International Journal of Educational Research
ISSN (Online): 2208-2204
Volume 09 Issue 01 March 2025

DOI: 10.53555/ephijer.v9i1.162

USING BUSINESS ANALYTICS TO FIND SHOPPER BEHAVIOR PATTER - ”ONLINE & OFFLINE.

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ABSTRACT

For our study on shopper behaviour in the Indian retail industry, we studied how people shop both online as well as in physical stores. To understand why shoppers choose certain stores, pick certain products, shop online how often, and what are the most important features to look for to shop. We researched a whole gamut of questions, from how important fast delivery is, to how online reviews affect the buy button.

So, we asked different questions to shoppers on their shopping habits as well as preferences. So we took a look at why some people tend to shop online and why others still want to visit a store. In addition, we looked at what payment methods shoppers feel most comfortable using and how they learn about new products and promotions.
We also looked at if mobile apps are good for shopping and if Tailor-made recommendations influence shopper's decision. We also analyzed the value of products being sustainable and how likely a shopper is to return to a store if a shopping experience is pleasant.

Our goal was to learn valuable insights that retailers who are selling products and interacting with customers can take advantage of to improve their selling strategies. Understanding these behaviors and preferences allows retailers to serve shopper needs better and ultimately have happier customers, more successful retail strategies.
Because the Indian retail market is growing and becoming more digital, this study is especially important. We want to bring those closer together through data science, from the payoff side to help retailers create a enjoyable, friction less experience in the store for their consumers, and starting on the liquidity side, making things easier, simpler for everyone, and more personalized.

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CHAPTER 1 – INTRODUCTION

INTRODUCTION

UNDERSTANDING SHOPPER BEHAVIOR IN INDIA'S DIGITAL AGE

From the explosion of digital technology, the shopping landscape has experienced many transformations in India with a great impact on shopping habits of consumers. This is a big change in the way retailers and consumers interact driven by e-commerce, mobile shopping and social media.

E-commerce Growth:

E-commerce has really changed the way of shopping in India. The new practice allows shopping from anywhere at any time compared to normal visiting the physical stores. The wider accessibility of products, prices reasonable and detailed product information and reviews to assist users to make a well informed choice are complemented by this convenience. The behavior change is caused by more customers opting for online platforms both for their essential and discretionary spending.

Mobile Shopping Surge:

Mobile shopping is a huge hit, with almost everyone owning an affordable smart-phone and access to a data plan. E Commerce companies are optimizing their websites and apps for mobile use since one can shop on the go with mobile devices. Easy navigation, secure payment with access and a personal notification make mobile shopping an essential part of Indian daily life.

Influence of Social Media:

Social media platforms have become thriving marketplaces. In India, especially where community and recommendations are very important give and take in customer decisions, social media drives the shopping behaviour. On Instagram and

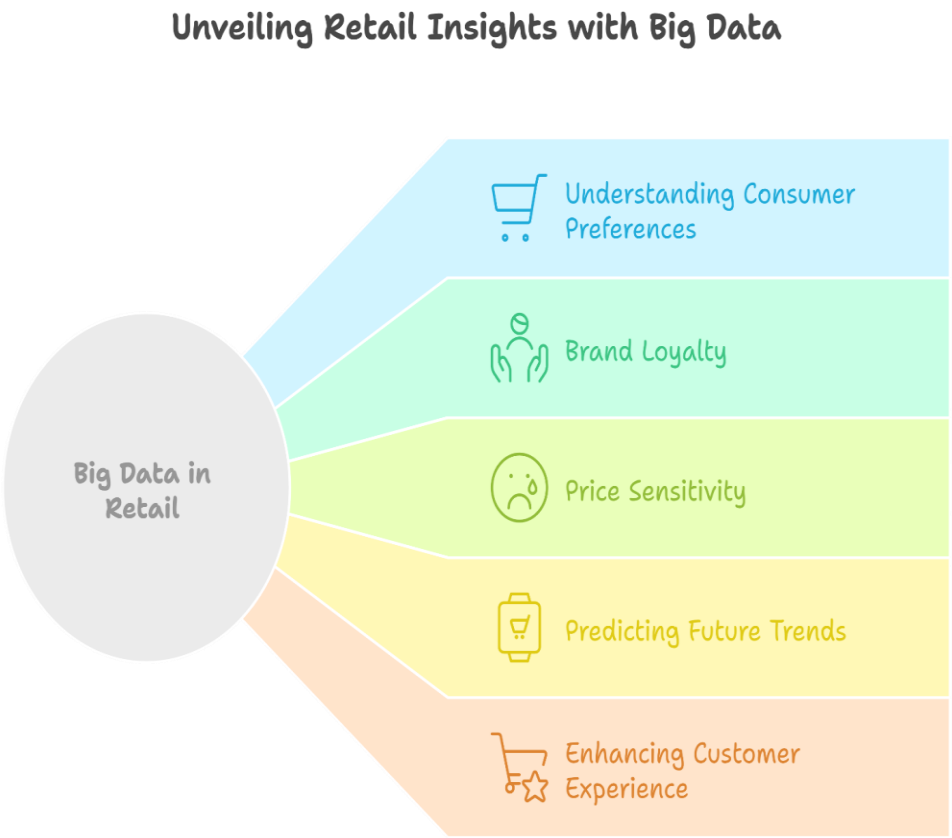
Facebook, customers may view new products, read product reviews and even purchase from product details of the integrated shopping functions. Also, these platforms are guided and shaped by influencers and peer recommendations to be a powerful shopping tool.

Digital Payments Integration:
Growing online shopping has moved in parallel with that towards digital payments. Uptake of such methods of payments as mobile wallets, UPI (Unified Payments Interface), and online banking, has gained traction among consumers, as governmental policies have encouraged use of digital transactions. The shift also makes it easier for smooth e-commerce transactions but it's an extra layer of security and convenience that cash transactions can't offer.

While digital shopping lanes are growing at a robust rate, the fascination for brick and mortar shopping doesn't seem to wane for folks to get the feel and touch of the products that are bought. Yet, even ancient retailers are beginning to combine digital strategies with physical experiences. However, many now have their online catalogs, allow you to reserve items online for pickup in store, or are focused on digital loyalty programs to combine the best of both worlds.
Finally, the digital transformation of India's retail industry infuses technology into traditional retail shopping values for a spectrum of benefits. With rapid advancements in digital platforms, they are forecasted to reshape retail even more, promising a more connected, efficient and Tailor-made shopping experience for customers. From today's perspective, this continuous digital revolution complements not only today's consumer needs but also provides the foundation for retail innovations in the future in India.

CONSUMER PREFERENCE UNRAVELLING THROUGH BIG DATA
Hey, as shopping and selling happens, retailers can actually understand what customers like and what customers want. But big data is a term for a heck of a lot of information from a lot of different places, shopping websites, social media, in store transactions.

The amount of money you're making off customers, that much data helps retailers to understand what customers are loyal to, what they like to buy, and how much amount they are willing to spend on products.



Key Understanding Consumer Preferences
Each time we become tempted by a buy button, each time we use plastic or swipe a card to pay, we leave some sort of a tip about our behaviour as a shopper. These clues are picked up by retailers, who want to learn more about us. Let's say,

if you frequently buy sports shoes online, the store will deduce that you enjoy sports and showing you sports related ads or fitness equipment ads. This is big data at work! Looking at a lot of these shopping clues from a lot of customers allows stores to figure out which products tend to be popular, and which different kinds of shoppers tend to be interested in.

Why Brand Loyalty Matters?
Stores can also make use of big data in order to understand brand loyalty, that is, how much shoppers are bound to a particular brand when shopping. For example, If we see someone bought the same brand of cereal number of times, then it will tell us that the person is loyal to that brand or logo. This information helps retailers decide what inventory to carry and how to set promotions. If they know many of its customers are loyal to a brand, they might going to put it on sale because that will attract more customers into the store.

How to Figure Out Price Sensitivity?
The second thing is that big data helps with price sensitivity. It's also about how much people's decision to buy something is affected by the price of it. Others may buy the same snacks even with higher price, whereas some may go for cheaper option. With big data, retailers are able to tweak prices a little bit to find out what people react to before choosing the best price to keep the customers wanting to buy happily impressed.

Exploring a Future Prediction of Shopping Trends
Retailers believe in big data because they are like crystal balls—it helps them predict what might become popular in the future. Looking at what people are buying now, and what they have bought in the past, stores can predict what might become the hit products of the future. They can stock up on the right things before everyone starts looking for them.

How We Make Shopping Better For Everyone?
But once stores have all this information from big data it does more than help them sell more — it can make shopping better to customers. With this information stores can put more of those products on their shelves and even recommend other products customers might enjoy. Plus, stores get to understand the customer preferences and make shopping experience Tailor-made to the customer. Just think about walking into a store or visiting a website that already knows exactly what you like; shopping would be that much quicker and more fun!

Big Data: Some Issues
In fact, big data is very helpful, but being used isn't convenient. However retailers have to ensure that all of this stays safe and no privacy is violated. In addition, they also need the right tools and smart people who can understand all the data and act upon it.

To summarize, big data is a very effective means for retailers to work out what customers want, how loyal they are to brands and how sensitive they are to prices. It's like having a map which details all the treasures that are available in consumer preferences. Retailers will be able to increase their sales with this map, as well as shopping will be an exponentially more enjoyable and Tailor-made experience for everyone. However, with big data growing all the time, understanding and matching the never ending needs of shoppers to also continue to grow.

PREDICTIVE ANALYTICS IN RETAIL
In retail, it's crazy fast paced, so knowing what the customers will want tomorrow is almost as important as figuring out what they want today. Using predictive analytics, retailers can use magic to pretend they know what will happen in the future by remembering what happened in the past. It makes educated guesses about future sales based on lots of data about past sales, keeping inventory in check, and getting a feel for trends before they break into the obvious.
Predictive analytics is making predictions by looking at data, statistical algorithms and machine learning techniques. Planning for a better future is like using a detailed diary of a shop's history. By taking this approach retailers can be far more informed when making decisions as to what to stock, when to order and when to hold a sale.

Forecasting Sales
Predictive analytics enables stores to know how much of something they are going to sell. Let's say a store finds out that they sell 100 ice creams every hot day, so they get another 100 ice creams ready in anticipation of sunny hot days when the weather forecast predicts it. In other words, they don't have excess stock that they have to give back to their customers. Retailers use past sales data to know when things sell: what products are most popular during particular seasons, and at what times of year people tend to purchase more gifts. It assists them in stocking products correctly while assisting them to schedule marketing campaigns at the correct time. For example, in November and December, if they realize that more are purchasing baking stuff, they probably would begin marketing the baking goods in the early part of those months.

How to Effectively Manage Inventory?
One tricky part of running a store is keeping just enough stock. Inventory that's too high means you have items on shelves that no one has purchased and it's tying up space costing you money. If there is too little, customers can't find what they want and might even go to another store instead. This problem is solved by predictive analytics, which helps predict the amount of stock to have in hand.

Predictive analytics can forecast what quantity of each product will probably be sold using historical sales data. That way stores can order just enough, without running out, but not ordering way too much. It also aids with planning in terms of placing items in the store to secure that they will catch the customer's eye.

Predicting Consumer Buying Trends

Predictive analytics can even find it can pick up on new trends before they become what they are. Retailers can also get ahead of the trend by figuring out what customers are beginning to buy more of and work on stocking up on products that are starting to come popular. By doing so, the store has plenty of stock when everyone else decides at the same time to search for the latest gadget, fashion style, or health food.

For instance, if a retailer sees sales of Eco friendly products go up they could choose to stock more of these products and go looking for other available varieties or related products to satisfy the interest they foresee from their customers.

Better Shopping for Everyone

It's not just a win for the store as predictive analytics makes shopping a better experience for customers. When stores understand what customers want, they can ensure that the product becomes available and easy to locate in stores. It also means that we help make prices better plus. When stores know what customers are willing to pay, how that is likely to change with trends, and how to price their items, customers are happy and stores are earning a profit.

So, what does retail predictive analytics do? It is like having a crystal ball that allows store owners to foresee the future. It helps them have something in place ready for when their customers want to buy something, how to manage their inventory, and catch on to trends just before they sink in. With the help of past data retailers can make smarter decisions for their customers and their businesses. This magical tool is helping retailers understand their customer needs and manage their resources at the same time – a completely new approach to planning for the future.

ENHANCING CUSTOMER EXPERIENCE THROUGH Tailor-made

In the world of shopping, every customer likes to feel special. That's where Tailor-made comes in. Tailor-made means making sure every shopper gets a shopping experience that feels just right for them. It's like when a friend knows exactly what gift you'd love for your birthday – it makes you feel really special!

How Data Science Makes Shopping Personal?

Data science is a bit like detective work, but instead of solving mysteries, it solves puzzles about what customers like and don't like. Stores collect lots of information from shoppers, like what items they look at online, what they buy, and even what they search for. Data science takes all this information and uses it to understand each shopper's unique tastes and preferences.

Tailor-made Marketing

Imagine you really love comic books. If a bookstore sends you an email with a special offer just for the latest comic books, you'd be pretty excited, right? That's Tailor-made marketing. Stores use data science to figure out what you like, and then they send you special offers and messages that match your interests. It's a way for stores to talk directly to you about the things you love, which makes you more likely to buy from them.

Product Recommendations Just for You

Have you ever watched a movie on a streaming service and then seen suggestions for other movies you might like? That's Tailor-made, too! Stores do the same thing. They use data science to suggest products that match the things you've bought or looked at before. For example, if you buy a lot of sports gear, the store might show you new sports equipment right when you visit their website. It's like having a personal shopper who knows exactly what you're interested in.

Improving Your Shopping Experience

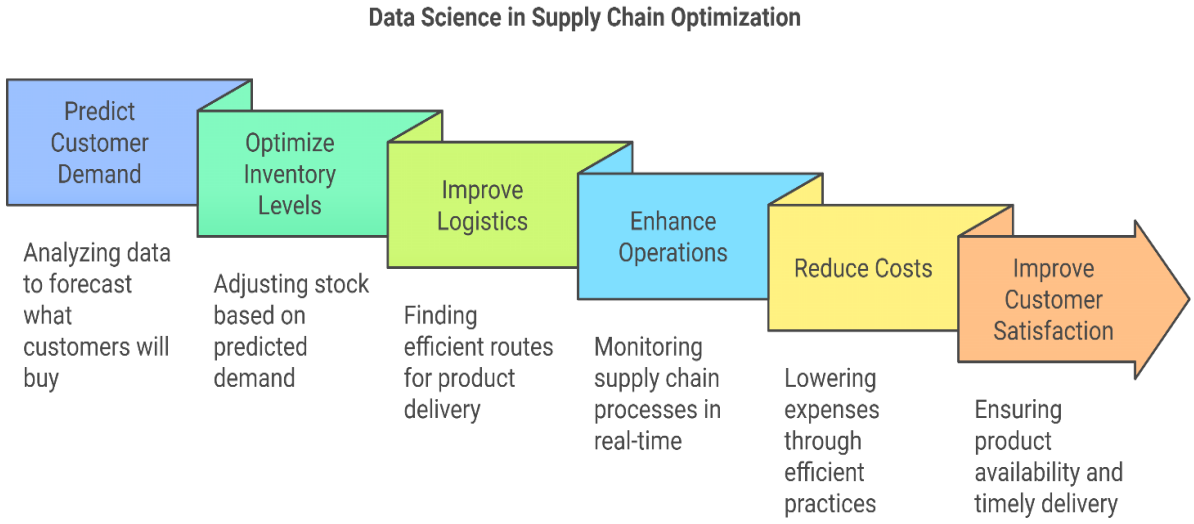
When stores personalize your shopping experience, it can make shopping faster and more fun. You don't have to waste time looking through things you don't like. Everything feels more tailored to you, which can make you enjoy shopping more and feel more connected to the store. Plus, when you find exactly what you need quickly, you're more likely to come back and shop there again.

Increasing Sales

For stores, making customers happy is just one part of Tailor-made. When customers enjoy Tailor-made experiences, they are more likely to buy more. If a store keeps showing you products that catch your eye, you might end up buying things you hadn't even planned to buy! This means more sales for the store, and happy customers who feel like the store really understands them.

OPTIMIZATION OF SUPPLY CHAIN MANAGEMENT WITH DATA SCIENCE

Have you ever wondered how your favorite products end up on store shelves just when you need them? It's all thanks to something called supply chain management. This is a fancy term for the steps it takes to get a product from where it's made to where it's sold. Data science is like a super tool that helps make this process smarter, faster, and cheaper.



What is Data Science in Supply Chain?
Data science involves using a lot of math and computer smarts to understand big piles of information. In supply chain management, data science helps by:

- **Predicting what customers will buy**: This means stores won't end up with too many unsold items.
- **Figuring out the best ways to deliver products**: This helps get your products to you faster.
- **Making sure products are always available when you need them**: No more going to the store and finding out they're out of your favorite snack!

How Data Science Helps
Here's how data science makes the supply chain better:

- **Better Inventory Management**:
  - Data science looks at past sales to predict how much of a product will be sold in the future.
  - It helps stores decide how many of each item to keep in stock, so they have just enough without wasting any space or money.

- **Improved Logistics**:
  - Finds the quickest and cheapest ways to move products from factories to stores.
  - It can also suggest the best routes for delivery trucks to take, saving time and fuel.

- **Efficient Operations**:
  - Data science tools keep an eye on every step of the supply chain in real-time, which means if something goes wrong, it can be fixed quickly.
  - It helps companies work together better. For example, it can tell a factory when a store is running low on a product, so they make more of it right away.

Reducing Costs and Improving Service
By using data science, companies can save a lot of money and make their customers happier:

- **Cutting Costs**:
  - Less money is spent storing too much product or wasting products that aren't sold.
  - Cheaper and faster shipping means lower costs for delivering goods.

- **Making Customers Happy**:
  - Products are available when and where customers want them, which makes shopping a better experience.
  - Faster delivery times mean you get your purchases sooner.

In simple terms, data science helps make sure that your favorite products are always available at the store and arrive faster when you order them online. It does this by using a lot of information to make smart decisions, which saves money and

makes everything work better. So, the next time you pick up something from the store, remember that data science played a part in getting it to you.

IMPORTANCE

Data science is important to understand the behavior of shoppers towards the Indian retail industry as the market is expanding online as well as offline. This project will investigate how shoppers in India come to those decision, what drives their behavior, and how exactly different trends are impacting retail performance in various regions. The project utilizes data oriented analysis to find patterns in consumer behavior that are not readily visible but are extremely important to retailers wanting to remain competitive and responsive to shifts in consumer preferences.

Retailers obtain the ability to make strategies more precisely matching the consumer needs and market dynamics through the usage of data science, hence improving the client satisfaction and loyalty. In a market such as India which is diverse, this is especially important since consumer preferences may differ widely within different states and regions. Retailers can improve product offerings, marketing initiatives and store footprint based on consumer behavior by correlating shopper behavior with company performance.

In addition, having external data scientists and training retail staff to use new data based tasks will provide the industry with the tools to react quickly to market changes. In addition to improving business operation, the proactive approach to leveraging technology also engenders a better shopping experience, thereby, attracting more customers to both online and offline stores.

Ultimately, this project is expected to set up a solid basis on which a data driven culture, within Indian retail sector, can be created, demonstrating the power of data science in how an organization can formulate its business strategies and tap in to new opportunities. It will not only help individual retailers grow but will also help grow the industry as a whole and will also help the retail industry to leverage technology as a means to ride on the wave of unprecedented Indian retail growth.

SCOPE

This project will be limited in scope as to examine and understand how shoppers behave in the Indian retail market particularly with the help of data science in this analysis. The objective is to get deeper into the patterns of shopper behaviour by collecting and analyzing information, gained primarily from 124 real transactions, and 14 stakeholders spread across 5 states of India.

Data analysis to identify current shopping trends and behaviours is one major part of the project. In other words, looking at not only what customers are buying, but when they are buying it, and what affects their decision. Understanding these patterns can help retailers serve important needs and preferences of their customers, and it might mean increased sales and customer satisfaction.

Another goal is to relate Shopper Behaviour Competency Index with the performance of the retail business in diverse regions. This is a tool that tells us how good retailers are at understanding and reacting to customer behaviors. The project can demonstrate how critical it is for retailers to be in keeping with their customers by comparing this index with actual business performance.

The project will also help in creating a data driven culture in Indian retail industry. This is basically driving retail forward by using data scientists as consultants in helping retailers take better business decisions based on data. Moreover, the Tesco Live project is part of the training effort aimed to make retail staff use data science in their daily work in order to respond better to the changes in shopper's behavior.

All in all, the project aims to show how data science can breathe new life into retail which is an already honking sector humming in India in an offline as well as an online space. Focusing on data driven strategies can help retailers remain agile, and maintain a competitive edge by staying ever more closely attuned to the needs and preferences of their customers. This is anticipated to improve the efficiency and profitability of the retail industry and offers a clear road map for retailers to use data science gleaningly to capture new business opportunities.

CHAPTER 2 - REVIEW OF LITERATURE

REVIEW OF LITERATURE

1. Statista (2024)

Statista’s report on shopping behavior in India reflects the evolving consumer preferences as India is gearing up to become a big market for digital adoption and changing lifestyles. Noting that Indian consumers are moving towards omnichannel shopping, the mixture of online and offline shopping experiences, it also highlights the country’s predominance over omnichannel shopping experiences. The report stresses the value of personal shopping, or experiences in which shoppers pursue authenticity and community connections. It also emphasizes that festive seasons affect shopping behavior as

consumers tend to swit online shopping for its convenience and safety in peak shopping months. As a result, retailers now need to change their strategies to fit the demand for custom products and services.

2. Gupta & Sharma (2023)
Gupta and Sharma (2012) focus on preferences of consumers in India across different retail formats (organized versus unorganized). What the data clearly shows is that situational factors are very influential in consumer behavior: Many consumers prefer shopping at more than one outlet rather than just going from one shop to the next. The results of this research indicate that learning this preferences can help retailers make better purchase prediction, and therefore enhance inventory management and marketing strategies. The competitive retail landscape requires a more nuanced approach to consumer behavior, which can in turn lead to better customer satisfaction and loyalty, write the authors.

3. Saini (2024)
Saini looks into the situation in the Indian retail sector, seeing how technology is the driving force creating modern shopping experience. It explores how digital tools, such as mobile apps and social media, are helping retailers interact with customers more effectively. Customer expectations have changed, Saini says, as customers expect to have a seamless experience across all platforms. A strategy presented for retailers to survive changing consumer preferences is integration of e-commerce with traditional retail.

4. India Retailing (2024)
In this article, we look at how data science is revolutionizing the Indian retail industry by transforming the way companies make decisions based on a more detailed analysis of the consumer behavior. It focuses on how big data is helping in understanding purchasing patterns, and how retailers can set their dynamic strategies according to customer needs. It emphasizes on predictive analytics as a great tool for making in store shopping experiences more personalizedersonalised, through personalizedersonalised recommendations based on past shopping and preference history. Additionally, it details how real time data is essential in optimizing inventory management and overall operational efficiency.

5. Calsoft (2024)
This analysis views best practices of how retail firms can leverage big data analytics. The authors describe the need for high quality data which is integrated from multiple sources to provide a complete view of consumer behavior. According to them, data governance is a key to making smart decisions that improve customer experience and drive growth in revenue. The paper additionally descriptions what retailers can do with analytics to see the trends and forecast the demand in order to have a better inventory management and satisfied customers.

6. Dataforest (2024)
In this article, we will present a number of data science use cases for retail — with an accent on Tailor-made and demand forecasting. The authors illustrate how machine learning algorithms can ’read’ the customer data, generating a custom shopping experience, and ’predict’ the customer’s future buying behavior. They emphasize successful examples from leading retailers such as Sephora that utilizes a combination of advanced analytics and personalized recommendations on customer interaction. The conversation centers on increasingly prevalent application of data science techniques in fine tuning marketing strategies and in enhancing overall business performance.

7. Comtec (2024)
Although this report from Comtec highlights the benefits of data analytics for the retail industry, it zeros in on the industry's ability to include data analytics in understanding consumers' needs and using this to improve the targeted communication strategies. According to the authors, Tailor-made marketing clearly outperforms traditional routes as it allows marketing to be highly Tailor-made to individual preferences. However, they note that such insights help retailers accurately predict demand and optimally manage inventory as well as better engage customers.

8. Reputation Today (2024)
In the light of this transformation, this article talks about how data driven retail can increase profitability for Indian retailers adopting a data culture into their business. Retailers using advanced analytics could see substantial incremental EBITDA growth over the next five years, according to a Boston Consulting Group report, the authors reference. According to them, using data efficiently can transform marketing tasks to lead to better customer retention and acquisition through Tailor-made experiences.

9. Kilili (2024)
In his insights shared at industry conferences, Dr. Anthony Kilili points out Tailor-made as one of the great benefits that data science can offer to the retail industry. Predictive analytics allows retailers to tailor their offerings to individual consumer behaviors and preferences, for instance, and thus increase customer loyalty and satisfaction, he says. According to Kilili, with more sophisticated algorithms in place, comes more responsive marketing strategies that can mirror consumer demands even more closely.

10. Kumar & Singh (2023)

Digital disruption and its impacts on Indian retail environments are explored by Kumar and Singh vis à vis the shopper behavior pattern. According to their research, technological advances like mobile payments and e commerce are tightly correlated with consumers making convenience driven purchases. They support retailers to capitalize on technology, not only as a Transactional functionality, but as a method of nurturing lasting relationships with consumers through improved service delivery.

11. Sharma (2023)
Sharma's study looks at how Q-commerce has transformed consumer expectations in India's retail. Rapid delivery services are referenced as a growing trend among consumers wanting the convenience of shopping, over more traditional shopping methods. This growing trend demands that retailers have proper logistics so as to respond to changing market needs as well as to leverage data analytics in improving the responsiveness of their supply chain operations.

12. Verma & Joshi (2023)
Verma and Joshi further point to the importance of introducing artificial intelligence into the retail strategies for commercial interaction and operation efficiency. According to their findings, AI powered tools can make sense of huge amounts of consumer data to help retailers personalize shopping experiences and streamline inventory management. By embracing AI technologies, retail will have to become a part of it or perish, they conclude.

13. India Retailing (2024)
According to India Retailing, data science is changing the face of retail and giving actionable insights into consumer behavior. As evidenced in the article, the retailers are increasingly adopting data driven strategies to improve the customer engagement, improve products and develop other strategies so as to have effective operations. Businesses can use predictive analytics and machine learning to provide customized product and service offerings to meet the needs of particular consumers, helping to increase customer satisfaction and loyalty. The report further emphasizes the role of real time data in the decision making processes to adapt to the changing market trends. Doing so increases profitability.

14. Ginesys (2024)
From digital transformation, Ginesys provides an overview on the major transformations in the India retail consumer behavior. The authors add that the modern consumers expect easy exchange ability between online and offline shopping experiences and so companies need a great omnichannel strategy.
Retailers assert that they need to use advanced analytics to uncover further insight into consumer preference and modify their marketing strategy as such. The article also highlights the rising significance of convenience, and Tailor-made shopping experience while deciding to buy, within the Indian market.

15. Credencys (2024)
Credencys explores retail business data strategies, highlighting how data analytics is essential for graphical models to infer shopper behaviour-al patterns. The authors outline a number of techniques retailers can employ to garner insight into consumer preferences which can be used to influence everything from their product assortment to their marketing campaigns. They encourage organizations to establish a culture of data driven-decision making and argue that integrating data initiatives with business need can result in better strategies and higher customer engagement.

16. **IMS Proschool (2024)**
Though being in the initial stage of implementation of the concepts of data science, IMS Proschool looks at ways in which data science can transform the way the retail industry works, including serving better customer insights and simplified operations. The paper presents a set of case studies to demonstrate how retailers were able to compete through big data, by predicting the behavior and preferences of consumers. However the take a stance in that using technologies e.g., AI and machine learning can not only enhance customer experience but also optimize supply chain management processes, resulting in profitability for a sector in which competition is fierce.

17. QIS College of Engineering and Technology(2024)
a) The advanced analytics in this study look into the consumer behavior dynamics in the Indian retail sector. The authors predict customer lifetime value with high accuracy by applying methodologies such as Recency, Frequency, Monetary (RFM) analysis, and machine learning models. According to their findings, the use of data-driven methodologies is a viable tool for dividing consumers by their purchasing behaviours, giving retailers important insights into how to tailor their marketing efforts. This work represents a stepping stone to future work that will attempt to integrate data analytics into the understanding of consumer behavior in retail environments.

CHAPTER 3
IMPLEMENTATION OF THE PROJECT
OBJECTIVES OF THE STUDY
1. Investigate current shopping habits among Indian consumers by analyzing how often they shop online each month.
2. Identify key factors that influence shoppers' choices of retailers, focusing on aspects like price, product variety, customer service, and loyalty benefits.
3. Examine the usage rate of retailer mobile apps and understand their importance in the shopping process.

4. Assess the significance of Tailor-made recommendations in enhancing the customer shopping experience.
5. Determine the main sources through which consumers learn about new products and promotions, such as social media, email notifications, in-store displays, and word of mouth.
6. Explore preferred payment methods for online shopping among consumers to understand trust and convenience in financial transactions.
7. Measure the likelihood of customers returning to a retailer following a positive shopping experience.
8. Evaluate how important sustainability is to consumers when making purchasing decisions.
9. Assess how online customer reviews influence consumers' purchasing decisions.
10. Analyze preferred shopping times during online sales events to optimize promotional activities.
11. Compare preferences for shopping in-store versus online, highlighting reasons for each choice.
12. Investigate participation rates in loyalty programs offered by retailers and their impact on customer retention.
13. Understand the importance of fast delivery in online shopping and its effect on consumer satisfaction.
14. Examine motivations for choosing physical stores over online shopping, such as immediate possession, the ability to try before buying, and easier returns.
15. Identify how consumers prefer to receive promotional offers and the effectiveness of different communication channels.
16. Study the frequency of using price comparison websites/apps before making purchases to understand price sensitivity among consumers.
17. Evaluate the importance of store layout and ambiance in influencing consumers' decisions to shop in-store.
18. Determine the influence of in-store promotions on consumers' decisions to visit retail stores.
19. Rate the importance of customer service in overall shopping satisfaction.
20. Explore the likelihood of consumers recommending a retail store to friends or family based on its digital integration.

I. RESEARCH PLAN

This study examines the shopper behavior patterns in Indian retail industry and the use of data science in improving the retail strategy and performance of retail businesses. This project aims at discovering current trends behind customers' behavior through advanced study of data, examining ways through which the retail industry responds to the discovered trends, and understanding the business results with this approach. The project also strives to correlate the Shopper Behavior Competency Index with performance metrics of the retail outlets across five different states in India to present a holistic picture of data driven practices in the aggressive retail industry.

II. RESEARCH METHODOLOGY

A. Research Design:

The study will use a mixed methods approach, mixing qualitative and quantitative research methods to fully engage the shopper behavior dynamics and the ability of data science to inform retail. The majority of the collected quantitative data will come from surveys and analysis of transaction data, whereas qualitative insights will be generated from interviews and focus groups with stakeholders.

B. Data Collection Methods:

Survey:

- **Questionnaire Design:** They will ask questions like how shoppers behave in actual stores, their preferences of different products and even their response to other retail strategies.
- **Sampling:** Generate a list of participants from a pool of first time shoppers, long time shoppers and financial advisors that are spread across those states.
- **Distribution:** Conduct surveys through online platforms, because they maximize reach and convenience for the survey participants.

III. SAMPLE AND POPULATION

A. Target Population:

The participants for the study are to be a broad spectrum of participants; while shoppers of varying degrees of experience, financial advisors engaged within the Indian retail industry will be considered.

B. Sampling Method:

We will use a stratified random sampling method to guarantee a representative sample from different demographic groups as well as different shopping experiences.

C. Sample Size:

The data to be collected from 100 people.

IV. DATA ANALYSIS

A. Quantitative Data Analysis:

Carry out the statistical analysis, such as frequency distribution, correlation and regression analysis to study the relationship among shopper behavior patterns and retail performance. Analyze the data to find important trends and evaluate how the Tailor-made marketing strategies performing.

B. Qualitative Data Analysis:
We use thematic analysis to interpret the interview and focus group responses, to uncover the key themes around the challenges and opportunities to use data science in retail. Assess stakeholder views of data science integration in customer engagement and business outcome.

C. Visualization:
Therefore, it presents the findings using various graphical representations like bar graph, pie chart etc to make them easily understandable for the non specialist audience.

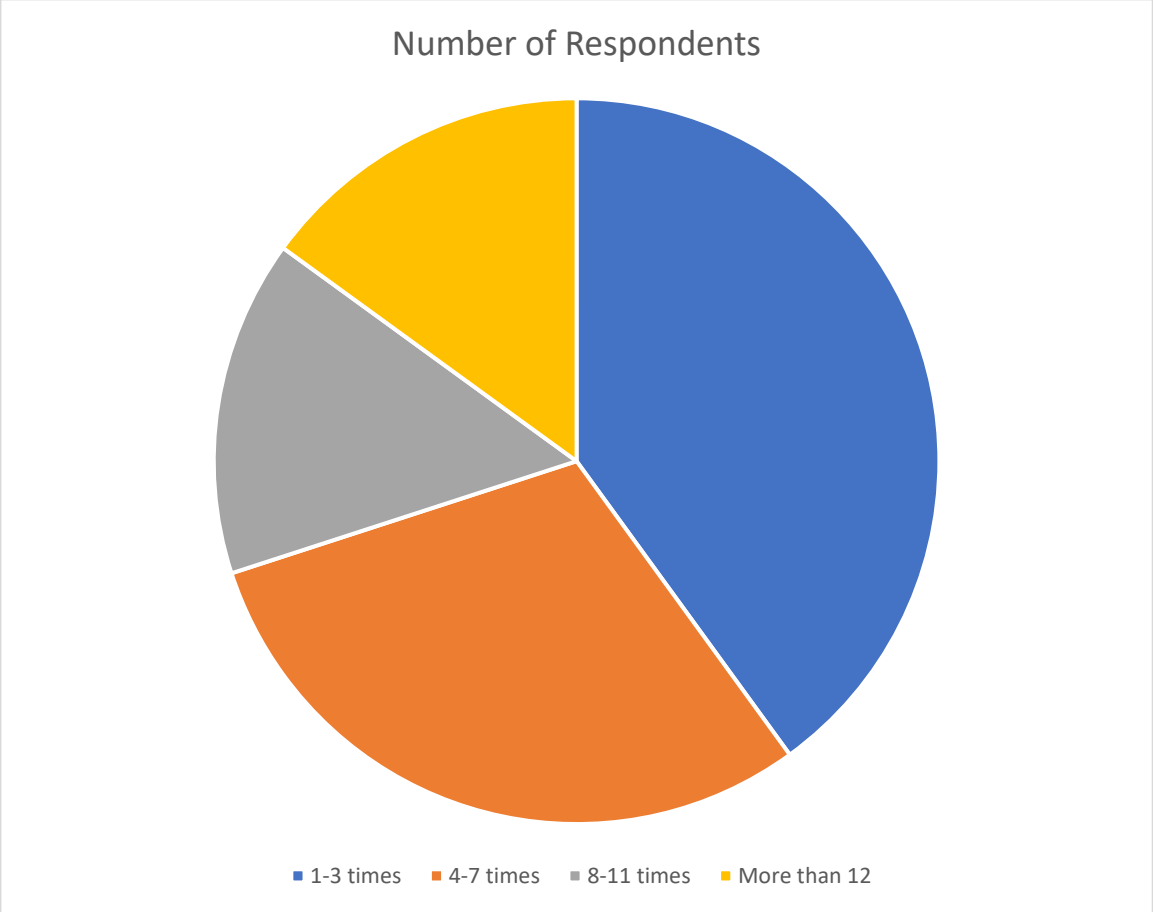
V. ETHICAL CONSIDERATIONS

b) The study will adhere to strict ethical standards in the collection, analysis, and presentation of data:
c) Obtain informed consent from each participant, so that they understand the goal of the study, and your right to withdraw at any time.
d) Ensure However it keeps confidentiality and privacy of participant data by its personal information being secured and to be used in this research only.
e) It will also address conflicts of interest, and will make transparent and communicate the study's findings to the study's participants and the public.
f) Obtain approval from institutional review boards and meet all regulations for human subjects research.

CHAPTER 4
RESULTS AND DISCUSSIONS

Question 1: How often do you shop online per month?

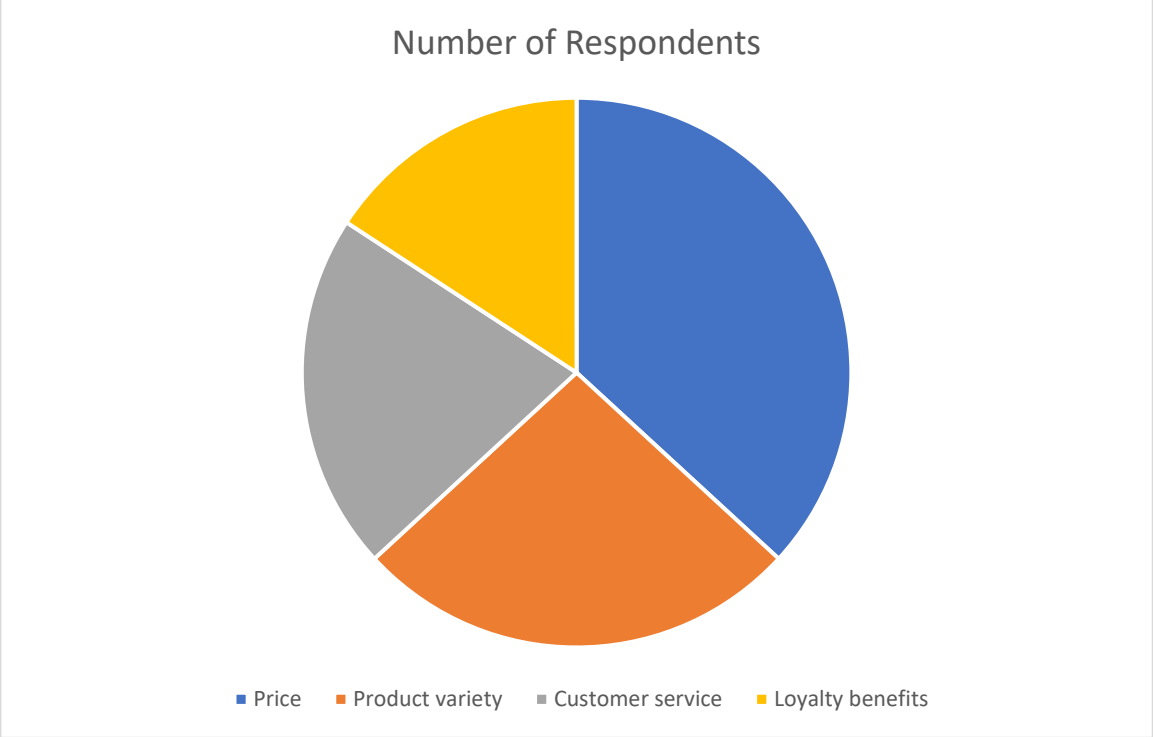
Frequency	Number of Respondents	Percentage (%)
1-3 times	40	40
4-7 times	30	30
8-11 times	15	15
More than 12	15	15



Interpretation:
This data indicates a moderate frequency of online shopping among participants, with 40% shopping 1-3 times a month. Notably, 15% of respondents shop more than 12 times, suggesting a significant segment of frequent online shoppers. This could imply a strong market for e-commerce strategies focused on frequent, smaller purchases.

Question 2: What factors influence your choice of retailer?

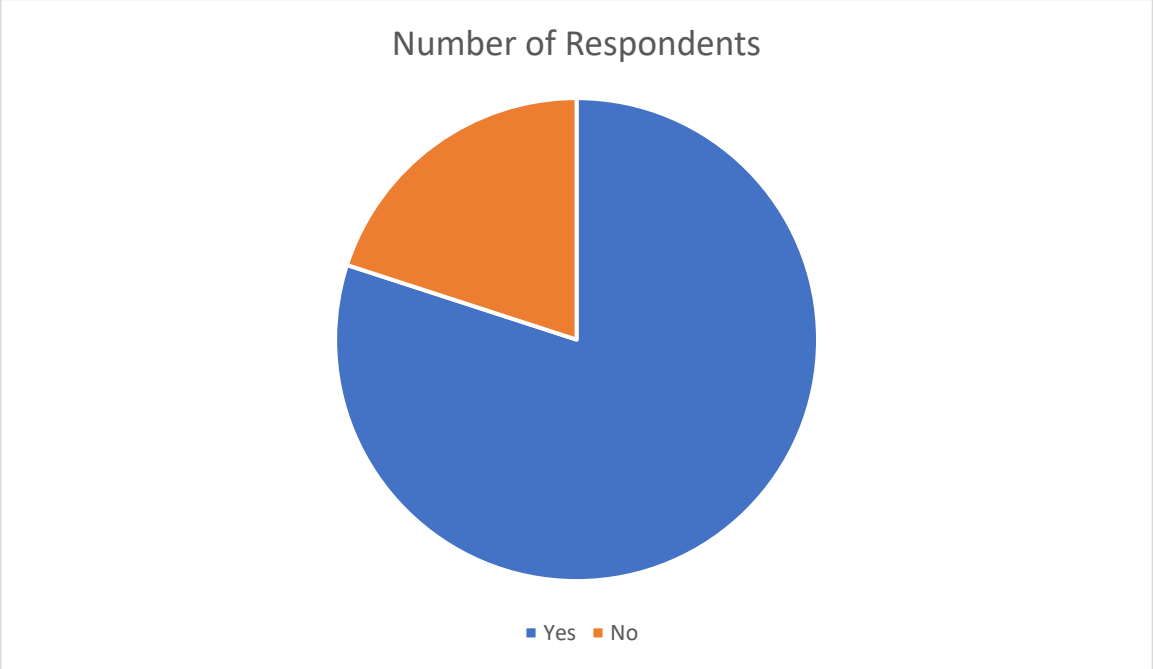
Factors	Number of Respondents	Percentage (%)
Price	70	70
Product variety	50	50
Customer service	40	40
Loyalty benefits	30	30



Interpretation:
Price is the most influential factor for 70% of the respondents, underscoring the importance of competitive pricing strategies in attracting customers. Product variety and customer service also play significant roles, highlighting areas where data science could help retailers optimize their offerings and interactions.

Question 3: Do you use retailer mobile apps for shopping?

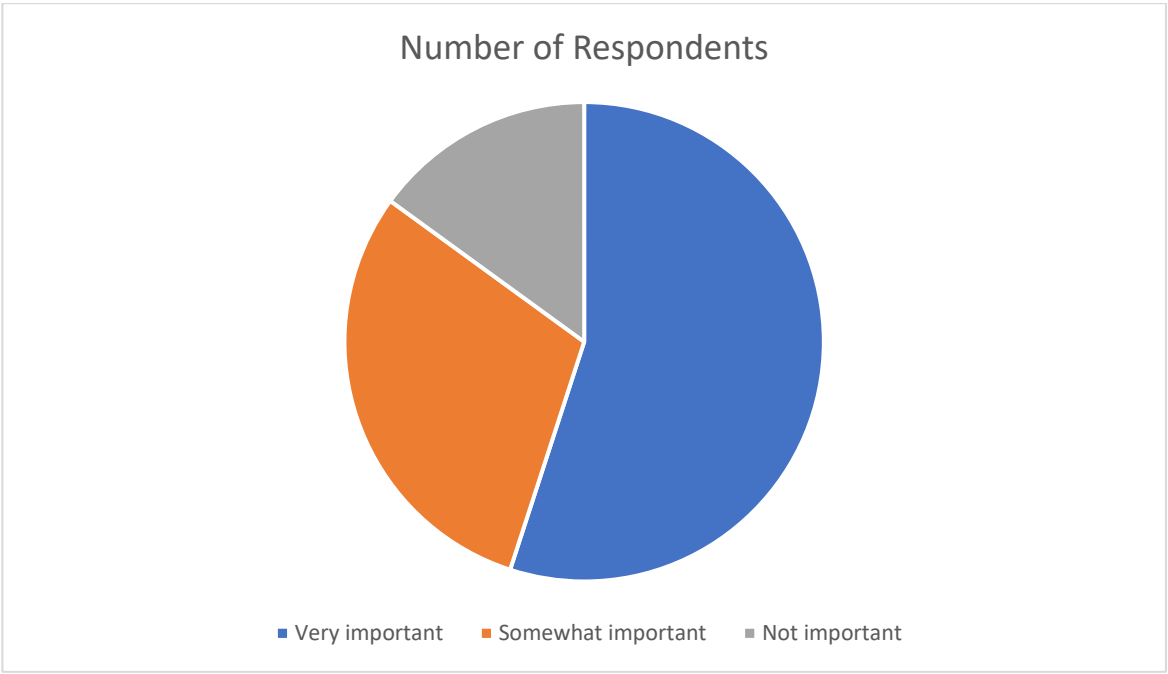
Response	Number of Respondents	Percentage (%)
Yes	80	80
No	20	20



Interpretation:
A substantial 80% of respondents use retailer mobile apps, indicating a shift towards mobile platforms in the retail sector. This trend supports the need for robust mobile app development and data analytics to enhance user experience and increase engagement.

Question 4: How important are Tailor-made recommendations in your shopping experience?

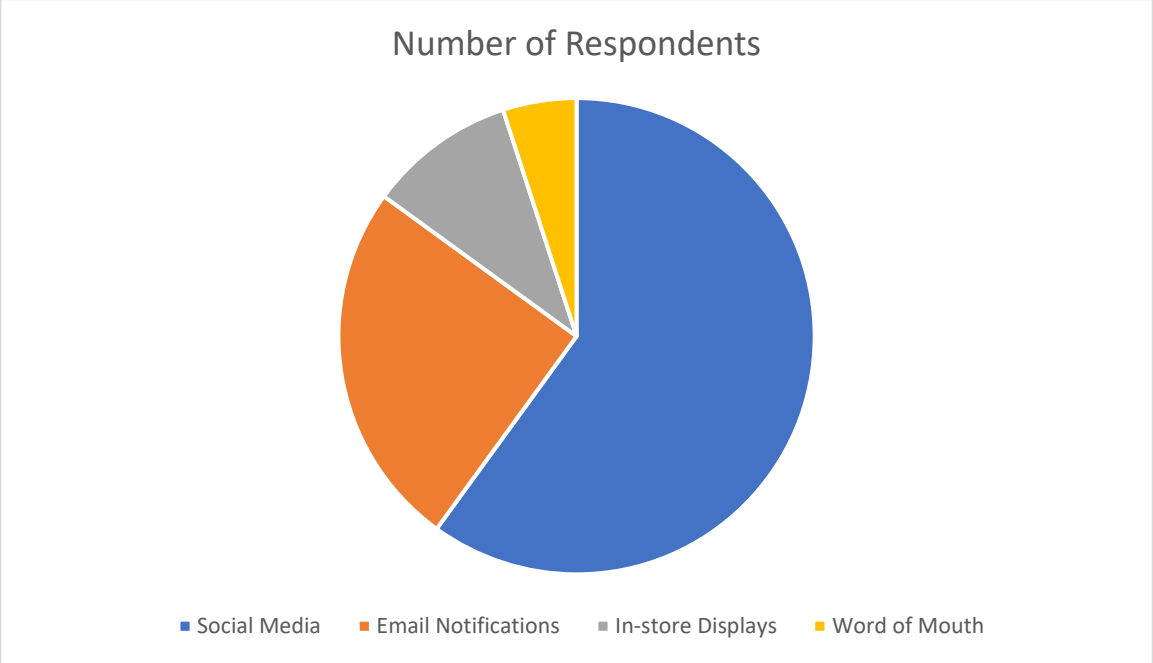
Importance Level	Number of Respondents	Percentage (%)
Very important	55	55
Somewhat important	30	30
Not important	15	15



Interpretation:
Tailor-made recommendations are considered very important by 55% of the participants, highlighting the effectiveness of targeted marketing and the potential of data science to refine recommendation engines. This suggests that retailers could improve sales and customer satisfaction by leveraging data insights to personalize offers.

Question 5: How do you typically learn about new products or promotions?

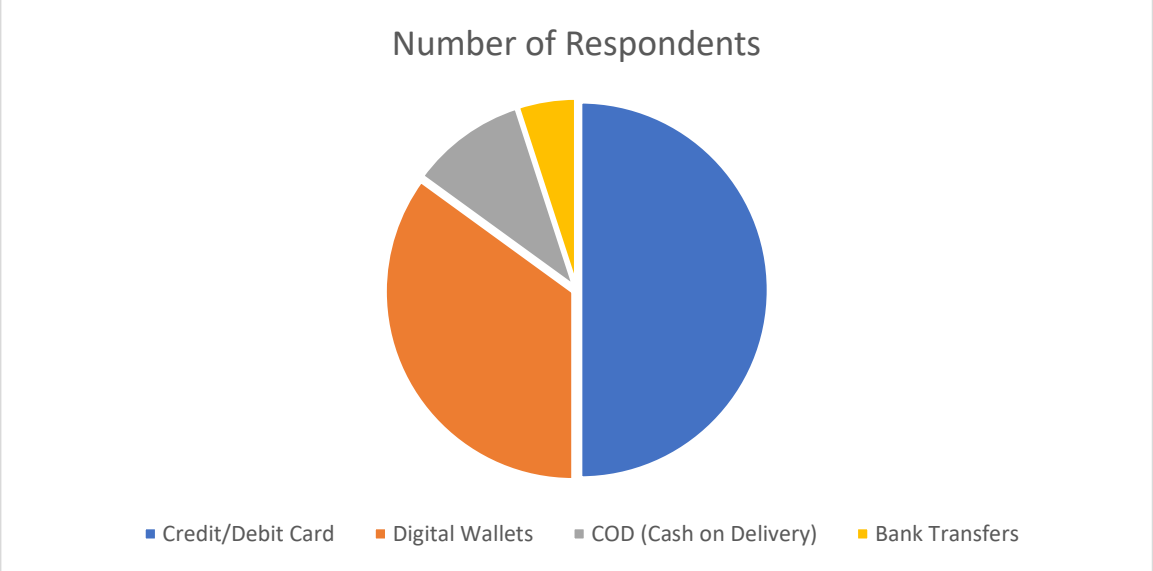
Information Source	Number of Respondents	Percentage (%)
Social Media	60	60
Email Notifications	25	25
In-store Displays	10	10
Word of Mouth	5	5



Interpretation:
Social media emerges as the dominant channel through which 60% of respondents discover new products and promotions, highlighting the importance of digital marketing strategies in the retail sector. Retailers could use data science to analyze social media trends and customer engagement to optimize their advertising efforts.

Question 6: Which type of payment method do you prefer when shopping online?

Payment Method	Number of Respondents	Percentage (%)
Credit/Debit Card	50	50
Digital Wallets	35	35
COD (Cash on Delivery)	10	10
Bank Transfers	5	5

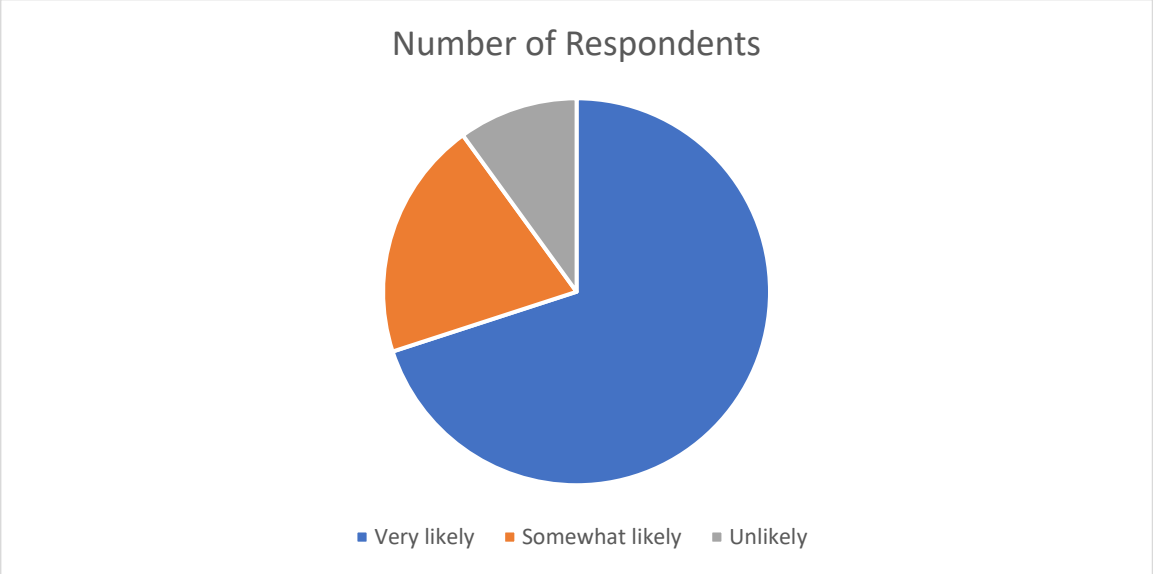


Interpretation:

Credit/debit cards are preferred by 50% of the respondents, with digital wallets also being popular. This preference indicates a trust in traditional and digital banking systems, suggesting that retailers should ensure secure and diverse payment options to cater to these preferences, leveraging data science to enhance security and payment gateway efficiency.

Question 7: How likely are you to return to a retailer after a positive shopping experience?

Likelihood	Number of Respondents	Percentage (%)
Very likely	70	70
Somewhat likely	20	20
Unlikely	10	10

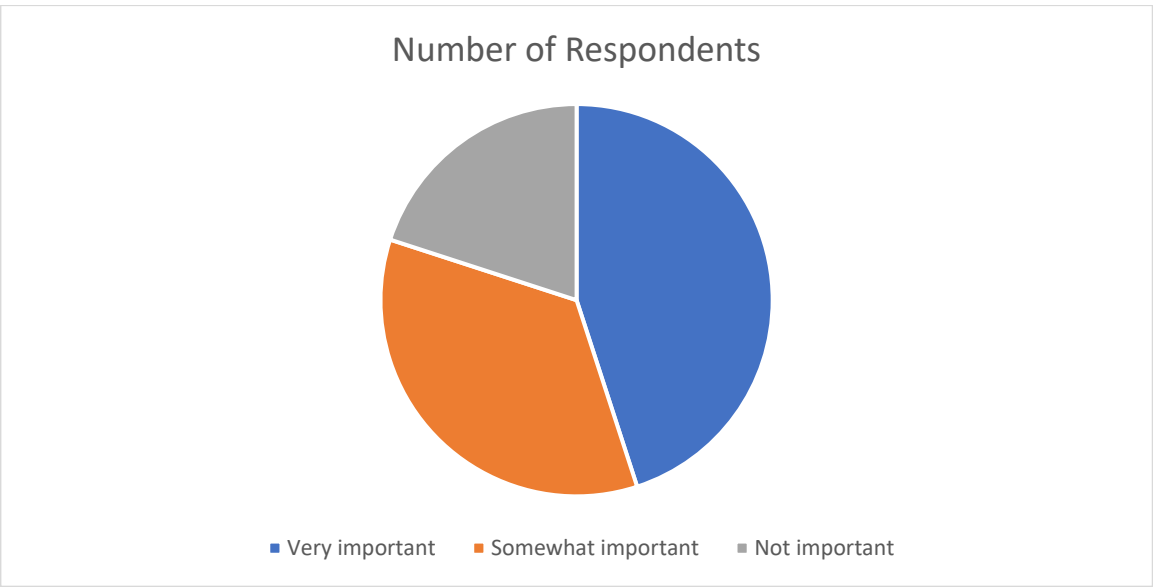


Interpretation:

A strong majority (70%) of shoppers indicate they are very likely to revisit a retailer following a positive experience. This highlights the importance of customer experience management in retaining customers, where data science can play a key role in tracking customer satisfaction and improving service delivery.

Question 8: How important is the sustainability of products to your purchasing decisions?

Importance Level	Number of Respondents	Percentage (%)
Very important	45	45
Somewhat important	35	35
Not important	20	20

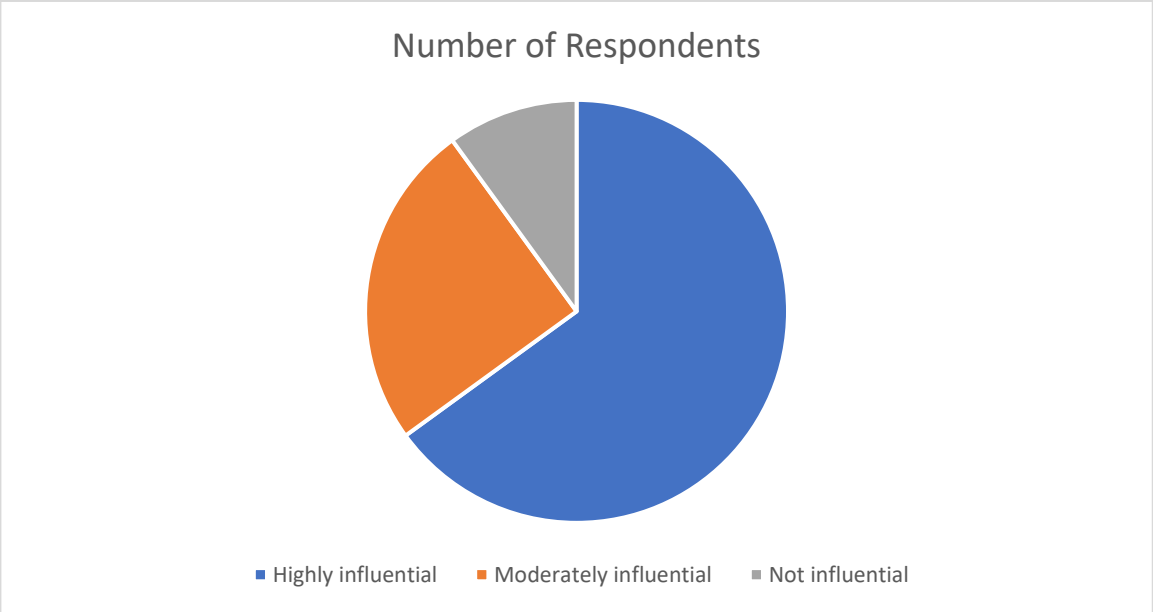


Interpretation:

Sustainability is deemed very important by 45% of participants, indicating a growing consumer preference for eco-friendly products. Retailers can utilize data science to analyze consumer trends towards sustainability and adjust their product offerings accordingly to meet this demand and enhance brand loyalty.

Question 9: How does online customer review influence your purchasing decisions?

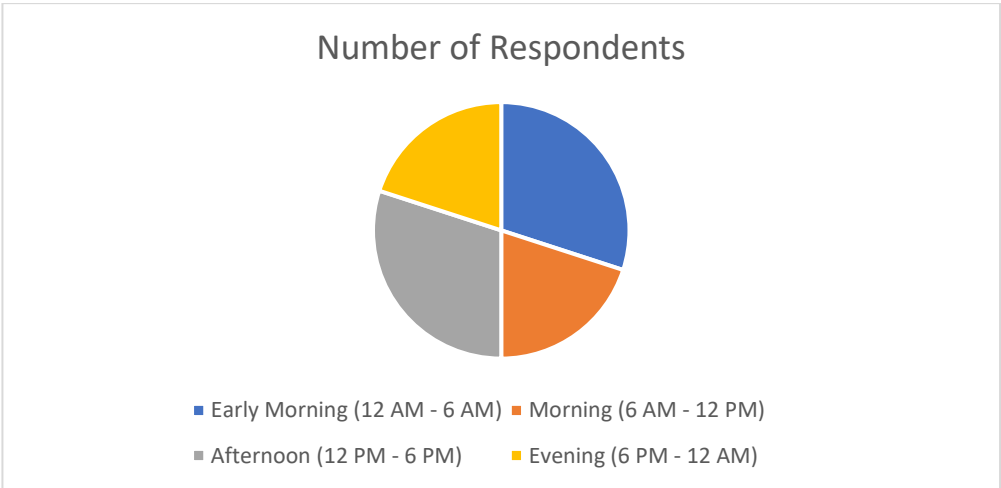
Influence Level	Number of Respondents	Percentage (%)
Highly influential	65	65
Moderately influential	25	25
Not influential	10	10



Interpretation:
Online customer reviews are highly influential for 65% of respondents, underscoring the impact of peer feedback on purchasing decisions. This trend suggests that managing online reputation and actively engaging with customer reviews could be pivotal for retailers, where data science can help analyze sentiments and feedback trends to enhance product offerings and customer service.

Question 10: What is your preferred shopping time during online sales events?

Shopping Time	Number of Respondents	Percentage (%)
Early Morning (12 AM - 6 AM)	30	30
Morning (6 AM - 12 PM)	20	20
Afternoon (12 PM - 6 PM)	30	30
Evening (6 PM - 12 AM)	20	20



Interpretation:
Shopping times are evenly spread throughout the day with a slight preference for early morning and afternoon periods, each attracting 30% of shoppers. Retailers can use this data to optimize their promotional activities and ensure server stability during peak shopping times, enhancing the shopping experience.

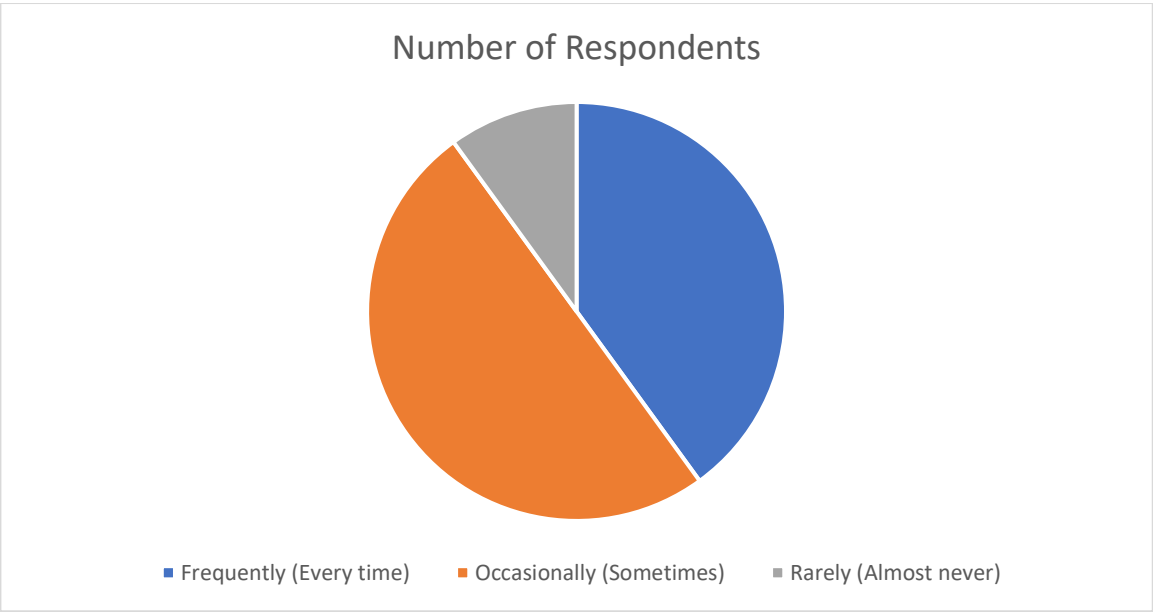
Question 11: Do you prefer to shop in-store or online, and why?

Preference	Number of Respondents	Percentage (%)
In-store	40	40
Online	60	60

Nterpretation:
60% of the respondents prefer online shopping, highlighting the convenience and accessibility of digital platforms. This preference shift underscores the need for retailers to bolster their online presence and enhance the e-commerce experience through targeted data analytics that can personalize the shopping journey and improve user engagement.

Question 12: How often do you participate in loyalty programs offered by retailers?

Participation Frequency	Number of Respondents	Percentage (%)
Frequently (Every time)	40	40
Occasionally (Sometimes)	50	50
Rarely (Almost never)	10	10

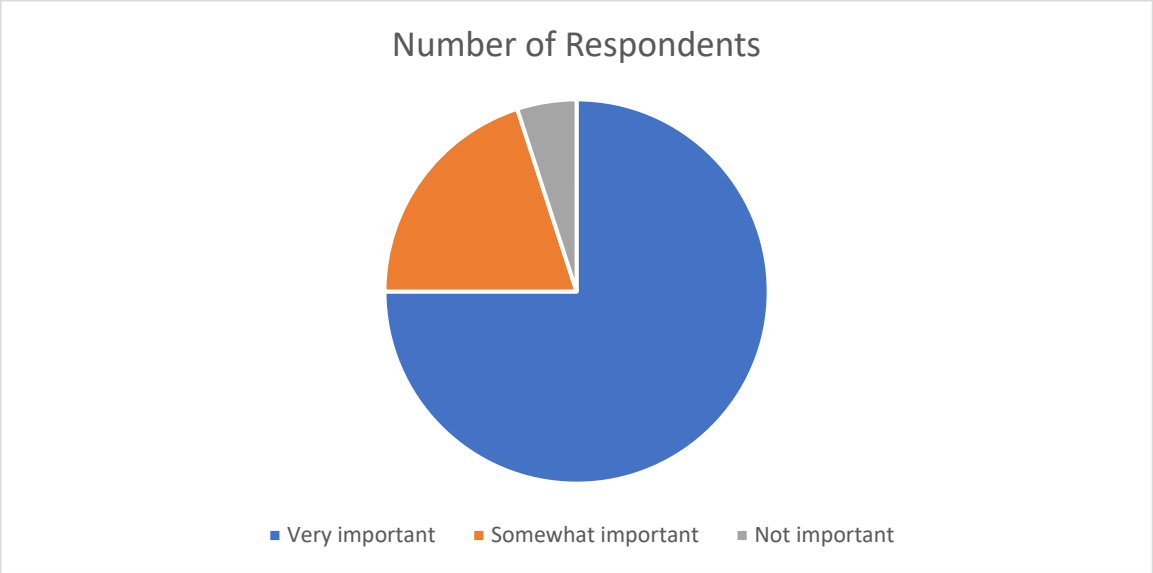


Interpretation:

A significant portion of respondents, 40%, frequently engage with loyalty programs, and 50% do so occasionally. This active participation suggests that loyalty programs are effective in retaining customers and encouraging repeat business. Retailers can utilize data science tools to analyze customer engagement and refine these programs to maximize participation and satisfaction.

Question 13: How important is fast delivery to your online shopping experience?

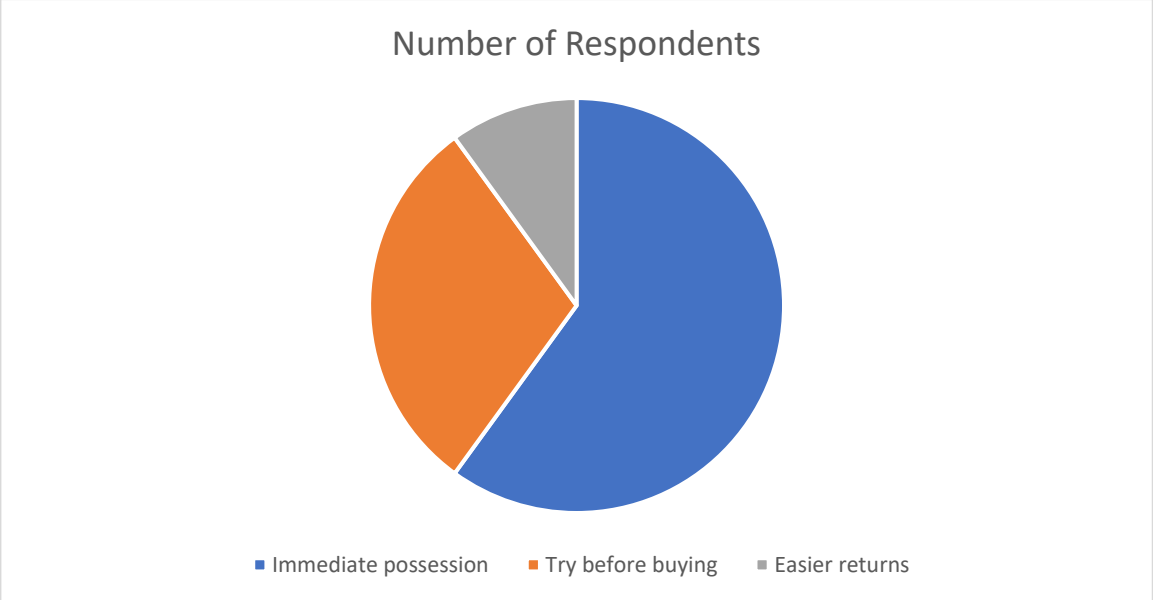
Importance Level	Number of Respondents	Percentage (%)
Very important	75	75
Somewhat important	20	20
Not important	5	5



Interpretation:
Fast delivery is deemed very important by 75% of the survey participants, emphasizing the critical role of logistics in the online shopping experience. Retailers should consider investing in their delivery networks and utilizing data science to optimize logistics and reduce delivery times to meet consumer expectations and enhance satisfaction.

Question 14: What motivates you to choose a physical store over online shopping?

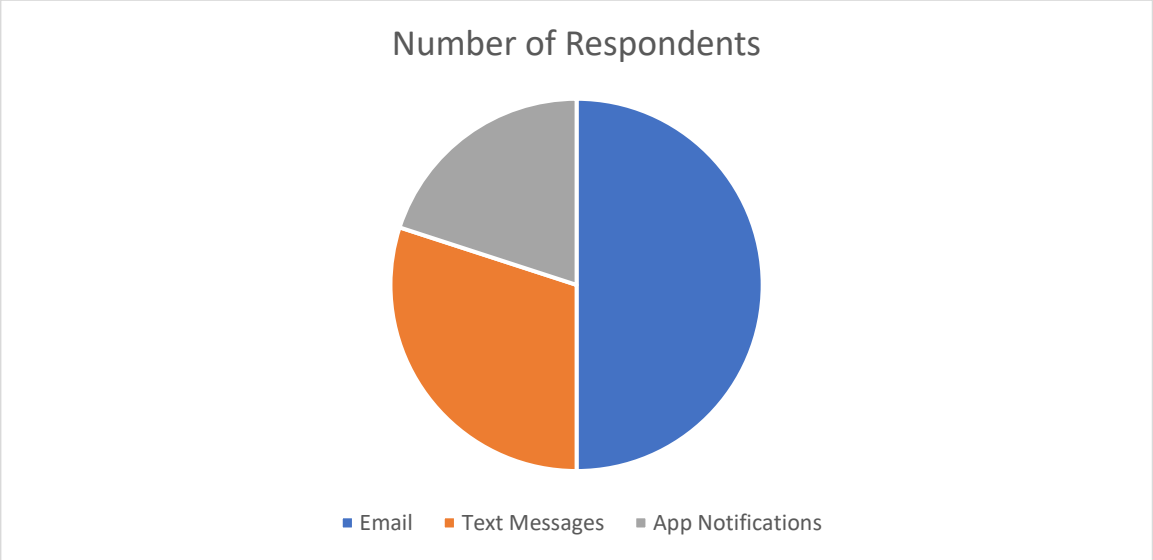
Motivation	Number of Respondents	Percentage (%)
Immediate possession	60	60
Try before buying	30	30
Easier returns	10	10



Interpretation:
Immediate possession is the primary motivation for 60% of respondents to choose physical stores, highlighting the appeal of instant gratification in shopping. Retailers can capitalize on this by ensuring a seamless and immediate product availability in stores, and also by exploring ways to shorten delivery times for online purchases through data-driven logistic improvements.

Question 15: How do you prefer to receive promotional offers?

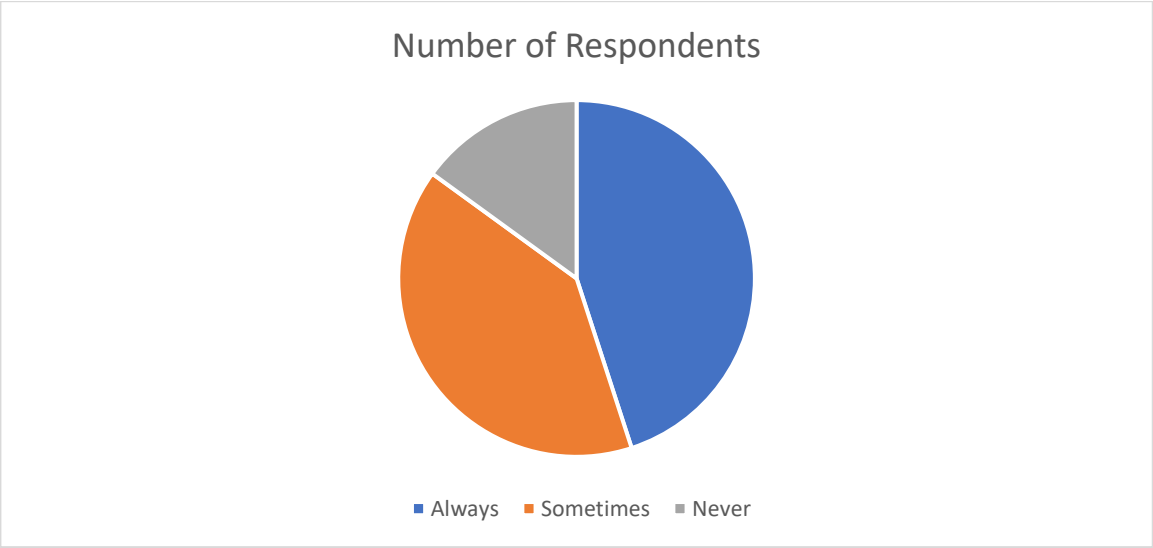
Promotional Offer Delivery	Number of Respondents	Percentage (%)
Email	50	50
Text Messages	30	30
App Notifications	20	20



Interpretation:
Email is the preferred medium for receiving promotional offers, chosen by 50% of respondents. This preference indicates that email marketing remains a potent tool for retail promotions. Retailers can use data analytics to personalize email content and optimize send times, increasing the effectiveness of their campaigns and improving customer engagement.

Question 16: How frequently do you use price comparison websites/apps before making a purchase?

Frequency	Number of Respondents	Percentage (%)
Always	45	45
Sometimes	40	40
Never	15	15

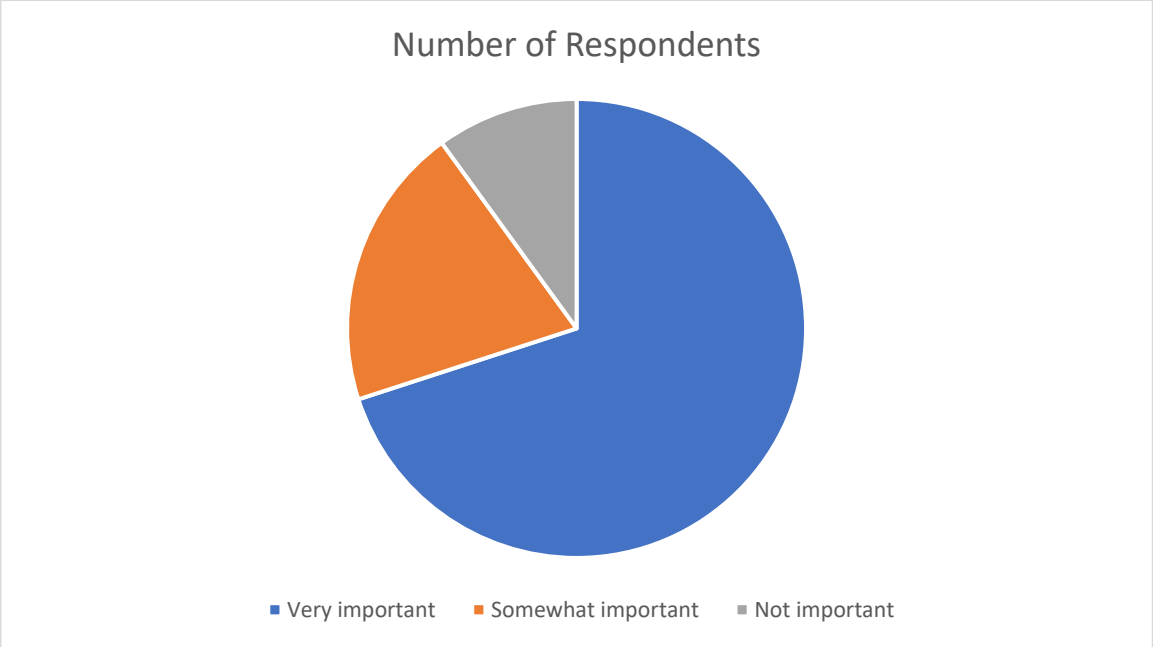


Interpretation:

Price comparison tools are used 'Always' by 45% of respondents, illustrating a significant trend towards price-sensitive shopping. This usage suggests that transparency in pricing and competitive pricing strategies are essential for retailers. By implementing data science tools to monitor competitor pricing and market demand, retailers can adjust their pricing strategies dynamically to attract and retain cost-conscious customers.

Question 17: How significant are store layout and ambiance in influencing your decision to shop in-store?

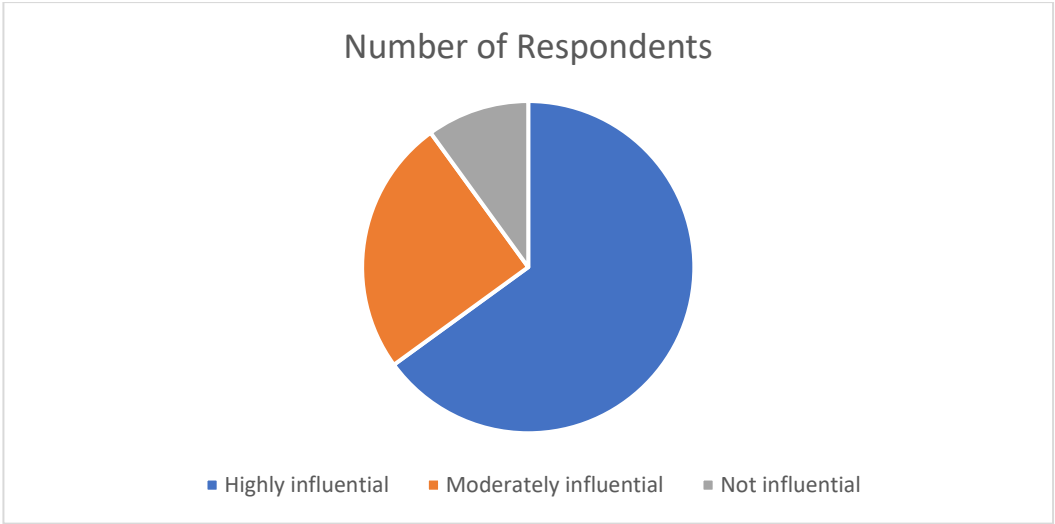
Importance Level	Number of Respondents	Percentage (%)
Very important	70	70
Somewhat important	20	20
Not important	10	10



Interpretation:
Store layout and ambiance are very important for 70% of the respondents, highlighting that the physical shopping environment plays a crucial role in attracting consumers. Retailers can leverage data science to analyze customer movement and interaction within stores to optimize layout and enhance the overall ambiance, thereby improving the shopping experience and increasing sales.

Question 18: Do in-store promotions influence your decision to visit a retail store?

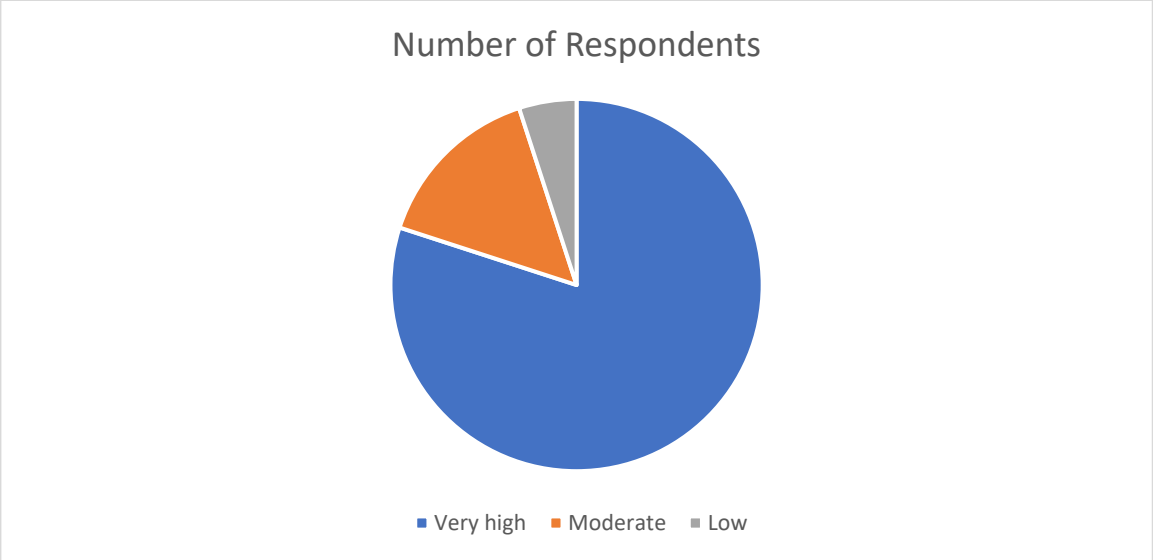
Influence Level	Number of Respondents	Percentage (%)
Highly influential	65	65
Moderately influential	25	25
Not influential	10	10



Interpretation:
In-store promotions are highly influential for 65% of participants, suggesting that promotions remain a powerful tool to drive foot traffic. Retailers can use data analytics to identify the most effective types of promotions and tailor their marketing strategies accordingly, thus enhancing the impact of promotional activities and driving higher in-store engagement.

Question 19: How do you rate the importance of customer service in your overall shopping satisfaction?

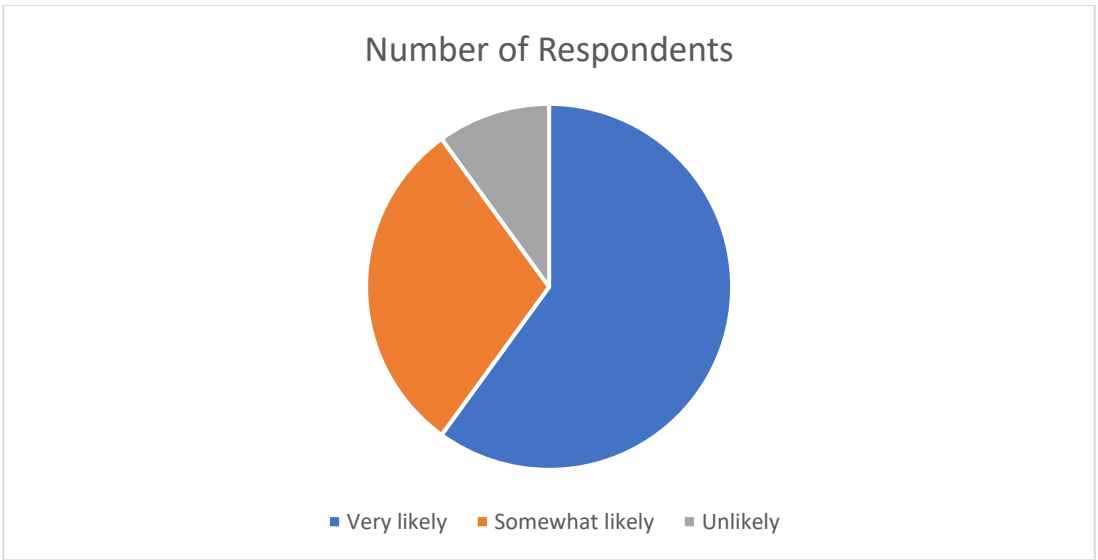
Importance Rating	Number of Respondents	Percentage (%)
Very high	80	80
Moderate	15	15
Low	5	5



Interpretation:
A significant 80% of the respondents rate customer service as very high in importance for their overall shopping satisfaction. This underscores the need for retailers to invest in quality customer service. Data science can be instrumental in monitoring and training customer service teams, analyzing customer feedback, and optimizing service delivery to enhance consumer satisfaction and loyalty.

Question 20: How likely are you to recommend a retail store to friends or family based on its digital integration (e.g., use of apps, online presence)?

Likelihood	Number of Respondents	Percentage (%)
Very likely	60	60
Somewhat likely	30	30
Unlikely	10	10



Interpretation:
60% of respondents are very likely to recommend a store based on its digital integration, indicating the increasing importance of digital tools in the retail experience. Retailers can enhance their digital strategies by employing data science to improve app functionality, integrate online and offline experiences, and analyze digital user engagement to boost recommendations and increase brand loyalty.

RESULTS

1) Some people shop online a lot, and most shop a few times each month.
2) Where people shop is dictated by price, more than anything else.
3) Statistics say that 8 out of 10 people use mobile apps for shopping.
4) And more than half of the people say their very important when it comes to shopping.
5) When most people find out about new products, it's through social media.
6) There are half as many online shoppers who like to pay their bill with the cards.
7) For most people, if they had a good experience in a store, they will shop there again.
8) Almost half (48 per cent) agreed that it is very important that products are Eco friendly.
9) People really base what they buy on online reviews.
10) Despite when they shop during sales, people's times tend to be early morning and afternoon.
11) It's now more costly for a retailer to open a store than it is to simply operate online.
12) Well, lots of people join loyalty programs to get rewarded and deals.
13) 75% of shoppers want fast delivery.
14) 6 in 10 people go to stores because they can get things right away or try them first.
15) And people love to get deals and offers via email.
16) Most people check the prices on different apps and sites before buying something in order to get the best price.
17) For most people, how a store looks and feels is very important.
18) Lots of folks want to drop in because of sales and special deals in stores.
19) For almost everyone, excellent customer service makes shopping a lot better.
20) Store that use technology well like having a good app or website more people will tell people to shop there.

21) **SUGGESTIONS**

As per the findings of the survey about Indian markets, the following suggestions can be made in order to help in the improvement of the shopping experience and sales of Indian retail business.

The first reason is that many people do online shopping and utilize the mobile applications, retailers need to invest on digital platforms. This means their websites, for example, run smoothly, safely support payments and load fast. Since 80% of survey participants use apps, they should make use of the personal shopping recommendations that more than half of the shoppers found very important in these platforms. Retailers might be able to track what customers look at, and ultimately buy, and use data science to suggest additional products those people might like.

Moreover, retailers need to actively manage their online reputation too as 65 per cent of shoppers rely on online reviews heavily. Satisfied customers can be encouraged to leave positive reviews and resolve the customer's issue by the retailers so that they can resolve the customer's issues instantly and could encourage their satisfied customers to leave positive reviews. Assuming they improve their public image and attract more customers.

Pricing strategies are also important also. According to most buyers, the prices are the main thing that influences where they shop, and so stores should check prices regularly (as 45 per cent of buyers use price comparison sites). This information allows them to make price adjustments simply to keep them competitive. They also influence with special deals and loyalty program. 40% of people use loyalty programs frequently and 65% are influenced by in store promotions, so it makes sense that stores would create exciting offers to give back to the customer for their purchases, urging them to return.

Since many people love the instant gratification that physical stores give, retailers should try their best to make the shopping experience in the store as pleasant as it can be. This translates into designing stores that are welcoming and easy for the consumer to shop in. Additionally, they should make sure they have stock for items and if they want to take it one step further possibly allowed for items to be bought online and picked up in store instead a creating a true convenience from both shopping methods.

Fast delivery is also important for online shopping, according to the survey. On the part of retailers, they have to look at the part of delivery and how to make it faster and more trustworthy, and that is possible through having a stronger use of data science to optimize delivery routes and times. And this would satisfy 75% of shoppers who want fast delivery.

Another important aspect is customer service. As it turns out, 80% of people say that good customer service makes them much happier when they shop, so retailers need to train their staff to be friendly and helpful. They could also exploit software to better handle customer queries and complaints, so that even if a deal isn't closed, shoppers will always come out satisfied.

Last but not least, as sustainability gets important, with 45% of the shoppers caring about it, retailers should focus on selling Eco friendlier products and making their own operations greener. It could include sourcing sustainable materials, minimizing packaging, or contributing to the use of local suppliers, in which case these organizations will reduce their carbon footprints.

To put it simply, with this Indian market, by improving digital experiences, handling prices and promotions, innovating in store experiences, managing delivery speed, providing great customer experiences, and moving towards sustainability, retailers have the chance to meet current and future customer expectations, as well as attract and retain customers…and fight their way to stay competitive in the constantly evaporating industry.

CHAPTER 5
CONCLUSION AND FUTURE SCOPE
CONCLUSION

A summary of our survey findings on Indian shopper behavior in the Indian retail industry gives us a lot of insights on how the customers want and what they like while shopping online and in store. Such insights allow retailers to make smart changes that will make their customers happier and presumably shop with some of these retailers more often.

From the first, you know that people go to shop online and are making use of mobile apps. It implies that retailers should be aware and guarantee that their internet based stages are as per the norms in our homes, simple to explore and additionally rechargeable. With so many people using apps and valuing Tailor-made shopping recommendations it is crucial for retailers to pay attention to Tailor-made on the shopping experience too. Data science can help them do this by elucidating the customer's behavior better and by suggesting products that should interest the customer based on his previous purchases.

Influencing a shopper finally decide to buy a product is also very influential online reviews. That is why it is important to have a good online reputation. Retailers should encourage positive experiences from their customers, who in turn are happy to share those experiences online, and address critic's issues quickly and effectively. This method will not only enhance the image for the retailer but also will attract their new customers who read these reviews.

Another big one is pricing, where people decide to go shopping. Many shoppers use price comparison websites or apps before buying anything, our survey found. Retailers will always have to watch carefully to ensure they keep pace with competitors' pricing strategies. Also, we can use strategies such as offering regular promotions and rewarding loyal customers which clearly work (e.g. shoppers love loyalty programs).

The need for a good in store experience is crucial in consumers preferring to shop in physical stores because of their immediate possession of products and the capacity to try items before purchasing. Retailers need to design stores so that they are welcoming, well designed, and have the right products. In addition to these things, they could look at merging online and physical shops by enabling customers to order online and take to the store.
Another factor which can improve online shopping experiences is fast delivery. Quick and reliable delivery is valued by many customers, and optimizing retailer's logistics and delivery systems can help meet their expectations. Being able to improve delivery routes and times through the use of data science could be a big step in delivering faster.

Overall shopping satisfaction is dependent on good customer service. For retailers, this means in store, as well as online, staff should be trained to be helpful and responsive. However, implementing efficient customer service systems to fix issues fast, and also keep customers happy.

Last, as more and more shoppers begin to care about sustainability, retailers have an opening to sway this audience by providing more sustainable products and/or operating in a more green business fashion. It is not only a positive to the environment, but also improves the retailer's brand image to those consumers who value sustainability.

Retailers focusing on these key areas of digital enhancement, through their reputation, competitive pricing, engaging in store experiences, fast delivery, excellent customer service and sustainable deliveries can really improve customer relationships and business performance. These strategies will help the retailers to stay relevant in the quickly changing Indian retail landscape where technology and traditional values work together to shape the Indian consumer behavior.

FUTURE SCOPE

The future of the Indian retail industry holds plenty for improvement and good times are ahead. Technology is going to advance even more, and retailers have a great opportunity to literally improve shopping experience for their customers both online and at storefronts.
The continued development of mobile apps and online platform is one huge area of potential. The reason is that a significant amount of shoppers do use apps and makes it a great opportunity for retailers to add new features that can make shopping even more fun and easy. For example, they could employ augmented reality (AR) technology to allow customers to see how their clothing might look on them, without having to attempt anything on in real life. Also, they

could leverage artificial intelligence (AI) to provide even more customised product suggestions tailored to the shopping history and preferences of each customer.

Data science is another important area because it can assist retailers to get a better understanding of their customers and make much smarter business decisions. By gathering and processing information on what type of goods customers buy, what they are interested in and how they shop, retailers are able to provide goods and services that are more appropriate for their customers. It could be Tailor-made marketing, in which promotions and discounts are based on the individual preferences, thus making the efforts in advertising more effective.

Online reviews and customer feedback can also be further used. Better systems can be created by retailers to quickly gather and analyze customer feedback and pinpoint where there is a common problem or area in need of improvement. Improving product quality and customer service would not stop here, but they would be able to create stronger relationships with customers, as they would know that their opinions really mean something, and would be acted upon.

There's more space for dynamic pricing models who price can change depending on demand, competition, etc. While this approach calls for advanced analytics, it is an approach to facilitate retailers becoming competitive and maximizing profits through the right price at the right time.

As long as there will be shoppers who still like the immediate gratification of shopping in stores, retailers can take steps to improve the in store experience by adding digital elements. For instance, the digital kiosks could be used by firms to provide clients with product information or to check immediately on the avail-ably of items. Stores might also bring in more self service options to speed up wait times while giving customers more control over your shopping experience.

There is room for improvement also in the logistics and delivery parts. Since many of the customers want fast delivery, retailers could opt to use drones or other revolutionary delivery strategies to make delivery faster. In addition, better inventory management systems will help in guaranteeing that the product is available exactly when it is needed and in the appropriate place, reducing the possibilities of stock-outs and delays.

Technology can be used to improve customer service as well. Bots chat and virtual assistants now offer immediate answers to inquiries, integrations allow these bots and assistants to handle other customer service tasks on par with and more efficient than human staff on its own. It allows instant support to the customer which in turn not only improves customer experience but also provides an opportunity for human customer service representative to focus on solving resources issues.

Finally, sustainable focus will remain. With increasingly aware customers now aware of the environmental effect their purchase makes, it can be foreseen that customers would start to develop loyalty in retailers that invest in green practices as well as products. Using environmentally friendly materials, minimizing waste, and supporting local suppliers who will incur a smaller footprint on transportation emissions are all solutions.

However, the Indian retail industry has the scope to look towards the future as an industry that embraces these innovations as well as adapts to new technologies since it can not just meet the evolving needs of its customers, but also lead the way in retail innovation. It will enable a proactive approach to the shopping experience and general growth and success of the retail sector.

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