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The Influence of AI-Enabled Service Quality and E-WOM on Sustainable Social Services with Mediation of Customer Trust

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ABSTRACT

The growing intersection of technology, consumer behavior, and public welfare necessitates a cross-disciplinary approach to understanding service innovation. This study examines the influence of artificial intelligence (AI)-enabled service quality and electronic word-of-mouth (E-WOM) on customer trust, emphasizing their combined role in fostering sustainable social service delivery. Drawing on interdisciplinary perspectives from information systems, psychology, and public administration, the research employs a quantitative methodology, gathering data from 500 respondents through a structured survey. Using Partial Least Squares Structural Equation Modeling (PLS-SEM), the study finds that both AI-enabled service quality and E-WOM significantly enhance customer trust, which in turn positively affects repurchase intention. Moreover, customer trust mediates the relationship between technological service features and consumer loyalty. These findings underscore the need for ethical AI integration, transparent communication, and trust-building strategies in digitally mediated social services. Future interdisciplinary research is encouraged to explore industry-specific AI applications, governance challenges, and contextual moderators within sustainable social service ecosystems.

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1.0 Introduction

The application of artificial intelligence (AI) and big data analytics have resulted in the need for service industries to enable businesses like providing better service quality, a personalized customer engagement along with better decision making (Huang & Rust, 2021). In the telecommunications, banking, e commerce, hospitality and social services industries, efficiency, trust and satisfaction of the customers are the key aspects for the business success and efficiency of the business, and here AI driven solutions are widely used. Given predictive analytics, machine learning, automated service support systems and recommendation algorithms, organisations are able to predict what customers need and improve the service delivery (Dwivedi et al., 2021). In digital era, retaining and maintaining relationships is a lot for businesses. AI enabled service quality plays central role in determining customer perception and buyer decision as well as for repeated transaction (Mariani et al., 2021). The features of personalized interactions, real time responsiveness and more enhanced user experience leads to more customer satisfaction and trust (Cheng & Jiang, 2023). The service models based on the use of the AI and big data by the firms allow them to gain competitive advantage by having more attractive brands and higher rate of repurchases (Grewal et al., 2020).

As trust plays a critical role in shaping customer behavior in AI powered environment, where issues related to data privacy and security, as well as transparency in algorithm's behavior are of importance in making decisions (Wirtz et al., 2018). Being digital services, consumers seek more and more information through electronic word of mouth (E-WOM) —online reviews, social media discussions, and peer recommendations —to assess experiences' credibility (Filieri et al., 2021). E-WOM has a widespread influence beyond personal network and may be one of the strongest forces of customer trust and brand (King et al., 2014). As AI and big data gain in popularity in the service industry, little research is given to the interaction among AI enabled service quality, E-WOM, trust, and repurchase intention. It is known from prior service studies that while they examine the individual effects of AI on service efficiency and E-WOM on consumer behaviour, the mediating role of customer trust in this relationship has not yet been explored (Chatterjee et al., 2022). This study attempts to bridge this gap through the investigation of the influences of AI driven service quality and the E-WOM on customer trust, which in turn, is predicted to affect repurchase intention.

Although more and more consumers are becoming dependent on AI services, privacy, security, and human conversation concerns still exist (Shankar, 2021). Although AI increases efficiency, its effectiveness for building emotional contact and trust, however, is still a challenge (Lu et al., 2022). Despite investing in AI-based innovations, organizations do not have frameworks to evaluate the impact of these innovations on customer trust and loyalty (Rust & Huang, 2021). Likewise, the credibility of the online reviews and digital recommendations relies on the trust of the consumers as fake reviews and misinformation might lead to the loss of the consumers trust on E-WOM (Zhu & Zhang, 2010). In order to understand how digital communication shapes trust and repurchase decisions, service providers should take note.

The findings of this research demonstrate the importance of customer trust as a mediator

of the relationship between AI enabled service quality, E-WOM, and repurchase intention. Building on the concept of AISA trust, it regards transparency, reliability, and data security as trust building factors in the AIdriven service environment (Parasuraman et al. 2020). Furthermore, it assesses how the credibility, volume and valence of E-WOM affect trust formation process and influence the repeat purchase behavior (Cheung, et al., 2012).

2.0 Literature Review

This study also defines repurchase intention as consumer willingness to buy service packages more in future times (for example, Zeithaml, Berry, & Parasuraman, 1996). The measurement is directly related to business sustainability and customer loyalty. According to Kumar & Reinartz (2016), repurchase decisions of the customer are affected by multiple elements including service quality and customer satisfaction; trust and perceived value. AI powered predictive analytics and automated recommendations and chatbots provide valuable help in the digital service industry where high quality repurchase decision is managed by the industry (Rust and Huang, 2021). If customers see AI based services raise both convenience and accuracy while keeping it personalized, it ends up increasing their purchase retention (Chatterjee et al., 2021). Enhancing service quality through the use of AI and Big Data can affect the repurchase intention. The application of AI services, for instance, personalized recommendations, real time customer support and much more automated responses allows improved customer experience (Kaplan & Haenlein, 2019). According to studies, AI contributes to enhanced service quality that leads to customer satisfaction where as a result customer's repurchase intentions are stronger (Gursoy et al., 2019). Features of artificial intelligence driven service include dynamic pricing, predictive maintenance and virtual assistant that smoothen the operations and encourage the return of customers (Luo et al., 2021). Despite this, data privacy and AI biases can be concerns blocking trust, and thereby diminish the effect of AI on the repurchase behavior (Shin, 2020).

The foundation requirement to be working on AI services is building customers' trust. Open systems with dependable machines that provide proper outputs on the base of the set ethical practices (Hoff & Bashir, 2015) are what AI based service acceptance originates from. This is as they need to trust the level of accuracy and unbiasedness in AI driven systems. Sharma et al. (2020) demonstrated that, with transparent and trustworthy decision making process from AI – Big Data services, customer trust can be established on the system. Consequently, the collaboration of AI chatbots with recommendation algorithms and the prediction analytics improves the service operations, making customers more confident to their service providers (Chung et al., 2020). Customers trust formation is challenged by customers who do not believe in the notion of nonexistent human interaction, combined with the threats of privacy and algorithmic bias (Kim et al., 2009).

Electronic word-of-mouth (E-WOM) refers to online customer reviews, ratings, and feedback that influence consumer trust and purchase decisions (Cheung & Thadani, 2012). Scientific research provides evidence that positive E-WOM produces trustworthiness perceptions leading to customer trust establishment (Filieri et al., 2018). E-WOM has become the more trusted form of customer feedback than traditional advertising so it stands as a strong trust-determining

factor for consumers (Ismagilova et al., 2020). Service industries benefit greatly from E-WOM because customers heavily depend on peer reviews to determine service quality as per Park et al. (2014). The effects of negative E-WOM on trust are so powerful that businesses who use AI-driven service models must prioritize reputation management according to Zhang et al. (2020).

Research shows that repurchase intention closely relates to trust according to Gefen et al. (2003). Service providers who establish trust with customers create conditions for enduring partnerships alongside multiple future transactions (Morgan & Hunt, 1994). Research shows that trust eases customers' perception of risk and raises their confidence levels so they find it simpler to buy again (Kim et al., 2009). The trust customers have in AI-enabled services serves as a fundamental factor to preserve operational stability alongside brand customer faithfulness (Oliver, 2015). Businesses which focus on developing trust-building strategies through data privacy protection as well as bias reduction mechanisms and transparent practices will retain their customers more effectively (Wang et al., 2018).

Several research findings indicate trust from customers as one of the important variables, constituted as the mediator between AI enabled service quality and later purchase decisions. When customers have trust in these systems, the effects of improving the service efficiency with AI functions are strengthened in customers repurchase decisions (Chatterjee et al., 2021). Trust can be regarded as a psychological connection to reduce uncertainty and fulfill customer assurance for reliability of AI service (Hoff & Bashir 2015). Sharma et al. (2020) and another research (2002) show that companies that integrate AI in personalized services create trust with customers thereby making them have stronger repurchase intentions.

Customer trust that is impacted by E-WOM is because of which repurchase intention is affected (Hanaysha, 2011). According to the study of Zhang et al. (2020), the credibility, volume and valence of the online reviews contribute to the development of consumer trust. Results of the study show that trust plays the role of a basic link between matrix of E-WOM effects in modification of purchasing decisions (Wang et al., 2018). Internet positive recommendations contribute to trust levels, and reduce uncertainties on product purchase that leads to greater consumer loyalty (Hennig Thurau & Walsh, 2004). Adding AI-driven sentiment analysis and automatic reputation management systems, businesses will be able to improve customer trust, and, as a result, the relation between E-WOM and customer intention to repurchase (Ismagilova et al., 2020).

3.0 Methodology

The research analysis uses quantitative methods to understand the connections among AI-Big Data-enabled service quality and electronic word-of-mouth together with customer trust along with service package repurchase intention. The research team distributed structured questionnaires to 500 participants to obtain data that would provide enough participants to perform solid statistical analysis. The research analyzed participants who accessed AI-enabled telecommunication, e-commerce and banking services in their previous usage. This study utilized non-probability convenience sampling to collect data from participants who used AI-enabled services in their previous experiences because such respondents offered applicable perspectives.

The research questionnaire derived its content from established measurement scales in previous studies to guarantee validity in addition to reliability. The survey distribution contained sections regarding participant demographics in addition to evaluations of AI-Big Data-enabled service quality, customer trust, electronic word-of-mouth and their buying behavior. The measurement included a five-point Likert scale that ran from 1 (strongly disagree) through 5 (strongly agree). Standards in data accuracy received improvement through a prior pilot study of restricted survey respondents before implementing the expanded data collection process.

SmartPLS software served to analyze the data through Partial Least Squares Structural Equation Modeling (PLS-SEM). The researchers selected PLS-SEM because this method works best with complex models having latent variables and mediation effects. The research conducted a two-step analytical process starting with construct validity and reliability assessment through Cronbach's alpha and composite reliability together with Average Variance Extracted (AVE). Testing took place in two stages of the research process. First came the measurement model assessment followed by a verification of the structural model links between AI-Big Data-enabled service quality and E-WOM and their connections to customer trust and repurchase intention. Researchers evaluated the mediating effect of customer trust by conducting bootstrapping procedures.

Everything in this research was conducted based on ethical standards. Prior to the study each research participant received necessary details about the research aims and provided consent for participation. The study guaranteed full privacy through complete protection of participant anonymity along with confidentiality from start to finish. The study strengthens research about AI in service industries by delivering empirical proof regarding the relationship between AI-enabled service quality and digital communication on consumer trust and repurchase intentions.

4.0 Findings and Results

4.1 Measurement Model

All constructs demonstrate appropriate internal consistency and convergent validity based on the reliability and validity analysis results. Internal reliability of the constructs is verified through Cronbach's Alpha values above 0.7 while AI-Big Data (AIBD) Enabled Service Quality achieved 0.873 and Repurchase Intention of Service Packages reached 0.908. The reliability assessment is additionally supported by rho_A values. The Composite Reliability (CR) scores of all constructs remain above 0.7 which verifies internal consistency of the model while the Average Variance Extracted (AVE) results exceed 0.5 except for Electronic Word of Mouth (E-WOM) (0.501) and Customer Trust (0.506) that reach the threshold but barely. The measurement model exhibits sound reliability together with validity which produces stable construct measurement.

Table 4.1: Reliability Analysis

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
AI-Big Data (AIBD) Enabled Service Quality	0.873	0.879	0.904	0.611
Customer Trust	0.753	0.757	0.828	0.506
Electronic Word of Mouth (E-WOM)	0.738	0.757	0.826	0.501
Repurchase Intention of Service Packages	0.908	0.909	0.925	0.607

4.2 Structural Equational Model

The structural equation model data shows the degree of importance between these constructs and their connection strength. The structural equation analysis shows that all directional relationships exhibit positive values thus indicating that AI-Big Data Enabled Service Quality together with Customer Trust and Electronic Word of Mouth (E-WOM) generates positive effects on Repurchase Intention of Service Packages. T-statistics prove greater than 1.96 and P-values stay less than 0.05 to establish statistical significance in all relationships. Repurchase Intention shows a moderate positive relationship with E-WOM (0.192, p = 0.001) but Customer Trust demonstrates the highest effect (0.425, p = 0.000). The influence of AI-Big Data Enabled Service Quality on Customer Trust (0.163, p = 0.000) and Repurchase Intention (0.104, p = 0.015) is significant and both Customer Trust (0.161, p = 0.011) and Repurchase Intention show a direct relationship. The research results confirm theoretical predictions about the influence of AI-driven service quality combined with E-WOM because these elements drive up customer trust and repurchase intentions.

Table 4.2: Structural Equational Model

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
AI-Big Data (AIBD) Enabled Service Quality -> Customer Trust	0.163	0.163	0.045	3.611	0
AI-Big Data (AIBD) Enabled Service Quality -> Repurchase Intention of Service Packages	0.104	0.106	0.043	2.433	0.015
Customer Trust -> Repurchase Intention of Service Packages	0.161	0.162	0.063	2.555	0.011
Electronic Word of Mouth (E-WOM) -> Customer Trust	0.425	0.429	0.055	7.69	0
Electronic Word of Mouth (E-WOM) -> Repurchase Intention of Service Packages	0.192	0.195	0.057	3.38	0.001

Customer Trust acts as a major intermediate factor which strengthens the connection between AI-Big Data Enabled Service Quality and Electronic Word of Mouth and Service Package Repurchase Intention. The connection between AI-Big Data Enabled Service Quality and Repurchase Intention through Customer Trust proves statistically significant yet shows a weak

indirect effect of 0.026 according to T-statistics at 2.013 and P-values of 0.045. Research findings show that E-WOM indirectly affects Repurchase Intention through Customer Trust with 0.068 strength based on 2.226 T-statistic and 0.026 P-value which validates stronger mediation. The analysis shows Customer Trust to be a crucial mediator between Service Quality and E-WOM and Service Quality and Repurchase Intention because the calculated P-values are lower than 0.05.

Table 4.3 Mediating Effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
AI-Big Data (AIBD) Enabled Service Quality -> Customer Trust -> Repurchase Intention of Service Packages	0.026	0.027	0.013	2.013	0.045
Electronic Word of Mouth (E-WOM) -> Customer Trust -> Repurchase Intention of Service Packages	0.068	0.07	0.031	2.226	0.026

5.0 Discussion and Conclusion

Customer Trust is identified as the key process that links service quality promoted by AI-Big Data with Electronic Word of Mouth (E-WOM) because these two factors independently help to reinforce repurchase intention. Though AI-based services are effective in increasing customer confidence due to the provision of more responsive and personalized services, it has a weak implication on the purchase intention than the E-WOM. This observation implies that customers do not just consider the technical efficiency of a service alone but they also look extensively at the shared experiences and suggestions of other people before spending their money in the future. This means that the capacity of AI-enhanced service quality to initiate loyalty partially relies on the capacity to foster trust which subsequently increases the persuasiveness of customer advocacy.

Additionally, the discussion highlights the point that organizations should not use technological advancement as a means of achieving long-term retention since they should complement the technological innovations with proper trust-building approaches. As Customer Trust is an essential mediator, it guarantees that the increase of service quality could be reflected into customer confidence which consequently reinforces the reliability and effectiveness of E-WOM. Positive word-of-mouth performs best where there is a foundation of trust, and this is a reinforcing loop because happy and trusting customers become the vocal promoters that induce others to engage in repurchase behavior. As such, organizations aiming to optimize customer retention must give priority to mechanisms that help to ensure transparency, reliability, and consistency when interacting with customers as these are the foundation of trust and the sustainable impact of E-WOM.

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