions with AI chatbot technology within the specific context of Halal brand marketing.

Our investigation makes a substantial contribution to the existing literature by providing a comprehensive understanding of the factors influencing user attitudes and intentions toward AI chatbots. Beyond summarizing our findings, our exploration delves into the practical implications and significance of this research, considering potential applications and real-world impacts, while candidly acknowledging the study's limitations.

Not confined to enriching the current literature, our research outlines a clear roadmap for future investigations and practical implementations. The recommendations put forth advocate for a deeper exploration of nuanced aspects, such as user perceptions, attitudes, and the intricate factors influencing AI chatbot adoption. The conclusion resolutely underscores the importance of this research, urging scholars and practitioners alike to build upon our findings and contribute to the sustained development of this evolving field.

In essence, this study propels our understanding of AI chatbot adoption in marketing communication, providing invaluable insights for future initiatives in the continually evolving landscape of technology-driven interactions, particularly within the culturally sensitive realm of Halal brands.

In the context of Halal marketing communication, this study holds significant implications for both academia and industry. Firstly, recognizing the central role of attitude in shaping the intention to adopt AI chatbots offers valuable guidance for crafting effective marketing strategies tailored to Halal brands. By accentuating positive attitudes towards AI chatbots in campaigns, there is the potential to boost technology adoption within the target audience.

Furthermore, developers and marketers operating in the Halal industry can leverage these findings to tailor AI chatbots specifically for this market. Customization can involve the incorporation of features and responses that align with the values and preferences of consumers interested in Halal products, thereby enhancing the overall user experience and fostering adoption.

The study advocates for cross-industry learning, encouraging stakeholders to draw insights from diverse industries, as exemplified by studies across SMEs. By adapting strategies and best practices identified in various contexts, valuable lessons can be applied to address the unique challenges and opportunities within Halal marketing communication. Emphasizing context-specific insights is paramount, particularly given the study's focus on Halal brands. The nuanced understanding provided by the findings can guide marketers in tailoring communication strategies that respect the cultural and religious sensitivities associated with Halal products. Additionally, the study underscores the pivotal role of perceived usefulness, emphasizing the importance of designing AI chatbots that provide tangible value and effectively communicate their utility to users. Developers and marketers are encouraged to highlight the practical benefits of AI chatbots in addressing users' needs and enhancing overall experiences.

Finally, the call for user-centric approaches in AI chatbot development is highlighted. By understanding users' needs, preferences, and concerns, developers can create AI chatbots that align more closely with user expectations, thereby increasing the likelihood of adoption. In conclusion, these implications offer actionable insights for shaping effective strategies and technologies in the domain of Halal marketing communication.

While our study provides valuable insights into the adoption of AI chatbots in the context of Halal marketing communication, it is essential to acknowledge certain limitations. The findings of our study may be specific to the Halal marketing communication domain, and generalizing the results to other industries or contexts should be approached with caution, given the potential significant variations in consumer behaviors and attitudes.

The reliance on self-reported measures through surveys introduces the potential for response bias and social desirability bias. Respondents may provide answers that align with societal expectations rather than their genuine perceptions. Our study adopts a cross-sectional design, capturing a snapshot of attitudes and intentions at a specific point in time. Longitudinal studies would offer a more comprehensive understanding of how these factors evolve over time.

While our study recognizes the influence of perceived usefulness, it does not extensively explore the role of anthropomorphism in shaping user perceptions and adoption intentions towards AI chatbots in the Halal context. The fast-paced nature of technological advancements may lead to changes in user perceptions and behaviors. Our study's focus on a specific timeframe may limit its relevance to future developments.

Halal marketing communication spans diverse regions and cultures, and our study might not capture the full spectrum of cultural variations within the Halal consumer segment. Despite these limitations, our study contributes valuable insights to the growing body of literature on AI chatbot adoption in

specific cultural contexts. Researchers and practitioners should carefully consider these limitations when interpreting and applying the findings from our study.

#### **Author's Contribution**

Ahmad Rafiki, Cut Kesuma Pahlufi : Contribute to formulating research ideas, collecting data, processing data, and interpreting data.

Yossie Rossanty : Contributing to writing systematics, research methods.

Muhammad Dharma Tuah Putra Nasution: Contributing to analyzing interpretation results, the language proofread.

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#### **Declaration of Competing Interest**

The author declares that there is no conflict of interest.

#### **Ethical Approval**

Ethical approval No patient-identifying parts in this paper were used or known to the authors. Therefore, no ethical approval was requested.

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