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Spiritual Trust in AI Systems: Investigating the Role of *Ta'abbud* in Personalized E-Commerce for Generation Z

Syahraeni[1], Syaparuddin[2], Sitti Nikmah Marzuki[3], Hukmiah[4], Sabbar Dahham Sabbar[5]
Institut Agama Islam Negeri (IAIN) Bone, Indonesia[1,2,3,4], The Rosy City for Educationa Services and Consultations, Jordan[5]
Correspondence Email: syahraeni2608@gmail.com

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Abstract

The rapid growth of AI-based e-commerce has yet to integrate spiritual values such as *ta'abbud*, essential for Muslim consumers in fostering trust and holistic well-being. This study aims to explore the role of *ta'abbud* in AI recommendation systems, enhancing consumer well-being materially and spiritually through increased consumer trust. The research is grounded in four theoretical frameworks: the Technology Acceptance Model (TAM), Consumer Well-Being, Consumer Behavior, and AI Personalization. The study employs Partial Least Squares Structural Equation Modeling (PLS-SEM) to assess relationships between variables. Data were collected via a stratified sampling questionnaire involving 240 Generation Z respondents. The findings reveal that information accessibility significantly influences the shopping experience (R^2 = 0.743), whereas recommendation quality moderately affects consumer trust (R^2 = 0.724). Furthermore, AI-based recommendation personalization enhances consumer well-being (R^2 = 0.635) by improving trust and recommendation relevance (R^2 = 0.586). Although the effect of *ta'abbud* is relatively small, it plays a meaningful role in shaping trust in AI systems, particularly for halal product purchases. This study offers practical implications for Sharia-compliant e-commerce in building consumer loyalty through value-based strategies.

Kata Kunci:
Kepercayaan Spiritual; Peran Ta'abbud; Personalisasi; E-Commerce; Generasi Z

Abstrak

Perkembangan e-commerce berbasis AI belum mengintegrasikan nilai spiritual seperti *ta'abbud*, yang penting bagi konsumen Muslim dalam membentuk kepercayaan dan kesejahteraan holistik. Penelitian ini bertujuan mengeksplorasi peran *ta'abbud* dalam sistem rekomendasi AI untuk meningkatkan kesejahteraan konsumen secara material dan spiritual melalui kepercayaan konsumen. Penelitian ini mengacu pada Technology Acceptance Model (TAM), Consumer Well-being, Consumer Behavior, dan AI Personalization. Metode yang digunakan adalah Partial Least Squares Structural Equation Modeling (PLS-SEM) untuk mengukur hubungan antar variabel. Data dikumpulkan melalui kuesioner dengan tekhnik stratified sampling yang melibatkan 240 responden Generasi Z. Hasil menunjukkan bahwa aksesibilitas informasi berpengaruh signifikan terhadap pengalaman belanja (R^2 = 0.743), dan kualitas rekomendasi berpengaruh sedang terhadap kepercayaan konsumen (R^2 = 0.724). Personalisasi rekomendasi AI meningkatkan kesejahteraan konsumen (R^2 = 0.635) melalui peningkatan kepercayaan dan relevansi rekomendasi (R^2 = 0.586). Meskipun pengaruh *ta'abbud* relatif kecil, nilainya penting dalam membentuk kepercayaan terhadap sistem AI, khususnya untuk produk halal. Studi ini memberi implikasi praktis bagi e-commerce syariah dalam membangun loyalitas konsumen berbasis nilai..

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INTRODUCTION

Ta'abbud in e-commerce contributes to enhancing consumer well-being by implementing AI recommendations that are fair, honest, and beneficial. Fairness is evident in platforms like Zalora and Shopee, which utilize algorithms to help Muslim consumers find halal products using specific filters.[1] Ensuring equitable access to desired items and fostering consumer trust.[2] Tokopedia and Lazada demonstrate honesty by providing clear halal labels, helping consumers avoid non-halal products.[3] Meanwhile, Halal Finder utilizes AI to deliver Sharia-compliant recommendations, enhancing consumer convenience and security.[4] By upholding the principles of *ta'abbud*, e-commerce platforms create ethical and satisfying shopping experiences and contribute holistically to consumers' spiritual and material well-being.

This study examines the integration of the *ta'abbud* model into AI-driven personalization in e-commerce, highlighting the role of consumer trust as a means to improve well-being. Four theoretical frameworks are applied: Consumer Well-Being Theory, AI Personalization Theory, Consumer Behavior Theory, and the Technology Acceptance Model. Consumer Well-Being Theory links personalized AI and positive shopping experiences to satisfaction and well-being, with *ta'abbud* offering a spiritual dimension.[5] The AI Personalization Theory emphasizes that relevant recommendations, easily accessible information, and user autonomy strengthen trust and improve system effectiveness.[6] Consumer Behavior Theory elucidates the influence of trust in technology and recommendation quality, moderated by *ta'abbud*, in shaping consumption patterns conducive to well-being.[7] Lastly, TAM outlines that consumer acceptance of AI personalization is driven by perceived utility, ease of use, and trust, resulting in enriched shopping experiences and elevated consumer well-being.[8]

These four theories are used to derive the hypotheses. AI-based recommendation personalization enhances consumer well-being by delivering relevant and accurate recommendations, simplifying shopping, saving time, and increasing satisfaction.[9] Thus, H1: AI-based recommendation personalization significantly impacts consumer well-being. Relevant and accurate AI recommendations also build consumer trust, as they are

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[1] Zulfikar Ikhsan Pane and Yohana Yohana, "Halal Information in Customer Value Disclosure," *Halal Research Journal* 4, no. 1 (2024): 1–11, https://doi.org/10.56174/pjieb.v3i2.119.

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[3] Risfiana Mayang Sari, "Consumer Protection in Muamalah Transactions," *Jurnal Ilmiah Mizani* 11, no. 1 (2024): 206–16, https://doi.org/10.29300/mzn.v11i1.4958.

[4] Muhammad Nazir, "Technology and Digital Transaction in Halal Retailing," in *Emerging Technology and Crisis Management in The Halal Industry: Issues and Recent Developments* (Springer, 2024), 123–37, http://dx.doi.org/10.1007/978-981-97-1375-2_8.

[5] Mohammad Sadegh Eshaghi, Mona Afshardoost, and Jana Lay-Hwa Bowden, "Consumer Well-Being (CWB): Conceptualisation, Contextualisation and a Research Agenda," *The Service Industries Journal* 43, no. 9–10 (2023): 618–41, https://doi.org/10.1080/02642069.2023.2197644.

[6] Aishwarya Gowda AG, Hui-Kai Su, and Wen-Kai Kuo, "Personalized E-Commerce: Enhancing Customer Experience through Machine Learning-Driven Personalization," in *2024 IEEE International Conference on Information Technology, Electronics and Intelligent Communication Systems (ICITEICS)* (IEEE, 2024), 1–5, http://dx.doi.org/10.1109/ICITEICS61368.2024.10624901.

[7] Cristobal Rodolfo Guerra-Tamez et al., "Decoding Gen Z: AI's Influence on Brand Trust and Purchasing Behavior," *Frontiers in Artificial Intelligence* 7 (2024), https://doi.org/10.3389/frai.2024.1323512.

[8] Hussein Gibreel Musa et al., "Marketing Research Trends Using Technology Acceptance Model (TAM): A Comprehensive Review of Researches (2002–2022)," *Cogent Business & Management* 11, no. 1 (2024): 2329375, https://doi.org/10.1080/23311975.2024.2329375 .

[9] Lior Fink, Leorre Newman, and Uriel Haran, "Let Me Decide: Increasing User Autonomy Increases Recommendation Acceptance," *Computers in Human Behavior* 156 (2024): 108244, https://doi.org/10.1016/j.chb.2024.108244.

perceived as helpful and reliable in shopping.[10] Thus, H2: Consumer trust significantly influences AI-based recommendation personalization. Accurate AI recommendations improve the shopping experience by making the process easier, more efficient, and more satisfying.[11] Thus, H3: Shopping experience significantly influences AI-based recommendation personalization.

Islamic values (*ta'abbud*) strengthen consumer trust by fostering the belief that AI systems align with religious principles.[12] Thus, H4: *Ta'abbud* significantly influences consumer trust. High-quality recommendations increase consumer trust because they are perceived as relevant, accurate, and reliable.[13] Thus, H5: The quality of recommendation significantly influences consumer trust. High-quality recommendations improve the shopping experience by enabling consumers to quickly and easily find suitable products.[14] Thus, H6: The quality of recommendations significantly influences the shopping experience. Easily accessible and clear information enhances the shopping experience by enabling consumers to make informed decisions.[15] Thus, H7: Information accessibility significantly impacts the shopping experience.

Perceived autonomy contributes to improved consumer well-being, as the freedom to make decisions fosters satisfaction, self-control, and the ability to meet needs independently.[16]

Thus, H8: Perceived autonomy significantly influences consumers' well-being. AI-based recommendation personalization mediates the relationship between consumer trust, shopping experience, and consumer well-being, as personalization optimizes the benefits of trust and experience into satisfaction and well-being.[17] Thus, H9 (a–b): AI-based recommendation personalization mediates the relationship between consumer trust, shopping experience, and consumer well-being.

Consumer trust mediates the relationship between *ta'abbud* and recommendation quality with AI-based personalization, as trust is key to accepting technology perceived as religiously appropriate and functionally reliable.[18] Thus, H10 (a–b): Consumer trust mediates the relationship between *ta'abbud*, recommendation quality, and AI-based recommendation

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[10] Kangming Xu et al., "Intelligent Classification and Personalized Recommendation of E-Commerce Products Based on Machine Learning," *ArXiv Preprint ArXiv:2403.19345*, 2024, https://doi.org/10.48550/arXiv.2403.19345.

[11] Prakash Dangi, Divya Saini, Dakshita Choudhary, "AI for Personalization in E-Commerce and Recommendation System," *Tuijin Jishu/Journal of Propulsion Technology* 44, no. 1 (2023): 122–30, https://doi.org/10.52783/tjjpt.v44.i1.2217.

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[13] Shihong Wei et al., "A Recommendation Model for E-Commerce Platforms Oriented to Explicit Information Compensation and Hidden Information Mining," *Knowledge-Based Systems* 286 (2024): 111359, https://doi.org/10.1016/j.knosys.2023.111359.

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[15] Khyati Modi, "A Study on Online Shopping and Its Effects on Consumer Behavior," *International Journal of Engineering Applied Sciences and Technology* 8, no. 3 (2023): 105–10, https://doi.org/10.33564/ijeast.2023.v08i03.014.

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[17] Stefan Larsson and Kashyap Haresamudram, "Consumer Trust and Platformised Retail Personalisation," *The Future of Consumption: How Technology, Sustainability and Wellbeing Will Transform Retail and Customer Experience*, 2023, 77–94, https://doi.org/10.1007/978-3-031-33246-3_5.

[18] Bangar Raju Cherukuri, "AI-Powered Personalization : How Machine Learning Is Shaping the Future of User Experience," *International Journal of Science and Research Archive* 12, no. 01 (2024): 3111–26, https://doi.org/10.30574/ijsra.2024.12.1.0961.

personalization. The Shopping experience mediates the relationship between recommendation quality, information accessibility, and perceived autonomy with AI-based recommendation personalization, because a positive experience driven by accessible information, relevant recommendations, and freedom of choice enhances consumer satisfaction and encourages acceptance of AI systems.[19] Thus, H11 (a–c): Shopping experience mediates the relationship between recommendation quality, information accessibility, and perceived autonomy with AI-based recommendation personalization. *Ta'abbud* is an individual's spiritual commitment grounded in Islamic teachings, reflected in the consumption behavior of Generation Z, particularly in the selection of halal products as an expression of obedience to Sharia principles. This behavior involves choosing products that meet halal standards and signifies an intention to attain blessings and the pleasure of Allah in every transaction, making religious values the foundation for shopping decisions.[20]

According to previous studies, research on exploring the *ta'abbud* model in using AI-based recommendation personalization in e-commerce through consumer trust in enhancing consumer well-being has not yet received sufficient attention from scholars. Several related studies have been categorized into three main areas: consumer well-being, consumer trust, and AI-based recommendation personalization. The first study on consumer well-being by Avinash Collis[21] shows that digital goods significantly contribute to consumer well-being, although their measurement is still suboptimal. John Vickers[22] examines the standards of consumer well-being in competition policy, while David W. Stewart[23] investigates the role of marketing in consumer well-being. The second area, consumer trust, is addressed by Hanifa Nur Fadilah[24], who states that trust is influenced by security, privacy, and information quality. Daoudi Mouad[25] shows that trust in e-commerce develops over time and is influenced by risk. Mengtian Zhang et al.[26] developed a consumer trust evaluation system using fuzzy decision-making strategies. The third area, AI-based recommendation personalization, is explored by Chaojian Li[27] found that AI and image processing enhance the accuracy of product recommendations and user satisfaction, demonstrating strong potential for practical applications. Kalyanasundharam Ramachandran[28] explains that AI facilitates personalized

[19] Darshan M and Ashwini C, "E-Commerce Product Recommendation System Using Machine Learning," *Interantional Journal of Scientific Research in Engineering and Management* 08, no. 07 (2024): 1–6, https://doi.org/10.55041/ijsrem36656.
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[26] Mengtian Zhang et al., "A Consumer Trust Assessment Model for Online Shopping Based on Fuzzy Fusion Decision-Making," *Journal of Organizational and End User Computing* 36, no. 1 (2024): 1–3, https://doi.org/10.4018/JOEUC.349730.
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[28] Kalyanasundharam Ramachandran, "Exploring the Role of Artificial Intelligence in Personalized Payment Recommendations," *International Journal of Finance* 9, no. 3 (2024): 23–31, https://doi.org/10.47941/ijf.1913.

payment recommendations. Meanwhile, Kostiantyn A. Shuryhin and Svitlana L. Zinovatna[29] show that AI supports financial decision-making through personalized recommendations, maintaining privacy and fairness. Finally, research by Mustafa Ayobami Raji et al.[30] explains that AI-based personalization increases engagement, satisfaction, and customer loyalty while driving innovation in e-commerce. Based on previous research, it only examined the general aspects without involving the spiritual values of *ta'abbud*.

To date, no study has systematically investigated the theoretical contribution of *ta'abbud* in shaping consumer trust in AI-personalized e-commerce. This research addresses that gap by offering a novel framework integrating *ta'abbud*-based trust into AI recommendation systems to enhance spiritual and material consumer well-being. The focus is specifically on Generation Z's experience of purchasing halal packaged products, a context largely overlooked in previous studies.

RESEARCH METHODS

This study employs Partial Least Squares Structural Equation Modeling (PLS-SEM) to analyze the relationship between *ta'abbud* and consumer well-being and evaluate the mediating roles of consumer trust and AI-based recommendation personalization on consumer well-being. PLS-SEM was chosen over Covariance-Based SEM (CB-SEM) because it is more suitable for exploratory research and effective for use with relatively small to medium sample sizes. Moreover, PLS-SEM is utilized because this approach enables the simultaneous examination of relationships among variables, including direct and indirect effects. Consequently, SEM facilitates the development of a more comprehensive path model to explain the interconnections among the variables studied.

The respondents in this study consist of Generation Z individuals, with data collected through a questionnaire-based survey. The questionnaire is structured into two primary sections designed to validate the conceptual model proposed in this research. The initial section provides an overview of the study's objectives, instructions for completing the questionnaire, and its relevance to socio-demographic information, including questions on age, gender, educational background, and monthly allowance. The subsequent section contains a multiple-choice item scale utilizing a five-point Likert scale to refine the structural model. This section comprises 24 questions, distributed as follows: 3 questions on consumer well-being (CWB), 3 on AI recommendation personalization (AIRP), 3 on consumer trust (CT), 3 on shopping experience (SE), 3 on *ta'abbud* (TA), 3 on recommendation quality (RQ), 3 on information accessibility (IA), and 3 on perceived autonomy (PA). Each item measures the constructs central to the research framework and ensures alignment with the study's objectives.

Data collection in this study was conducted using the stratified sampling method, which involves dividing the sample based on geographical areas. The questionnaire was

[29] Kostiantyn A. Shuryhin and Svitlana L. Zinovatna, "Recommendation System for Financial Decision-Making Using Artificial Intelligence," *Applied Aspects of Information Technology* 7, no. 4 (2024): 348–58, https://doi.org/10.15276/aait.07.2024.24.
[30] Mustafa Ayobami Raji et al., "E-Commerce and Consumer Behavior: A Review of AI-Powered Personalization and Market Trends," *GSC Advanced Research and Reviews* 18, no. 3 (2024): 066–077, https://doi.org/10.30574/gscarr.2024.18.3.0090.

distributed to Generation Z respondents who had made halal product purchases through e-commerce in Bone Regency, with the data collection period spanning three months in 2024. The questionnaire was distributed online via social media platforms, such as WhatsApp and Instagram, formatted as Google Forms. The number of respondents involved in this study was 240 individuals from Generation Z. To ensure the validity and adequacy of the data used in multivariate analysis, according to Hair Jr et al.[31] the number of respondents selected meets the minimum criterion of being ten times the number of parameters used in this study, in line with the established guidelines for multivariate statistical analysis.[32]

The research model was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS software version 4.1.0.9.[33] The analysis was conducted in two main stages. The initial stage focused on evaluating the measurement model, which included validity and reliability testing. As part of this evaluation, Convergent validity required factor loadings exceeding 0.7, composite reliability (CR) above 0.7, and average variance extracted (AVE) above 0.5.[34] Discriminant validity was assessed using the cross-loading method and the Fornell-Larcker criterion. Cross-loadings were deemed adequate if each indicator had the highest loading on its respective construct compared to other constructs.[35] Meanwhile, the Fornell-Larcker criterion was satisfied when the correlation based on the square root of AVE was greater than the correlations among variables.[36] Construct reliability was examined using Cronbach's alpha, where values above 0.6 indicated sufficient reliability.[37] Once the measurement model criteria were met, the analysis proceeded to the structural model evaluation. The structural model evaluation assessed the relationships among latent constructs and tested the hypotheses. At this stage, T-statistics had to exceed 1.96, and P-values had to be less than 0.05 to be statistically significant. The R-Square value was interpreted as strong (≥ 0.75), moderate (≥ 0.50), weak (≥ 0.25), or overfit (≥ 0.90.[38] Adjusted R-Square values above 0.25 or 0.50 indicated significant predictive capability of the model.[39] Additionally, the strength of construct effects was evaluated using F-Square values, categorized as small (≥ 0.02), medium (≥ 0.15), and large (≥ 0.35), following

[31] Joseph F Hair Jr et al., *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R: A Workbook* (Springer Nature, 2021).
[32] Rex B Kline, *Principles and Practice of Structural Equation Modeling* (Guilford publications, 2023).
[33] Sarah Madaniah et al., "Driving Tourist Intentions Through User-Generated Content: Evidence From Structural Equation Modeling," *International Journal of Educational Review, Law And Social Sciences* 4, no. 06 (2024), https://doi.org/10.54443/ijerlas.v4i6.2177.
[34] Joe F. Hair, Matthew C. Howard, and Christian Nitzl, "Assessing Measurement Model Quality in PLS-SEM Using Confirmatory Composite Analysis," *Journal of Business Research* 109, no. August 2019 (2020): 101–10, https://doi.org/10.1016/j.jbusres.2019.11.069.
[35] Mikko Rönkkö and Eunseong Cho, *An Updated Guideline for Assessing Discriminant Validity*, *Organizational Research Methods*, vol. 25, 2022, https://doi.org/10.1177/1094428120968614.
[36] Norazwa Yeop Kamarudin et al., "Structural Equation Modelling: Validation of Career Readiness Model Using Psychological Constructs," *Int J Eval & Res Educ* 13, no. 1 (2024): 159–69, http://doi.org/10.11591/ijere.v13i1.27143.
[37] Rudy de Barros Ahrens, Luciana da Silva Lirani, and Antonio Carlos de Francisco, "Construct Validity and Reliability of the Work Environment Assessment Instrument WE-10," *International Journal of Environmental Research and Public Health* 17, no. 20 (2020): 1–19, https://doi.org/10.3390/ijerph17207364.
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the guidelines provided by Cohen.[40]

Although *ta'abbud* is a central cultural construct in this study, it is important to note that other potential covariates, such as broader cultural, social, or regional factors, were not explicitly modeled. This may limit the scope of the findings, as unmeasured cultural influences beyond *ta'abbud* could also shape consumer well-being and technology acceptance. Future research is encouraged to incorporate a wider range of cultural variables to provide a more holistic understanding of consumer behavior in similar contexts. Acknowledging this limitation enhances the rigor and interpretive depth of the study.

RESULTS AND DISCUSSION

Demographic Profile of the Respondents

Table 1. presents the demographic data of the research respondents, revealing a substantial gender imbalance, with females comprising 85.8% of the sample and males only 14.2%. This disproportionate representation may introduce bias into the findings, as the results are more likely to reflect the perspectives and experiences of female respondents. In terms of age, most respondents are aged 21–24 years (52.9%), followed by the 17–20 years group (32.9%) and the 25–27 years group (14.2%), with no respondents under 17 years old. Regarding the highest level of education, most respondents have a senior high school education (60%), followed by bachelor's degree holders (37.1%). In comparison, others have diploma-level education (2.1%) or belong to other categories (0.8%), with none having only primary or junior high school education. Economically, the majority of respondents have a monthly allowance below IDR 1 million (71.7%), followed by those in the IDR 1 million to IDR 1.5 million range (17.5%), and 5.4% each in the IDR 1.5 million to IDR 2 million and above IDR 2 million categories. These data indicate that the respondents are predominantly young adults, with moderate to high educational backgrounds and predominantly lower-middle economic status.

Table 1. Demographic Profile of Respondents

Criteria	Category	Frequency	Percent
Gender	Male	34	14.2%
	Female	206	85.8%
Age	Under 17 years	0	0%
	17 yrs. to 20 yrs	79	32.9%
	21 yrs. to 24 yrs	127	52.9%
	25 yrs. to 27 yrs	34	14.2%
Highest Education	Primary School	0	0%
	Junior High School	0	0%
	Senior High School	144	60%
	Diploma	5	2.1%
	Bachelor's Degree	89	37.1%

[40] Kukoh Mey Ariyanto et al., "Optimizing Online Shopping with Smart-Pls as a Tool for e-Commerce Enhancement," in *2024 3rd International Conference on Creative Communication and Innovative Technology (ICCIT)* (IEEE, 2024), 1–7, http://dx.doi.org/10.1109/ICCIT62134.2024.10701152 .

	Others	2	0.8%
Monthly Allowance	Below IDR 1 million	172	71.7%
	Above IDR 1 million to IDR 1.5 million	42	17.5%
	IDR 1.5 million to IDR 2 million	13	5.4%
	Above IDR 2 million	13	5.4%

Source: Processed Primary Data (Questionnaire), (2024)

Measurement Model Assessment

The measurement model in SEM-PLS can be evaluated through factor loadings, Cronbach's alpha, Composite Reliability, Average Variance Extracted (AVE), and Discriminant Validity. Table 2. presents the validity and reliability results for the constructs in the study. Indicator loadings, Cronbach's alpha, composite reliability, and AVE were used to evaluate each construct. Loading factors greater than 0.7, Cronbach's alpha and composite reliability greater than 0.7, and AVE greater than 0.5 indicate that all constructs have good validity and reliability.[41] Therefore, the constructs used in this study can be considered valid and reliable.

Table 2. Validity and Reliability for Constructs

Constructs	Indikator	Loading Factors	Cronbach's alpha	Composite reliability	AVE
Consumer Well-Being (CWB)	CWB1	0,922	0.899	0.937	0.832
	CWB2	0,908			
	CWB3	0,907			
AI Recommendation Personalization (AIRP)	AIRP1	0,904	0.880	0.926	0.808
	AIRP2	0,932			
	AIRP3	0,858			
Consumer Trust (CT)	CT1	0,922	0.921	0.950	0.863
	CT2	0,943			
	CT3	0,922			
Shopping Experience (SE)	SE1	0,904	0.910	0.943	0.847
	SE2	0,937			
	SE3	0,921			
Ta'abbud (Ta)	Ta1	0,800	0.801	0.883	0.717
	Ta2	0,853			
	Ta3	0,884			
Recommendation Quality (RQ)	RQ1	0,943	0.946	0.965	0.903
	RQ2	0,956			
	RQ3	0,952			
Information Accessibility (IA)	IA1	0,939	0.937	0.960	0.889
	IA2	0,938			
	IA3	0,951			
Perception of Autonomy (PA)	PA1	0,905	0.909	0.943	0.846
	PA2	0,926			
	PA3	0,928			

Source: Processed Primary Data (Questionnaire), (2024)

[41] Hair Jr et al., *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R: A Workbook.*

Table 3. presents the results of the Fornell-Larcker criterion test to evaluate discriminant validity among latent variables. The diagonal values (AVE) indicate discriminant validity, which should be higher than the correlations between different variables.[42] For instance, the AVE for Consumer Well-Being (CWB) is 0.912, higher than the correlations with other variables, indicating good validity. The correlation between *Ta'abbud* (Ta) and other variables is lower (e.g., 0.567 with IA), suggesting a weaker relationship. Overall, the table demonstrates good discriminant validity for most latent variables.

Table. 3 Discriminant Validity

Latent Variable	IA	CT	CWB	RQ	SE	PA	AIRP	Ta
IA	0.943							
CT	0.591	0.929						
CWB	0.608	0.618	0.912					
RQ	0.663	0.841	0.640	0.950				
SE	0.822	0.587	0.630	0.675	0.920			
PA	0.805	0.528	0.625	0.623	0.795	0.920		
AIRP	0.671	0.690	0.797	0.704	0.674	0.703	0.899	
Ta	0.567	0.529	0.598	0.497	0.572	0.573	0.670	0.847

Source: Processed Primary Data (Questionnaire), (2024)

Structural Model Assessment

The structural model assessment was conducted using Smart PLS 4, which includes both direct and indirect effects, in line with the research objectives as depicted in Figure 1. This study presents explicit hypotheses, detailed in Table 4. and Figure 1. Additionally, using PLS-SEM bootstrap, the evaluation was extended to include indirect effects and mediation analysis. T-statistics measure the significance of causal relationships, with a threshold of 1.96 at a significance level of 0.05, while P-values < 0.05 indicate significant relationships.[43]

Table 4 shows that all hypotheses on direct effects (H1, H2, H3, H4, H5, H6, H7, and H8) are accepted. The AI Recommendation Personalization (AIRP) has been proven to significantly affect consumer well-being (CWB), with a T-statistic value of 22.546 and a P-value of 0.000, indicating that Hypothesis H1 is accepted. Furthermore, consumer trust (CT) also shows a significant influence on AI-based recommendation personalization (AIRP), with a T statistic of 7.907 and a P value of 0.000 (H2 accepted). Shopping experience (SE) likewise significantly affects AIRP, as evidenced by a T statistic of 8.806 and a P value of 0.000, thereby supporting Hypothesis H3.

In addition, *ta'abbud* (Ta) significantly influences consumer trust (CT), as shown by a T statistic of 3.197 and a P value of 0.002 (H4 accepted). Recommendation quality (RQ) has a highly significant impact on consumer trust (CT), with a T statistic of 16.157 and a P value of 0.000 (H5 accepted), and also significantly affects shopping experience (SE), with a T statistic

[42] Wei Li and Yoon Fah Lay, "Examining the Reliability and Validity of Measuring Scales Related to Informatization Instructional Leadership Using PLS-SEM Approach," *Dinamika Jurnal Ilmiah Pendidikan Dasar* 16, no. 1 (2024): 12–32, https://doi.org/10.30595/dinamika.v16i1.19768.

[43] Ana Rita Nogueira et al., "Methods and Tools for Causal Discovery and Causal Inference," *Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery* 12, no. 2 (2022): e1449, https://doi.org/10.1002/widm.1449.

of 3.244 and a P value of 0.001 (H6 accepted). Information accessibility (IA) is also proven to significantly enhance the shopping experience, with a T statistic of 4.962 and a P value of 0.000 (H7 accepted). Lastly, perceived autonomy (PA) significantly influences shopping experience (SE), as indicated by a T statistic of 3.995 and a P value of 0.000 (H8 accepted). Thus, all hypotheses in this model are statistically significant and accepted, demonstrating that variables such as *ta'abbud*, recommendation quality, information accessibility, and perceived autonomy play a crucial role in shaping AI-based recommendation personalization, impacting consumer well-being.

In addition to statistical significance, the strength of the relationships is indicated by the standardized path coefficients (β), which range from 0.147 to 0.797. The strongest effects are observed between AIRP and CWB (β = 0.797) and between RQ and CT (β = 0.768), reflecting substantial impact. These findings confirm that the model is not only statistically valid but also practically relevant in explaining how *ta'abbud*, recommendation quality, information accessibility, and perceived autonomy influence AI-based personalization, affecting consumer well-being.

Table 4. Structural Model Assessment (Direct Effect Result and Decision)

Hypothesis	Relationship	Original sample (β)	Sample mean	Standard deviation	T statistics	P values	Decision
H1	AIRP -> CWB	0.797	0.799	0.035	22.546	0.000	Accepted
H2	CT -> AIRP	0.449	0.443	0.057	7.907	0.000	Accepted
H3	SE -> AIRP	0.411	0.412	0.047	8.806	0.000	Accepted
H4	Ta -> CT	0.147	0.150	0.046	3.197	0.002	Accepted
H5	RQ -> CT	0.768	0.765	0.048	16.157	0.000	Accepted
H6	RQ -> SE	0.179	0.171	0.055	3.244	0.001	Accepted
H7	IA -> SE	0.436	0.434	0.088	4.962	0.000	Accepted
H8	PA -> SE	0.332	0.342	0.083	3.995	0.000	Accepted

Source: Processed Primary Data (Questionnaire), (2024)

The analysis results presented in Table 5. and Figure 1. indicate that all tested hypotheses, namely H9a, H9b, H10a, H10b, H11a, H11b, and H11c, were significant and accepted. This is supported by T-statistics values greater than 1.96 and P-values less than 0.05. Therefore, it can be concluded that the relationships between the variables tested through the mediators have a significant effect, which supports the hypotheses proposed in this study. AI-based recommendation personalization (AIRP) has been proven to be a significant mediator between consumer trust (CT) and consumer well-being (CWB), as indicated by a T statistic of 7.982 and a P value of 0.000 in Hypothesis H9a. Similarly, shopping experience (SE) also indirectly affects consumer well-being through AIRP (H9b), with a T statistic of 7.862 and a P value of 0.000. These results suggest that the better the shopping experience and consumer trust, the higher the quality of recommendation personalization, ultimately enhancing consumer well-being.

Furthermore, *ta'abbud* (Ta) exerts an indirect effect on AIRP through CT, with a T

statistic of 2.595 and a P value of 0.010 (H10a accepted), confirming that religious values such as *ta'abbud* can enhance AI personalization by fostering greater trust. Likewise, recommendation quality (RQ) has a strong indirect influence on AIRP through CT, with a T statistic of 8.514 and a P value of 0.000 (H10b accepted). Additionally, RQ indirectly affects AIRP through SE (H11a), with a T statistic of 2.967 and a P value of 0.003, indicating that recommendation quality builds trust and strengthens the shopping experience that supports effective AI personalization.

Moreover, information accessibility (IA) indirectly affects AIRP via SE (H11b), with a T statistic of 4.627 and a P value of 0.000, highlighting the importance of easy access to information in enhancing the shopping experience, improving recommendation personalization. Finally, perceived autonomy (PA) also significantly influences AIRP indirectly through SE, with a T statistic of 3.343 and a P value of 0.001 (H11c accepted), suggesting that consumers' sense of control during shopping contributes to a better experience and more effective personalization.

Based on the analysis results, the standardized path coefficients (β) for each mediation effect are as follows: CT → AIRP → CWB = 0.357 (moderate), SE → AIRP → CWB = 0.327 (moderate), Ta → CT → AIRP = 0.066 (weak), RQ → CT → AIRP = 0.345 (moderate), RQ → SE → AIRP = 0.073 (weak), IA → SE → AIRP = 0.179 (weak–moderate), and PA → SE → AIRP = 0.136 (weak–moderate). These β values indicate varying strengths of relationships, ranging from weak to moderate, thereby confirming the practical relevance of the mediation model examined in this study.

Table 5. Structural Model Assessment (Indirect Effect Result and Decision)

Hypothesis	Relationship	Original sample (β)	Sample mean	Standard deviation	T statistics	P values	Decision
H9a	CT -> AIRP -> CWB	0.357	0.353	0.045	7.982	0.000	Accepted
H9b	SE -> AIRP -> CWB	0.327	0.329	0.042	7.862	0.000	Accepted
H10a	**Ta -> CT -> AIRP**	**0.066**	**0.068**	**0.025**	**2.595**	**0.010**	**Accepted**
H10b	RQ -> CT -> AIRP	0.345	0.338	0.040	8.514	0.000	Accepted
H11a	RQ -> SE -> AIRP	0.073	0.071	0.025	2.967	0.003	Accepted
H11b	IA -> SE -> AIRP	0.179	0.178	0.039	4.627	0.000	Accepted
H11c	PA -> SE -> AIRP	0.136	0.142	0.041	3.343	0.001	Accepted

Source: Processed Primary Data (Questionnaire), (2024)

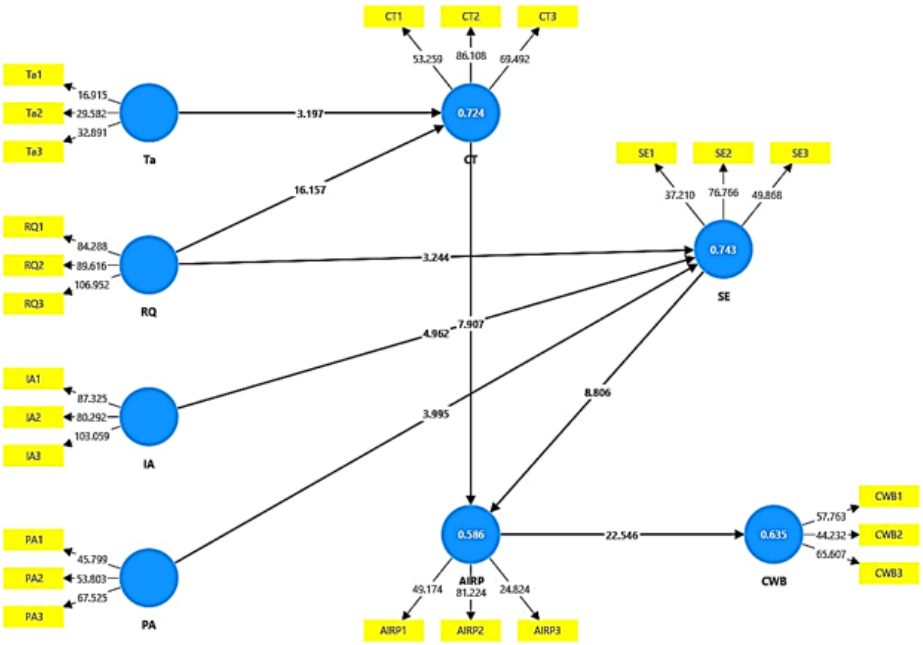

Figure 1. Smart-PLS Analysis Result
Source: Data Processed by the author, (2024)

Table 6. presents the R-Square and Adjusted R-Square values for the endogenous variables in this study. Consumer Trust (CT) has an R-Square of 0.724, indicating that 72.4% of its variance is explained by *Ta'abbud* (Ta) and Recommendation Quality (RQ). Consumer Well-Being (CWB), with an R-Square of 0.635, shows that 63.5% of its variance is influenced by AI Recommendation Personalization (AIRP). Shopping Experience (SE) has an R-Square of 0.743, indicating that 74.3% of its variance is affected by Recommendation Quality (RQ), Information Accessibility (IA), and Perceived Autonomy (PA). Meanwhile, AIRP, with an R-Square of 0.586, indicates that CT and SE explain 58.6% of its variance. These results suggest that the research model effectively accounts for most of the variability in the endogenous variables, with significant contributions from key factors.

Table 6. R-Square and Adjusted R-Square Values

Endogenous Variable	R-square	R-square adjusted
CT	0.724	0.721
CWB	0.635	0.633
SE	0.743	0.740
AIRP	0.586	0.583

Source: Processed Primary Data (Questionnaire), (2024)

Table 7. presents the results of the F-Square test, which indicates the influence of independent variables on dependent variables within the research model. The interpretation of variable relationships refers to Cohen (1988) is categorized as small (≥0.02), medium (≥0.15), and large (≥0.35). The relationships between Information Accessibility (IA) and Shopping Experience (SE) and Consumer Trust (CT) and AI-Based Recommendation

Personalization (AIRP) exhibit medium effects, with values of 0.229 and 0.319, respectively. Recommendation Quality (RQ) and Consumer Trust (CT), as well as AI-Based Recommendation Personalization (AIRP) and Consumer Well-being (CWB), demonstrate large effects, with values of 1.607 and 1.737, respectively. Conversely, Recommendation Quality (RQ), Shopping Experience (SE), *Ta'abbud* (Ta), and Consumer Trust (CT) demonstrate small effect sizes, with *Ta'abbud* showing an f^2 value of 0.059 and Recommendation Quality at 0.067. The relatively small effect of *Ta'abbud* suggests that while spiritual or religious motivations may influence consumer well-being, their impact tends to be more subtle and indirect. This highlights the importance of considering the complex nature of intrinsic religious values, which may not exert strong direct effects but can still contribute meaningfully within a broader behavioral framework. Other relationships, such as Shopping Experience (SE) and AI-Based Recommendation Personalization (AIRP) (0.267) and Perception of Autonomy (PA) and Shopping Experience (SE) (0.145), indicate medium effects. These findings highlight the varying strengths of independent variables in explaining dependent variables.[44]

Table 7. F-Square Values

Variable Relationships	F-Square
IA -> SE	0,229
CT -> AIRP	0,319
RQ -> CT	1,607
RQ -> SE	0,067
SE -> AIRP	0,267
PA -> SE	0,145
AIRP -> CWB	1,737
Ta -> CT	0,059

Source: Processed Primary Data (Questionnaire), 2024

Table 8. shows that the model fit test results indicate SRMR values of 0.044 for the saturated model and 0.076 for the estimated model, both below the threshold of 0.08, indicating a good model fit. The NFI values of 0.848 (saturated) and 0.835 (estimated) also suggest that the model fit is acceptable. Additionally, the values of d_ULS, d_G, and chi-square support these findings, confirming that the model is suitable for further analysis.

Table 8. Model Fit

Indeks	Saturated model	Estimated model
SRMR	0.044	0.076
d_ULS	0.576	1.732
d_G	0.617	0.702
Chi-square	931.604	1009.095
NFI	0.848	0.835

Source: Processed Primary Data (Questionnaire), 2024

[44] Hair Jr et al., *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R: A Workbook.*

The structural assessment of direct relationships among research variables demonstrates that Information Accessibility significantly enhances Shopping Experience. Easy access to relevant and clear product information allows consumers to make purchase decisions more confidently and efficiently, consistent with Chandra Sekhar Patro's study.[45] From a theoretical perspective, this result highlights the importance of perceived ease of use, as outlined in the Technology Acceptance Model (TAM), whereby easily accessible information drives system acceptance and improves user experience. Furthermore, the relationship between Consumer Trust and AI-based personalization exhibits a very strong effect, suggesting that consumers are more willing to accept the recommendations when they trust an e-commerce platform and its AI system. This finding aligns with research by Noha Hassan[46] which found that AI personalization enhances consumer trust, engagement, and satisfaction.

Recommendation Quality significantly increases Consumer Trust, indicating that relevant, accurate, and preference-aligned product recommendations encourage consumers to perceive the AI system as reliable and capable of understanding their needs, strengthening trust and acceptance of the e-commerce platform. Findings from Rabab Ali Abumalloh support this result.[47] In addition, Recommendation Quality significantly yet moderately impacts Shopping Experience, suggesting that relevant and appropriate recommendations improve comfort and satisfaction during shopping. Other factors also contribute to the overall consumer experience. This finding is consistent with the study by Jaekyeong Kim.[48] Shopping Experience is significantly associated with AI-based personalization, indicating that the better and more enjoyable the consumer's shopping experience, the more effective the AI system becomes in delivering relevant and personalized recommendations, thus increasing consumer acceptance of such personalization. This result is supported by the study conducted by Adia Hilar Hilabi.[49] Perceived Autonomy significantly affects the Shopping Experience. When consumers feel they have control and freedom in choosing products, they enjoy the shopping process more comfortably and satisfactorily. This finding aligns with Jihyung Han's study.[50]

Furthermore, AI-based personalization significantly impacts Consumer Well-Being, indicating that highly relevant recommendations can substantially improve consumer well-

[45] Chandra Sekhar Patro, "Consumers' Digital Shopping Experience: A Study of the Factors Influencing Purchase Decision," International Journal of E-Business Research 19, no. 1 (2023): 1–17, https://doi.org/10.4018/ijebr.318475.

[46] Noha Hassan, Mohamed Abdelraouf, and Dina El-Shihy, "The Moderating Role of Personalized Recommendations in the Trust–Satisfaction–Loyalty Relationship: An Empirical Study of AI-Driven e-Commerce," Future Business Journal 11, no. 1 (2025), https://doi.org/10.1186/s43093-025-00476-z.

[47] Rabab Ali Abumalloh et al., "Journal of Innovation Behavioural Theory," Journal of Innovation & Knowledge 9, no. 4 (2024): 100569, https://doi.org/10.1016/j.jik.2024.100569.

[48] Jae Kyeong Kim, Il Young Choi, and Qinglong Li, "Customer Satisfaction of Recommender System: Examining Accuracy and Diversity in Several Types of Recommendation Approaches," Sustainability (Switzerland) 13, no. 11 (2021), https://doi.org/10.3390/su13116165.

[49] Adia Hilar Hilabi and Zawawi, "The Effect of Customer Experience and Artificial Intelligence (AI) Personalization on Lazada Customer Loyalty in Surabaya," *East Asian Journal of Multidisciplinary Research (EAJMR)* 4, no. 6 (2025): 3021–36, https://doi.org/10.55927/eajmr.v4i6.207.

[50] Jihyung Han and Daekyun Ko, "Consumer Autonomy in Generative AI Services: The Role of Task Difficulty and AI Design Elements in Enhancing Trust, Satisfaction, and Usage Intention," Behavioral Sciences 15, no. 4 (2025), https://doi.org/10.3390/bs15040534.

being. These results align with earlier studies by Logesh and Raja.[51] In this study, the value of spirituality through the concept of *Ta'abbud* contributes to Consumer Trust, although its effect is relatively minor compared to other variables. This suggests that while the direct statistical impact of *ta'abbud* on consumer trust may appear small, its strategic significance is substantial, particularly in niche markets such as halal e-commerce. These results are consistent with prior studies conducted by Ahmad Rafiki et al.[52] The smaller effect reflects that religious or spiritual motivations might not dominate all online shopping contexts, especially when compared to functional factors like recommendation quality or information access. However, *ta'abbud* functions as a foundational value, reinforcing consumer confidence in the system when it aligns with their religious expectations. In effect, it serves as a qualitative enhancer rather than a quantitative driver of trust. Therefore, *ta'abbud* is a value-based foundation that reinforces consumer trust, even though its quantitative contribution may not be dominant. Incorporating *ta'abbud* into AI recommendation systems reflects an e-commerce platform's commitment to religious principles, particularly in providing halal products that Muslim consumers trust. Although its statistical effect is minor, *ta'abbud* holds strategic value in bridging material satisfaction with spiritual fulfillment, enhancing consumer acceptance of AI personalization, and promoting holistic consumer well-being. All direct relationships examined in this study demonstrate high significance, underscoring the importance of these factors in enhancing consumer experience and well-being in e-commerce.

Structural assessment of the indirect relationships between research variables reveals that high-quality recommendations significantly influence consumer trust because relevant and accurate suggestions enhance perceived system reliability. This trust, in turn, increases acceptance of AI-based personalization systems. These findings are consistent with prior research by Xiaoyi Zhang et al.[53] In the context of *ta'abbud*, religious values contribute to developing consumer trust in AI-based recommendation systems. However, their statistical impact is smaller than other factors such as recommendation quality or information accessibility. Nevertheless, the role of religious values cannot be overlooked, particularly in shaping Muslim consumers' attitudes toward the technology being used. This is especially relevant for e-commerce platforms that focus on halal products, as consumers from religious backgrounds expect efficient systems that comply with Shariah principles. Integrating *ta'abbud* values becomes essential in fostering trust and acceptance of AI personalization. This trust ultimately promotes consumer well-being, not only in material terms but also spiritually. Therefore, although the quantitative effect of *ta'abbud* is relatively small, its strategic importance is substantial within the context of halal e-commerce. Integrating religious values is crucial for building consumer loyalty and strengthening the connection

[51] Mr S Arun Logesh and S Raja, "A Study on the Impact of Artificial Intelligence on Online Customer Satisfaction," Emperor Journal of Finance 3, no. 5 (2024), https://doi.org/10.58394/EJF.2024.3514.
[52] Ahmad Rafiki, Sutan Emir Hidayat, and Muhammad Dharma Tuah Putra Nasution, "An Extensive Effect of Religiosity on the Purchasing Decisions of Halal Products," PSU Research Review 8, no. 3 (2024): 898–919, https://doi.org/10.1108/PRR-07-2022-0093.
[53] Xiaoyi Zhang et al., "Is AI Chatbot Recommendation Convincing Customer? An Analytical Response Based on the Elaboration Likelihood Model," Acta Psychologica 250 (2024): 104501, https://doi.org/10.1016/j.actpsy.2024.104501.

between AI technology and faith-based values. These results are consistent with the study conducted by Zahid Hussain.[54] Additionally, good information accessibility significantly enhances the shopping experience, as easily accessible and relevant information simplifies decision-making and builds consumer confidence. This encourages acceptance of AI personalization, as consumers are more likely to adopt technologies that streamline the shopping process, consistent with previous research by Thabang Excellent Mofokeng.[55]

The quality of recommendations remains crucial, as high-quality, relevant, and personalized suggestions improve the shopping experience by reducing effort and increasing satisfaction. This positive experience, in turn, reinforces consumer acceptance of AI-based personalization systems, even though its direct influence is smaller compared to other factors. These findings are consistent with Alya Aulia Nurdin's and Zaenal Abidin's previous research.[56] Consumers' perception of autonomy in selecting products significantly enhances their shopping experience, as feeling in control reduces decision fatigue and increases satisfaction. This sense of empowerment leads to greater acceptance of AI personalization, as consumers are more likely to adopt technologies that respect their choices and support informed decision-making. This finding is consistent with prior studies conducted by Ying Yan et al.[57] Consumer trust in AI-based recommendation systems significantly contributes to consumer well-being, as trust reduces perceived risk, increases satisfaction, and facilitates more confident and efficient decision-making. This trust enables consumers to rely on AI personalization to meet their needs with greater ease and comfort, enhancing their material and emotional well-being. This result aligns with earlier research by Maria Petrescu et al.[58] Moreover, positive shopping experiences, including ease of navigation and convenience, strengthen the acceptance of AI recommendations and improve consumer well-being through time efficiency and shopping satisfaction. These findings corroborate prior research by Ovidiu-Iulian Bunea et al.[59] Overall, the combination of recommendation quality, positive shopping experiences, and religious values positively impact the acceptance of AI-based technology and enhances consumer well-being.

The findings from the direct and indirect influences analysis align with the *ta'abbud* model in utilizing AI recommendations in e-commerce through consumer trust to enhance consumer well-being. Munib Siddiqui and Waseem ul Hameed[60] found that religious values or *ta'abbud* significantly influence building consumer trust in e-commerce platforms.

[54] Zahid Hussain, "AI-Driven Personalization and Purchase Intention in Modest Fashion: Sharia Compliance as Moderator," International Journal of Halal Industry 1, no. 1 (2025): 33–45, https://doi.org/10.20885/ijhi.vol1.iss1.art3.
[55] Thabang Excellent Mofokeng, "The Impact of Online Shopping Attributes on Customer Satisfaction and Loyalty: Moderating Effects of e-Commerce Experience," Cogent Business and Management 8, no. 1 (2021), https://doi.org/10.1080/23311975.2021.1968206.
[56] Alya Aulia Nurdin and Zaenal Abidin, "The Influence of Recommendation System Quality on E-Commerce Customer Loyalty with Cognition Affective Behavior Theory," *Journal of Advances in Information Systems and Technology* 5, no. 1 (2023): 1–11, https://doi.org/10.15294/jaist.v5i1.65910.
[57] Ying Yan et al., "The Impact of Perceived Control and Power on Adolescents' Acceptance Intention of Intelligent Online Services," *Frontiers in Psychology* 13, no. September (2022): 1–11, https://doi.org/10.3389/fpsyg.2022.1013436.
[58] Maria Petrescu et al., "Exploring AI Technology and Consumer Behavior in Retail Interactions," *Journal of Consumer Behaviour* 23, no. 6 (2024): 3132–51, https://doi.org/10.1002/cb.2386.
[59] Ovidiu-Iulian Bunea et al., "The Next-Generation Shopper: A Study of Generation-Z Perceptions of AI in Online Shopping," *Journal of Theoretical and Applied Electronic Commerce Research* 19, no. 4 (2024): 2605–29, https://doi.org/10.3390/jtaer19040125.
[60] Munib Siddiqui and Waseem ul Hameed, "Exploring the Nexus of Religiosity and Trust in E-Commerce: Implications for Purchase Intentions in Pakistan," *Pakistan Journal of Humanities and Social Sciences* 11, no. 4 (2023): 4003–15.

However, this influence is relatively smaller compared to other factors. Dewi Pradhita[61] examined how *ta'abbud*, reflecting commitment to religious values, affects consumers' evaluation of the safety, quality, and halal aspects of products offered on digital platforms. In AI-based personalized recommendation technology, *ta'abbud* values are a crucial foundation driving consumer acceptance of these systems, especially when the systems reflect principles of halal compliance and religious needs. These findings are consistent with prior studies Elizabeth A Minton et al.[62] M Irfan Assiddiqi et al.[63] emphasized the importance of developing e-commerce platforms incorporating religious values to attract specific consumer segments, such as those prioritizing halal products. By integrating *ta'abbud* values into the design and operation of AI-based recommendation systems, platforms can provide a shopping experience that is not only functionally relevant but also holistically supports consumer well-being, encompassing both material and spiritual aspects Muhammad Nur Ishak and Adjila Mohamed.[64] This becomes a critical strategy in building consumer loyalty while enhancing competitiveness in religiously driven e-commerce markets.

CONCLUSION

This study reveals that information accessibility, recommendation quality, consumer trust, shopping experience, and AI-based personalization significantly influence the acceptance of AI technology and consumer well-being in e-commerce, particularly in purchasing halal products by Generation Z. Information accessibility helps Generation Z easily find halal products. In contrast, high-quality recommendations strengthen their trust in AI-based e-commerce platforms. Religious values such as *ta'abbud* are crucial in building consumer trust regarding the products' safety, quality, and halal compliance. However, their influence is relatively smaller compared to other factors. By integrating religious values and technical approaches, AI-based e-commerce can provide a shopping experience that is efficient and functionally relevant and reflects the spiritual needs of Generation Z, thereby supporting their material and spiritual well-being.

This study has several limitations that should be acknowledged. First, the scope of the data, which focuses solely on Generation Z in a specific region, may limit the generalizability of the findings to other age groups or locations. Second, the influence of religious values such as *ta'abbud* on AI technology acceptance and consumer trust, while significant, was analyzed partially without considering interactions with other potentially relevant cultural or social factors. Third, the study primarily emphasizes consumer perceptions of AI-based e-commerce for halal products, with limited exploration of the operational impact of

[61] Dewi Pradhita, "Intersection of Islamic Values and Consumer Preferences," *Advances in Business & Industrial Marketing Research* 2, no. 1 (2024): 15–25, https://doi.org/10.60079/abim.v2i1.231.
[62] Elizabeth A Minton, Begum Kaplan, and Frank G Cabano, "The Influence of Religiosity on Consumers' Evaluations of Brands Using Artificial Intelligence," *Psychology & Marketing* 39, no. 11 (2022): 2055–71, https://doi.org/10.1002/mar.21727 .
[63] M. Irfan Assiddiqi et al., "Influence of Halal Awareness, Islamic Branding, Celebrity Endorsers and Israel Product Boicots on E-Commerce Product Purchase Decisions (Study of Lecturers and Staff of Sulthan Thaha Saifuddin Jambi State Islamic University)," *International Journal of Economics (IJEC)* 3, no. 2 (2024): 1142–53, https://doi.org/10.55299/ijec.v3i2.1120.
[64] Muhammad Nur Ishak and Adjila Mohamed, "Harmonization of Islamic Economics With Artificial Intelligence: Towards an Ethical and Innovative Economic Paradigm," *Al-Kharaj: Journal of Islamic Economic and Business* 5, no. 4 (2023), https://doi.org/10.24256/kharaj.v5i4.4387.

integrating religious values into recommendation systems from a technical perspective. Finally, the quantitative approach does not fully capture the deeper dynamics of consumer decision-making, which could be enriched through qualitative methods such as in-depth interviews or case studies.

Future studies should expand the population and location scope to improve the findings' generalizability. Analyzing the interaction between religious values such as *ta'abbud* and other cultural and social factors is also crucial, as they may influence the acceptance of AI technology. Additionally, a deeper technical approach should be incorporated to explore the operational impact of integrating religious values into AI-based recommendation systems. Enriching the data with qualitative methods, such as in-depth interviews or case studies, will provide deeper insights into consumer decision-making dynamics. E-commerce practitioners can benefit from integrating religious values into recommendation system design, particularly to boost consumer trust in halal products. Collaboration among academics, technology developers, and the industry is essential to ensure the optimal reflection of religious values and to develop more holistic consumer well-being indicators, considering both material and spiritual aspects in AI-based e-commerce.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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