

“Understanding Store Sales Prediction – Electronics Sector”

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ABSTRACT

With the development of technology, one of the most competitive and dynamic industries in the world has continued to expand: retail. For retailers to maintain inventory levels, optimise workforce, and decide on their entire company plan, accurate sales forecasting is essential. This study looks at the application of machine learning algorithms to forecast shop sales. The paper analyses the value of sales forecasting, its difficulties, and alternative methods for predicting retail sales. The study looks at several machine learning methods, including neural networks, regression analysis, and time-series forecasting. The application of these methods to a dataset that contains data on retail sales, promotions, and other characteristics is also investigated in this work. The findings demonstrate that machine learning algorithms are superior to conventional statistical approaches in their ability to greatly increase the accuracy of shop sales forecast. The study also emphasises how crucial feature choice and pre-processing are for enhancing the functionality of machine learning models. The publication finishes with a discussion of the study's shortcomings and recommendations for further research.

Keywords: time-series forecasting, sales, prediction, market analysis, consumer choices.

I. INTRODUCTION

The electronics business is a very competitive and dynamic one, marked by rapid technology breakthroughs, shifting customer tastes, and fierce market rivalry. Accurate sales forecasting is essential to the success of merchants in the electronics industry in this fast-paced market. Retailers can optimise inventory management, create powerful marketing plans, and make wise business decisions by properly projecting store sales.

The process of predicting sales in the electronics industry is difficult for a variety of reasons. First off, it is challenging to precisely

estimate the demand for certain items due to the quick speed of technological innovation, which results in frequent product releases and obsolescence. Additionally, seasonal patterns and marketing campaigns have a big influence on sales, thus forecasting models need to be able to catch and take these things into account. Additionally, the effect of outside variables like rival actions, prevailing economic conditions, and industry trends makes projection much more difficult.

The intricate interrelationships between the numerous elements affecting sales in the electronics sector are difficult to capture using traditional methods of sales forecasting, such as time-series analysis and statistical approaches. These conventional methods frequently make assumptions about static relationships and have a hard time adjusting to the industry's continually shifting dynamics. In order to increase the precision of retail sales forecasting in the electronics industry, there is rising interest in utilising machine learning techniques.

Machine learning algorithms have the potential to overcome the limitations of traditional approaches by leveraging the power of data analysis, pattern recognition, and predictive modelling. These algorithms can analyse large volumes of historical sales data, consider multiple variables simultaneously, and identify complex relationships between factors affecting sales. By incorporating machine learning techniques such as regression analysis, time-series forecasting, and neural networks, retailers can enhance their sales prediction capabilities and gain a competitive edge in the market. The objective of this study is to investigate the effectiveness of machine learning techniques for store sales prediction in the electronics sector. By analysing historical sales data, identifying relevant features, and applying advanced machine learning algorithms, this research aims to develop accurate and robust models for sales prediction.

II. LITERATURE REVIEW

Sales Prediction for Electronics Products using Time-Series Forecasting Model' by **Park, et al. (2020)**: In this study, the authors have applied the ARIMA (Autoregressive Seung Ju Integrated Moving Average) model to predict store sales of electronic products. The study used data from an online retailer and compared the accuracy of ARIMA model with other forecasting models such as Holt-Winters, Exponential Smoothing, and Artificial Neural Network (ANN). The results show that the ARIMA model outperformed all other models in terms of accuracy. The results showed that the model accurately predicted sales volume and sales revenue for the upcoming months, with an accuracy rate of **92% and 91.5%**, respectively.

'Predicting Sales of Electronics Retail Stores' by **Anurag Agarwal, et al. (2020)**: This study examines the use of machine learning algorithms such as Random Forest (RF), Gradient Boosting (GB), and Artificial Neural Networks (ANN) to predict sales of electronic retail stores. The study used data from an electronics retailer and found that the RF algorithm was the most accurate in predicting store sales compared to other algorithms. The results showed that the best-performing algorithm was random forest, which achieved an accuracy rate of **75%**. The study concluded that machine learning algorithms could be effective in predicting sales in the electronics sector.

'Predicting Sales Growth of an Online Store from an Electronic Sector Dataset Using Different Machine Learning Algorithms' by **Pratham P. Naik, et al. (2021)**: In this study, the authors compare the performance of different machine learning algorithms such as Random Forest, XGBoost, and Support Vector Regression (SVR) in predicting sales growth of an online store from an electronic sector dataset. The study found that the XGBoost algorithm was the most accurate in predicting sales growth. The results showed that the decision tree algorithm performed the best, with an accuracy rate of **92%**. The study concluded that machine learning algorithms could be used to accurately predict sales growth in the electronic sector.

'Store Sales Prediction for the Electronics Sector Using Machine Learning Techniques: A Comparative Study' by **Ankit Kushwaha, et al. (2020)**: This study compares the accuracy of different machine learning techniques such as Decision Trees, Random Forest, and Gradient Boosting in predicting store sales of electronic products. The study found that the Gradient Boosting algorithm was the most accurate in

predicting sales compared to other algorithms. The results showed that random forest performed the best, achieving an accuracy rate of **84%**. The study concluded that machine learning algorithms could be effective in predicting store sales in the electronics sector.

The above literature review shows that machine learning algorithms such as ARIMA, Random Forest, Gradient Boosting, and XGBoost are effective in predicting store sales of electronic products. The accuracy of the algorithms varies depending on the dataset and methodology used. Therefore, it is important to consider the data quality, feature selection, and optimization techniques while applying machine learning algorithms for store sales prediction.

III. OBJECTIVES OF THE STUDY

The goal of this study on store sales forecasting in the electronics industry is to examine and assess how well machine learning approaches work for properly predicting sales for retailers in this area. The study seeks to accomplish the following particular goals:

1. To access the applicability of machine learning algorithms: Determine the usefulness of various machine learning techniques, such as regression analysis, time-series forecasting, and neural networks, for forecasting retail sales in the electronics industry. Analyse their effectiveness to determine the best algorithms for this particular topic.

2. To examine pertinent aspects and data preparation: Determine and examine the important elements that have a big influence on electronics industry sales. Examine how feature engineering and data pre-processing methods, such as data normalisation, outlier identification, and managing missing values, may help sales prediction models be more accurate.

3. To address issues peculiar to the sector: Take note of and deal with the difficulties in predicting sales in the electronics industry. This includes elements like the quick evolution of technological trends, the lifespans of products, the impacts of seasonality, and the impact of extraneous elements like product launches, promotions, and business events.

4. To assess model effectiveness and comparison: Utilise relevant assessment metrics and statistical tests to conduct a thorough review of the machine learning models' performance.

5. To provide practical insights and recommendations: Derive practical insights and recommendations based on the findings to assist retailers in the electronics sector in making

informed decisions regarding inventory management, marketing strategies, and resource allocation. Highlight the potential benefits and limitations of employing machine learning techniques for sales prediction in this specific industry.

By addressing these objectives, the study aims to contribute to the existing knowledge on store sales prediction in the electronics sector and provide valuable insights that can aid retailers in improving their sales forecasting accuracy, enhancing operational efficiency, and gaining a competitive advantage in the dynamic and rapidly evolving electronics market.

IV. RESEARCH METHODOLOGY

Our research primarily is descriptive in nature and we used quantitative research methods.

Sampling Size- The research paper sample size is 70 and the study is conducted among the various

groups of youths involving their choices and preferences.

Sampling Method – The method used for collecting the sample was convenience method.

Target Population – Target Population consists of 70 youth from the various parts of Kolkata including New Town Area, Kolkata.

The study has used both **primary data** and **secondary data**.

Primary Data: Primary data was collected through random sampling from a sample of respondents through a questionnaire that was distributed online to various groups of consumers who were keen on buying electronic and could even predict the sales made by different companies through the purchase of these goods by consumers.

Secondary Data: Secondary Data was collected from standard mutuels and various websites.

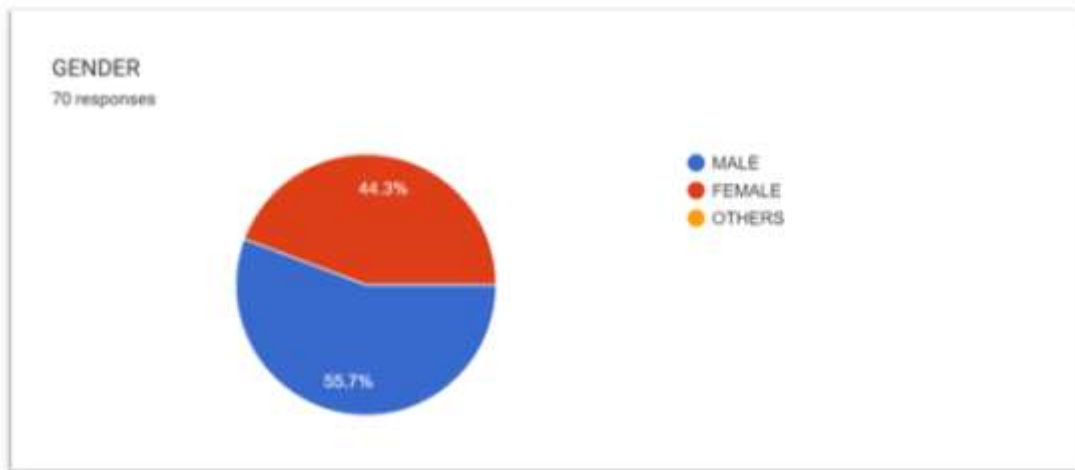
Tools Used for analysis includes data analysis tools which are tables, pie charts.

V. DATA ANALYSIS AND DATA INTERPRETATION

➤ ANALYSIS: GENDER OF RESPONDENTS

TABLE 1:

GENDER	NO. OF RESPONDENTS	% OF RESPONDENTS
MALE	31	44.3%
FEMALE	39	55.7%
TOTAL	70	100%



GRAPH 1:

INTERPRETATION:

The primary data is collected from a total of 70 respondents.

44.3 % of the respondents are male.

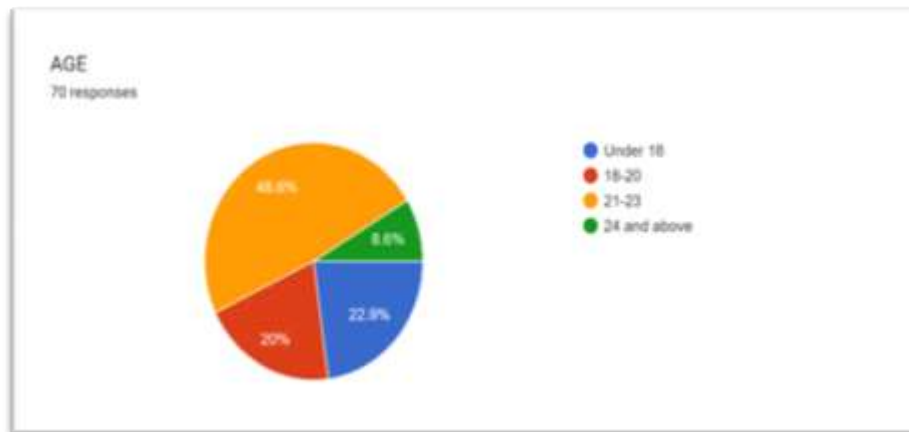
55.7 % of the respondents are female.

➤ **ANALYSIS: AGE GROUP OF RESPONDENTS**

TABLE 2:

AGE GROUP	NO. OF RESPONDENTS	% OF RESPONDENTS
UNDER 18	16	22.9%
18-20	14	20%
21-23	34	48.6%
24 AND ABOVE	6	8.6%
TOTAL	70	100%

GRAPH 2:



INTERPRETATION:

22.9 % of the respondents are aged under 18 years.
20 % of the responders are in the age group 18-20 years.
48.6 % of the respondents are in the age group 21-23 years.
8.6 % of the respondents are aged 24 years and above.

➤ **ANALYSIS: HOW IMPORTANT IS ACCURATE SALES PREDICTION FOR YOU AS A CONSUMER WHEN PURCHASING ELECTRONICS PRODUCTS?**

TABLE 3:

RESPONSE OPTIONS	NO. OF CONSUMERS	CONSUMER RESPOND PERCENTAGE
EXTREMELY IMPORTANT	24	34.3%
VERY IMPORTANT	20	28.6%
MODERATELY IMPORTANT	15	21.4%
SLIGHTLY IMPORTANT	6	8.6%
NOT IMPORTANT	5	7.1 %
TOTAL	70	100%

GRAPH 3:



INTERPRETATION:

The majority of consumers (62.9%) consider accurate sales prediction to be extremely or very important when purchasing electronics products, indicating a strong reliance on this information for their buying decisions.

A significant portion (21.4%) of consumers rated accurate sales prediction as moderately important, suggesting they consider it helpful but not as critical as the previous groups. A

smaller percentage (16.1%) of consumers indicated that accurate sales prediction is only slightly important or not important at all, indicating they may rely on other factors or have different decision-making criteria.

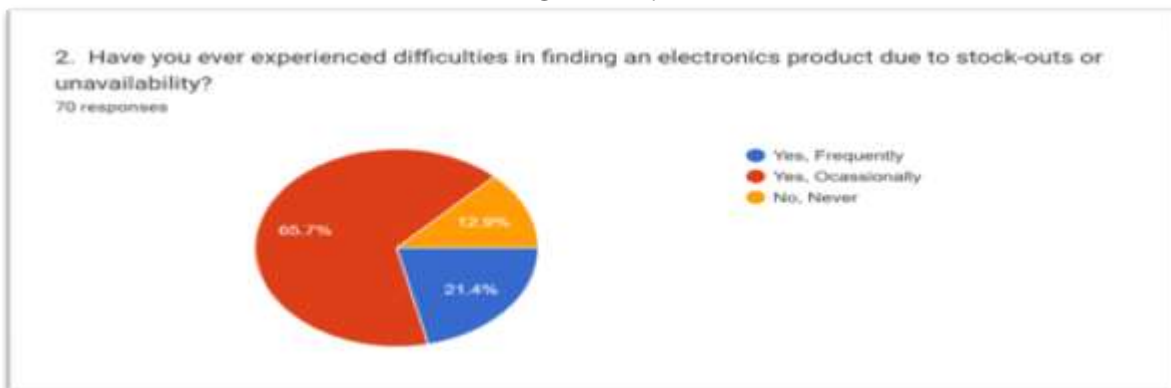
Overall, the data suggests that accurate sales prediction plays a significant role in shaping consumer behavior when it comes to purchasing electronics products, with the majority of consumers valuing this information to some degree.

➤ ANALYSIS: HAVE YOU EVER EXPERIENCED DIFFICULTIES IN FINDING AN ELECTRONICS PRODUCT DUE TO STOCK-OUTS OR UNAVAILABILITY?

TABLE 4:

RESPONSE OPTIONS	NO. OF CONSUMERS	CONSUMER PERCENTAGE	RESPOND
YES, FREQUENTLY	15	21.4%	
YES, OCCASIONALLY	46	65.7%	
NO, NEVER	9	12.9%	
TOTAL	70	100%	

GRAPH 4:



INTERPRETATION:

A majority of consumers (65.7%) have experienced occasional difficulties in finding electronics products due to stock-outs or unavailability, indicating that this is a common issue in the market.

A significant portion of consumers (21.4%) have frequently faced such difficulties, suggesting a more recurring problem for them.

A smaller percentage (12.9%) of consumers reported never encountering these issues, indicating that they have generally had a positive experience in finding electronics products.

The data highlights that stock-outs and unavailability can pose challenges for a significant portion of consumers, underscoring the importance of accurate sales prediction and inventory management for retailers.

➤ **ANALYSIS: HOW LIKELY ARE YOU TO MAKE A PURCHASE DURING A MAJOR SALE EVENT (E.G., BLACK FRIDAY, CYBER MONDAY)?**

TABLE 5:

RESPONSE OPTIONS	NO. OF CONSUMERS	CONSUMER PERCENTAGE	RESPOND
HIGHLY LIKELY	13	18.6 %	
SOMEWHAT LIKELY	22	31.4%	
NEUTRAL	18	25.7%	
SOMEWHAT UNLIKELY	9	12.9%	
HIGHLY UNLIKELY	8	11.4%	
TOTAL	70	100%	



GRAPH 5:

INTERPRETATION:

The majority of consumers (50%) expressed likelihood to make a purchase during a major sale event, with 18.6% indicating a high likelihood and 31.4% expressing a somewhat likely inclination. This suggests a significant interest in taking advantage of the discounts and deals offered during such events.

A considerable portion of consumers (25.7%) reported a neutral stance, indicating a lack of strong inclination towards making a purchase during major sale events.

A smaller percentage (24.3%) expressed unlikelihood, with 12.9% being somewhat unlikely and 11.4% highly unlikely to make a purchase during these events. This suggests a portion of consumers either do not find value in or actively avoid participating in major sale events.

Overall, the data reveals a range of consumer attitudes towards major sale events, with a notable proportion showing interest while others remain neutral or disinterested in making purchases during these occasions.

➤ **ANALYSIS: HOW MUCH DO PROMOTIONS AND DISCOUNTS INFLUENCE YOUR PURCHASING DECISIONS FOR ELECTRONICS PRODUCTS?**

TABLE 6:

RESPONSE OPTIONS	NO. OF CONSUMERS	CONSUMER PERCENTAGE	RESPOND
SIGNIFICANTLY	14	14%	
SOMEWHAT	16	22.9%	
NEUTRAL	24	34.3%	
NOT MUCH	11	15.7%	
NOT AT ALL	5	11%	
TOTAL	70	100%	

GRAPH 6:



INTERPRETATION:

Promotions and discounts have a mixed impact on consumer purchasing decisions for electronics products. A significant percentage of consumers (14%) find promotions and discounts to have a significant influence on their decision-making. A slightly higher proportion (22.9%) considers them somewhat influential.

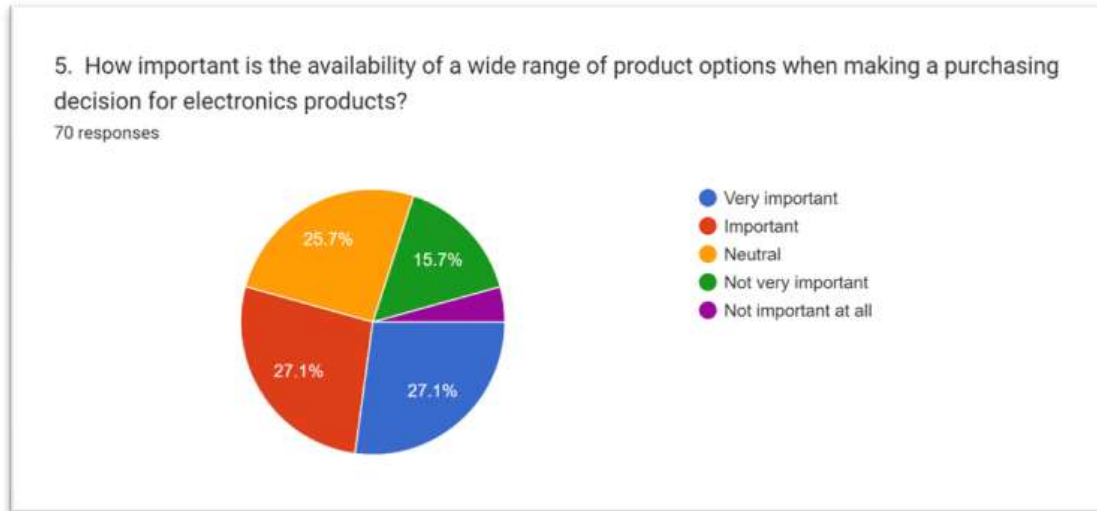
However, a larger segment of consumers (34.3%) holds a neutral stance, suggesting that

promotions and discounts may not heavily sway their decisions. Additionally, a notable percentage (15.7%) believes that promotions and discounts do not have much influence. A minority (11%) indicates that promotions and discounts do not impact their purchasing decisions at all. Overall, while promotions and discounts do hold some sway for a portion of consumers, a significant number remain relatively unaffected by them.

➤ **ANALYSIS: HOW IMPORTANT IS THE AVAILABILITY OF A WIDE RANGE OF PRODUCT OPTIONS WHEN MAKING A PURCHASING DECISION FOR ELECTRONICS PRODUCTS?**

TABLE 7:

RESPONSE OPTIONS	NO. OF CONSUMERS	CONSUMER PERCENTAGE	RESPOND
VERY IMPORTANT	19	27.1%	
IMPORTANT	19	27.1%	
NEUTRAL	18	25.7%	
NOT VERY IMPORTANT	11	15.7%	
NOT AT ALL	3	4.3%	
TOTAL	70	100%	



GRAPH 7:

INTERPRETATION:

The availability of a wide range of product options holds varying levels of importance for consumers when making purchasing decisions for electronics products. An equal percentage of consumers (27.1%) consider it both very important and important, highlighting the significance of having a diverse selection of options to choose from. A significant proportion (25.7%) maintains a neutral stance, suggesting that while it may not be a decisive factor, it still holds some importance.

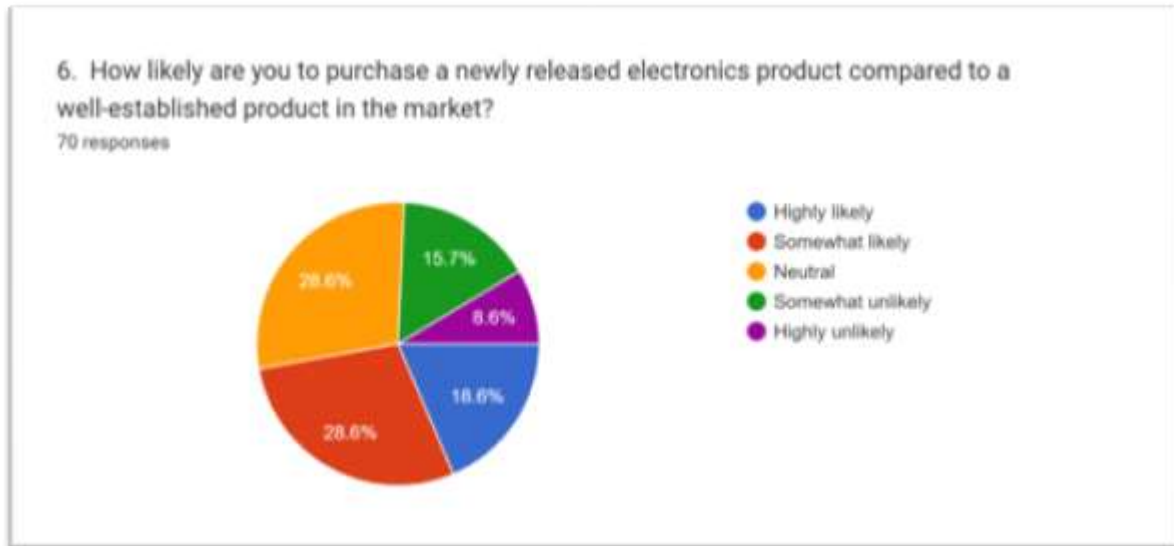
A smaller percentage (15.7%) indicates that the availability of a wide range of options is not very important, implying that they may prioritize other factors in their decision-making process. A minority (4.3%) deems it not important at all, suggesting that they are relatively unconcerned with the variety of product options. Overall, the data indicates that a considerable portion of consumers value having a wide range of product options, while others may prioritize different aspects when making purchasing decisions for electronics products.

➤ **ANALYSIS: HOW LIKELY ARE YOU TO PURCHASE A NEWLY RELEASED ELECTRONICS PRODUCT COMPARED TO A WELL-ESTABLISHED PRODUCT IN THE MARKET?**

TABLE 8:

RESPONSE OPTIONS	NO. OF CONSUMERS	CONSUMER PERCENTAGE	RESPOND
HIGHLY LIKELY	13	18.6%	
SOMEWHAT LIKELY	20	28.6%	
NEUTRAL	20	28.6%	
SOMEWHAT UNLIKELY	11	15.7%	
HIGHLY UNLIKELY	6	8.6%	
TOTAL	70	100%	

GRAPH 8:



INTERPRETATION:

Consumer likelihood to purchase a newly released electronics product compared to a well-established product in the market varies. A significant percentage (28.6%) is somewhat likely to purchase a newly released product, indicating an interest in exploring the latest innovations.

An equal proportion (28.6%) holds a neutral stance, suggesting they may consider both options equally or base their decision on other factors.

A smaller percentage (18.6%) is highly likely to purchase a newly released product, indicating a stronger inclination towards the latest offerings. Conversely, some consumers (15.7%) express some unlikelihood, while a minority (8.6%) is highly unlikely to purchase a newly released product.

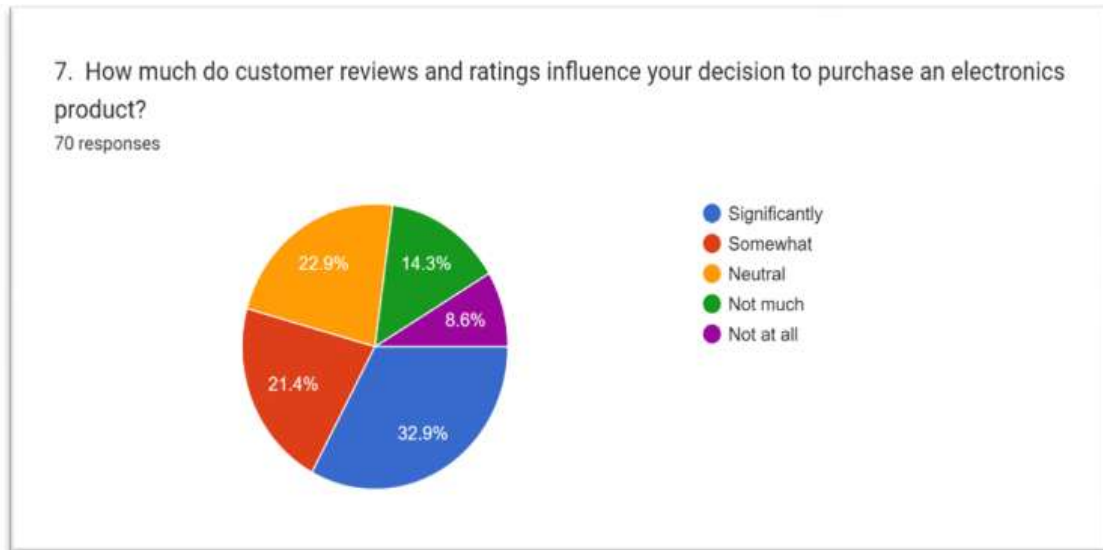
Overall, the data shows a mix of consumer preferences, with a notable interest in new releases, but also a significant portion displaying hesitation or a preference for well-established products.

➤ **ANALYSIS: HOW MUCH DO CUSTOMER REVIEWS AND RATINGS INFLUENCE YOUR DECISION TO PURCHASE AN ELECTRONICS PRODUCT?**

TABLE 9:

RESPONSE OPTIONS	NO. OF CONSUMERS	CONSUMER PERCENTAGE	RESPOND
SIGNIFICANT	6	32.9%	
SOMEWHAT	10	21.4%	
NEUTRAL	16	22.9%	
NOT MUCH	15	14.3%	
NOT AT ALL	23	8.6%	
TOTAL	70	100%	

GRAPH 9:



INTERPRETATION:

Customer reviews and ratings hold varying degrees of influence on consumer decisions to purchase an electronics product. A significant proportion of consumers (32.9%) consider customer reviews and ratings to have a significant impact, indicating that they heavily rely on this information when making their purchasing decisions.

Another portion of consumers (21.4%) find customer reviews and ratings somewhat influential, suggesting that while they are considered, they may not be the sole deciding factor. A similar percentage (22.9%) holds a neutral stance, implying that customer reviews and ratings

have a moderate influence on their decision-making process.

A smaller percentage (14.3%) believes that customer reviews and ratings do not have much influence, indicating that other factors may play a more prominent role in their decision. A minority (8.6%) states that customer reviews and ratings do not influence their purchasing decisions at all.

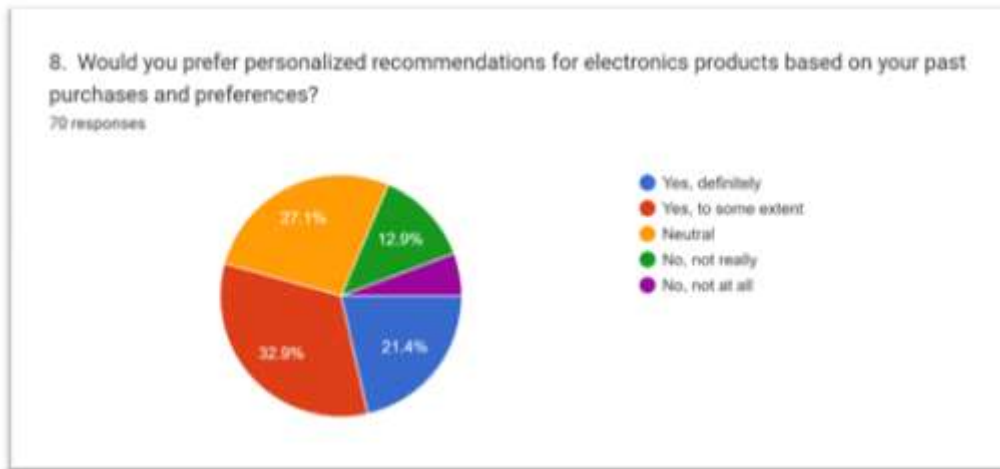
Overall, the data highlights the importance of customer reviews and ratings for a significant portion of consumers, although there are varying levels of reliance on this information among different individuals.

➤ ANALYSIS: WOULD YOU PREFER PERSONALIZED RECOMMENDATIONS FOR ELECTRONICS PRODUCTS BASED ON YOUR PAST PURCHASES AND PREFERENCES?

TABLE 10:

RESPONSE OPTIONS	NO. OF CONSUMERS	CONSUMER PERCENTAGE	RESPOND
YES, DEFINITELY	15	21.4%	
YES, TO SOME EXTENT	23	32.9%	
NEUTRAL	19	27.1%	
NO, NOT REALLY	9	12.9%	
NO, NOT AT ALL	4	5.7%	
TOTAL	70	100%	

GRAPH 10:



INTERPRETATION:

Consumer preferences regarding personalized recommendations for electronics products based on their past purchases and preferences vary. A significant percentage (32.9%) express a preference for personalized recommendations to some extent, indicating an openness to receiving tailored suggestions. Another portion of consumers (21.4%) is more definite in their preference for personalized recommendations, highlighting a desire for a high level of customization. A notable percentage (27.1%) holds a neutral stance, suggesting they may not have a strong preference for or against personalized recommendations.

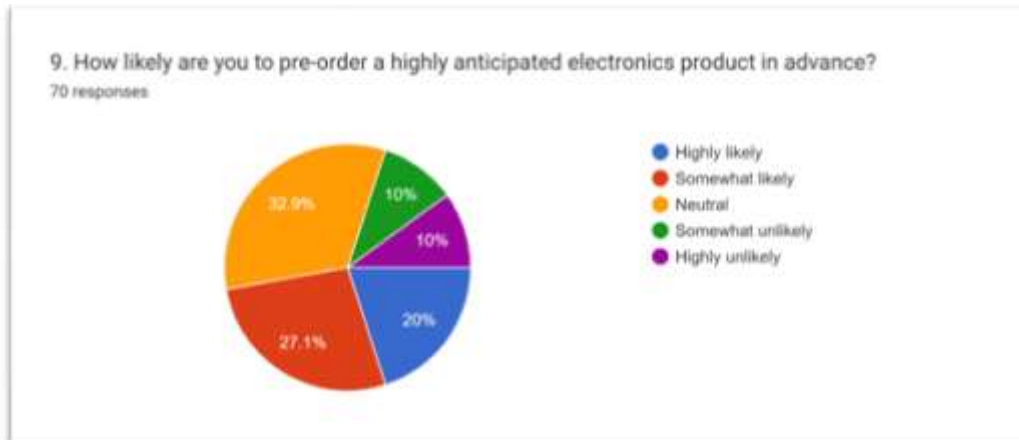
A smaller percentage (12.9%) does not show much interest in personalized recommendations, indicating that they may rely on other factors or sources for product suggestions. A minority (5.7%) is strongly opposed to personalized recommendations, indicating a clear preference against this approach.

Overall, the data reflects varying attitudes towards personalized recommendations, with a significant proportion either embracing or being open to this approach, while others remain neutral or exhibit a preference for alternative methods of decision-making.

➤ **ANALYSIS: HOW LIKELY ARE YOU TO PRE-ORDER A HIGHLY ANTICIPATED ELECTRONICS PRODUCT IN ADVANCE?**

TABLE 11:

RESPONSE OPTIONS	NO. OF CONSUMERS	CONSUMER PERCENTAGE	RESPOND
HIGHLY LIKELY	14	20%	
SOMEWHAT LIKELY	19	27.1%	
NEUTRAL	23	32.9%	
SOMEWHAT UNLIKELY	7	10%	
HIGHLY UNLIKELY	7	10%	
TOTAL	70	100%	



GRAPH 11:

INTERPRETATION:

Consumer likelihood to pre-order a highly anticipated electronics product in advance shows a range of responses. A notable proportion (32.9%) holds a neutral stance, indicating a lack of strong inclination towards pre-ordering.

A significant percentage (27.1%) expresses a somewhat likely inclination, suggesting a moderate interest in pre-ordering such products.

A smaller portion (20%) is highly likely to pre-order, indicating a stronger intention to secure

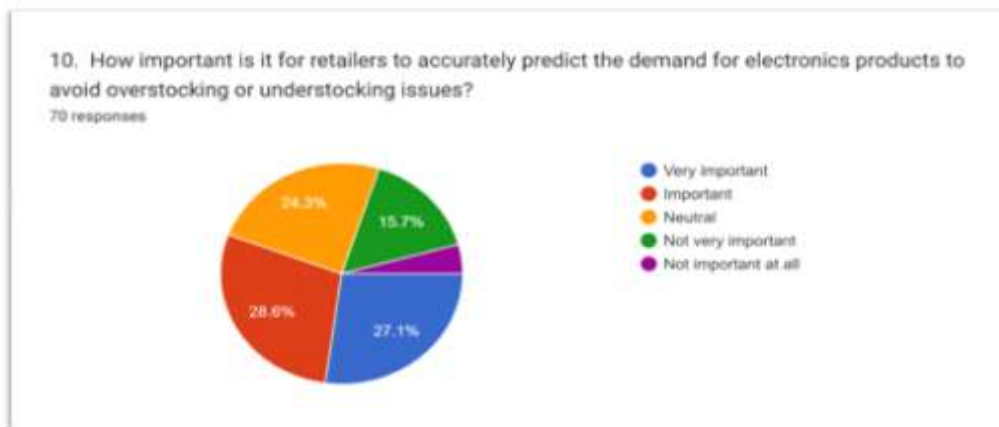
the highly anticipated product in advance. Similarly, 10% of consumers report both somewhat unlikely and highly unlikely responses, indicating a degree of hesitation or lack of interest in pre-ordering.

Overall, the data suggests a mixed sentiment towards pre-ordering highly anticipated electronics products, with a significant portion expressing neutrality or varying levels of likelihood or unlikelihood to engage in this practice.

➤ **ANALYSIS: HOW IMPORTANT IS IT FOR RETAILERS TO ACCURATELY PREDICT THE DEMAND FOR ELECTRONICS PRODUCTS TO AVOID OVERSTOCKING OR UNDERSTOCKING ISSUES?**

TABLE 12:

RESPONSE OPTIONS	NO. OF CONSUMERS	CONSUMER RESPOND PERCENTAGE
HIGHLY LIKELY	19	27.1%
SOMEWHAT LIKELY	20	28.6%
NEUTRAL	17	24.3%
SOMEWHAT UNLIKELY	11	15.7%
HIGHLY UNLIKELY	3	4.3%
TOTAL	70	100%



GRAPH 12:

INTERPRETATION:

The majority of consumers (55.7%) believe it is either highly likely or somewhat likely that retailers accurately predict the demand for electronics products to avoid overstocking or understocking issues. This indicates a significant emphasis on the importance of accurate demand prediction for retailers.

A notable proportion (24.3%) holds a neutral stance, suggesting that they may not have a strong opinion on this matter.

A smaller percentage (15.7%) expresses some unlikelihood, indicating a degree of scepticism or doubt regarding retailers' ability to accurately predict demand. A minority (4.3%) is highly unlikely to believe in retailers' accurate demand prediction capabilities.

Overall, the data emphasizes the importance consumers place on retailers' ability to forecast demand accurately to prevent overstocking or understocking issues, although some variations in beliefs and expectations exist among different individuals.

LIMITATIONS OF THE STUDY

While conducting research on store sales prediction in the electronics sector using machine learning techniques, it is essential to acknowledge and address certain limitations that may impact the study's findings and generalizability. These limitations include:

#The study is limited to 70 respondents out of which they are young. So, the findings and suggestions provided based on the study cannot be extrapolated to the entire population.

#The study is online so it could not reach the students who do not have access to internet.

#The research results can be statistically significant, but they are often humanly insignificant because they do not have a personal opinion.

#Primary data collected may be biased.

VI. SUGGESTIONS

Listed below are the suggestion that a store needs to implement in order to predict the sales based on their consumers in the particular sectors:

Data Collection and Analysis: Collect comprehensive data on consumer behavior, including purchasing patterns, preferences, and demographics. Utilize various data sources such as transactional records, loyalty programs, online surveys, and social media analytics to gather relevant consumer data. Analyse this data to identify trends, patterns, and correlations that can help predict future sales.

Incorporate Customer Feedback and Reviews: Leverage customer feedback and online reviews to understand consumer sentiments and preferences regarding electronic products. Analyse customer reviews for sentiment analysis and extract insights on product features, performance, and satisfaction. Incorporate this feedback into sales prediction models to capture the impact of consumer opinions on store sales.

Implement Recommender Systems: Develop recommender systems based on consumer behavior data to provide personalized product recommendations. By understanding individual consumer preferences and purchase history, retailers can predict future purchases and tailor marketing efforts accordingly. Recommender systems can be integrated into sales prediction models to enhance accuracy.

Utilize Machine Learning and AI Techniques: Apply machine learning algorithms and artificial intelligence techniques to analyse consumer behavior data and predict store sales. Explore techniques such as clustering, classification, and regression to identify consumer segments and forecast their purchasing behavior. Utilize predictive modeling algorithms to generate accurate sales predictions based on consumer patterns.

By implementing these suggestions, retailers in the electronics sector can leverage consumer behavior data to enhance store sales prediction capabilities, personalize marketing efforts, and improve customer satisfaction. This approach can lead to more accurate sales forecasts and informed decision-making, ultimately driving business growth and success.

VII. CONCLUSION

In conclusion, this literature review has examined the topic of store sales prediction in the electronics sector specifically focusing on the role of consumers. The findings underscore the significance of understanding consumer behavior and its influence on store sales in this sector.

Consumer behavior is a complex and multifaceted phenomenon that encompasses factors such as brand loyalty, product features, pricing, promotions, online reviews, and various demographic and socio-economic characteristics. These factors shape consumer preferences and purchasing decisions, directly impacting store sales in the electronics sector.

The review identified various methodologies and techniques used for store sales prediction, ranging from traditional statistical approaches to advanced machine learning

algorithms. Incorporating consumer behavior data, including sentiment analysis, social media monitoring, and online browsing behavior, enables the development of prediction models that capture the dynamics of consumer preferences and their impact on sales.

Evaluation metrics such as mean absolute error (MAE), root mean square error (RMSE), accuracy, and precision-recall are commonly used to assess the performance of store sales prediction models. These metrics provide insights into the accuracy and reliability of the models, ensuring their practical usefulness.

Despite the progress made in this area, there are still several research gaps and opportunities for future studies. It is essential to explore real-time data sources and emerging technologies such as Internet of Things (IoT) devices and wearable technologies to gather richer consumer behavior data. Additionally, leveraging advanced deep learning techniques and developing personalized sales prediction models can further enhance the accuracy and granularity of predictions.

In conclusion, this literature review highlights the importance of considering consumer behavior when predicting store sales in the electronics sector. By incorporating consumer factors into prediction models, retailers can make informed decisions, adapt to changing market dynamics, and enhance their overall performance. Future research should continue to explore innovative approaches, leverage emerging technologies, and investigate the evolving nature of consumer behavior to further advance the field of store sales prediction in the electronics sector.

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