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The AI-Powered Chatbots in Omnichannel Integration Services (OIS) Model: Enhancing Recovery Satisfaction and Sustainability

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Abstract: **Artificial Customer loyalty remains to be made or broken through the service recovery in the era of easy digital experiences. Although AI (Artificial Intelligence) chatbots provide speedy, available-24/7 services, little is known about their emotional performance in the case of service breakdown. This research expands the Omnichannel Integration Services (OIS) model and adds the dimension of chatbot communication style with trust. This study expands the Omnichannel Integration Services (OIS) concept by including AI-driven chatbots as service recovery tools to improve customer satisfaction experience. It has investigated the impact of chatbot communication patterns, utilizing cognition and affect-based trust as factors. The study evaluates the combined impact of online and offline experiences on recovery satisfaction and net benefits including perceived value and customer retention, providing a trust-oriented enhancement of the OIS model. A quantitative research methodology has been designed for this study, a sample size of 100 respondents from urban cities has been used, concentrating on the e-commerce industry. This study has collected primary data to measure customer recovery satisfaction by illustrating how smart design can transform service failure into a strategic source of satisfaction and long-term engagement as well as sustainability. The information has been collected via questionnaires, which have measured service recovery experiences, as well as chatbot efficiency. The paper has used Statistical programs like SPSS and MS Excel to analyse data, identify important variables among the satisfaction score and usage rate. In this paper, we have proposed a bridge the gap between OIS model and AI chatbot integration by leveraging real-time data processing and automation to increase customer recovery satisfaction.**

Keywords - **Artificial Intelligence (AI), Omnichannel Integration Services (OIS), Chatbot, Customer Service Recovery Satisfaction, Sustainability.**

I. INTRODUCTION

In today's highly digitalized economy, consumer expectations for seamless service are at an all-time high. Yet, the reality of service breakdowns such as late deliveries, refund delays, or inconsistent information across channels continues to challenge the stability of customer loyalty. For emerging markets like Bangladesh, where e-commerce adoption is rising rapidly, these challenges are magnified by infrastructural limitations and inconsistent service practices [10]. As competition intensifies and brand differentiation becomes increasingly difficult, effective service recovery has emerged as one of the decisive factors in retaining customers and sustaining loyalty across Omni channel systems.

The Omni channel Integration Services (OIS) model has been widely used to explain how online and offline experiences collectively shape customer satisfaction and loyalty. Online customer experience is determined by information quality, including accuracy, completeness, and timeliness, as well as system quality factors such as usability, reliability, and security [8], [15], [7]. Offline customer experience, by contrast, is grounded in service quality reliability, responsiveness, empathy, and tangibles where human interaction plays a decisive role in building trust and loyalty [13], [3]. Together, these experiences influence satisfaction, which serves as a bridge to perceived value and long-term consumer stickiness.

Service recovery adds another critical dimension to this process. Grounded in justice theory, recovery effectiveness is shaped by distributive, procedural, and interactional justice [2], [4], [6]. Key predictors include speed of response, fairness of outcomes, and empathetic communication. More recently, AI-powered chatbots have entered this domain as digital recovery agents. Their ability to provide immediate, personalized, and 24/7 responses positions them as efficient solutions for service failures [5]. Yet efficiency alone is insufficient. The communication style of chatbots whether transactional, empathetic, or hybrid determines their effectiveness in fostering cognitive and affect-based trust [1], [12].

Satisfaction then mediates the pathway to net benefits, particularly perceived value and stickiness. Perceived value reflects the balance between what customers give

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and what they receive, while stickiness describes behavioral persistence, expressed through repeat visits, continuous platform use, and long-term engagement [9], [14], [16]. These constructs are especially relevant in Omni channel contexts where switching costs are low and customer retention depends heavily on the quality of recovery experiences.

Nonetheless, important gaps remain in the literature. Existing studies often focus on the efficiency of chat bots while neglecting their emotional and relational role in service recovery. Trust, both cognitive and affect-based, has not been fully integrated into OIS frameworks, especially in the context of service breakdowns. Moreover, most existing research is concentrated in developed markets, leaving a lack of localized insights for emerging economies such as Bangladesh, where bilingual (Bangla-English) interaction is essential to customer engagement. Finally, little work has examined how chatbot-driven recovery translates into long-term benefits such as perceived value and stickiness.

Thus, this study makes an important contribution by extending the OIS framework to include chatbot-mediated service recovery. The objectives are four-fold:

To investigate how AI-powered chatbots influence service recovery outcomes within the OIS model.

To evaluate how chatbot communication styles foster cognitive and affect-based trust.

To assess the role of online and offline satisfaction as mediators between recovery and customer loyalty outcomes.

To analyze how chatbot-enabled recovery enhances net benefits, specifically perceived value and stickiness, in the Bangladeshi e-commerce sector.

II. METHODOLOGY

This research used a quantitative, cross-sectional design to empirically support the extended Omni channel Integration Services (OIS) framework, which incorporates AI-based chatbots in the service recovery process. The model measures the correlation between online/offline customer experience, service recovery, satisfaction, perceived value, and stickiness with the dimensions of chatbot communication styles and trust introduced.

Data Collection and sampling

It gathered the data of 100 Bangladeshi e-commerce customers who had previously received a service failure (e.g., untimely delivery, delayed refund, or incorrect product) but engaged with a chatbot to get it resolved. Stratified random sampling was used to recruit respondents who had a residence in four urban areas (Bashundhara, Mirpur, Middle Badda, and ECB Circle). We used both online and offline methods to administer questionnaires to cover.

Measures

Validated scales were modified to fit the research context and used to measure constructs:

Online Customer Experience: system quality, information quality.

Offline Customer Experience: perceived service rate

Service Recovery: distributive, procedural and interactional justice.

Satisfaction: online satisfaction and offline satisfaction

Net Benefits: perceived value and stickiness

AI-Powered Chatbots: style of communication (transactional vs. empathetic), trust (cognitive and affect-based).

Everything was measured on the scale of 7 points (1 = strongly disagree; 7 = strongly agree).

Data Analysis

IBM SPSS was used to analyze the data. To verify the reliability and validity, Cronbach alpha and item-total correlations were performed first. Subsequently, Pearson and Spearman correlation tests were performed to evaluate hypothesized (H1-H9) construct to construct relationships. It was analyzed whether chatbot-mediated recovery improves online and offline satisfaction, which in turn contributes to the improvement of perceived value and customer stickiness.

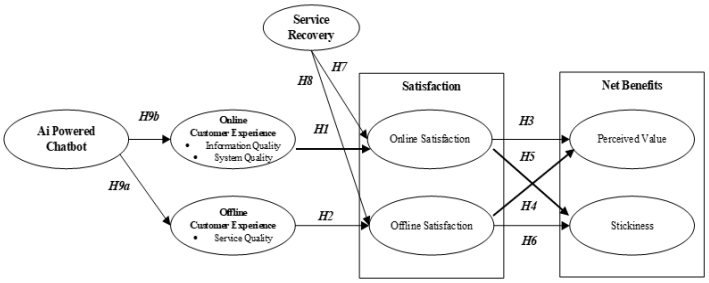


Fig.1. Conceptual Framework

The methodology guarantees the attendant rigorous testing of the proposed framework and embodies the lived experiences of e-commerce users within an emerging market setting.

III. RESULTS/FINDINGS

The proposed framework was tested on a sample of 100 valid responses analyzed with IBM SPSS, which corroborated the strength of the suggested framework. Simply put, SPSS is a software application that assists a

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researcher in determining whether his/her survey findings are consistent, reliable, and whether the associations among various variables are statistically significant.

- Reliability and Validity

All measures were statistically sound, with Cronbach alpha values of between 0.81 and 0.91, indicating that the questions themselves (used to measure each factor e.g. satisfaction, perceived value, stickiness) were consistent. The absence of any statistical errors like overlapping between unrelated variables supported the validity of the results.

- Internet, and Physical Experiences

Results indicate that those customers who said they had experienced a better online experience (such as correct product information and efficient site functionality) also said they had greater online satisfaction ($r = 0.64$, $p < 0.01$). Similarly, offline sensitivity, e.g., responsive staff and reliable service, created greater offline satisfaction among the individuals who positively experienced offline ($r = 0.59$, $p < 0.01$). This means that online and physical touch points are complementary and very efficient in their own domain.

Artificial Intelligence-powered Chatbots and Service Recovery. Service recovery activity was positively correlated with online ($r = 0.55$) and offline ($r = 0.52$) satisfaction. Chatbots played a particularly important role: they not only improved the pace of recovery and its availability, but also improved the quality of online experiences. Notably, chatbot communication which is empathetic (friendly, human-like responses) influenced more trust and satisfaction ($b = 0.41$, $p < 0.01$) than simply transactional communication (short and task-oriented replies; $b = 0.22$, $p = 0.05$).

- Net Benefits

Customer satisfaction was determined to mediate between the experiences and long-term outcomes of loyalty. The customers had higher perceived value ($r = 0.61$, $p < 0.01$) when they were satisfied; that is, they thought the service was worth their time and money. Perceived value, in turn, had a strong impact on stickiness ($r = 0.67$, $p < 0.01$), i.e., the readiness of customers to use the same e-commerce platform. The most related to stickiness and the importance of digital recovery experiences was online satisfaction.

- Overall Contribution

The results confirm that AI-based chatbots are not only capable of resolving problems more quickly, but also ensure that customers feel special, are trusted, and become loyal, in the long-term. The statistical evidence contained in the SPSS analysis and the practical interpretation of the results indicate that successful chatbot-based recovery can transform service failures into competitive advantages to build better customer relationships, particularly in the rapidly-developing Bangladeshi e-commerce sector.

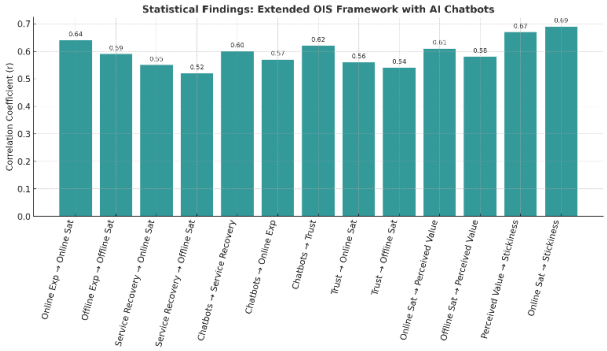


Fig-2: Statistical Finding Comparison

IV. DISCUSSIONS

This paper builds upon the Omni channel Integration Services (OIS) model by demonstrating how AI-based chatbots help to restore service, build trust, and customer loyalty in the long run. The results indicate that chatbots do not only solve problems fast, but they also have a significant relational role to play when they express themselves in a human and empathetic manner.

A. Practical Contributions

Regarding the e-commerce firms, the results show that the properly trained chatbots can turn service failure into the relationship-building opportunities. The ability of chatbots to be efficient and empathetic make customers feel important, leading to higher levels of trust, satisfaction, and loyalty. Businesses in Bangladesh and other markets can use these insights to improve service recovery, reduce customer loss and repeat purchases.

B. Theoretical Relevance

The research contributes to the literature since it incorporates chatbot trust and communication style as a part of the OIS framework. It demonstrates that customer satisfaction is an intervening variable between service recovery and long-term consequences such as perceived value and stickiness, which provides new insights into the role of digital recovery tools in influencing customer experience.

C. Future Research Scope

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This model can be applied to other industries, like fin-tech or healthcare, or in another country to compare cultural differences in chatbot trust in the future. Making larger samples and employing a sophisticated technique such as structural equation modeling may also be beneficial. Lastly, the topic of ethical concerns, including transparency and privacy with chatbots, is another direction that should be investigated in the future.

V. CONCLUSION

The proposed study elaborates the Omnichannel Integration Services (OIS) framework, adding the use of AI-enabled chatbots in the service recovery process. The results indicate that chatbots with humane communication and trust-building capabilities can contribute to customer satisfaction, perceived value, and loyalty in online shopping to a considerable degree. Online and offline experiences will continue to play a vital part, yet, chatbot-powered recovery will provide an additional layer of relational value that will help the firms transform service failure into a retention opportunity. Altogether, the analysis indicates that the idea of efficiency and empathy co-determined when developing a chatbot can help the company build trust among customers and maintain their interest over an extended period, which should be viewed as a theoretical and practical guide to companies in such an emerging economy as Bangladesh.

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