https://doi.org/10.62370/hbds.v27i1.280014 Human Behavior, Development and Society
E-ISSN 2651-1762, Vol 27 No 1, 280014

Revolutionizing Customer Experiences Through Technology Business Tools in the Cebu City Hospitality Sector

Ma. Sherrilyn D. Escala[1], Norberto M. Secretaria[1], Leahlou E. Narvios[1], Jiomarie B. Jesus[2]* and Teodorico A. Bastida, Jr.[3]
College of Management and Entrepreneurship, Cebu Technological University–Main Campus[1], Cebu City, 6000, Philippines
School of Business, Mandaue City College[2], Mandaue City, 6014, Philippines
College of Business and Accountancy, University of Cebu - Main Campus[3], Cebu City, 6000, Philippines
*Corresponding Author: jiomariej15@gmail.com

Date Received: 30 March 2025 Revised: 16 May 2025 Accepted: 29 August 2025

Paper Type: Original Research

Abstract

Aim/Purpose: The study's purpose was to examine the impact of emerging digital technologies on the Cebu City hospitality sector, a growing tourism hub where technological adoption is essential for maintaining competitiveness and customer satisfaction. While AI-driven personalization, blockchain integration, and Internet of Things (IoT) automation are reshaping service quality and operational efficiency globally, their collective impact on guest experiences in emerging economies remains underexplored. This gap is addressed by analyzing how these technologies influence customer perceptions and operational outcomes, considering demographic variations among international tourists, domestic travelers, and local visitors, and identifying key challenges to digital transformation in local contexts.

Introduction/Background: This paper addresses the gap in understanding how emerging digital technologies collectively shape customer experiences and operational efficiency within the hospitality sector, particularly in emerging tourism hubs such as Cebu City, the Philippines. While previous studies have often examined technologies such as AI, blockchain, and IoT individually, their synergistic effects in real-world service settings remain underexplored, especially in regions with diverse customer demographics. By employing a multidimensional analytical approach, this study investigated how technological innovations influence guest satisfaction and service quality, offering insights into optimizing digital adoption strategies to enhance competitiveness and meet evolving consumer expectations in the hospitality industry.

Methodology: A descriptive-correlational design was employed in this study to analyze the impact of AI, IoT, blockchain, IoT, and algorithm customization on guest satisfaction and loyalty in a hospitality setting in Cebu City. A validated survey was administered to 100 guests, including 40 tourists (40%), 25 transients (25%), 30 local visitors (30%), and 5 from other groups (5%). The survey instrument, verified for content and construct validity, achieved a high Cronbach's Alpha of .957. Data were analyzed using descriptive statistics and multiple regression analysis to examine the relationship between technological innovations and guest satisfaction, with a p-value of ≤ .05 indicating significance.

Findings: The demographic profile predominantly consisted of young adults aged 21-30 (58%), with a significant majority being female (73%). Educational attainment among respondents was notably high, with 54% holding college degrees. Technological infrastructure readiness and customization algorithms received positive feedback, reflecting high levels of guest satisfaction with digital tools. Notably, the study identified significant positive relationships among AI-driven guest personalization, blockchain integration, and improvements in service quality, perceived product value, and overall guest experience. Conversely,

the utilization of IoT demonstrated negative or negligible impacts, indicating the necessity for a more strategic and thoughtful approach to technology integration to maximize guest satisfaction.

Contribution/Impact on Society: This study enhances understanding of how emerging digital technologies, such as AI, blockchain, and customization algorithms, improve customer experiences and operational efficiency within the hospitality sector. By providing empirical insights from a technology-integrated hotel in a growing tourism hub, actionable guidance is offered for industry practitioners, technology developers, and policymakers aiming to optimize service delivery through innovation. The findings highlight the importance of digital readiness and strategic adoption of personalized technologies in shaping guest satisfaction, value creation, and competitive advantage. Ultimately, this research bridges the gap between digital transformation theory and practical application, contributing to sustainable growth in hospitality services, particularly in emerging economies.

Recommendations: Hospitality practitioners should prioritize strategic adoption of AI-driven personalization, blockchain integration, and customization algorithms to enhance guest experiences and service efficiency. Building digital infrastructure and addressing data privacy and ethical concerns are essential to fostering guest trust. Hotels should also invest in upskilling their workforce to support the transition toward tech-integrated service models. For future researchers, applying mixed-methods or Structural Equation Modeling (SEM) approaches could yield deeper insights into guest behavior and technology adoption dynamics. These steps will help ensure sustainable, personalized, and competitive hospitality services in digitally evolving markets like Cebu City.

Research Limitation: This study was limited by its quantitative, cross-sectional design, which captured guest perceptions at a single point in time within one hotel. While the sample provided reasonable representation, the results may not be generalizable to all hospitality contexts in Cebu City, particularly those with varying operational scales, digital maturity, and customer segments. The absence of qualitative insights also restricts the exploration of emotional and cognitive factors that drive guest satisfaction and technology acceptance. Furthermore, the study did not account for seasonal demand patterns, variations in staff performance, or service recovery scenarios, all of which may have shaped guest experiences. The exclusive reliance on self-reported data may have introduced response bias, and the lack of triangulation limits the depth of interpretation.

Future Research: Future studies should examine the long-term effects of AI and blockchain integration on customer loyalty, operational resilience, and brand equity across various hotel types and ownership models. Comparative research between urban and rural hospitality settings could reveal how digital infrastructure readiness and demographic diversity shape technology-enabled service delivery. Further, integrating employee perspectives and digital training assessments may offer a more holistic view of value co-creation within service ecosystems. Exploring cross-cultural guest expectations and service personalization standards could also refine digital strategy alignment in multi-market contexts. Additionally, incorporating real-time behavioral analytics, satisfaction tracking, and post-stay feedback systems could provide richer insights into personalization outcomes, adaptive service models, and continuous improvement mechanisms in hospitality innovation.

Keywords: *Customer experience*, *digital transformation*, *artificial intelligence*

Introduction

The global hospitality industry is undergoing a profound digital transformation, driven by rapid technological advancements that are reshaping customer experiences and operational efficiency (Shin et al., 2022; Alawami et al., 2025). Adopting technology-based business operational tools, including artificial intelligence (AI)-driven personalization, blockchain integration, and data-driven customization algorithms,

fundamentally alters service delivery models. In emerging tourism hubs like Cebu City, Philippines, where the hospitality sector significantly contributes to the local economy, leveraging digital innovations is not just an option but a strategic necessity for sustaining competitiveness and enhancing customer satisfaction (Ratna et al., 2024). However, the extent to which these technologies enhance service quality and influence guest satisfaction in this specific economic and cultural context remains underexplored.

Customer experience in hospitality is broadly defined as the holistic perception formed by guests across multiple touchpoints during their service journey. This includes not only tangible service elements such as check-in and room amenities, but also intangible and emotional dimensions such as personalization, convenience, trust, and perceived value (Li et al., 2022; Liu et al., 2022). As such, it is increasingly mediated by digital technologies that enable real-time customization, predictive analytics, and seamless service delivery.

Hospitality services are evolving to meet the expectations of Millennials and Gen Z travelers, who value hyper-personalized, tech-integrated experiences (Black, 2025). The Technology Acceptance Model (TAM) (Davis, 1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) provide foundational insights into how perceived ease of use and usefulness influence digital adoption. However, while TAM and UTAUT explain individual adoption behavior, they are insufficient in capturing the synergistic impacts of multiple emerging technologies on co-created service experiences in complex, people-intensive industries, such as hospitality.

To address these limitations, the study is anchored on Service-Dominant Logic (SDL) (Gallarza et al., 2023; Sadiq & Waheed, 2023), a theory that conceptualizes value as co-created through interactions between operant (knowledge-based) and operand (tangible) resources. SDL is more suited to explain how digital tools, such as AI, blockchain, and algorithm customization, interact with service systems, guest knowledge, and perceived value propositions to shape the overall guest experience. Unlike TAM or UTAUT, SDL focuses on value-in-use, aligning with the hospitality sector's goal of sustained experiential value rather than one-time adoption.

This study bridges theoretical and practical gaps by employing a multidimensional analytical approach that evaluates how AI, blockchain, and personalization algorithms collectively impact customer experiences, operational efficiency, and consumer perceptions in Cebu City's hospitality sector. Demographic segmentation is integrated to uncover variations in technology adoption patterns among international tourists, domestic travelers, and local visitors. Rather than assessing each technology in isolation, the study explored how their intersection contributed to personalized, efficient, and trustworthy service delivery. Furthermore, it identifies critical barriers to digital transformation, such as infrastructural constraints, varying adoption rates, and disparities in digital literacy. The study's quantitative approach, incorporating regression models and statistical analysis, provides empirical evidence to inform strategic decision-making for hospitality businesses, policymakers, and technology providers.

By offering data-driven recommendations for optimizing digital engagement strategies, this research contributes to the broader discourse on AI-driven innovation in hospitality. It aims to guide industry stakeholders toward sustainable business growth in an increasingly competitive, tech-centric economy through theory-driven and context-aware insights.

Research Objectives

The study evaluated the impact of technology-based business tools on customer experiences in the hospitality sector of Cebu City, Philippines. Specifically, the following aspects were addressed:

1. To assess the level of customer satisfaction with technology-based business operational tools.
2. To analyze the relationship between demographic factors and customer perceptions of technology-based innovations in the hospitality sector.

3. To determine the significant predictors of customer satisfaction and how specific technologies influence dimensions of Service-Dominant Logic, improving overall service quality, guest experience, and operational efficiency.

Literature Review

Artificial Intelligence, Smartphone Devices, and Blockchain for Personalization

Artificial intelligence (AI), smartphone-enabled interfaces, and blockchain technology are increasingly redefining personalized service delivery in the hospitality sector. AI supports real-time customization through behavioral data analysis, while smartphone platforms facilitate seamless guest interaction, and blockchain enhances transactional security and trust (Makivić et al., 2024; Lv et al., 2024; Chen et al., 2024). These technologies are conceptualized as operant resources under the Service-Dominant Logic (SDL) framework—tools that engage the guest in co-creating value through interactive and secure service systems (Gallarza et al., 2023). Although their impact has been well-studied, their synergistic integration remains underexplored, particularly in developing markets like Cebu City, where digital transformation is uneven and contextualized by infrastructural and cultural factors.

Customization Algorithms for Guest Preferences

Customization algorithms contribute to value co-creation by anticipating individual preferences and enabling dynamic service configurations. These algorithms act as AI extensions that refine guest profiles, leading to higher satisfaction and long-term loyalty (Tomczyk et al., 2022; Yang et al., 2024). Within the SDL lens, they function as knowledge-intensive operant resources that transform guest inputs into personalized experiences. However, empirical studies validating their effectiveness in Philippine hospitality environments are sparse, which underscores the need for context-specific investigation.

Technological Infrastructure Readiness

Technology infrastructure—categorized under operand resources—is critical for enabling service innovation. Its presence determines the feasibility and performance of AI, IoT, and blockchain systems (Hsu & Tseng, 2022; Han et al., 2024). SDL emphasizes that value-in-use depends not only on technology availability but also on how it supports relational and experiential processes. In Cebu City, infrastructure disparities may limit the full potential of co-created value, suggesting that technological readiness must be evaluated alongside guest satisfaction outcomes.

Goods, Services, and Value (SDL Constructs)

The SDL framework reconceptualizes guest experiences around value-in-use, assessing not just outcomes but also how services and goods contribute to overall satisfaction. Technologies like AI and IoT enhance engagement and process efficiency (Shin & Perdue, 2022; Molina-Collado et al., 2022), while personalization increases perceived value (Liu et al., 2022; Jain et al., 2024). Yet, empirical literature notes that digital tools may have minimal impact on tangible goods, creating a mismatch between perceived innovation and product quality (Horng et al., 2024). Maintaining equilibrium between technological novelty and core service value is thus central to avoiding value co-destruction (Sthapit et al., 2023).

Operant Resources & Operand Resources

SDL differentiates between operant resources (skills and information) and operand resources (devices and infrastructure), both of which are essential for co-creating value. AI, blockchain, and customization tools enhance the cognitive and interactive dimensions of guest engagement (Le et al., 2022; Sadiq & Waheed, 2023). However, the literature remains limited in examining how these technologies dynamically

engage local guests, whose digital literacy and expectations vary. This study thus investigated how value was co-created within varying resource configurations in Philippine hospitality settings.

Service System & Value Proposition

The integration of digital technologies within service systems supports SDL's emphasis on networked value creation. AI and blockchain can align back-end systems with front-stage service delivery, reinforcing a consistent value proposition (Furrier et al., 2025; Capeau et al., 2024). This alignment is especially critical in emerging markets, where hotels must deliver trustworthy, personalized experiences to attract increasingly digital-savvy tourists. Understanding how technology-enabled systems meet brand promises is essential for sustaining competitiveness in globalized hospitality environments.

Methodology

Design

This descriptive-correlational study examined how AI, IoT, blockchain, and algorithm customization influence guest satisfaction and loyalty in a hospitality setting in Cebu City. Using a validated survey and multiple regression analysis, the study explored technology readiness and demographic interactions, providing data-driven insights for improving hospitality services.

Study Setting

The study was conducted in a well-established hospitality establishment located in a dynamic urban area of Cebu City. Strategically situated near key commercial and recreational zones, the hotel attracts a diverse range of guests, including business travelers, tourists, and local patrons. Its integration of advanced technological services—such as AI-driven guest personalization, IoT applications, and blockchain-based solutions—made it an ideal setting for examining the impact of technological advancements on guest satisfaction and loyalty.

Respondents

A total of 100 guests from a hospitality establishment in Cebu City, all of whom had experience using the hotel's technology-integrated services, were surveyed. A non-probability purposive sampling technique was employed to ensure that respondents met specific inclusion criteria: (1) legal age (18 and above), (2) current or recent stay during the data collection period, and (3) direct interaction with at least one technology-based service offered by the hotel (e.g., AI personalization, blockchain check-in, or mobile access systems). Based on management estimates, this hotel receives approximately 300–400 guests per month. The sample of 100 represented a substantial proportion of that population, thereby providing a reasonable cross-section of user perceptions. The final sample composition consisted of 40 tourists (40%), 25 transients (25%), 30 local visitors (30%), and 5 individuals from other relevant guest categories (5%), ensuring diversity across visitor types and technology engagement levels.

Instrument

The survey questionnaire underwent a rigorous validation process to ensure its relevance and reliability. A panel of hospitality and quantitative research experts reviewed the instrument for content validity, refining items related to AI-driven personalization, digital customer repositories, smartphone-based interactions, algorithm customization, and technological infrastructure readiness. A pilot study with 30 hotel guests confirmed the clarity and feasibility of the instrument, yielding a high Cronbach's Alpha of .957. Construct validity was established by aligning items with SDL theory and previously validated studies. These procedures confirmed the questionnaire's reliability in assessing guest satisfaction and technology-driven operations in the hospitality sector.

Ethical Considerations

In this study, ethical considerations were ensured by obtaining informed consent from all participants, guaranteeing voluntary participation, and protecting respondent confidentiality through anonymization. Data were securely stored and used solely for research purposes. Ethical approval was obtained from the relevant institutional review board, adhering to data protection regulations and ethical guidelines.

Data Analysis

The data were analyzed using descriptive and inferential statistics. Frequency distribution, percentage analysis, and mean computations were used to profile respondents and assess their perceptions of technological advancements within the hospitality setting. Multiple regression analysis was used to examine the relationships between AI-driven personalization, IoT utilization, blockchain integration, and algorithm customization and guest satisfaction, loyalty, and service quality. A *p-value* of ≤ .05 indicated statistical significance, ensuring methodological rigor in identifying key predictors of guest experience. This approach provided data-driven insights into the impact of technology on the quality of hospitality services.

Results

Table 1 reflects evolving hospitality trends, with high reliance on tourism (40%), transient guests (25%), and local visitors (30%), indicating post-pandemic travel recovery.

Table 1 *Profile of Respondents* (n = 100)

	Frequency	Percentage
Distribution of Respondents		
Tourists	40	40.00
Transients	25	25.00
Local Visitors	30	30.00
Other Relevant Groups	5	5.00
Age		
20 below	2	2.00
21 – 30	58	58.00
31 – 40	28	28.00
41 – 50	11	11.00
51 – 60	1	1.00
Gender		
Male	27	27.00
Female	73	73.00
Civil Status		
Single	57	57.00
Married	31	31.00
Widowed	7	7.00
Separated	5	5.00
Educational Attainment		
High School Graduate	3	3.00
College Undergraduate	32	32.00
College Graduate	54	54.00
Master's Degree Graduate	10	10.00
Post Graduate	1	1.00

Millennials and Gen Z (86%) drive demand for tech-integrated services (Black, 2025; Botshot, 2025), while a 73% female majority highlighted the need for gender-sensitive approaches. The rise of solo travelers (57%) points to a shift toward flexible, personalized experiences (Jain, 2024). With most

respondents holding college-level education, sustainability and digital innovation remain top priorities. These patterns underscore the importance of AI personalization, automation, and data-driven tools in enhancing service quality and guest engagement, which is core to this study's aim of evaluating the impact of technology-based business tools on hospitality experiences.

Table 2 results indicate strong guest agreement on the effectiveness of all evaluated tools (aggregate *M* = 4.46, *SD* = 0.44).

Table 2 *Respondent Perceptions of Technology-Based Business Operational Tools*

Indicators	Mean	*SD*	Interpretation
1. AI in Guest Personalization	4.42	0.48	Strongly Agree
2. Utilizations of Smartphone Devices for Personalization	4.38	0.44	Strongly Agree
3. Integration of Blockchain for Personalization	4.42	0.42	Strongly Agree
4. Customization Algorithms for Guest Preferences	4.53	0.40	Strongly Agree
5. Technological Infrastructure Readiness.	4.53	0.39	Strongly Agree
Aggregate Mean	**4.46**	**0.43**	**Strongly Agree**

Strongly Disagree (SD) = 1.00–1.79; Disagree (D) = 1.80–2.59; Neutral (N) = 2.60–3.39; Agree (A) = 3.40–4.19; Strongly Agree (SA) = 4.20–5.00

The highest-rated tools—Technological Infrastructure Readiness (*M* = 4.53) and Customization Algorithms (*M* = 4.53)—suggest that guests highly value stable digital platforms and hyper-personalized services. Tools such as AI-driven Personalization and Blockchain Integration (*M* = 4.42 each) also scored well, affirming their role in enhancing security, convenience, and satisfaction. While Smartphone Utilization received the lowest among high scores (*M* = 4.38), it still fell within the "Strongly Agree" range, supporting its perceived value in mobility-driven service engagement. These results were consistent with prior studies: AI and algorithm customization significantly improve personalization, while infrastructure enhances user trust and usability (Liu et al., 2023; Jesus, 2024a); secure tools, such as blockchain, support post-pandemic confidence in tech-mediated service delivery (Binesh & Baloglu, 2023).

Respondent experiences according to the dimensions of SDL theory are shown below in Table 3.

Table 3 *Level of Respondents' Experiences According to the Dimensions of Service-Dominant Logic Theory*

Indicators	Mean	*SD*	Interpretation
1. Service	4.54	0.40	Strongly Agree
2. Goods	4.46	0.41	Strongly Agree
3. Value	4.39	0.44	Strongly Agree
4. Operant Resources	4.34	0.47	Strongly Agree
5. Operand Resources	4.34	0.48	Strongly Agree
6. Service System	4.45	0.46	Strongly Agree
7. Value Proposition	4.42	0.50	Strongly Agree
Aggregate Mean	**4.42**	**0.45**	**Strongly Agree**

Strongly Disagree (SD) = 1.00–1.79; Disagree (D) = 1.80–2.59; Neutral (N) = 2.60–3.39; Agree (A) = 3.40–4.19; Strongly Agree (SA) = 4.20–5.00

The results (*M* = 4.42, *SD* = 0.45) indicated that technology-based tools significantly enhanced guest experiences across all SDL dimensions, with the highest ratings for Service (*M* = 4.54), Goods (*M* = 4.46), and Service Systems (*M* = 4.45). These items reflected strong perceptions of improved responsiveness, tangible value, and operational coordination through digital innovations (Li et al., 2022). Consistently high

scores across Value Proposition and resource constructs further validated the SDL framework, though slightly lower means for Operant and Operand Resources (*M* = 4.34 each) suggested opportunities to deepen guest engagement and optimize technological deployment (Onofrei et al., 2022).

Table 4 reports the relationships between technology tools and perceptions of customer services.

Table 4 *Relationships between Technology-Based Business Operational Tools and Services*

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	*t*-value	Sig.	Verbal Description
(Constant)	1.427	.451	-	3.167	.00	Significant
AI in Guest Personalization	.00	.092	.00	.001	1.00	Insignificant
Utilization of IoT	-.187	.107	-.208	-1.754	.10	Insignificant
Integration of Blockchain	.261	.104	.278	2.52	.00	Positive, Significant
Customization of Algorithms	.241	.111	.243	2.172	.00	Positive, Significant
Technology Readiness	.373	.114	.363	3.27	.00	Positive, Significant

Technology readiness (β = .363, $p < .05$), blockchain integration (β = .278, $p < .05$), and customization algorithms (β = .243, $p < .05$) significantly enhance service quality, confirming their central role in improving hospitality experiences. However, AI-driven personalization (β = .00, $p = 1.00$) and IoT utilization (β = -.208, $p = .10$) showed no significant effects, highlighting the need for more strategic and context-sensitive integration. These findings were aligned with SDL by emphasizing the impact of well-implemented operant and operand resources on service outcomes (Jesus, 2024b; Lin et al., 2025).

In Table 5, relationships between technology tools and perceptions of various goods are reported.

Table 5 *Relationships between Technology-Based Business Operational Tools and Goods*

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	*t*-value	Sig.	Verbal Description
(Constant)	.799	.44	-	1.818	.10	Insignificant
AI in Guest Personalization	.017	.09	.02	.19	.90	Insignificant
Utilization of IoT	-.079	.104	-.085	-.754	.50	Insignificant
Integration of Blockchain	.279	.101	.289	2.752	.00	Positive, Significant
Customization of Algorithms	.236	.108	.232	2.181	.00	Positive, Significant
Technology Readiness	.36	.111	.343	3.241	.00	Positive, Significant

Technology readiness (β = .343, $p < .05$), blockchain integration (β = .289, $p < .05$), and customization algorithms (β = .232, $p < .05$) significantly enhanced guests' perception of goods, confirming their role in improving tangible service quality. Conversely, AI personalization (β = .02, $p = .90$) and IoT utilization (β = -.085, $p = .50$) showed no meaningful effect, underscoring the importance of focusing on impactful technologies for value creation (Nuong & Ragavan, 2023; Jesus et al., 2025).

Table 6 shows the relationships between technology tools and customer perceptions of their value.

Table 6 *Relationships between Technology-Based Business Operational Tools and Value*

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	*t*-value	Sig.	Verbal Description
(Constant)	1.107	.521	-	2.124	.00	Significant
AI in Guest Personalization	.165	.106	.181	1.552	.10	Insignificant
Utilization of IoT	-.074	.124	-.074	-.596	.60	Insignificant
Integration of Blockchain	.338	.12	.325	2.818	.00	Positive, Significant
Customization of Algorithms	.027	.128	.025	.212	.80	Insignificant
Technology Readiness	.277	.132	.244	2.103	.00	Positive, Significant

Technology readiness (β = .244, $p < .05$) and blockchain integration (β = .325, $p < .05$) significantly enhanced value perception, affirming their roles in delivering reliable, high-value experiences in hospitality settings. However, AI personalization (β = .181, $p = .10$), IoT utilization (β = -.074, $p = .60$), and algorithm customization (β = .025, $p = .80$) showed no significant effects, suggesting that not all innovations translate directly into perceived value (Gutierriz et al., 2023).

Table 7 shows relationships between technology tools and customer perceptions of operant resources.

Table 7 *Relationships between Technology-Based Business Operational Tools and Operant Resources*

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	*t*-value	Sig.	Verbal Description
(Constant)	1.292	.533	-	2.422	.02	Significant
AI in Guest Personalization	.316	.109	.322	2.907	.01	Positive, Significant
Utilization of IoT	-.23	.126	-.21	-1.79	.08	Insignificant
Integration of Blockchain	.572	.123	.511	4.659	.00	Positive, Significant
Customization of Algorithms	.065	.131	.056	.499	.62	Insignificant
Technology Readiness	-.04	.135	.511	-.300	.77	Insignificant

Blockchain integration (β = .511, $p < .05$) and AI-driven personalization (β = .322, $p < .05$) significantly strengthened operant resources by enhancing secure, knowledge-based service delivery. Meanwhile, IoT utilization (β = -.210, $p = .08$), algorithm customization (β = .056, $p = .62$), and technology readiness (β = -.030, $p = .77$) showed no significant influence, suggesting that only specific technologies contribute to skill-based value creation (Pielech et al., 2025).

Table 8 shows relationships between technology tools and customer perceptions of operand resources.

Table 8 *Relationships between Technology-Based Business Operational Tools and Operand Resources*

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	*t*-value	Sig.	Verbal Description
(Constant)	.459	.534	-	.858	.39	Insignificant
AI in Guest Personalization	.385	.109	.385	3.534	.00	Positive, Significant
Utilization of IoT	-.106	.127	-.097	-.837	.41	Insignificant
Integration of Blockchain	.307	.123	.269	2.497	.01	Positive, Significant
Customization of Algorithms	.119	.131	.099	.908	.37	Insignificant
Technology Readiness	.166	.135	.133	1.227	.22	Insignificant

AI-driven personalization (β = .385, $p < .05$) and blockchain integration (β = .269, $p < .05$) significantly enhanced operand resources, reinforcing their role in strengthening tangible, tech-enabled service infrastructure. Meanwhile, IoT utilization (β = -.097, $p = .41$), algorithm customization (β = .099, $p = .37$), and technology readiness (β = .133, $p = .22$) showed no significant effects, suggesting that some tools face barriers to effective implementation (Basilisco & Jesus, 2024; Di Paolo et al., 2025).

Table 9 presents relationships between technology tools and customer perceptions of service systems.

Table 9 *Relationships between Technology-Based Business Operational Tools and Service Systems*

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	*t*-value	Sig.	Verbal Description
(Constant)	1.604	.545	-	2.946	.00	Significant
AI in Guest Personalization	.332	.111	.352	2.987	.00	Positive, Significant
Utilization of IoT	-.312	.129	-.303	-2.417	.02	Negative, Significant
Integration of Blockchain	.358	.125	.333	2.855	.01	Positive, Significant
Customization of Algorithms	.008	.134	.007	.059	.95	Insignificant
Technology Readiness	.25	.138	.214	1.818	.07	Insignificant

AI-driven personalization (β = .352, $p < .05$) and blockchain integration (β = .333, $p < .05$) significantly enhanced service systems, affirming their role in streamlining operations and ensuring secure, responsive service delivery (Jerez-Jerez, 2025). However, IoT utilization (β = -.303, $p < .05$) had a negative impact, indicating integration challenges. Customization algorithms (β = .007, $p = .95$) and technology readiness (β = .214, $p = .07$) showed no significant effects, suggesting that system-level value creation requires more than infrastructure—it demands strategic, user-aligned execution (Kandampully et al., 2023).

Table 10 shows relationships between technological business tools and customer perceptions of value propositions.

Table 10 *Relationships between Technology-Based Business Operational Tools and Value Propositions*

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	*t*-value	Sig.	Verbal Description
(Constant)	.696	.573	-	1.215	.23	Insignificant
AI in Guest Personalization	.391	.117	.373	3.342	.00	Positive, Significant
Utilization of IoT	-.244	.136	-.213	-1.796	.08	Insignificant
Integration of Blockchain	.422	.132	.353	3.2	.00	Positive, Significant
Customization of Algorithms	.235	.141	.187	1.671	.10	Insignificant
Technology Readiness	.031	.145	.023	.211	.83	Insignificant

AI-driven personalization (β = .373, $p < .05$) and blockchain integration (β = .353, $p < .05$) significantly improved the value proposition in hospitality, confirming their relevance in delivering high-impact, customer-centric experiences. Meanwhile, IoT utilization (β = -.213, $p = .08$), algorithm customization (β = .187, $p = .10$), and technology readiness (β = .023, $p = .83$) did not show significant effects, suggesting that strategic implementation—not just availability—of technology was essential for value creation (Shariffuddin et al., 2023).

Discussion

This study demonstrated that technology-based business operational tools meaningfully shape guest experiences through co-creation mechanisms outlined in Service-Dominant Logic (SDL). Blockchain integration and technology readiness emerged as key drivers of perceived value, enhancing operant and operand resources, and improving service systems, reflecting their roles in creating secure, reliable, and seamless guest interactions. These technologies function not merely as transactional tools, but as enablers of trust and transparency within the value network, reinforcing SDL's principle that operant resources such as information and systems are central to value-in-use.

Interestingly, AI-driven personalization and customization algorithms did not consistently yield significant effects across all SDL dimensions. This may be attributed to limitations in personalization depth, system maturity, or guest readiness to engage with AI-enhanced services. In particular, some guests may have perceived AI as impersonal or intrusive, especially when it lacks contextual sensitivity or cultural adaptation, highlighting the need for hospitality operators to refine AI implementation strategies. These findings contrasted with some settings in which AI and IoT showed consistently strong impacts, suggesting context-specific challenges in emerging hospitality environments.

For hotel managers in emerging economies like the Philippines, these findings underscore the importance of prioritizing technologies that strengthen both operational reliability and customer empowerment. Managers should not only invest in scalable digital infrastructure, but also align these investments with employee training, data ethics, and contextual service design. Overreliance on automation without parallel human engagement may undermine emotional connection, a core factor in service differentiation. Ultimately, value creation in the digital hospitality landscape requires balancing innovation with empathy, scalability with personalization, and automation with authentic service delivery.

Recommendations

To enhance guest satisfaction and long-term competitiveness, hospitality businesses should prioritize the targeted integration of AI, blockchain, and customization algorithms in areas where they demonstrably improve service delivery, value perception, and system efficiency. For instance, AI-driven personalization should be implemented with cultural and behavioral sensitivity to avoid perceived intrusiveness. At the same time, blockchain should be used to strengthen secure payment, identity verification, and loyalty programs. Customization algorithms must be aligned with actual customer data profiles to avoid irrelevant or generic service suggestions. Hotel managers should develop a technology investment strategy anchored on infrastructure readiness, ensuring systems are scalable, secure, and compatible with evolving digital trends. Public-private collaboration is also encouraged to support digital policy frameworks that govern the ethical use of data, cybersecurity, and guest privacy protections.

Equally critical is employee reskilling—training staff to operate and interpret digital systems while maintaining the warmth and empathy central to hospitality. Blending automation with human touchpoints will ensure that technological advancements do not erode guest connections. Finally, industry stakeholders should support continuous feedback systems and adaptive learning mechanisms to refine digital implementations based on real-time guest experiences.

Author Contributions

Ma. Sherrilyn D. Escala: Conceptualization, methodology, investigation, data curation, formal analysis, writing—original draft, project administration; ***Norberto M. Secretaria:*** Methodology, validation, formal analysis, writing—review & editing; ***Leahlou E. Narvios:*** Investigation, data collection, resources, writing—original draft; ***Jiomarie B. Jesus:*** Conceptualization, theoretical framework development (Service-Dominant Logic anchoring), supervision, writing—review & editing, critical revision for intellectual content; ***Teodorico A. Bastida, Jr.:*** Visualization, statistical validation, writing—review & editing, supervision.

References

Alawami, A., Alawami, M., Obaid, A., Alrushaydan, M., Boudjedra, M. L., Boudjedra, B. E., Alharbi, M., Alzoori, H., Abosaif, S., Bshir, G., Alawami, H., & Abufawr, M. (2025). A systematic review of AI-driven innovations in the hospitality sector: Implications on restaurant management. *American Journal of Industrial and Business Management, 15*(1), 30–40. https://doi.org/10.4236/ajibm.2025.151003

Arici, H. E., Saydam, M. B., & Koseoglu, M. A. (2024). How do customers react to technology in the hospitality and tourism industry? *Journal of Hospitality & Tourism Research, 48*(6), 1081–1096. https://doi.org/10.1177/10963480231168609

Astuti, E., Harsono, I., Uhai, S., Muthmainah, H. N., & Vandika, A. Y. (2024). Application of artificial intelligence technology in customer service in the hospitality industry in Indonesia: A literature review on improving efficiency and user experience. *Sciences Du Nord Nature Science and Technology, 1*(01), 28–36. https://doi.org/10.71238/snst.v1i1.15

Basilisco, G. L., & Jesus, J. B. (2024). Enhancing service quality and customer satisfaction: A study of House of Lechon in the hospitality industry in Cebu City, Philippines. *PREO Journal of Business and Management, 5*(2), 89–98. https://philarchive.org/rec/JESESQ

Black, A. (2025, February 13). Australian cruises are booming among Gen Z and millennials, here's why. *https://philarchive.org/rec/JESESQ*https://www.dailytelegraph.com.au/lifestyle/australian-cruises-are-booming-among-gen-z-and-millennials-heres-why/news-story/bb03c0092fd0f440a09f7cc62e0f32d0

Binesh, F., & Baloglu, S. (2023). Are we ready for hotel robots after the pandemic? A profile analysis. *Computers in Human Behavior, 147,* 107854. https://doi.org/10.1016/j.chb.2023.107854

Botshot. (2025, April 28). Hospitality industry statistics 2025 - Key hotel stats & trends. https://botshot.ai/resources/blog/hospitality-industry-statistics

Busulwa, R., Pickering, M., & Pathiranage, N. W. (2024). Readiness of hospitality and tourism curricula for digital transformation. *Journal of Hospitality, Leisure, Sport & Tourism Education, 35,* 100519. https://doi.org/10.1016/j.jhlste.2024.100519

Capeau, F., Valette-Florence, P., & Cova, V. (2024). A consumer demands-resources model of engagement: Theoretical and managerial contributions from a cross-validated predictive ability test procedure. *Journal of Business Research, 177*, 114619. https://doi.org/10.1016/j.jbusres.2024.114619

Chaudhari, S., Ghanvatkar, S., & Kankanhalli, A. (2022). Personalization of intervention timing for physical activity: Scoping review. *JMIR mHealth and uHealth, 10*(2), e31327. https://doi.org/10.2196/31327

Chen, L., Huang, J., Zhu, D., & Yang, Y. (2024). Utilization of blockchain technology in personalized nursing: A scoping review. *Journal of Clinical Nursing, 33*(11), 4254–4266. https://doi.org/10.1111/jocn.17320

Chrysafiadi, K., Kontogianni, A., Virvou, M., & Alepis, E. (2025). Enhancing user experience in smart tourism via fuzzy logic-based personalization. *Mathematics, 13*(5), 846. https://doi.org/10.3390/math13050846

Davis, F. D. (1989). Technology acceptance model: TAM. In M. N. Al-Suqri & A. S. Al-Aufi (Eds.) *Information seeking behavior and technology adoption* (pp. 205–219). IGI Global. https://www.scirp.org/reference/referencespapers?referenceid=3834466

Di Paolo, F., Bettiga, D., & Lamberti, L. (2025). Leveraging social capital for destination promotion in the metaverse: The Enoverse case. *Tourism Management*, 107, 105072. https://doi.org/10.1016/j.tourman.2024.105072

Furrier, M. T., de Lamônica Freire, O. B., & de Vasconcelos Gomes, L. A. (2025). Toward an unfolding view of brand value co-creation from a multi-stakeholder perspective. *Journal of Marketing Theory and Practice,* 1–21. https://doi.org/10.1080/10696679.2025.2475061

Gallarza, M., Gil-Saura, I., & Arteaga-Moreno, F. (2023). Bridging service dominant logic and the concept of customer value through higher order indexes: Insights from hospitality experiences. *European Journal of Tourism Research, 35,* 3510. https://doi.org/10.54055/ejtr.v35i.3104

Grua, E. M., De Sanctis, M., Malavolta, I., Hoogendoorn, M., & Lago, P. (2022). An evaluation of the effectiveness of personalization and self-adaptation for e-health apps. *Information and Software Technology, 146*, 106841. https://doi.org/10.1016/j.infsof.2022.106841

Gutierriz, I., Ferreira, J. J., & Fernandes, P. O. (2023). Digital transformation and the new combinations in tourism: A systematic literature review. *Tourism and Hospitality Research*, 25(3), 194–212. https://doi.org/10.1177/14673584231198414

Han, H., Kim, S. S., Badu-Baiden, F., Al-Ansi, A., & Kim, J. J. (2024). Drivers of hotel guests' choice of smart products: Applying a complexity theory involving TAM, technology readiness, TPB, and emotion factors. *International Journal of Hospitality Management, 120*, 103755. https://doi.org/10.1016/j.ijhm.2024.103755

Horng, J. S., Liu, C. H., Chou, S. F., Yu, T. Y., Chang, Y. H. E., & Hu, D. C. (2024). Big data meets sustainable marketing: A new integrated curriculum for hospitality education. *Journal of Hospitality, Leisure, Sport & Tourism Education, 35*, 100502. https://doi.org/10.1016/j.jhlste.2024.100502

Hsu, H., & Tseng, K. F. (2022). Facing the era of smartness: Constructing a framework of required technology competencies for hospitality practitioners. *Journal of Hospitality and Tourism Technology, 13*(3), 500–526. https://doi.org/10.1108/JHTT-04-2021-0120

Jain, A. (2024, December 16). *'Chai and samosas': US hotels welcome Indian tourist boom to revive revenue*. Reuters. https://www.reuters.com/world/us/chai-samosas-us-hotels-welcome-indian-tourist-boom-revive-revenue-2024-12-11/

Jain, S., Sharma, K., & Devi, S. (2024). The dynamics of value co-creation behavior: A systematic review and future research agenda. *International Journal of Consumer Studies, 48*(1), e12993. https://doi.org/10.1111/ijcs.12993

Jalilvand, M. R., & Ghasemi, H. (2024). Augmented reality technology in tourism and hospitality research: A review from 2010 to 2024. *Journal of Science and Technology Policy Management*, *Vol. ahead-of-print* (No. ahead-of-print). https://doi.org/10.1108/JSTPM-04-2024-0136

Jerez-Jerez, M. J. (2025). A study of employee attitudes towards AI, its effect on sustainable development goals and non-financial performance in independent hotels. *International Journal of Hospitality Management*, 124, 103987. https://doi.org/10.1016/j.ijhm.2024.103987

Jesus, J. B. (2024a). Revealing contrasting outlooks: A critical examination of the efficacy of Agile project management frameworks in business process outsourcing (BPO) in Cebu City, Philippines. *PREO Journal of Business and Management, 5*(2), 48–56. https://philpapers.org/archive/JESRCO.pdf

Jesus, J. B., Kilag, O. K. T., Gamboa, J. C. M., Solatorio, R. F., & Matis, P. J. A. (2024b). Exploring the role of digital transformation in modern accounting and business practices: A systematic review. International *Multidisciplinary Journal of Research for Innovation, Sustainability, and Excellence (IMJRISE), 1*(6) 896–902. https://doi.org/10.5281/zenodo.11669590

Jesus, J., Llamedo, E. E., Tenedero, M. A., & Navares, E. C. (2025). Assessing employee satisfaction with human capital management practices in the BPO sector: A Cebu City case study. *ASEAN Journal of Management & Innovation, 12*(1), 51–64. https://so13.tci-thaijo.org/index.php/AJMI/article/view/1037.

Kandampully, J., Bilgihan, A., Van Riel, A. C. R., & Sharma, A. (2023). Toward holistic experience-oriented service innovation: Co-creating sustainable value with customers and society. *Cornell Hospitality Quarterly*, *64*(2), 161–183. https://doi.org/10.1177/19389655221108334

Kumar, S., Lim, W. M., Sivarajah, U., & Kaur, J. (2023). Artificial intelligence and blockchain integration in business: Trends from a bibliometric-content analysis. *Information Systems Frontiers, 25*(2), 871–896. https://doi.org/10.1007/s10796-022-10279-0

Kumar, D., Shandilya, A. K., & Kumar, S. (2024). Artificial intelligence adoption in hospitality and tourism: A science mapping approach. *Global Journal of Business Social Sciences Review, 12*(4), 209–217. https://doi.org/10.35609/gjbssr.2024.12.4(5)

Le, Q. H., Phan Tan, L., & Hoang, T. H. (2022). Customer brand co-creation on social media: A systematic review. *Marketing Intelligence & Planning, 40*(8), 1038–1053. https://doi.org/10.1108/MIP-04-2022-0161

Li, J., Ma, F., & DiPietro, R. B. (2022). Journey to a fond memory: How memorability mediates a dynamic customer experience and its consequent outcomes. *International Journal of Hospitality Management, 103*, 103205. https://doi.org/10.1016/j.ijhm.2022.103205

Lin, K. J., Chen, S., Zhang, K., Li, X., Ye, H., & Law, R. (2025). Technology evaluation: A systematic review and implications for ethical technology management in tourism and hospitality. *Asia Pacific Journal of Tourism Research*, *30*(2), 194–210. https://doi.org/10.1080/10941665.2024.2425604

Liu, C. H., Dong, T. P., & Vu, H. T. (2023). Transformed virtual concepts into reality: Linkage the viewpoint of entrepreneurial passion, technology adoption propensity, and advantage to usage intention. *Journal of Retailing and Consumer Services, 75,* 103452. https://doi.org/10.1016/j.jretconser.2023.103452

Liu, X., Zeng, Y., He, J., & Li, Z. (2022). Value cocreation research in tourism and hospitality: A comparative bibliometric analysis. *International Journal of Contemporary Hospitality Management, 34*(2), 663–686. https://doi.org/10.1108/IJCHM-05-2021-0666

Liu, X. X., Yin, C. Y., & Li, M. R. (2024). The power of voice! The impact of robot receptionists' voice pitch and communication style on customer value cocreation intention. *International Journal of Hospitality Management, 122*, 103819. https://doi.org/10.1016/j.ijhm.2024.103819

Luo, Y., Yang, L., Ye, Q., & Liao, Q. (2023). Effects of customization and personalization affordances on perceived value and continuance intention of smartwatch use. *Technological Forecasting and Social Change, 194*, 122752. https://doi.org/10.1016/j.techfore.2023.122752

Lv, L., Chen, S., Liu, G. G., & Benckendorff, P. (2024). Enhancing customers' life satisfaction through AI-powered personalized luxury recommendations in luxury tourism marketing. *International Journal of Hospitality Management, 123,* 103914. https://doi.org/10.1016/j.ijhm.2024.103914

Makivić, R., Vukolić, D., Veljović, S., Bolesnikov, M., Dávid, L. D., Ivanišević, A., Silić, M., & Gajić, T. (2024). AI impact on hotel guest satisfaction via tailor-made services: A case study of Serbia and Hungary. *Information, 15*(11), 700. https://doi.org/10.3390/info15110700

Mekouar, L., Iraqi, Y., Damaj, I., & Naous, T. (2022). A survey on blockchain-based recommender systems: Integration architecture and taxonomy. *Computer Communications, 187,* 1–19. https://doi.org/10.1016/j.comcom.2022.01.020

Molina-Collado, A., Gómez-Rico, M., Sigala, M., Molina, M. V., Aranda, E., & Salinero, Y. (2022). Mapping tourism and hospitality research on information and communication technology: A bibliometric and scientific approach. *Information Technology & Tourism, 24*(2), 299–340. https://doi.org/10.1007/s40558-022-00227-8

Narayan, R., Gehlot, A., Singh, R., Akram, S. V., Priyadarshi, N., & Twala, B. (2022). Hospitality feedback system 4.0: Digitalization of feedback system with integration of industry 4.0 enabling technologies. *Sustainability, 14*(19), 12158. https://doi.org/10.3390/su141912158

Ndaguba, E. A., & Van Zyl, C. (2023). Exploring bibliometric evidence of Airbnb's influence on urban destinations: Emotional solidarity, Airbnb supply, moral economy, and digital future. *International Journal of Tourism Cities, 9*(4), 894–922. https://doi.org/10.1108/ijtc-03-2023-0056

Nuong, M. D., & Ragavan, N. A. (2023). Digital future of the global hospitality industry and hospitality education: Review of related literature. *Asia-Pacific Journal of Futures in Education and Society*, *2*(2), 71–100. https://doi.org/10.58946/apjfes-2.2.P5

Onofrei, G., Filieri, R., & Kennedy, L. (2022). Social media interactions, purchase intention, and behavioural engagement: The mediating role of source and content factors. *Journal of Business Research, 142*, 100–112. https://doi.org/10.1016/j.jbusres.2021.12.031

Pielech, M., Beckmann, E. A., & Dorsainvil, H. (2025). Optimizing psychological treatments for pediatric chronic pain to enhance outcomes, availability, and accessibility. *Current Opinion in Psychology*, 64, 102038. https://doi.org/10.1016/j.copsyc.2025.102038

Rane, N., Choudhary, S., & Rane, J. (2023). Hyper-personalization for enhancing customer loyalty and satisfaction in customer relationship management (CRM) systems. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4641044

Ratna, S., Saide, S., Putri, A. M., Indrajit, R. E., & Muwardi, D. (2024). Digital transformation in tourism and hospitality industry: A literature review of blockchain, financial technology, and knowledge management. *EuroMed Journal of Business, 19*(1), 84–112. https://doi.org/10.1108/EMJB-04-2023-0118

Riegger, A. S., Merfeld, K., Klein, J. F., & Henkel, S. (2022). Technology-enabled personalization: Impact of smart technology choice on consumer shopping behavior. *Technological Forecasting and Social Change, 181,* 121752. https://doi.org/10.1016/j.techfore.2022.121752

Sadiq, I., & Waheed, A. (2023). Resource value co-creation in retail: integrating service dominant logic of marketing and consumer culture theory. *Russian Law Journal*, *11*(2), 456-475. https://doi.org/10.52783/rlj.v11i2.2200

Shariffuddin, N. S. M., Azinuddin, M., Yahya, N. E., & Hanafiah, M. H. (2023). Navigating the tourism digital landscape: The interrelationship of online travel sites' affordances, technology readiness, online purchase intentions, trust, and E-loyalty. *Heliyon*, 9(8), e19135. https://doi.org/10.1016/j.heliyon.2023.e19135

Shin, H., & Perdue, R. R. (2022). Hospitality and tourism service innovation: A bibliometric review and future research agenda. *International Journal of Hospitality Management, 102,* 103176. https://doi.org/10.1016/j.ijhm.2022.103176

Son, Y. S., & Kwon, K. H. (2023). Utilization of smart devices and the evolution of customized healthcare services focusing on big data: A systematic review. *mHealth, 10,* 7. doi: https://doi. 10.21037/mhealth-23-24

Spaho, E., Çiço, B., & Shabani, I. (2025). IoT integration approaches into personalized online learning: Systematic review. *Computers, 14*(2), 63. https://doi.org/10.3390/computers14020063

Sthapit, E., Garrod, B., Stone, M. J., Björk, P., & Song, H. (2023). Value co-destruction in tourism and hospitality: A systematic literature review and future research agenda. *Journal of Travel & Tourism Marketing, 40*(5), 363–382. https://doi.org/10.1080/10548408.2023.2255881

Tomczyk, A. T., Buhalis, D., Fan, D. X., & Williams, N. L. (2022). Price-personalization: Customer typology based on hospitality business. *Journal of Business Research, 147,* 462–476. https://doi.org/10.1016/j.jbusres.2022.04.036

Ullah, F., Lei, S., Newton, J. K., & Lund, D. W. (2025). TCM-AVC Model: A systematic literature review on value co-creation in B2B and research agenda. *Sustainability, 17*(5), 2021. https://doi.org/10.3390/su17052021

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, *27*(3), 425–478. https://doi.org/10.2307/30036540

Yang, S., Li, Q., Jang, D., & Kim, J. (2024). Deep learning mechanism and big data in hospitality and tourism: Developing personalized restaurant recommendation model for customer decision-making. *International Journal of Hospitality Management, 121*, 103803. https://doi.org/10.1016/j.ijhm.2024.103803

Yetis, H., Karakose, M., & Baygin, N. (2022). Blockchain-based mass customization framework using optimized production management for industry 4.0 applications. *Engineering Science and Technology, an International Journal, 36,* 101151. https://doi.org/10.1016/j.jestch.2022.101151

Zimmermann, R., Mora, D., Cirqueira, D., Helfert, M., Bezbradica, M., Werth, D., Weitzl, W., Riedl, R., & Auinger, A. (2023). Enhancing brick-and-mortar store shopping experience with an augmented reality shopping assistant application using personalized recommendations and explainable artificial intelligence. *Journal of Research in Interactive Marketing, 17*(2), 273–298. https://doi.org/10.1108/JRIM-09-2021-0237