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Impact of customer experience on brand loyalty in the e-commerce industry

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1. Analysis of the business problem

In today’s highly competitive and rapidly evolving digital market, various businesses are forced to shift their focus towards positive customer experience as a key advantage in the online space. Through the continuous transformation of digital space, new e-businesses are emerging on several platforms including social media and company websites. They can provide personalized experiences and therefore foster stronger relationships with their audience. According to Statista in 2023, global retail e-commerce sales were estimated at $5.8 trillion. Forecasts suggest a significant 39% increase in the coming years, with sales expected to exceed $8 trillion by 2027 (*Global retail e-commerce sales 2014-2027*, n.d.). This growth trend highlights the importance of consumer-centric strategies in sustaining business growth and competitiveness in the digital marketplace. Unlike traditional marketing strategies that prioritize product features or price, online businesses must go in different directions to attract new consumers and ensure positive retention.

Customer loyalty refers to the consumer who repeatedly chooses a particular company’s products over the goods offered by the competitors. This attachment is often rooted in the emotional connection that the customers develop towards the brand. When they feel aligned with company values and have positive experiences with the products, they are more likely to consciously choose that company more consistently. Many businesses develop loyalty programs to encourage repetition of the purchases. When the expectations of the customers are met consistently and reliability of the brand is ensured, it fosters an overall positive experience.

This report aims to develop an analytical framework on the relationship between customer experience and customer loyalty. In competitive markets, the development of effective strategies is crucial for the survival of the company. By using advanced data analysis techniques, we will uncover trends that can help various businesses to improve products, enhance customer experience, and drive business growth.

2. Dataset Overview

The dataset provided is secondary data, which means it was collected from an external source rather than being generated specifically for the current analysis. The company’s name was not provided. Chosen data consists of customer-related information, detailing various customer attributes and their customer purchasing behaviors. It is structured, including both numerical and categorical variables such as customer demographic, loyalty program tier, total spend, purchase frequency, customer rating, and repeat purchase status.

This dataset allows an analysis of how customer experience is influencing brand loyalty in the e-commerce industry. It is reflected in factors like purchase frequency, customer ratings and loyalty program tiers. Through the examination of the trends and patterns in the dataset, it will be possible to establish whether there are any relationships between the attributes and if they are increasing the customers' likelihood of remaining loyal towards the brand.

3. Analytical methods

To analyze the relationship between the customer's experience and loyalty, a data-driven approach was used to check whether there are any significant correlations or trends. This section will outline the main methods used for data processing, transformation and statistical analysis.

The dataset was first cleaned to remove any inconsistencies or missing values to allow reliable results. This process also included removal of the duplicates. This ensured that unnecessary entries would not appear in the analysis. If not cleaned these numbers could lead to inaccurate results by skewing the findings and misrepresenting the relationships.

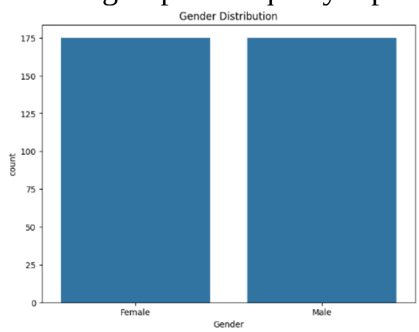
Once the dataset was cleaned, categorical variables such as “Satisfaction Level” were transformed into numerical representations to allow the execution of quantitative analysis. This was done using a mapping technique that assigned numerical values to different satisfaction categories (e.g., Satisfied = 3, Neutral = 2, Unsatisfied = 1). The Satisfaction Level and Membership Type columns were mapped to numerical values for easier analysis. Then there was an exploratory data analysis to understand the structure of the data and identify patterns.

To examine potential relationships between certain variables, correlation analysis was performed. It measured the strength and direction of associations. To easily interpret the data and to identify potential trends and clusters, various data visualization techniques were also used, e.g. including scatter plots, frequency tables or bar charts.

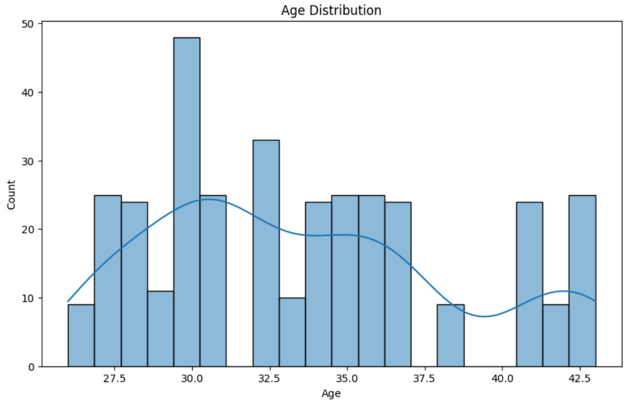
Finally, the analysis included a machine learning approach to predict whether a customer is likely to remain loyal towards the brand. The Random Forest Classifier was used to classify customers based on various features, assessing the key factors that contribute to loyalty.

4. Analysis of the data

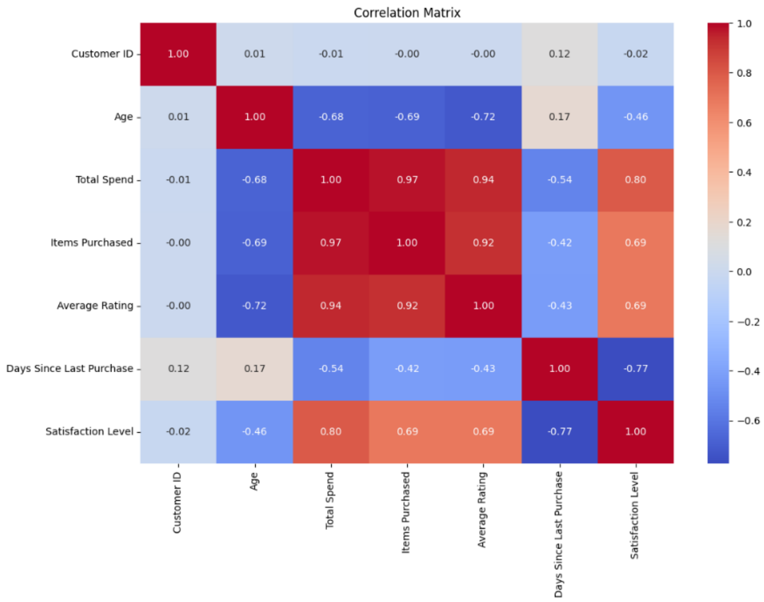
After cleaning the data, the gender distribution analysis presents an equal representation of male and female customers. This balance indicates equal representation of men as well as women. This also suggests that gender will not be a major factor influencing customer loyalty or purchasing behavior, as both groups are equally represented.



Furthermore, the age distribution analysis provides insights into the demographic of the customers of this brand. Although the dataset indicates that the age distribution is mostly evenly spread, there is one dominating group.



Another analysis includes correlation matrix. It was used to examine the relationships between key numerical variables such as “Total spend”, “Items Purchased”, “Average Rating”, “Days Since Last Purchase”. A positive correlation indicates that as one variable increases, the other does as well. Negative numbers suggest an inverse relationship. Key findings from this correlation matrix include the Satisfaction Level” variable and “Total Spend”. The moderate positive correlation indicates that higher customer satisfaction may be associated with increased spending. Another correlation involves “Items Purchased” and “Total Spend”. This strong positive correlation suggests that customers who buy more items tend to also spend more overall. On the other hand, there is negative correlation between the “Days Since Last Purchase” and “Total Spend”. This could indicate that customers who did not make a recent purchase are less likely to spend.



The distribution of customer satisfaction levels, as visualized in the chart, offers a deeper understanding of how customers perceive their experiences with the company’s products. For this analysis, satisfaction levels were grouped into three categories: Unsatisfied (0), Neutral (1), and Satisfied (2). This categorization simplifies the interpretation of customer feedback and allows for a clearer focus on actionable insights.

From the chart, the Satisfied category represents the largest group, with over 120 responses, indicating that a significant portion of customers had a positive experience with their purchases.

This is a promising sign for the company, as it suggests that the platform is meeting customer expectations for a large segment of its user base. However, the Unsatisfied category also accounts for a substantial portion of responses, closely trailing the satisfied group. This indicates that there are still considerable gaps in meeting customer needs, which could potentially harm brand reputation and customer retention if not addressed effectively.

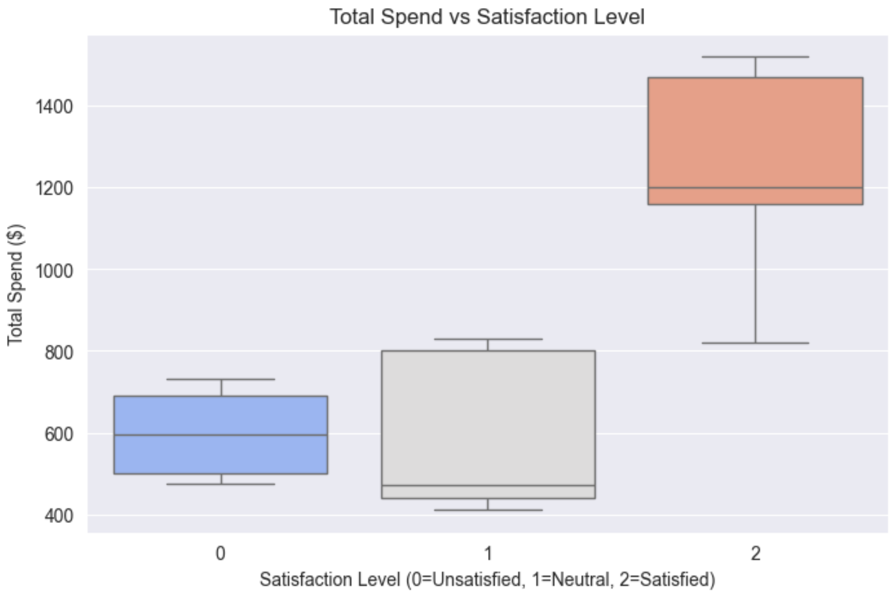
Interestingly, the Neutral category is the least represented, indicating that most customers tend to form definitive opinions—either positive or negative. This polarization could be attributed to the emotional nature of e-commerce purchases, where customers are more likely to leave feedback if they are highly satisfied or deeply dissatisfied.

The implications of this distribution are significant for business strategy. While a high percentage of satisfied customers reflects positively on the platform, the presence of a notable number of dissatisfied customers calls for immediate attention. A closer examination of the unsatisfied group's feedback reveals recurring issues such as product quality concerns, delays in delivery, and discrepancies between product descriptions and actual products received. These factors are critical pain points that, if addressed, could help convert dissatisfied customers into loyal ones and further strengthen customer satisfaction rates.

Additionally, the small proportion of neutral reviews presents an opportunity for the company to encourage more feedback from customers who might not have strong opinions about their purchases. This could be achieved through post-purchase follow-ups or incentives to leave detailed reviews, helping the company gain a more balanced perspective on its overall performance.

By leveraging these insights, the company can focus its efforts on improving product quality, enhancing logistics, and ensuring accurate product listings, which will not only boost customer satisfaction but also foster trust and loyalty among its user bases.

The box plot offers a thorough analysis of the relationship between overall spending and customer satisfaction levels. With total expenditure in dollars on the y-axis, it divides customers into three satisfaction levels: unsatisfied (0), neutral (1), and satisfied (2). The spread, central tendency, and possible outliers in each category are effectively highlighted by this depiction.



Customers who are categorized as unsatisfied spend the least overall, with the interquartile range (IQR) mostly falling between $500 and $650. The median spend of this group is far lower than that of the satisfied group, suggesting that discontent is highly correlated with decreased platform spending and involvement. The comparatively tiny spread indicates that unhappy customers tend to spend consistently, which probably reflects low investment because of expectations not being delivered.

With expenditures ranging from roughly $450 to $750, the Neutral group exhibits a somewhat wider distribution than the dissatisfied clients. While it is still significantly lower than that of the satisfied group, the median spending level is marginally greater than that of the dissatisfied group. This implies that although neutral consumers are less disengaged than dissatisfied ones, they nevertheless contribute moderately to revenue and offer a chance for expansion if their level of satisfaction can be raised.

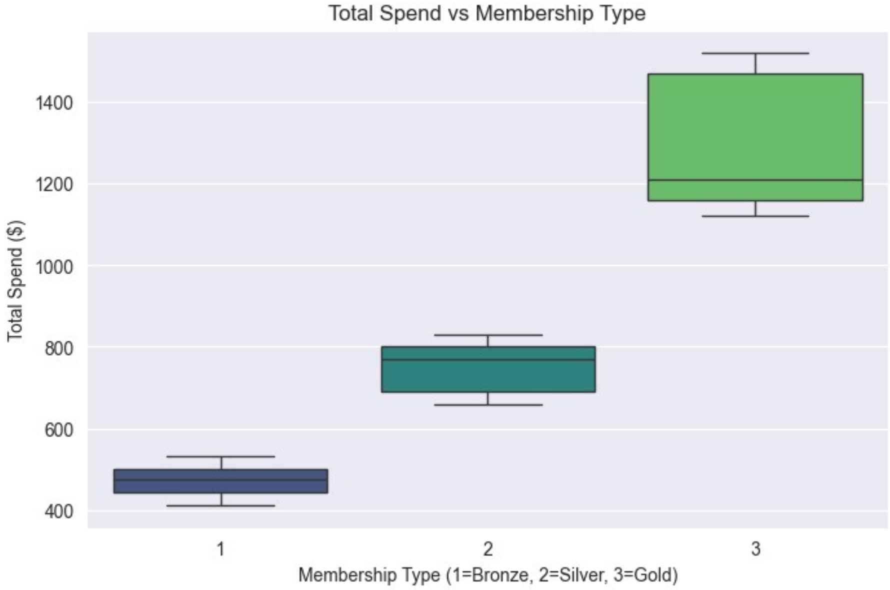
The group that shows the highest overall spending is Satisfied, with a much wider IQR that ranges from about $800 to $1200. The outliers above $1400 demonstrate the platform's capacity to collect higher-value transactions from happy consumers, and the median spending level for this category is noticeably greater than that of the other groups. This broad distribution highlights the significance of happy customers to Amazon's profitability by indicating that they are more inclined to spend more money and to make repeat or high-value transactions.

Spending patterns and satisfaction levels are directly correlated, according to the comparison analysis. Positive customer experiences and revenue growth are strongly correlated, as seen by the much higher spending of delighted customers. However, because their limited spending lowers overall revenue contributions, disgruntled customers pose a risk to profitability.

The identification and resolution of disgruntled customers' pain points should be the focus of efforts to increase overall profitability and customer retention.

The box plot displays the overall expenditure trends of clients in the Bronze (1), Silver (2), and Gold (3) membership tiers. Understanding consumer behavior, engagement levels, and the possible relationship between spending and membership satisfaction all depend on this picture.

Gold members spend far more than both bronze and silver members, according to the figure, which shows clear disparities in spending between membership tiers. Interestingly, compared to bronze and silver members, who have more constrained and stable spending ranges, gold members have a substantially broader interquartile range (IQR), indicating more spending unpredictability.



Important insights about consumer happiness and engagement methods are brought to light by the obvious spending level stratification. One explanation is that clients in the gold membership tier might think their advantages are worth more, which would encourage them to spend more money.
This may indicate that premium membership services are successfully meeting the demands of devoted, high-spending clients. Conversely, Bronze and Silver members' comparatively modest and consistent expenditure trends suggest that they may not be fully utilizing the services or perks offered to them.

It would be advantageous to investigate the precise elements that motivate gold members' high purchasing habits to improve customer satisfaction across all categories. Strategies to customize services and benefits for bronze and silver members can be informed by an understanding of these characteristics, which may lead to increased participation and spending. The business can also think about offering lower-tier members value-added services, personalized incentives, or loyalty programs to increase their purchasing and general pleasure.

Furthermore, even within the highest membership group, the variation in gold members' spending may indicate varying degrees of satisfaction. The business would be able to maintain and increase customer happiness at this level by identifying patterns within this group, such as purchase frequency, product preferences, and major displeasure points.

To sum up, the disparities in spending that are emphasized in this plot indicate that the business has been able to extract value from gold members, but it may be performing poorly with bronze and silver members. Overall customer involvement, satisfaction, and loyalty may be increased via focused tactics to raise these lower tiers' perceived value and level of satisfaction. The study lays the groundwork for more investigation and data-driven choices to maximize membership benefits and guarantee steady client expansion at every level.

An independent samples t-test was conducted to examine the relationship between purchase frequency and total spending among customers. Customers were divided into two groups: those who made purchases within the last 30 days ("repeat customers") and those who had not ("non-repeat customers"). The analysis revealed a statistically significant difference in total spending between the two groups, with repeat customers exhibiting higher spending levels.

This finding suggests that customers who purchase more frequently tend to spend more overall, highlighting the importance of fostering repeat business to enhance revenue. To further explore factors contributing to customer loyalty, a Random Forest Classifier was trained using demographic and behavioral data, including age, total spend, items purchased, average rating, discount applied, and membership type. The model achieved an accuracy of approximately 92.86% in predicting loyal versus non-loyal customers.

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Accuracy: 92.85714%
              precision    recall  f1-score   support

           0       0.86      0.90      0.88        21
           1       0.96      0.94      0.95        49

    accuracy                           0.93        70
   macro avg       0.91      0.92      0.92        70
weighted avg       0.93      0.93      0.93        70
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These insights underscore the value of leveraging customer data to identify and target loyal customers effectively. By understanding the characteristics and behaviors associated with loyalty, businesses can develop tailored strategies to encourage repeat purchases, such as personalized marketing campaigns, loyalty programs, and targeted promotions. Implementing these strategies can lead to increased customer retention, higher spending, and overall improved business performance.

5. Description and Strategies

Creating successful business strategy in the e-commerce industry requires a grasp of the complex nature of consumer behavior. Our thorough investigation examined several consumer data aspects, such as the distribution of genders and ages, satisfaction levels, total expenditure about satisfaction, and spending trends among membership kinds. These revelations have highlighted important areas that demand attention to improve client interaction and spur company expansion.

Our analysis of the distribution of ages and genders showed that our clientele was varied, with unique tastes and habits among various groups. Although both male and female consumers frequently purchase online, there are differences in the factors that determine their level of Happiness. Research shows that whereas women place more value on security, financial considerations, and social influence, men are more impacted by elements like perceived website quality and convenience. Another important factor is age; younger consumers (under 30) place a higher value on website quality and convenience, whereas older consumers (30 and beyond) are more impacted by enabling factors, financial worries, and security issues.

We found a range of experiences, from high satisfaction to dissatisfaction, when evaluating consumer satisfaction levels. This variance emphasizes the need for tailored strategies to meet a range of client expectations. The relationship between overall spending and satisfaction levels is a noteworthy discovery. Positive customer experiences have a direct impact on revenue production, as evidenced by the tendency of customers who report higher levels of satisfaction to spend more.
Premium or higher-tier members, such as those with gold memberships, tended to spend more money overall than normal members, according to additional research on membership kinds. This pattern suggests that loyalty programs and membership tiers can effectively motivate customers to increase their spending.

To address the identified issues and leverage the insights gained, the following strategies are recommended:

- Personalized Customer Engagement: Create marketing initiatives that are specifically tailored to the tastes of various age and gender groupings. For example, improving the quality and usability of a website may appeal more to younger and male consumers, but focusing on security features and offering comprehensive product information may appeal to older and female consumers.

- Improvement of Customer Satisfaction: Put policies into place that are meant to raise general customer satisfaction. This can entail providing prompt customer service, asking for input frequently to pinpoint problems, and making sure the caliber of the product meets client standards. Business can promote loyalty and increase spending by resolving areas of unhappiness.

- Loyalty Program Optimization: Rejuvenate current loyalty programs to provide more alluring rewards for higher-level subscribers. This could entail exclusive offers based on past purchases, early access to new products, or exclusive pricing. Customers may be encouraged to raise their spending and upgrade their memberships as a result of such improvements.

- Security and Privacy Assurance: Investing in strong cybersecurity measures is essential, especially considering the increased security concerns of some client segments. Customers who are concerned about security may become more satisfied and spend more money if these efforts are clearly communicated.

- Convenient purchasing experiences are made easier by streamlining the online shopping procedure, which younger customers especially enjoy. Offering flexible shipping options, streamlining the checkout process, and improving website performance could all be part of this.

The business can meet the various wants of its clientele, raise consumer satisfaction, and encourage more spending by putting these tactics into practice. This will help it achieve long-term growth in the cutthroat world of e-commerce.

6. Conclusion

Our thorough investigation explored the complex connections among consumer demographics, satisfaction levels, purchasing patterns, and membership categories in the e-commerce industry. We found that people's contentment with online shopping is highly influenced by their age, with those between the ages of 29 and 48 having the highest levels of pleasure. Furthermore, consumers who have been buying online for more than four years are generally happier, but gender does not seem to have a big impact on satisfaction levels.

Our examination of consumer buying patterns showed that, on average, men spend more money online than women do. Additionally, despite maybe having lower average spending than older consumers, younger customers have a tendency to make more frequent purchases. According to this tendency, older consumers can be more concerned with the quality and value of their purchases, whilst younger consumers prefer the convenience and variety provided by e-commerce platforms.

We discovered that premium or higher-tier members, such gold members, typically have higher overall expenditures than ordinary members when we looked at the association between total spending and membership type. This suggests that membership tiers and loyalty programs can successfully encourage consumers to spend more money.

Using explanatory variables like age, purchase frequency, and membership type, we were able to accurately assess consumer loyalty by incorporating a Random Forest Classifier into our predictive model. To focus retention techniques and raise the value of these consumers, businesses can use this model to identify clients who are more likely to become loyal.

The paper provides best practices for improving customer engagement through segmented marketing, service improvement, reward system maximization, and improved security based on these findings. For instance, messaging can be made more relevant and effective by tailored marketing efforts that take into account the preferences of various age and gender groups. Customer loyalty and satisfaction can also be increased by ongoing service enhancements like quicker delivery times and effective customer assistance. Customers' purchasing and brand loyalty can be increased by optimizing reward programs by providing alluring perks for varying membership tiers.
Lastly, enhancing online transaction security can increase consumer trust, particularly among

consumers who place a high importance on security.

In conclusion, businesses can improve customer loyalty and keep a competitive edge in the online market by comprehending and catering to the various requirements and behaviors of their clientele.

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