What Best Buy's Video Game Listings Tell Us About Customer Preferences

Team Number: 5A

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Introduction

Best Buy Co., Inc. is a technology and electronics retail store that operates primarily in the United States and Canada. Most of the products sold by Best Buy can be found on their online website (bestbuy.com), which has a variety of filters to sift through the exact electronics you would like to purchase. Our group has decided to analyze the video game segment of the company's online platform, specifically due to the plethora of options and consumer activity regarding the subsection of electronic products.

As a company primarily focused on physical sales, our analysis will prioritize gaming equipment rather than the games themselves. With video game consoles and accessories comprising the majority of product, these two categories will serve as the primary focus of our evaluation. The website itself also has numerous rating mechanisms that consumers can use to both rate and analyze the quality of the products they hope to purchase. This also stood out to us in our selection, because the group believes that the free-market rating from the demand side, paired with the variety of classification attributes on the supply side, provide optimal ways to collect data and analyze consumer spending patterns and trends as they relate to video games and their accessories. Specifically, the group hopes to answer questions such as:

- What are the different attributes consumers tend to account for when purchasing consoles vs. Accessories?
- Which brands provide the safest floor from poor product ratings, and which are more risky (largest variation) in terms of product ratings?
- What specific key words do consumers look for in positive reviews and look out for in more negative-leaning reviews?
- Which brands excel in certain accessory types according to customer rating, sales figure and the variety of product offered?

The answer to these questions will help to provide a better assessment and understanding of what it is that consumers look for when purchasing electronic products such as video game consoles and accessories in particular from retailers.

Related Work Similar to this Project:

In deciding on a topic to research, the questions of consumer trends quickly became a frontrunner, especially in the developing age of online retailing and readily available purchase and review information.

Before we decided on a specific product/company to research, we came across a report on gaming trends in the United States. This report is called *Gaming Trends - Consoles & Accessories - US – 2024,* a published report by Mintel, a market research company. We were intrigued by the contents of this report, which stated that in the year of 2023, over 95% of the Generation Z population had played a video game within the past three months. This number was astonishing, and considering that oftentimes, the purchaser of products is not the ultimate consumer, but instead a legal guardian or parent, we wanted to delve deeply into what both the end-point user and parents felt were important in a product.

Another key aspect of this article that intrigued us was the fact that 40% of current gamers in the United States were interested in soon purchasing a variety of add-ons and accessories to complement their video gaming habits. These products could be anything ranging from headsets, to controllers, to entirely new accessories, all of which we realized we could find consumption data for on a website like Best Buy's.

Another piece of publication we found inspiring to our research was an article on Stuff that highlighted its own ratings of the top accessories the Xbox brand currently has to offer entitled *Best Xbox Series X and Series S Accessories 2024.*[3] We found this article to be a great reference point when analyzing our data to determine, according to Best Buy's website, if the consumers truly agreed with these rankings of best Xbox accessories, or if the website left out any popular and highly rated products from the Xbox brand. We also used this article as a frame of reference to distinguish what impact popular media discourse has on the purchasing habits and expectations of eventual video game accessories buyers. We were excited by the possibility of either finding new products left out by the website or confirming possible biases in the way that users purchase products that may not align with the product quality, but rather the advocates and marketing of the product itself.

Acquiring and Organizing Data:

At first, we tried to use the BestBuy API query builder that provides subset of the product attributes to create sample request and response documents. Though having an easy interface and direct API access the attributes were not specific enough for our in-depth analysis. The official git application is not open to personnel using personal and educational email addresses.

This encouraged us to detour into using well established application called Web Scraper. The decision helped us eliminate any debugging process within the code while providing

a much more intuitive way for us to grasp the essential information contained under the listings. After some minor specifications we successfully scraped all 550 listings from the two sections we focus on.

Further relevant subcategory attributes were web scraped using the Beautiful Soup web scraping Python Library.

For the cleaning process, we first got rid of the listings not having price attach it as well as ones with misplaced elements/wrong attributes. Then we created dedicated columns to take account of the common aspects in the specifications tab such as the number of USB ports, compatible platform and wireless or not. We reckon this encoding approach would give us more playfulness and depth into the exploratory analysis process.

Analysis Methods:

In this project, a variety of statistical and data visualization methods were employed to explore and analyze the dataset effectively.

The analysis began with descriptive statistics, examining average metrics like discounts through grouping and aggregation. Visualizations played a crucial role, including:

- Bar charts to showcase brand popularity and average discounts,
- Boxplots to examine the distribution of ratings across brands, and
- Histograms combined with KDE plots to analyze price distributions.
- Temporal trends were explored using line charts, such as monthly and yearly business patterns.
- Advanced tools like heatmaps summarized average ratings by brand and accessory type, while stacked bar charts visualized ESRB age ratings across brands for comparative insights.
- Natural language processing techniques were integrated by generating word clouds from review mentions to highlight key themes.

Extensive data preparation steps included:

- Converting dates into a standardized format for temporal analysis,
- Handling missing values, and
- Transforming categorical data for effective analysis.
- The project also utilized advanced filtering techniques to rank brands based on specific metrics, such as ease-of-use ratings.

While the focus was on exploratory analysis, the structured insights from this work provide a strong foundation for predictive modeling, such as demand forecasting or sentiment analysis, making the findings actionable for business decisions.

Data Analysis/Discussion:

The first exploratory analysis we focus on the prices in both sections to see where BestBuy position its standing among competitors. From Chart1 we could identify the majority of listing lays between $0 to $75. To derive insight from discount trend we plotted the release year with discount rate. Chart2 shows that indeed the fresh released product have the least discount whereas the most deals happen on product three years old.

The strategic analysis of the corporation focuses on brands with the highest number of listings in the data: Nintendo leads, followed by Arcade1Up and Turtle Beach, with several major brands occupying the middle positions in the top 15. A horizontal bar chart (Chart3) provides a snapshot of Best Buy's listing strategy, revealing a focus on customer preferences. Best Buy prioritizes high-recognition products while supplementing its offerings with smaller, more affordable suppliers to bridge gaps in value-oriented options.

To evaluate whether BestBuy's listing brands effectively deliver products that satisfy customers, we utilized multiple boxplots (Chart 4) to compare customer ratings across brands. The distribution confirms that the top two brands, Nintendo and Arcade1Up, successfully deliver on the expectations Best Buy seeks to create, setting themselves apart from other brands. Additionally, the heatmap (Chart 5) provides a detailed overview of the average customer ratings for ease of use, value, and quality across all brands. Brands like Nintendo, Arcade1Up, and PowerA consistently maintain high ratings across all three dimensions, further solidifying their standout performance. Conversely, brands such as MSI show lower average ratings, indicating room for BestBuy to change their listing proportion of the brand.

To derive insights into customer preferences on the website, we organized product mentions into the top 10 positive and negative aspects (Chart 6&7). The analysis reveals that price and functionality are the most significant factors, consistently ranking at the top of both positive and negative sentiments. We plotted a scatterplot (Chart 8) vindicate the correlation between price and rating. To further illustrate customer preferences, we also created a word cloud (Chart 9), offering a visual representation of key themes.

To evaluate whether Best Buy's product offerings align with customer satisfaction, we employed a Random Forest and Linear regression model. The resulting scatterplot (Chart

10) illustrates the predicted customer ratings against the actual ratings, with the diagonal line representing perfect alignment. The model demonstrates a strong predictive capability, suggesting that key product features and brand reputation are well-correlated with customer satisfaction. This analysis highlights that top-performing brands like Nintendo and Arcade1Up meet Best Buy's strategic goal of delivering high-quality products that resonate with customers. Conversely, lower-performing brands such as MSI indicate areas where Best Buy could refine its product mix to enhance overall customer satisfaction. By leveraging these predictive insights, Best Buy can better tailor its offerings to meet customer expectations and strengthen its market position.

Conclusion:

The booming video game market, as evidenced by the increasing monthly accessory releases, highlights both the growing demand and the intensifying competition in this industry. Our analysis of Best Buy's video game segment reveals that strategic product listings and alignment with consumer preferences are pivotal for success in this dynamic landscape. By focusing on key trends such as pricing strategies, demographic targeting, and customer satisfaction metrics, we identified brands that consistently deliver quality and value, reinforcing Best Buy's strategic positioning. Conversely, brands like MSI present opportunities for improvement, allowing Best Buy to refine its offerings further.

Through advanced visualization and predictive modeling, we demonstrated that factors such as price, functionality, and brand reputation significantly influence customer satisfaction. These insights equip Best Buy with actionable recommendations to optimize its product mix, enhance customer engagement, and sustain its competitive edge in the ever-evolving gaming accessories market. This report underscores the importance of aligning supply-side strategies with demand-side expectations to capitalize on the opportunities in this rapidly expanding sector.
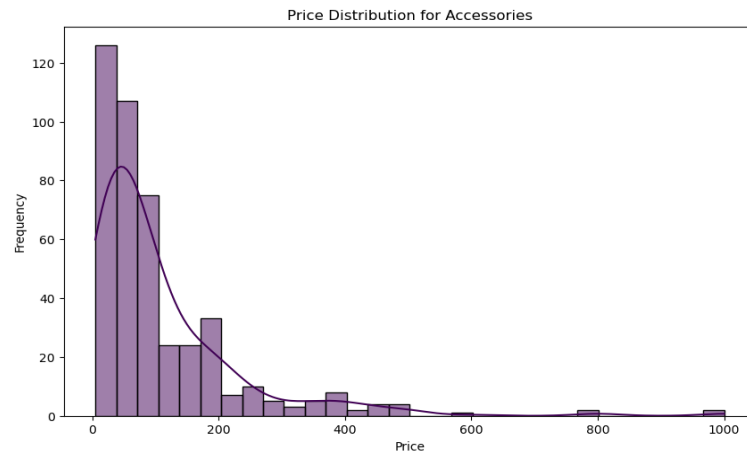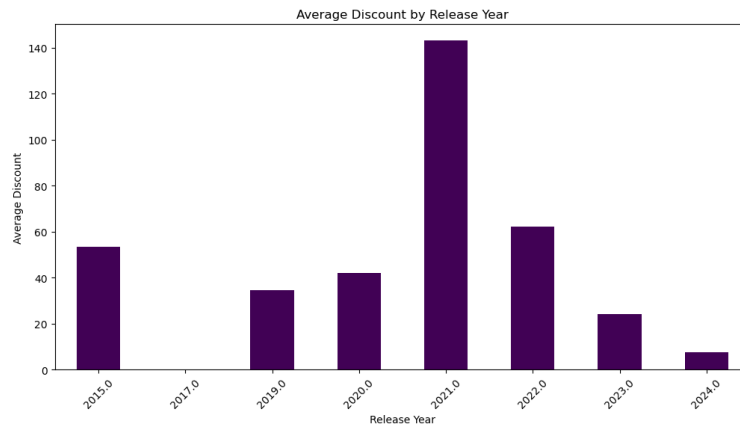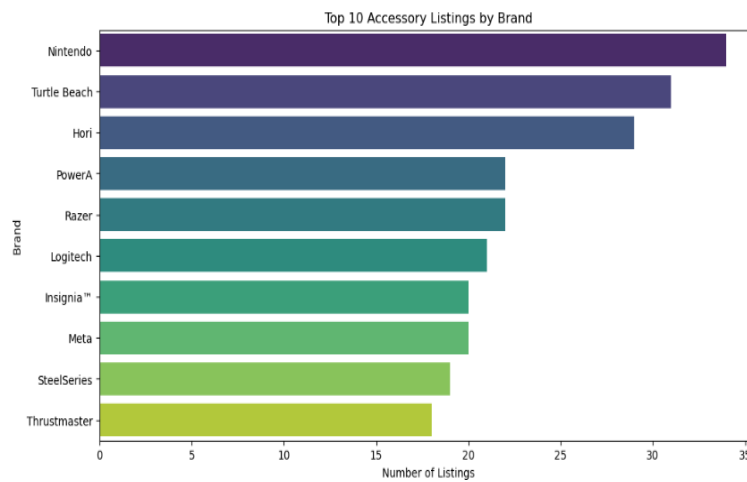
Figures and Charts:

Chart 1

Price Distribution for Accessories

Chart 2

Average Discount by Release Year

Chart 3

Top 10 Accessory Listings by Brand

Chart 4

Distribution of Value Ratings by Top 15 Brand

Chart 5

Average Ratings by Brand
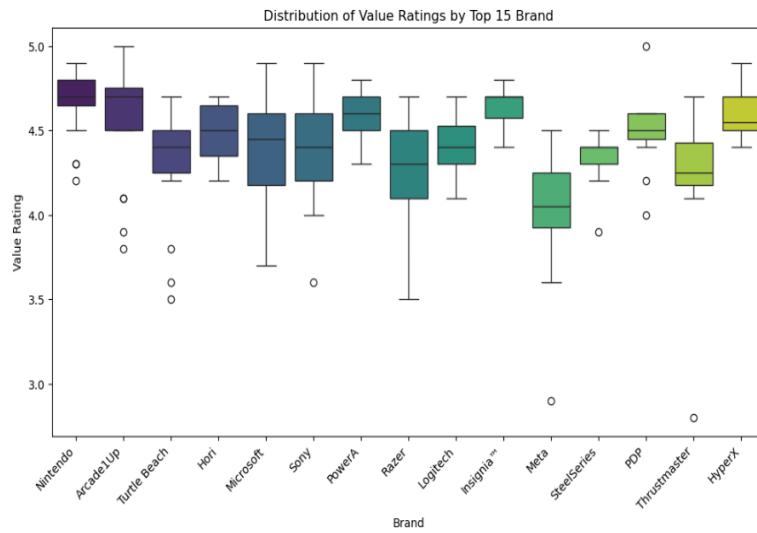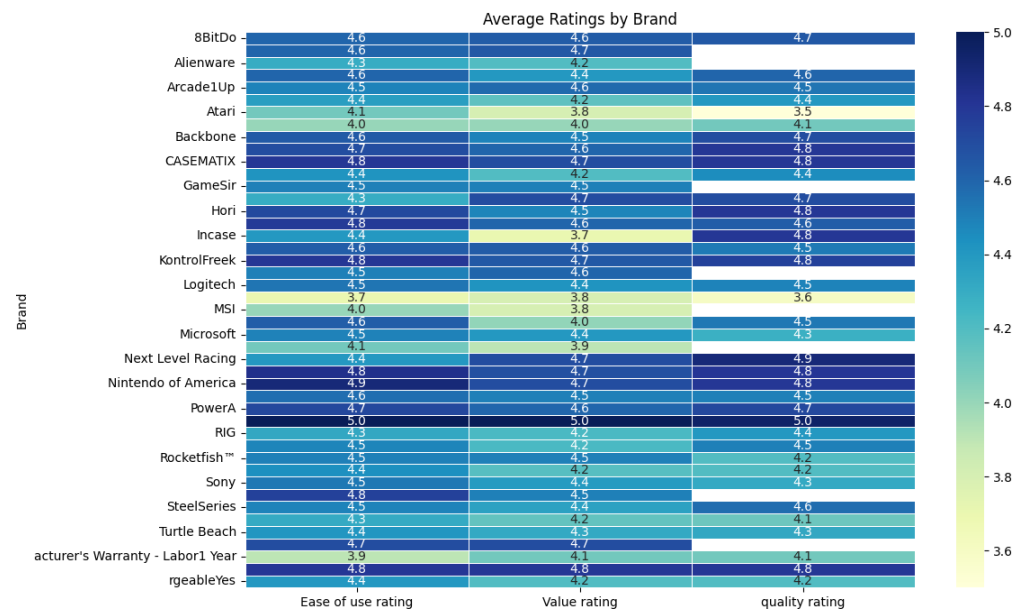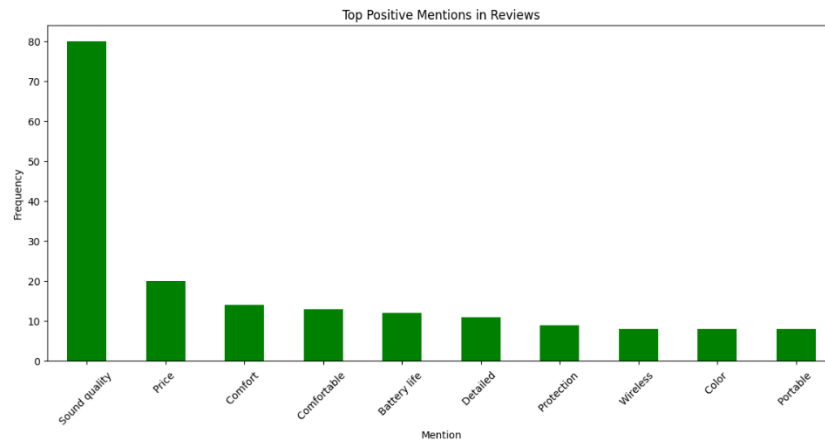
Chart 6

Chart 7

Chart 8

Chart 9

Chart 10
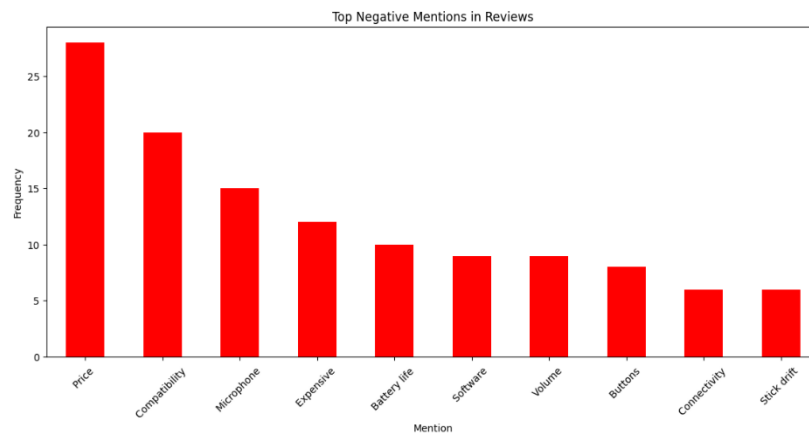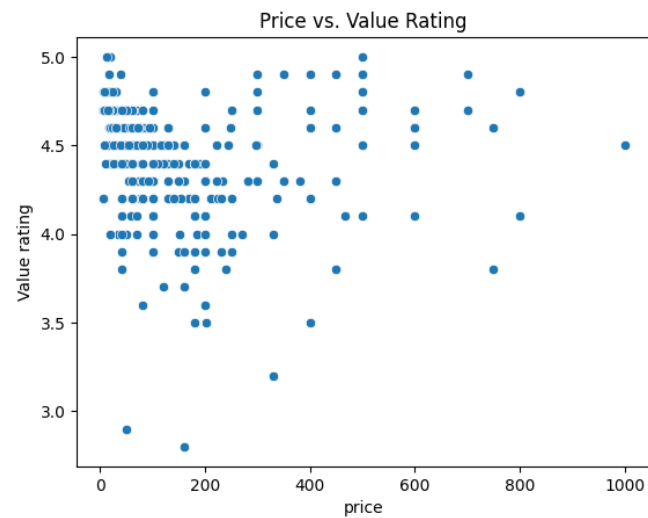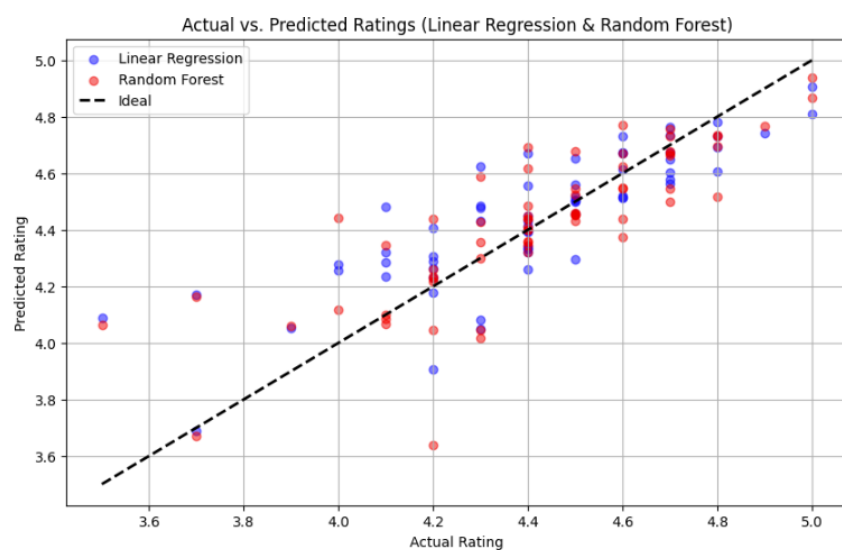
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