PROJECT REPORT

Amazon Consumers Data Analysis

BAMM 1024 - Introduction to Statistical Analysis 01

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PREVIEW

The report delves into the detailed analysis of the data collected by the surveys and questionnaires. The data is about how customers behave on Amazon's website and the preferences of their purchases.

INTRODUCTION

The outcome of the collection and analysis of the dataset is to identify possible problems and their solutions, which ultimately helps to enhance the user experience of shopping of customers on the Amazon website and to increase sales and customer retention to have a good profit. The information is being gathered to gain insight into customer demands and satisfaction levels, as well as to find sectors for improvement in Amazon's products and services.

The dataset claims to be a real-world dataset obtained by polls or questionnaires issued to Amazon consumers. The questions include a wide variety of concepts relating to online buying behaviour, as is customary in consumer research and analysis of markets.

DESCRIPTIVE ANALYSIS

Based on the dataset referred, the following is the descriptive Analysis:

1. **Demographics**:

    - The dataset includes respondents of various age groups and genders.

    - Age ranges from 15 to 64 years, with the majority falling within the 20 to 30 age group.

    - Gender distribution includes female, male, and some respondents who prefer not to specify or fall under the "others" category.

2. **Purchase Behavior**:

    - Purchase frequency varies, with respondents shopping less than once a month to multiple times a week.

    - Purchase categories are diverse, including Clothing and Fashion, Beauty and Personal Care, Groceries and Gourmet Food, Home and Kitchen, and others.

    - Some respondents make purchases less frequently due to reasons like high shipping costs, finding a better price elsewhere, or changing their mind about the purchase.

- A mix of personalized recommendations and product searches influence purchasing decisions of the customers.

3. **Online Shopping Patterns**:

   - Browsing frequency varies, with some respondents rarely browsing and others browsing multiple times a day.

   - Product search methods include keyword searches and browsing through categories.

   - Multiple pages are explored during the search, and the first page is often visited.

   - Customer reviews play a role in decision-making, with different levels of importance and reliability.

4. **Cart Behavior**:

   - Cart completion frequency varies, with some respondents rarely completing their carts and others often doing so.

   - Cart abandonment factors include changing their mind, finding a better price elsewhere, or no longer needing the item.

   - Some respondents save items for later but don't necessarily complete the purchase.

5. **Product Reviews and Recommendations**:

   - Some respondents leave reviews, with varying levels of reliability and helpfulness.

   - Personalized recommendations are considered helpful by many, but their accuracy varies.

   - Competitive prices, wide product selection, and user-friendly interfaces are appreciated.

6. **Satisfaction and Improvements**:

   - Overall shopping satisfaction is influenced by factors like product quality, shipping speed, competitive prices, and customer service responsiveness.

   - Areas for improvement include reducing packaging waste, improving website/app interfaces, and offering better shipping options.

7. **Trends and Patterns**:

- Multiple times a week, personalized recommendations and keyword searches are common patterns.

- Certain categories like Clothing and Fashion, Beauty and Personal Care, and Groceries and Gourmet Food are popular.

- Respondents often seek better prices and are influenced by shipping costs.

8. **Gender and Preferences**:

- Gender differences can influence preferences and behaviors, but preferences are diverse within each gender group.

9. **Customer Engagement**:

- Some respondents engage more frequently, with multiple times a day browsing, while others engage less often.

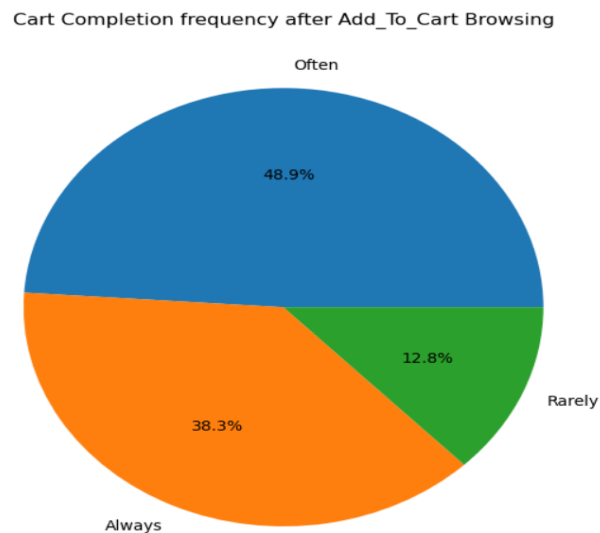10. **Recommendations and Suggestions**:

- Personalized recommendations and product reviews play a role in decision-making, but there's room for improvement in accuracy and reliability.

INFERENTIAL ANALYSIS

Cart Completion Frequency:

Output

Cart Completion frequency after Add_To_Cart Browsing

Insights and Inference:

The pie chart shows that 48.9% of users who add items to their cart often complete the purchase, 12.8% of users rarely complete the purchase, and 38.3% of users always complete the purchase.
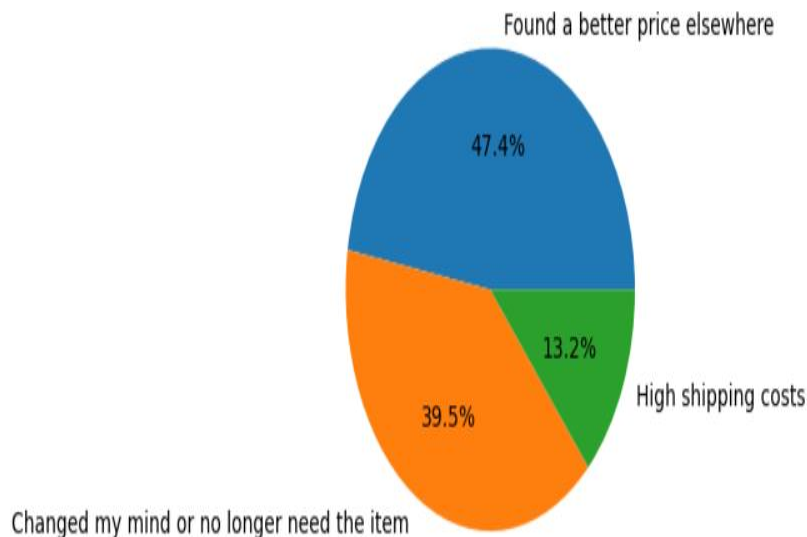
- **Often:** 48.9% of users who add items to their cart often complete the purchase. This means that they add items to their cart with the intention of buying them, and they usually follow through with the purchase.

- **Rarely:** 12.8% of users who add items to their cart rarely complete the purchase. This means that they add items to their cart without the intention of buying them, or they change their mind before making the purchase.

- **Always:** 38.3% of users who add items to their cart always complete the purchase. This means that they are very likely to buy anything they add to their cart.

Overall, the pie chart illustrates that adding products to the cart increases the likelihood of a purchase, but it is not a certainty. If Amazon wants to boost the likelihood of a purchase, it should also focus on other aspects such as delivering an excellent shopping experience and attractive discounts.

Cart Abandonment Factors

Output

Cart Abandonment Factors of customers whose Cart Completion Frequency is "Often" or "Rarely"

Found a better price elsewhere — 47.4%

High shipping costs — 13.2%

Changed my mind or no longer need the item — 39.5%

Insights and Inference:

The pie chart shows that the top three reasons for cart abandonment for customers whose cart completion frequency is "Often" or "Rarely" are:

- **Found a better price elsewhere:** 47.4% of customers abandoned their cart because they found a better price elsewhere. This suggests that customers are price sensitive and are likely to abandon their cart if they find a better deal elsewhere.

- **High shipping costs:** 13.2% of customers abandoned their cart because of high shipping costs. This suggests that customers are sensitive to shipping costs and are likely to abandon their cart if they find the shipping costs to be too high.

- **Changed my mind or no longer need the item:** 39.5% of customers abandoned their cart because they changed their mind or no longer needed the item. This suggests that customers may not be fully committed to their purchase when they add items to their cart, and they are likely to abandon their cart if they change their minds or no longer need the item.

Factors that cause Abandonment

- **Price is a major factor in cart abandonment:** Customers are price sensitive and are likely to abandon their cart if they find a better deal elsewhere. This suggests that Amazon should focus on offering competitive prices in order to reduce cart abandonment.

- **Shipping costs are also a major factor in cart abandonment:** Customers are sensitive to shipping costs and are likely to abandon their cart if they find the shipping costs to be too high. This suggests that Amazon should offer free shipping or discounted shipping in order to reduce cart abandonment.

- **Customers may not be fully committed to their purchase:** It is important to make sure that customers are fully committed to their purchase before they add items to their cart. This can be done by providing clear and concise product information, offering customer reviews, and making it easy for customers to contact customer support.

Overall, the pie chart demonstrates that the most prevalent causes for cart abandonment for consumers whose cart completion frequency is "Frequently" or "Rarely" are price and shipping charges. In order to decrease cart abandonment, Amazon should prioritize competitive pricing and free or reduced shipping. Furthermore, before adding things to a customer's cart, Amazon should ensure that they are totally committed to their transaction.

Improvement Areas

Output

Improvement Areas provided by the customers on whom "Heavily" or "Moderately" reliable

Insights and Inference:

The pie chart shows that the top four improvement areas suggested by heavily or moderately reliable customers are:

- **Product quality and accuracy:** 44.8% of customers suggested that product quality and accuracy could be improved. This suggests that customers are concerned about the quality of the products they are buying, and they want to be sure that they are getting what they pay for.

- **Reducing packaging waste:** 24.1% of customers suggested that packaging waste could be reduced. This suggests that customers are concerned about the environment, and they want to see Amazon take steps to reduce packaging waste.

- **Customer service responsiveness:** 17.2% of customers suggested that customer service responsiveness could be improved. This suggests that customers want to be able to get help quickly and easily when they have a problem.

- **Shipping speed and reliability:** 13.8% of customers suggested that shipping speed and reliability could be improved. This suggests that customers want to be able to get their orders quickly and without any problems.

Areas where Amazon can make improvements:

- Customers are concerned about the quality of the products they are buying. Amazon should focus on providing high-quality products that meet the expectations of its customers.

- Customers are concerned about the environment. Amazon should take steps to reduce packaging waste and promote sustainability.

- Customers want to be able to get help quickly and easily when they have a problem. Amazon should have a responsive customer service team that is available to help customers with their problems.

- Customers want to be able to get their orders quickly and without any problems. Amazon should offer fast and reliable shipping options.

- Provide clear and concise product information. This will help customers make informed decisions about the products they are buying.

- Offer customer reviews. This will give customers an opportunity to hear from other customers about their experiences with the products and services.

- Make it easy for customers to contact customer support. This will help customers get help quickly and easily when they have a problem.

- Offer free or discounted shipping. This will help to reduce shipping costs and make it more affordable for customers to shop with Amazon.

Overall, the pie chart suggests heavily, or moderately reliable consumers are concerned about a range of concerns, including product quality, packaging waste, customer service, and transportation. Amazon should consider these considerations when making decisions about how to enhance its products and services.

Purchase Frequency Vs Age:

Output
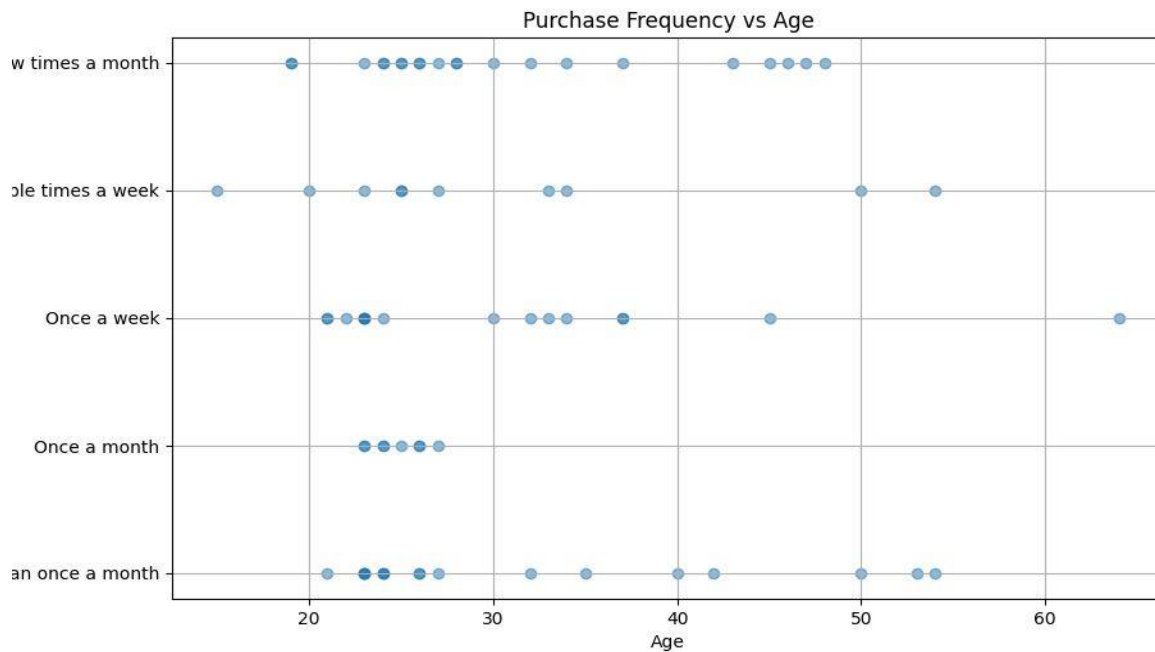
Insights and Inference:

The scatter plot shows a positive correlation between purchase frequency and age. This means that younger customers tend to purchase more frequently than older customers.

The scatter plot also shows that there is a lot of variation in purchase frequency within each age group. This suggests that other factors, such as income, lifestyle, and interests, also play a role in purchase frequency.

- Younger customers tend to purchase more frequently than older customers. Amazon should target younger customers with marketing campaigns and promotions.

- There is a lot of variation in purchase frequency within each age group. Amazon should segment its customers by age and target each segment with the right marketing campaigns and promotions.

- Amazon should understand the factors that influence purchase frequency for their target customers in order to develop effective marketing campaigns and promotions.

Overall, the scatter plot shows a positive correlation between purchase frequency and age. This shows that younger customers make more purchases than older customers. However, purchase frequency varies greatly within each age group, therefore Amazon should segregate its consumers by age and target each segment with the appropriate marketing campaigns and promotions.

## **Purchase Category Distribution:**

Output
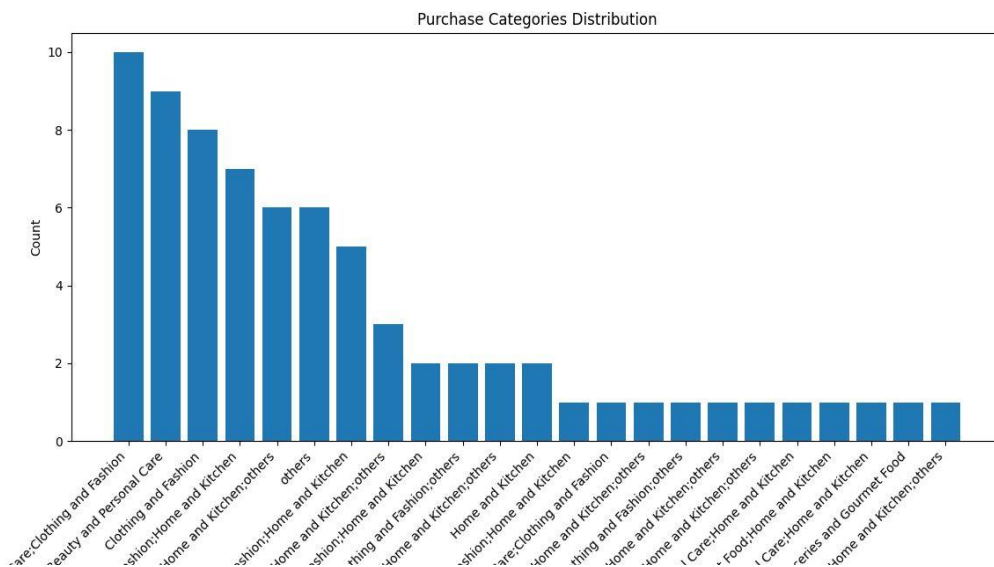
Insights and Inference:

The bar graph shows the distribution of purchase categories for the customers in the dataset. The most popular purchase category is "Clothing and Fashion", followed by "Beauty and Personal Care" and so on.

- The most popular purchase category is "Clothing and Fashion". This suggests that customers are interested in purchasing clothing and fashion. Amazon should focus on offering a wide variety of clothing at competitive prices.

- The second most popular purchase category is "Beauty and Personal Care". This suggests that customers are interested in purchasing products for their personal care. Amazon should focus on offering a wide variety of beauty and personal care products at competitive prices.

Factors that can improve sales:

- **Offer a wide variety of products in each category:** This will give customers more options to choose from and increase the chances of them making a purchase.

- **Offer competitive prices:** Customers are more likely to make a purchase if they feel like they are getting a good deal.

- **Run promotions and discounts:** Promotions and discounts can help to attract new customers and encourage existing customers to make more purchases.

Average Shopping Satisfaction by Gender

Output
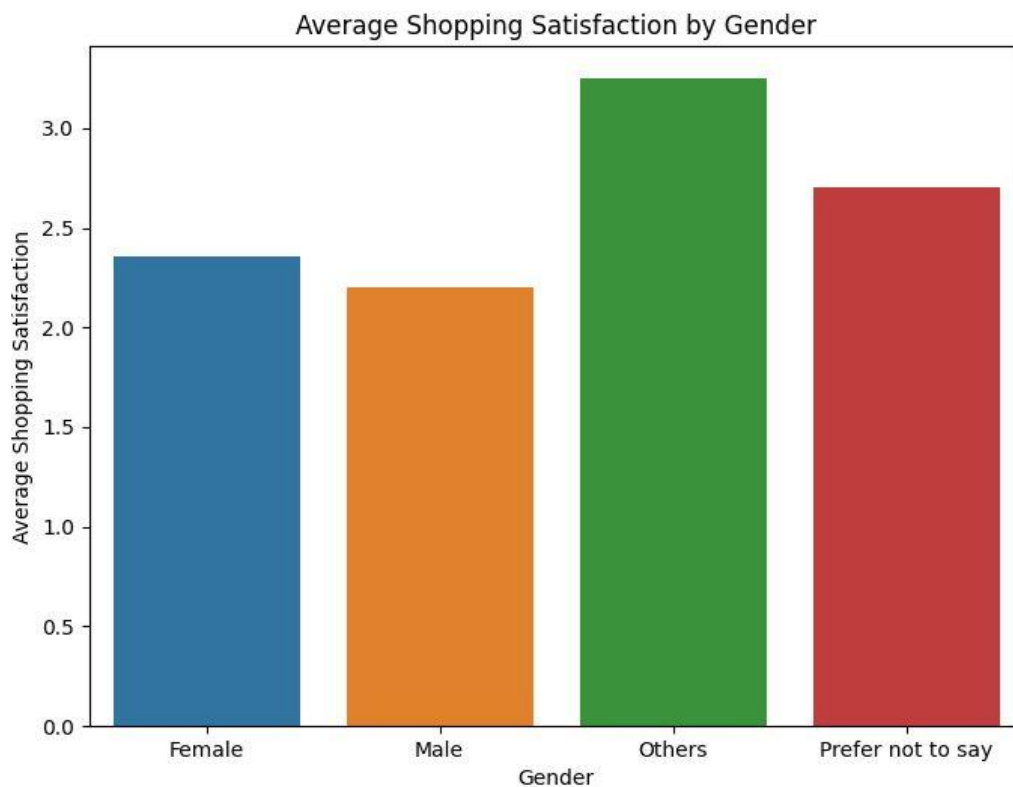
Insights and Inference:

The bar graph shows the average shopping satisfaction for customers by gender. The results show that people who mentioned their gender as others have the highest average shopping satisfaction, followed by prefer not to say, females and males.

- People who have mentioned their gender as "others" have the highest average shopping satisfaction. This suggests that they are more satisfied with their shopping experiences than males, females, and those who prefer not to say.

- Prefer not to say have the second highest average shopping satisfaction. Customers who identify as "prefer not to say" are happier with their shopping experiences than both men and women. It might be due to a number of factors, including the customer's specific wants and preferences.

- Females had the third-highest average purchasing satisfaction. This shows that female buyers are happier with their purchases. There might be several reasons for this, such as females being more inclined to purchase for things, they are enthusiastic about, or females being more likely to be affected by social media and marketing efforts.

- Males had the lowest level of overall shopping pleasure. This implies that guys are less happy with their shopping experiences than females, others, and prefer not to say. There might be several explanations for this, including males' preference to focus on price while purchasing and males' susceptibility to social media and marketing activities.

Areas that can be improved for shopping satisfaction:

- **Listen to customer feedback:** Amazon should regularly collect feedback from customers and use it to improve their products and services.

- **Personalize the shopping experience:** Amazon should use data to personalize the shopping experience for each customer. This could include offering recommendations, suggesting products, and providing personalized discounts.

- **Make it easy to shop:** Amazon should make it easy for customers to find the products they are looking for and to check out quickly and easily.

- **Offer a good customer service experience:** Amazon should have a responsive customer service team that is available to help customers with their problems.

Use Cases of the Analysis:

- Amazon can use this data to understand the shopping behavior of different age groups and tailor their marketing strategies accordingly.

- Moreover, patterns can be identified in purchase frequency to optimize inventory management and supply chains.

- Amazon can use this data to identify popular purchase categories and tailor their marketing strategies accordingly.

CORRELATION ANALYSIS

Formula Used:

$$r = \frac{n(\Sigma xy) - (\Sigma x)(\Sigma y)}{\sqrt{[n\Sigma x^2 - (\Sigma x)^2][n\Sigma y^2 - (\Sigma y)^2]}}$$

1. **Correlation between Personalized Recommendation Frequency and Shopping Satisfaction:**

   The value of correlation coefficient is calculated to be 0.52 which demonstrates that there is moderate positive relation between these two variables.
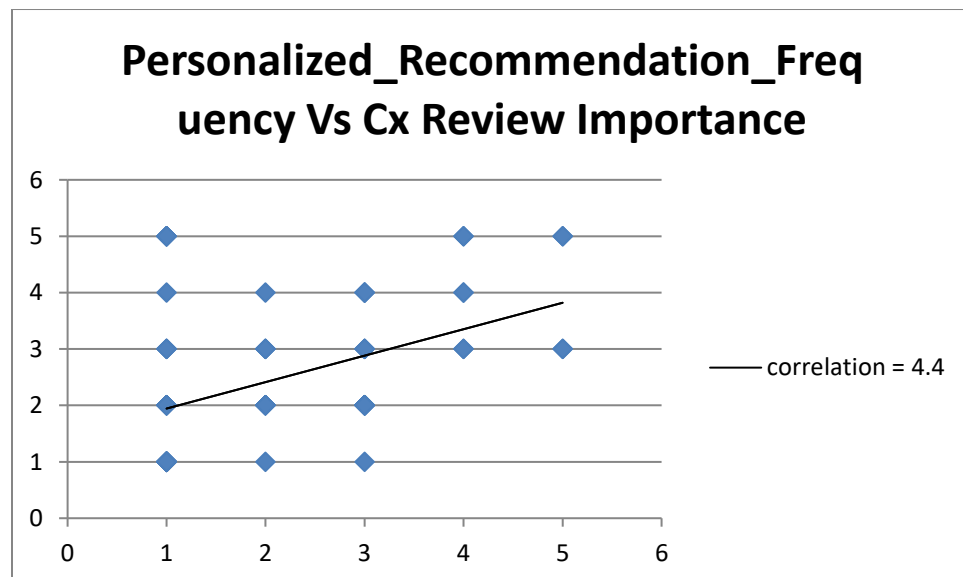
2. Correlation between Customer Review Importance and Shopping Satisfaction:

The value of correlation coefficient is 0.59 which lies in the range of moderate positive relation.


3. Correlation between Personalized Recommendation Frequency and Customer Review Importance:

The value of correlation coefficient comes out to be 4.4 which is a shows a low positive relation between these two variables.

4. Correlation between Customer Age and Shopping Satisfaction

The value of correlation coefficient is -0.07 which shows that there is almost no relationship between the age of customer and their how satisfy they are from shopping on Amazon.

Shopping_Satisfaction Vs Cx Age
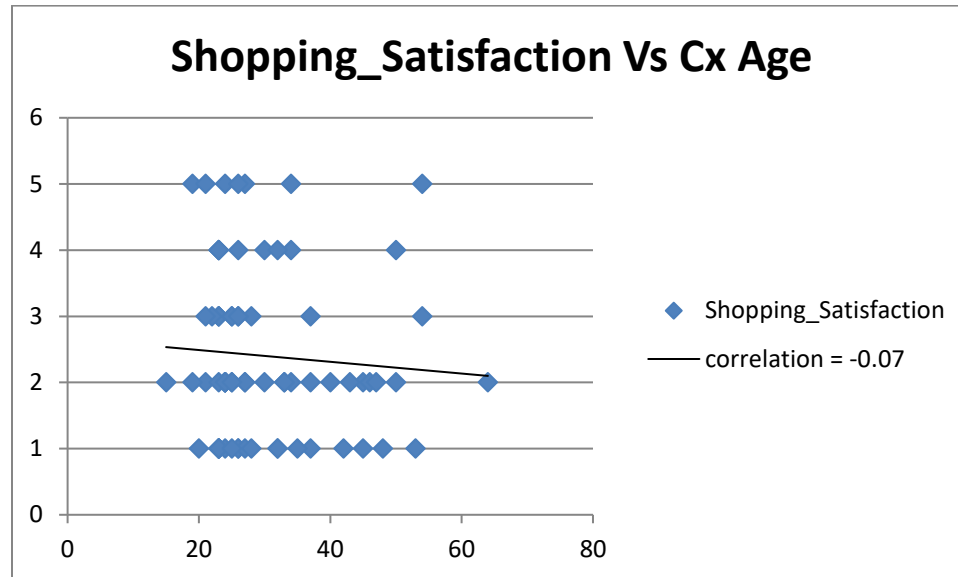
CONCLUSION

All of these analyses offer perceptions into client preferences, behavior, and satisfaction on Amazon, which might be useful for real businesses. By using such techniques to analyze the information, it can be achieved to find ways to enhance Amazon's services while also improving customer satisfaction, optimizing product recommendations, and lowering cart abandonment rates.

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