

Optimizing Online Shopping Experience: The Role of AI Chatbots and ‘Like’ Features in Enhancing User E-commerce Engagement and Purchasing Decisions

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Abstract

In the midst of fierce e-commerce competition, user experience (UX) has become a crucial factor for success. However, users often face challenges such as slow responses to product inquiries and a lack of personalization, which can hinder purchasing decisions. This research aims to analyze and prove how optimizing UX through the implementation of an AI Chatbot and a ‘like’ feature can significantly increase user engagement and encourage purchasing decisions. The main focus is to design, test, and validate the effectiveness of these two interactive features as a solution to the identified problems. Using a Design Thinking approach, this study began with qualitative data collection through interviews to validate user needs. Based on the initial findings, an initial prototype (version A) and an optimized prototype (version B) were developed. Subsequently, the A/B testing method was used to quantitatively compare the two prototype versions to measure the increase in user acceptance after the optimization process. The results of the initial data analysis show that users perceive the ‘like’ feature as highly influential (80%) and the chatbot as positively influential (60%) on their purchasing decisions. The results of the A/B testing then confirmed that the optimized prototype (version B) received significantly higher ratings, especially in the ‘Very Good’ category, compared to the initial version, which validates the success of the design optimization process. In conclusion, the implementation of an AI Chatbot and a ‘like’ feature, designed through an iterative process, is proved effective in creating a more efficient, personal, and satisfying shopping experience.

Keywords: A/B Testing, AI Chatbot, Design Thinking, E-commerce, User Experience (UX).

I. INTRODUCTION

The development of online stores today involves creating an e-commerce system that is not only robust but also flexible in handling various business processes, such as customer management, transactions, and data analytics [1]. The creation and management of an e-commerce system must consider the integration of various components that support optimal business operations. This includes search engine optimization (SEO), purchase funnel design, and digital marketing strategies that can increase user engagement and drive sales conversions [2]. A robust system must be able to provide an accessible and secure shopping experience for consumers, considering in-depth technical factors in its platform design [5], [8].

One of the key factors in e-commerce success is the ability to meet customers’ ever-increasing expectations. In this context, the personalization of the shopping experience is crucial. Technologies that enable the dynamic customization of the user experience, such as the use of data analytics and AI-based recommendation systems, can strengthen the interaction between customers and the e-commerce platform [3], [4], [6]. Research shows that more personal interactions can increase customer loyalty and strengthen their trust in the platform [3], [10]. However, on the other hand, a common challenge is the gap between the platform’s ability to provide product information quickly and the relevance of the product recommendations provided. Therefore, it is important to design a system that is not only efficient but can also adapt to customer preferences in real-time. Features such as an AI Chatbot and a ‘Like’-based rating system can be used to meet this need, providing a more interactive and personal shopping experience, as well as adding value for customers and increasing their satisfaction [7], [13].

Furthermore, the development of an e-commerce system must also consider in-depth technical aspects, such as smooth and secure transactions. Secure payment systems, including the use of SSL and SET protocols, as well as the latest technologies like blockchain, are essential elements in ensuring data protection and secure transactions [9], [11]. This integration process requires a careful approach to ensure that the new system can function properly within the existing technological ecosystem, as well as its compatibility with legacy systems that are still used by many companies [5], [8]. With the rapid development in digital technology and changes in consumer behavior, this study aims to explore how the implementation of interactive features, such as an AI

Chatbot and a 'Like' system, can enhance user engagement and drive purchasing decisions on e-commerce platforms [12], [13]. This study also aims to understand the impact of integrating these new technologies on the customer experience, as well as the challenges that arise during their implementation.

II. METHOD

This study applies a structured methodological framework, as illustrated in Figure 1, to ensure a systematic and user-centered research process. The framework integrates a UX Journey approach to comprehensively capture user needs, expectations, and pain points throughout their interaction with the product, thereby supporting effective requirements elicitation and informed design development. Insights gathered from the UX Journey are then translated into design solutions that are iteratively refined to enhance usability and user experience. To strengthen the rigor and objectivity of the proposed designs, the resulting alternatives are quantitatively validated through A/B testing. This validation stage enables a direct comparison of design variants based on measurable performance indicators, ensuring that the selected design is not only conceptually sounded but also empirically supported by user response data.



Figure 1 Research Processes

A. Needs Identification

The initial stage of the research focuses on Needs Identification, where the study's focus is identified through a comprehensive literature review to understand the current research landscape of user experience on e-commerce websites [18]. This process refers to a systematic literature review of the customer journey to identify key concepts and existing research gaps [19]. By understanding various customer journey models, such as loyalty loops and involvement spirals [20], and by referencing existing conceptual frameworks, this research is focused on optimizing the shopping experience through the implementation of specific interactive features to enhance engagement and facilitate users' purchasing decisions [24].

B. Data Collection

Once user needs have been clearly identified, the Data Collection stage is carried out as a critical phase within the UX Journey framework, serving as the foundation for effective software requirement elicitation aimed at improving developer productivity and effectiveness [14]. At this stage, data are primarily gathered using qualitative research methods, such as in-depth interviews, to thoroughly explore and validate user needs, expectations, and pain points related to the features to be developed. These interviews enable researchers to capture detailed insights into users' experiences, behaviors, and challenges, which might not be fully revealed through quantitative approaches alone. By systematically analyzing the collected data, this process seeks to bridge the gap between user-centered insights and technical requirements. Consequently, it facilitates the integration of a comprehensive understanding of user experience into the system design process, thereby enhancing developers' capability and efficacy in creating solutions that are both technically sounded and closely aligned with actual user needs [16].

C. Data Analysis

In the Data Analysis stage, the collected qualitative data is processed to identify key patterns and themes from the user experience with the IT system [17]. This analysis involves the dynamic mapping of the customer journey to understand current user interactions and how new features could have a significant impact [21, 23]. The goal of this analysis is to uncover the conceptual framework of the customer journey and define future research agendas [20].

D. Prototype Development

The Prototyping stage is the phase where the results of the data analysis are translated into tangible design solutions. This design process applies the principles of Design Thinking within the UX Journey framework, which includes cycles of divergent thinking (idea exploration) and convergent thinking (selecting the best solution) to address the identified UX problems [17]. Two prototype versions (Version A and Version B) were developed with the aim of directly integrating user experience needs into the product, a process which also serves to enhance developer skills [16].

E. Prototype Testing

The final stage is Prototype Testing, where the effectiveness of the two design versions is quantitatively evaluated to validate the research hypothesis. The method used is A/B Testing, an approach that has been systematically reviewed in the literature as a reliable method for empirically comparing design variations [25]. This testing aims to objectively evaluate the user experience, where the process can be automated to obtain efficient comparison results between the two prototype versions [24].

III. RESULTS AND DISCUSSION

A. Needs Identification

The initial stage of the research focuses on identifying problems that users often face when shopping online. Based on preliminary observations, it was found that users frequently have difficulty obtaining product information quickly and feel that the recommendations provided lack personalization. To address this issue, the implementation of two interactive features was proposed. From this proposal, two hypotheses, or preliminary assumptions, were formulated as follows: 1) Hypothesis for the AI Chatbot Feature: It is hypothesized that by providing a responsive chatbot feature, users will more easily and instantly obtain the product information they need, thereby reducing hesitation and accelerating the purchasing decision. 2) Hypothesis for the 'Like' Feature: It is hypothesized that with a 'like' feature, users can mark products of interest, allowing the system to provide more personalized recommendations. This is expected to increase the relevance of the products offered and encourage user engagement.

B. Data Collection

To examine both hypotheses, data were collected through in-depth interviews involving five initial respondents. These interviews were conducted to explore and validate whether users genuinely perceived a need for the proposed chatbot and "like" features within the system. The qualitative approach was chosen to capture detailed user perspectives, experiences, and expectations that may not be fully revealed through quantitative methods alone. Through open-ended questions and guided discussions, respondents were encouraged to express their views on the usefulness, relevance, and potential impact of the proposed features on their overall user experience. The insights obtained from these interviews served as preliminary evidence to assess the alignment between user needs and the proposed system functionalities. A summary of the key qualitative findings derived from each respondent is presented in Table 1, providing an overview of user feedback that informed subsequent stages of design and validation:

Table 1 Preliminary Data Collection Results

Respondent	Findings Related to the AI Chatbot	Findings Related to the Like Feature
Akbar	It's very helpful because I can get product recommendations not just from the reviews.	It's quite important as an additional consideration in addition to the existing reviews.
Yudhi	It's useful for when you're unsure which product to choose, as you can directly ask for recommendations.	It's very important because by 'liking' an item, the chatbot can provide relevant recommendations in the future.
Ma'aruf	It can be used as an online consultation tool to find the right products.	It's important to be able to compare liked items without having to switch pages.
Arya	It's not very influential because I can just ask the seller directly.	It's very important to see a product's popularity and compare its quality based on the number of 'Likes'.
Rama	It's fairly influential because it can provide information I didn't know before.	It's quite important to be able to compare products directly on the same page.

C. Data Analysis

The qualitative and quantitative data, including scale-based ratings collected in the previous stage, were subsequently analyzed to develop a more structured and systematic justification of the user needs. This analysis involved mapping each respondent's interview responses to predefined behavioral variables through a Map Interview process, followed by the identification of Significant Behaviour Patterns that emerged across

participants. Through this analytical approach, two distinct user personas were identified. Persona 1 represented users who required detailed and comprehensive information and whose decision-making was strongly influenced by the presence of chatbot and “like” features as sources of validation and reassurance. Persona 2 represented users who were primarily interested in product trends and who perceived both the chatbot and “like” features as essential tools for discovering popular or highly rated products. The outcomes of this analysis are presented in Table 1, which quantitatively summarizes the characteristics of each persona based on the measured behavioral variables.

Table 2 Initial Data Analysis Results

Respondent	Measured Variables	Respondent Results
Users who need more detailed information	How much influence does the ‘like’ feature have on a user’s product purchasing decision?	Scale 5: Highly Influential (4 People) Scale 4: Moderately Influential (1 Person)
Users who need more detailed information	How influential is the chatbot feature on the product page in your decision-making?	Scale 5: Highly Influential (1 Person) Scale 4: Moderately Influential (3 People) Scale 3: Influential (1 Person)
Users who are interested in product trends	How important are recommendations from the chatbot and ‘likes’ in influencing your decision to buy a product?	Scale 5: Highly Influential (2 People) Scale 4: Moderately Influential (3 People)

The key findings from this analysis are:

1. **Strong Validation of the ‘Like’ Feature:** This feature was considered to have a very high influence. Four out of five respondents (80%) rated the ‘Like’ feature as “Very Influential” on their purchasing decisions.
2. **Positive Influence of the Chatbot Feature:** The chatbot feature was also validated as having a positive influence. A majority of respondents (60%) rated it as “Moderately Influential” in assisting their decision-making process.
3. **Importance of Feature Synergy:** When analyzed from the perspective of the trend-interested persona, 100% of respondents rated the combined recommendations from both features as either “Very Important” (2 respondents) or “Moderately Important” (3 respondents).

This preliminary analysis provides a strong justification for proceeding with the prototype design, as both features were proven to address user needs and have the potential for a significant impact.

D. Prototype Development

The prototype stage involves the initial design of the AI chatbot and ‘Like’ features on an e-commerce product page. This prototype includes the user interface (UI) and the basic user experience (UX) flow, demonstrating how users can interact with the chatbot to ask for product details and how the ‘Like’ feature will influence the displayed product recommendations.

1. Design of the Like Feature on the Product Page

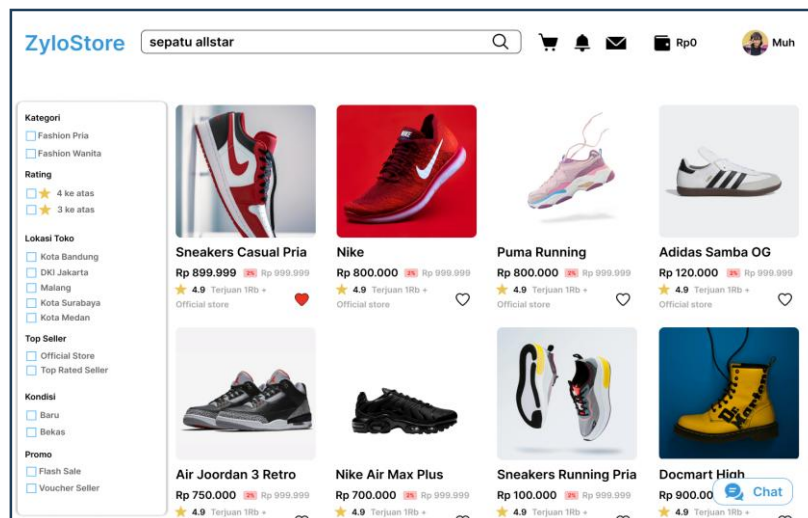


Figure 2 Design of the Like Feature

In this design, the 'like' feature is positioned prominently below each product to ensure high visibility and ease of access for users during browsing. This placement is intentionally chosen to allow users to quickly express interest in a product with minimal cognitive effort and without disrupting the overall navigation flow. By situating the 'like' button separately from critical transactional elements, such as pricing or purchase options, the design minimizes the risk of accidental interactions while maintaining functional clarity. Findings from the interview results indicate that users prefer intuitive and non-intrusive interaction mechanisms, and the strategic placement of the 'like' feature aligns with these preferences. Consequently, this design decision is expected to enhance user engagement by enabling users to effortlessly indicate their product preferences, support personalized recommendations, and improve the overall shopping experience without compromising usability.

2. Design of the Chatbot Feature

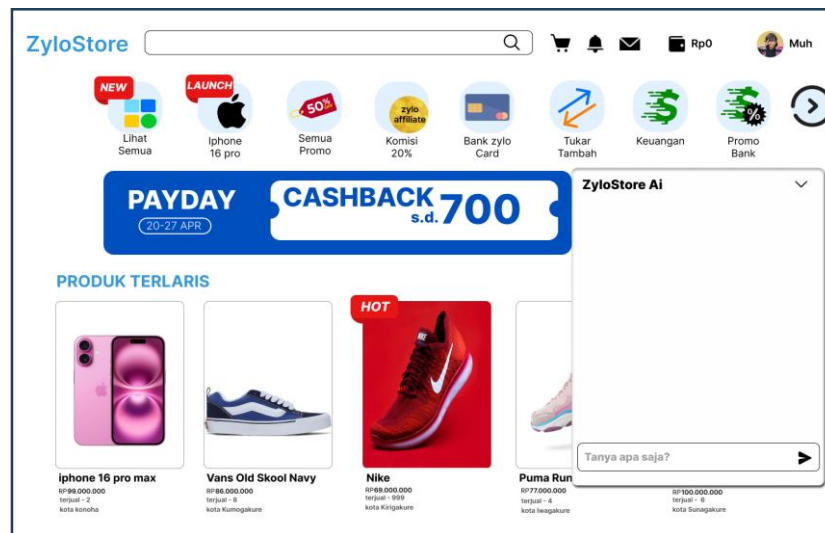


Figure 3 Design of the Chatbot Feature

In this design, the chatbot feature is positioned in the bottom-right corner of the interface, a placement commonly associated with accessibility and minimal disruption to primary user activities. This strategic location allows users to interact with the chatbot at any time to obtain additional information about products, clarify purchasing procedures, or resolve uncertainties during the shopping process. Based on the results of the in-depth interviews, this non-intrusive placement is expected to support users who require guidance or reassurance without interrupting their browsing flow. By remaining readily available yet unobtrusive, the chatbot enhances the overall user experience by providing timely assistance while maintaining a smooth and uninterrupted shopping journey.

E. Prototype Testing

In the prototype testing stage, the A/B testing method was employed to systematically evaluate and compare the effectiveness of two design alternatives: the initial prototype (Version A) and the optimized prototype developed based on prior user feedback (Version B). This method was selected to provide a direct comparison of design performance and to identify measurable differences in user perception between the two versions. Before the evaluation began, the purpose and functionality of each feature included in both prototypes were clearly explained to five respondents to ensure a shared understanding of how the features were intended to operate within the system. Following this explanation, respondents were asked to assess each prototype by providing ratings on several key aspects, including perceived usefulness, ease of use, and overall design quality, as if the features had already been fully implemented in a real application. These assessments were collected quantitatively to allow for objective comparison between Version A and Version B. The primary objective of this A/B testing was to validate whether the design optimization process resulted in improved user acceptance and satisfaction. By analyzing differences in user ratings between the two prototypes, the study aims to determine the extent to which user-centered design refinements contributed to a more effective and user-friendly interface.

1. A/B Testing Results for the 'Like' Feature

Figure 4 illustrates the evaluation results for the Before Changes (Version A) prototype. In this initial design, user responses were relatively dispersed, indicating varied perceptions of the prototype's overall quality and usability. Among the five respondents involved in the assessment, the majority (three respondents) rated the design as "Fairly Good," suggesting that while the prototype met basic expectations, there were notable aspects that could be improved. Meanwhile, one respondent provided a "Good" rating, reflecting a more positive assessment of the design's functionality and layout, and another respondent rated it as "Very Good," indicating a high level of satisfaction with the initial concept. These results demonstrate that although Version A was generally acceptable to users, the variation in ratings highlights the need for further refinement to achieve a more consistently positive user experience.

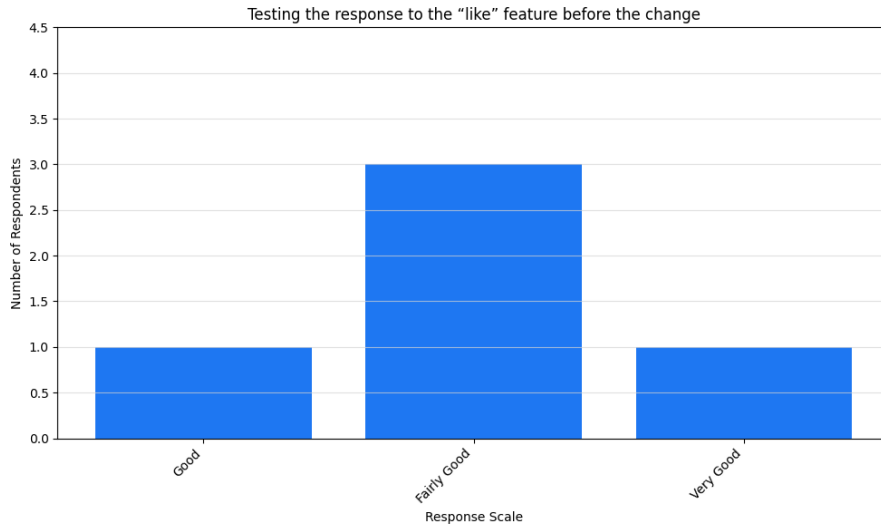


Figure 4 Like Feature Data Before Changes

Figure 5 illustrates the evaluation results for the design after changes (Version B). Following the design optimization, a clear improvement in user perceptions can be observed. It is indicated by a noticeable shift toward more positive ratings. The number of respondents who assessed the design as "Very Good" increased to three out of five, reflecting higher overall satisfaction with the revised interface. Meanwhile, the number of respondents who rated the design as "Fairly Good" decreased to two, and no respondents rated it merely as "Good." This shift suggests that the design improvements successfully enhanced users' perceptions of usability, effectiveness, and overall design quality compared to the initial version.

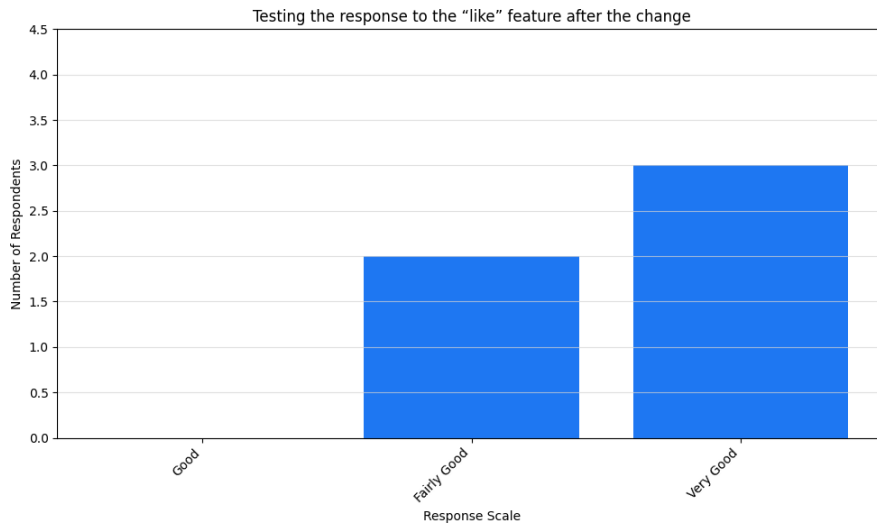


Figure 5 Feature Data After Changes

A comparison between Figures 4 and 5 demonstrates a clear improvement in user perceptions following the design optimization process. In Version A (Before Changes), user evaluations were relatively dispersed, with most respondents rating the design as “Fairly Good” and only a small number expressing higher satisfaction. It indicates that the initial prototype met basic usability requirements but lacked consistency in delivering positive user experience. In contrast, Version B (After Changes) shows a notable shift toward more favorable evaluations, as the majority of respondents rated the design as “Very Good” and none assigned a moderate “Good” rating. This transition reflects a more concentrated and positive assessment of the optimized prototype. It suggests that the implemented design changes effectively enhanced usability, visual appeal, and overall user satisfaction. Overall, the comparison indicates that the refinement process successfully addressed user concerns identified in the initial version and resulted in a more consistently well-received interface. This comparison proves that the design optimization of the ‘Like’ feature succeeded in significantly increasing user acceptance.

2. Results of the A/B Test for the AI Chatbot Feature

Before Changes (Version A) as seen in figure 6 indicates that the test results for the initial design indicate that user evaluations were generally positive, but it still reflected moderate satisfaction. Among the five respondents who participated in the testing, the majority, four respondents, rated the feature as “Fairly Good,” suggesting that the feature was functional and understandable, but it had not yet fully met user expectations in terms of usability, clarity, or overall experience. Only one respondent provided a “Very Good” rating. It indicates that while some users perceived strong value in the initial design, this level of satisfaction was not yet consistent across participants. Overall, these findings imply that the initial version was acceptable and usable, yet it still required refinement to enhance user engagement and achieve a higher level of user satisfaction.

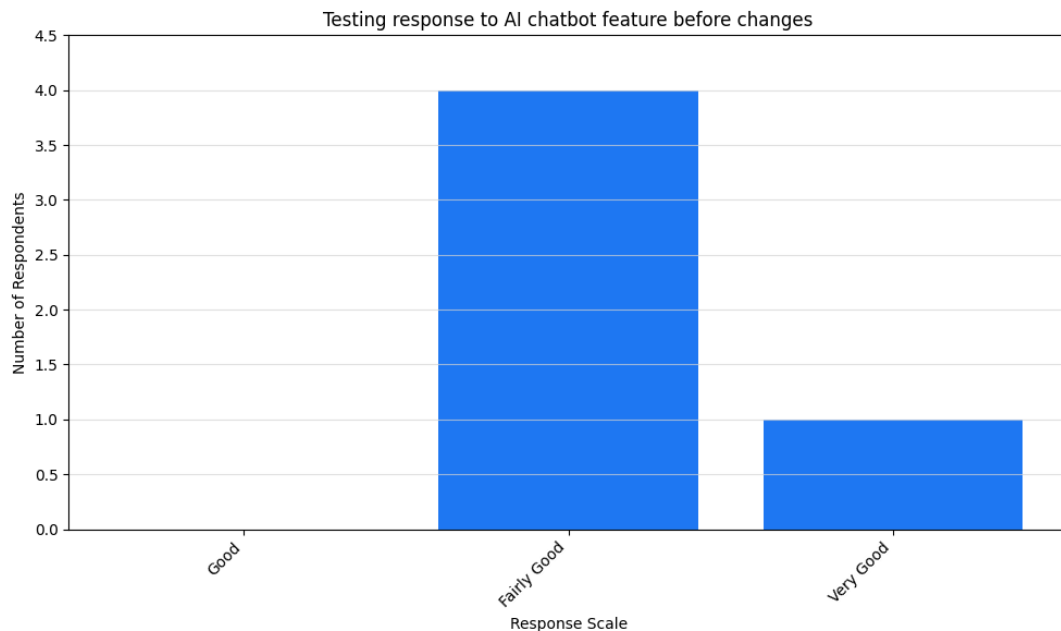


Figure 6 AI Chatbot Feature Data Before Changes

After the implementation of design improvements, the evaluation results in After Changes (Version B), as seen in figure 7. It demonstrates a substantial and positive shift in user perceptions. The optimized design was rated “Very Good” by four out of five respondents. It indicates a markedly higher level of satisfaction compared to the initial version. This increase suggests that the refinements effectively addressed previous shortcomings related to usability, clarity, and overall user experience. The remaining respondent provided a “Good” rating, which still reflects a positive assessment and indicates that the design met user expectations to a considerable extent. Notably, no respondents rated the optimized design as “Fairly Good” or lower. It highlights a clear reduction in moderate evaluations and a strong convergence toward higher satisfaction levels. Overall, these results confirm that the design optimization process significantly enhanced the perceived quality and effectiveness of the feature. It leads to more consistent and favorable user acceptance.

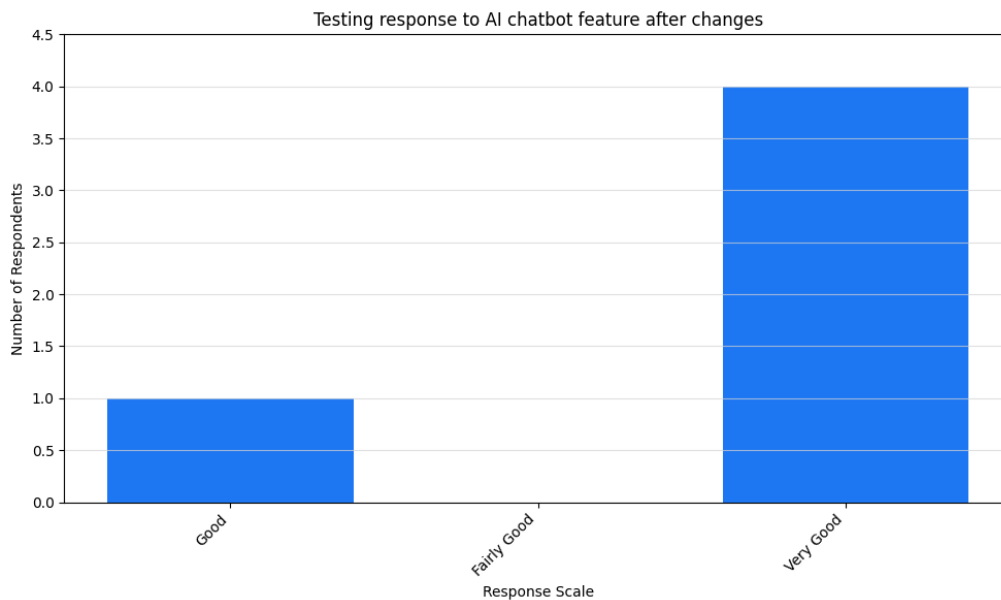


Figure 7 AI Chatbot Feature Data After Changes

A comparison of the evaluation results between the initial design (Version A) and the optimized design (Version B) reveals a clear improvement in user satisfaction following the design changes. In Version A, user perceptions were generally positive but remained at a moderate level, with four out of five respondents rating the feature as “Fairly Good” and only one respondent rating it as “Very Good”. It indicates that the feature was functional yet still fell short of fully meeting user expectations. In contrast, Version B demonstrates a significant positive shift, where four respondents rated the feature as “Very Good” and the remaining respondent rated it as “Good.” This change reflects a substantial increase in higher satisfaction levels and the elimination of moderate evaluations. The comparison indicates that the design improvements successfully addressed usability and experience-related issues identified in the initial version, resulting in more consistent, favorable, and convergent user perceptions, and confirming the effectiveness of the optimization process in enhancing overall user acceptance.

IV. CONCLUSION

This study, which applied a Design Thinking approach, demonstrates that the implementation of an AI chatbot and a ‘like’ feature has great potential to enhance the online shopping experience on e-commerce platforms. The initial problem identification, based on the user’s need for more detailed product information and personalized recommendations, was proven to be valid and relevant. Data analysis shows that both features have a positive influence on purchasing decisions. The ‘Like’ feature is considered highly influential by a majority, indicating the effectiveness of personalization. Meanwhile, the chatbot feature also proved to be influential in helping users make decisions, particularly for those seeking quick product information. Validation through prototype testing confirmed the very positive user reception for both features. This reinforces that the designed solution met user needs and expectations, affirming the role of Design Thinking in creating user-centered innovations. Therefore, the AI chatbot and ‘Like’ features are innovations worth adopting for a more efficient, personal, and satisfying online shopping experience.

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