Team D

Course: Human Computer Interaction (CSE 4451)
Section: B

Team Members:
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Submitted to: Ms. Novia Nurain

☐ **What is your team's specific problem statement? What is your team's specific user group?**

- **Target User:** Regular E-commerce platform users.

- **Problem Statement:** Meeting changing expectations from customers who want a more personalized and immersive shopping experience is challenging. Concerns include the need to determine if people will be eager to share their AR experiences on social media, the demand for participatory AR exploration, and skepticism over AI-driven fashion advice.

- **Why Issues Exist:** Rapid advancements in technology have created a dynamic environment where it is essential to comprehend customer preferences. Using AI and AR successfully and adjusting to these changes will be the problem.

- **Where Issues Occur:** These problems show up in the e-commerce industry, especially in online purchasing experiences that aren't personalized or interactive. The objective is to maximize this area by integrating AI and AR, guaranteeing that companies continue to be creative and customer-focused.

Background Study:

The paper [1], implies that a recommender system simplifies decision-making, provides personalized recommendations, reduces information overload, and integrates product reviews and user behavior data. They proposed integrated real-world and virtual information by enhancing the online shopping experience with sensory input and by utilizing a QR code system product information can be accessed quickly. However, their Image Interactivity Technology (IIT) influences affective and cognitive shopping behavior, allowing product mix and match by enabling zoom and 3D modeling. The chatbot system accelerates the search process, offers personalized interaction and communication, utilizes past behavior for customized responses, serves as a feedback mechanism for customer satisfaction, and provides real-time information and responses during customer interactions.

In the paper [2], they emphasize that for product selection and recommendation, AI can be used to recommend products to customers based on their preferences and past behavior. AI can assist in negotiation and auction processes on E-commerce websites, and optimize scheduling and logistics for order processing and delivery. However, the scalability of servers ensures a smooth shopping experience even during high-traffic periods. An automated response system to customer inquiries and support requests is also included. Artificial Intelligence (AI) determines optimal pricing and bundling strategies for products. Image search functionality and augmented reality are also included for virtual try-on.

The research in paper [3], explores By putting chatbots and augmented reality interactive technology to the test in a retail environment, this study investigates consumer engagement and purchase intentions. By emphasizing involvement through a real-world experiment and looking at how these interactive technologies affect customer behavior, it adds to the body of knowledge on digital marketing. Moreover, the Theory of Conversation (ToC) is used for chatbots and consumers with the help of deep learning. They also talk about Augmented Reality Interactive Technology (ARIT) which determines users' actual behavior toward products in technology-based shopping.

The paper [4], contains a conceptual framework and hypothesis regarding the E-commerce platforms using Augmented Reality (AR). With the ability to view items in preferred places using mobile devices, augmented reality online shopping is perceived as being simple to use, boosting the probability that customers would make the right selections. To address the increased demand for cutting-edge technology and to increase customer engagement, augmented reality in online shopping offers creative, immersive product experiences at home. Technology, particularly augmented reality, should be straightforward, simple to use, and improve purchase decisions, according to perceived usefulness. Online buying, made possible by gadgets like smartphones and computers, saves time, provides a variety of alternatives, and makes price comparison simple, improving the whole shopping experience.

The research [5], examines the impact of unfavorable augmented reality (AR) contexts on consumers' purchase intentions. Complex AR contexts reduce processing fluency, which negatively affects product quality perceptions and purchase intentions. However, this impact is lessened when the product has a unique design or when the AR context is made less visually complex. These findings emphasize the importance of context in AR product evaluations and offer

strategies for AR retailers to address these issues. In summary, the study highlights how AR context affects consumer perceptions and provides practical implications for retailers.

The paper [6], mentions AI and machine learning have extensive applications in e-commerce, business management, and finance. They enhance customer experiences, streamline supply chains, and cut costs. Key uses include chatbots for customer service, image search for product discovery, data analysis, recommendation systems, and inventory management. In finance, they aid credit scoring, loan underwriting, portfolio management, and HR processes, improving decision-making and risk mitigation. These technologies boost sales, profits, sales trend forecasting, and overall customer satisfaction. AI and machine learning are now essential for revolutionizing operations and data-driven decision-making in these sectors.

Research Domain:

Software engineering, Artificial Intelligence (AI), Augmented Reality (AR), Machine Learning.

References

[1] *Pillarisetty, R. and Mishra, P., 2022. A review of AI (Artificial Intelligence) tools and customer experience in online fashion retail. International Journal of E-Business Research (IJEBR), 18(2), pp.1-12.*

[2] *Iqbal, S. (2020). Revamping Fashion E-Commerce in India using Artificial Intelligence. Current Trends in Fashion Technology & Textile Engineering, 7(1). https://doi.org/10.19080/ctftte.2019.05.555704*

[3] *Moriuchi, E., Landers, V.M., Colton, D. and Hair, N., 2021. Engagement with chatbots versus augmented reality interactive technology in e-commerce. Journal of Strategic Marketing, 29(5), pp.375-389.*

[4] *Chakraborty, S., & Gupta, D. (2017). A study of the factors impacting the adoption of augmented reality in online purchases in India. 2017 2nd IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT).*

[5] *When reality backfires: Product evaluation context and the effectiveness of augmented reality. (n.d.).*

[6] Pallathadka, H., Ramirez-Asis, E. H., Loli-Poma, T. P., Kaliyaperumal, K., Ventayen, R. J. M., & Naved, M. (2023). Applications of artificial intelligence in business management, e-commerce and finance. Materials Today: Proceedings, 80, 2610–2613. https://doi.org/10.1016/j.matpr.2021.06.419

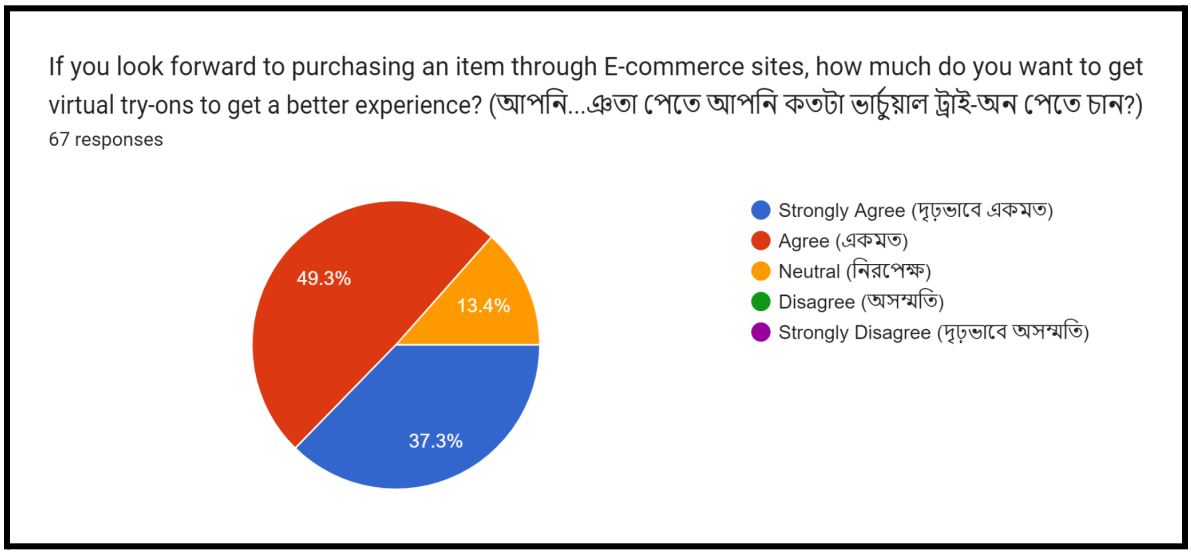
☐ **Provide a detailed description of your data collection process.**

- We used a survey and interview method for collecting data. We need to know what general people and E-commerce users want, their preferences, and how they will accept the current technology in an E-commerce platform.

- We reached out to our targeted user group by interviewing our family members and friends. We did an open survey to reach people who frequently use and prefer online shopping.

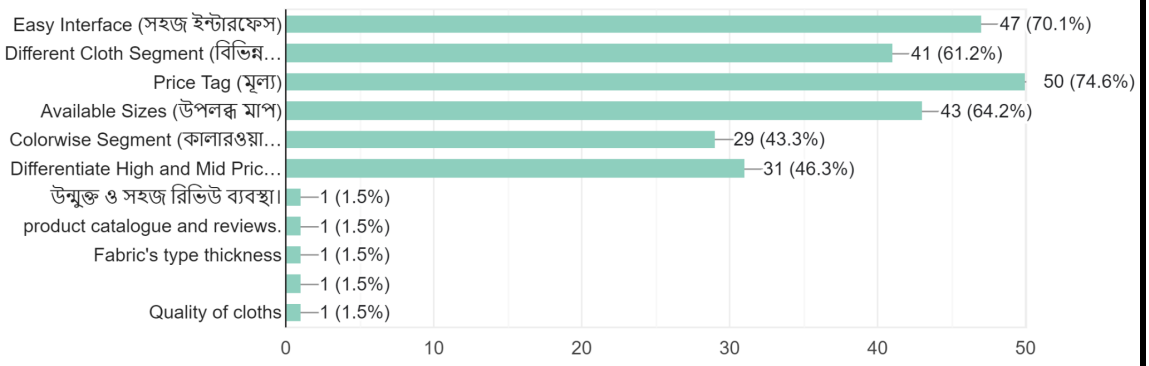
- The participants are a maximum of around 86% people in the (16-25) age group. The other 14% are (26-35) age group people. The total response was 67 people. 94% of them use E-commerce and online platforms for shopping.

- The given data below are generated by our survey process,



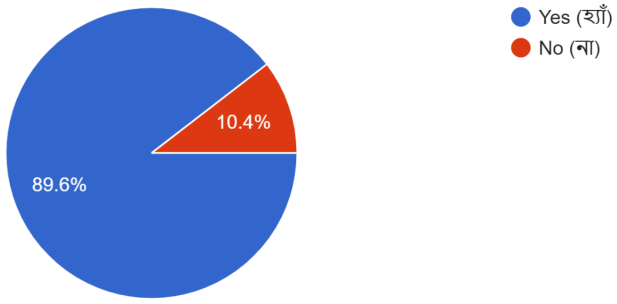
Select the following features that you would want to have in e-commerce site before purchasing an apparel product? (একটি পোশাক পণ্য কেনার আগে আপন...টে যে বৈশিষ্ট্যগুলি পেতে চান তা নির্বাচন করুন?)

67 responses



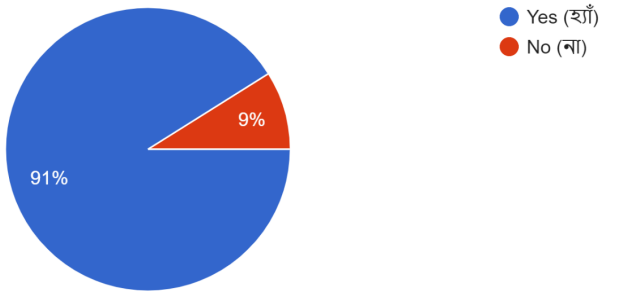
Do you prefer an AI Chatbot to help you in product recommendation, order tracking , customer support and personalized interactions? (আপনি কি ...ামর্শের জন্য একটি ভার্চুয়াল সহযোগী পছন্দ করেন?)

67 responses



Would you recommend others to use E-commerce purchasing with Artificial Intelligence and virtual environment, if we implement a system with your a...ত পরামর্শগুলির সাথে একটি সিস্টেম বাস্তবায়ন করি?)

67 responses



The affinity diagram below shows the generated data by interviews,

- For collecting survey data we used Google Forms and the responses were gathered in an Excel sheet. The interview data is noted by recording and then we generate text from those, it should be mentioned that before recording the voice of the person we took permission.

- The problem faced was for taking an interview because we had to wait for the persons whose interview would be taken as per their preferred time. However, we managed to have the interviews within our time limit because of the cooperation of the people who were being interviewed by us.

☐ **Briefly describe your data analysis process (you use the affinity diagram to analyze your data)**

- The final insights are,
    1. E-commerce shopping habits.
    2. Augmented reality and virtual try-ons.
    3. AI chatbots.
    4. Data tracking and personalization.

- The new thing we discovered is that most of them need to be made aware of what augmented reality does in virtual try-ons. However, we thought they were satisfied with current AI chatbots used in E-commerce platforms like Daraz and Amazon, but they are totally not. They suggested having real-time guidance during purchase, giving orders through chatbots, and tracking their order without leaking their personal information.

- We confirmed what we suspected was the trust issue and security system. Most of the time customers are cheated by wrong or damaged products from such online platforms. They are also aware of their safety and data security while using artificial intelligence-based E-commerce systems as they are told briefly about virtual try-ons.

- The link of the "Team D" Affinity Diagram from the Miro board,

  https://miro.com/app/board/uXjVNfpWi4s=/?moveToWidget=3458764566797916602&cot=14

USER PERSONA

BACKGROUND

Age: 23
Occupation: Student
Technology Proficiency: High; comfortable with various devices and applications.
Shopping Behavior: Enjoys online shopping for convenience but values personalized experiences.

GOALS AND MOTIVITIONS

- Robin is looking for a seamless and enjoyable online shopping experience.
- He wants to explore products in a more interactive way using augmented reality (AR).
- Seeks efficient and personalized assistance during his shopping journey.

CHALLENGES

- Limited time due to his study
- Sometimes struggles to find the right product without physically trying it.

ROBIN ARIF

Student

NEEDS AND PREFERENCES

1. **Air Experience:**
   - Wants to virtually try on clothing and accessories before making a purchase.
   - Appreciates the ability to visualize furniture and home decor items in her living space using AR.
2. **HCI Preferences:**
   - Values an intuitive and user-friendly interface.
   - Prefers a seamless transition between different sections of the app.
3. **AI-Powered Chatbots:**
   - Expects quick and helpful responses from the AI-powered chatbot.
   - Appreciates proactive suggestions based on her browsing and purchase history.
4. **Personalization:**
   - Prefers personalized product recommendations tailored to her style and preferences.
   - Values a system that remembers her preferences for a more customized experience.

USER JOURNEY:

1. **Discovery:**
   - Discovers the app through social media and friends' recommendations.
   - Interested in the app's AR features for trying on clothing and visualizing home decor.
2. **Browsing And Shopping:**
   - Explores the app using the intuitive HCI design.
   - Tries on different clothing items and virtually places furniture in her living space using AR.
3. **AI-Powered Assistance:**
   - Engages with the AI-powered chatbot for product recommendations.
   - Enjoys proactive suggestions based on her preferences and previous interactions.
4. **Post-Purchase:**
   - Receives personalized recommendations for future purchases.
   - Finds the AI-powered chatbot helpful for tracking orders and managing returns.

BACKGROUND

Age: 25
Occupation: Student
Technology Proficiency: Moderate; comfortable with common applications but seeks user-friendly interfaces.
Shopping Behavior: Enjoys both online and in-store shopping for unique and aesthetically pleasing items.

GOALS AND MOTIVITIONS

- Rushan is looking for a visually appealing and creative shopping experience.
- Seeks inspiration for her design projects through unique and artistic products.
- Values a balance between technology features and a user-friendly interface.

CHALLENGES

- Finds it time-consuming to discover unique and artistic items in crowded online marketplaces.
- Occasionally struggles to visualize how certain decor items will fit into her living space.

ADNAN RUSHAN

Student

NEEDS AND PREFERENCES

1. **Immersive Visual Experience:**
   - Interested in using AR to visualize how art and decor items will look in his home.
   - Appreciates a visually stimulating and immersive shopping experience.
2. **Intuitive HCI Design:**
   - Values an interface that is intuitive and aesthetically pleasing.
   - Prefers touch-based controls for a tactile and engaging shopping experience.
3. **AI-Powered Curations:**
   - Expects the AI-powered chatbot to curate collections of unique and artistic items based on her design preferences.
   - Appreciates suggestions for complementary items to enhance her design projects
4. **Personalization:**
   - Values an app that remembers her favorite themes and colors.

USER JOURNEY:

1. **Discovery:**
   - Discovers the app through design forums and recommendations from fellow creatives.
   - Excited to explore the AR features for visualizing art and decor in her space.
2. **Browsing And Shopping:**
   - Navigates through the app's aesthetically pleasing interface.
   - Uses AR to visualize how various art pieces and decor items will look in her home.
3. **AI-Powered Assistance:**
   - Engages with the AI-powered chatbot to receive curated suggestions based on her design preferences.
   - Enjoys the AI's ability to understand her artistic style.
4. **Checkout:**
   - Values a secure and efficient checkout process.
   - Appreciates features like saved favorites and one-click ordering.

1 Scenario and 1 Storyboard

Scenario: Sunday, November 19, 2023, 16:42, Dhaka, Bangladesh

A young man is sitting in his room, looking at a storyboard of two drawings. The first drawing shows a man wearing a blue shirt and jeans, smiling. The second drawing shows the same man wearing a different jacket. The young man is contemplating his options. He is thinking about buying the jacket, but he is not sure if it will look good on him. He is also thinking about placing a furniture order, but he is not sure what he needs. Finally, he is thinking about hiring a helper, but he is not sure what kind of helper he needs.

Storyboard: