User study for Human-robot-Interaction

Group number: ____4B____

Group members:

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Research Question:

Does assistance of the robot for product finding in a supermarket improves the shopping experience of the customer or not?

Hypotheses:

This hypothesis verifies "Whether the robot is useful in assistance for finding a product with particular specifications in supermarket and does it improve the experience of the customer?

Not every salesman knows the allergen ingredients in a product, and it is time consuming to find a product in a big supermarket. During the pandemic, the queue is very big standing outside the supermarkets for a long time as the number of people in the shop is reduced. This experiment may provide an insight whether the usage of the robot is beneficial or not to find a product and the shopping time could be reduced or not for the customers. Even the salesman in the shop is changing it is even difficult for the salesman to remember all the products location and ingredients.

Study Setup:

Environment and robot/participant placement:

The robot will be placed for each aisle or it moves along with customer in a supermarket based upon the experimental needs.

Robot behaviour:

The robots' need to greet the customer. Then ask the customer what product they need to get. After that it must ask any preferences like food allergies and particular needs then it must check its database and locate the product and provide the products location by saying the location or pointing it out.

Experiment conditions:

Three different conditions:

1. Without robot help if the person goes for shopping and the time taken for it must be calculated.
2. With robot assistance if the customer shops the time taken to shop must be calculated.
3. Feedback from the customer when robot is moving along with the one person during shopping and difference in feedback when separate robots placed in different aisle of the supermarket during shopping.

Robot/participant tasks:

Participant tasks:

Asking the robot for a location for a particular product. If they do not require its help, they can continue the shopping or they want to freely shop on their own.

Robot tasks:

1. Pointing out the requested product for the customer based upon their preferences.
2. Recommend related items in the same aisle so the that are on the customer's list to reduce the time.
3. Getting customers' purchases and putting them in the bags/in the place where the customer asks the robot to put it.

Participants:

The target of the participants is likely to be adults aged 18 to 60 (20 participants). Because these people are more likely to shop in supermarkets daily. People below the age of 18 are not well suited or mature enough for handling the robot.

Measurements:

Subjective:

Questionnaire rating of the satisfaction with the robots' assistance?

Does the robot helping to find the product improves your experience of shopping?

Objective:

1. The accuracy of number of times the robot finding the correct product.
2. Robot recommended items relevancy to customer preference as customer feedback.
3. The time taken to complete the shopping with and without the robots' help.
4. The number of times returning to the same aisle as it may reduce the time.