

# Market segmentation Case study

GITHUB LINK- <https://github.com/shreyasatpute/Market-Segmentation.git>

Market segmentation is a strategic marketing approach involving the division of a large target market into smaller, more distinct segments based on specific criteria or characteristics. This segmentation enables businesses to customize their marketing strategies, products, and services to better meet the unique needs and preferences of each segment. Common segmentation criteria include demographics, psychographics, geography, behavior, benefits sought, usage patterns, occasion-based factors, and considerations specific to business-to-business (B2B) interactions. By adopting this approach, businesses can create highly targeted marketing campaigns, develop products that align precisely with customer demands, and optimize resource allocation. Ultimately, effective market segmentation can lead to increased sales and heightened customer satisfaction.

## **Deciding (not) to Segment**

Deciding not to segment in market segmentation means that a business chooses not to divide its target market into smaller, distinct segments and instead treats the entire market as a single entity. In this approach, the company assumes that all customers have similar needs, preferences, and behaviors, and it develops a uniform marketing strategy and product/service offering for the entire market.

This strategy can be appropriate in some cases when the market is relatively homogenous, and there are no significant differences among customers. However, it has limitations, such as:

By not recognizing potential differences among customers, the company may miss opportunities to better meet the specific needs of certain customer groups and, as a result, may lose out on potential sales and market share.

Without segmentation, marketing resources may be inefficiently distributed, as the company may invest in marketing channels, messages, or products that don't resonate with all customers.

A one-size-fits-all approach may result in less personalized and less engaging marketing campaigns, which can lead to lower customer satisfaction and loyalty.

Competitors who engage in effective segmentation and target specific customer groups may gain a competitive advantage by offering tailored solutions and marketing messages.

While there are situations where not segmenting the market may be suitable, it's essential for businesses to carefully evaluate whether this approach aligns with the actual characteristics of

their customer base and market dynamics. In many cases, effective market segmentation can lead to more efficient resource allocation and improved customer satisfaction.

### **Specifying the Ideal Target Segment**

Specifying the ideal target segment in market segmentation involves identifying and focusing on a particular subset of customers within the segmented groups. This subset represents the most promising and profitable customer base for a business. By honing in on the ideal target segment, a company can allocate resources efficiently and tailor its marketing strategies and product offerings to maximize appeal and engagement with these specific customers, ultimately leading to higher sales and greater success.

### **Collecting Data**

Collecting data in market segmentation is the process of gathering information about potential customers within various segments. This data can include demographic details, psychographic profiles, behavioral patterns, geographic location, and other relevant characteristics. This information is crucial for businesses to effectively define and understand their target segments, allowing them to tailor marketing strategies, products, and services to meet the specific needs and preferences of each group. Data collection methods may involve surveys, interviews, data analysis, and market research to ensure accurate and actionable insights for segmentation purposes.

### **Exploring Data**

Exploring data in market segmentation involves analyzing the collected information to gain deeper insights into the characteristics and behaviors of different customer segments. This process allows businesses to identify patterns, trends, and key factors that influence customer preferences and purchasing decisions within each segment. By exploring data, companies can refine their understanding of their target audience, refine their marketing strategies, and make more informed decisions on product development and resource allocation. It's an essential step in the market segmentation process that helps businesses optimize their efforts to better serve their customers and achieve their marketing goals.

### **Principal Component Analysis**

PCA stands for Principal Component Analysis, which is a dimensionality reduction technique commonly used in data analysis and machine learning. It is used to simplify complex datasets while retaining as much of the essential information as possible. PCA achieves this by transforming the original variables (features) into a new set of variables called principal components, which are linear combinations of the original features.

**Data Standardization:** Before performing PCA, it's common practice to standardize the data by subtracting the mean and dividing by the standard deviation for each feature. This ensures that all features have the same scale.

**Covariance Matrix:** PCA calculates the covariance matrix of the standardized data. The covariance matrix describes the relationships and variances between pairs of features.

**Eigendecomposition:** PCA then performs an eigendecomposition or singular value decomposition (SVD) on the covariance matrix to obtain the eigenvalues and eigenvectors. The eigenvalues represent the amount of variance explained by each principal component, while the eigenvectors represent the directions (combinations of original features) of the principal components.

**Selecting Principal Components:** The principal components are ranked in descending order of their corresponding eigenvalues. Typically, you choose a subset of the top principal components that explain most of the variance in the data. This reduces the dimensionality of the dataset while preserving the most important information.

**Dimension Reduction:** The original data is projected onto the selected principal components, creating a lower-dimensional representation of the data. This reduced-dimension dataset can be used for various purposes, such as visualization, clustering, or feeding into machine learning algorithms.

PCA is often used in data preprocessing to reduce the computational complexity of models, remove noise from data, or aid in data visualization. It's particularly useful when dealing with high-dimensional datasets, as it can help identify the most significant features and eliminate redundant or less informative ones.

## Extracting Segments

Extracting segments in market segmentation involves the process of identifying, defining, and isolating distinct customer groups within a broader target market.

**Data Collection:** Start by gathering relevant data about your customer base or market, including demographic information, behavioral data, psychographic details, geographic location, and any other relevant criteria. The data can be collected through surveys, interviews, data sources, or market research.

**Data Analysis:** Analyze the collected data to identify patterns, trends, and characteristics that differentiate various groups of customers. You can use statistical techniques, data visualization tools, and exploratory data analysis to gain insights into your market.

**Segmentation Criteria:** Determine the criteria you will use to divide the market into segments. These criteria could be demographic (e.g., age, gender), psychographic (e.g., lifestyle, values), behavioral (e.g., buying habits, brand loyalty), geographic (e.g., location), or a combination of these factors.

**Segmentation Process:** Apply the chosen criteria to the data to group customers into segments. Depending on the complexity of the data and the criteria, you can use clustering algorithms, statistical methods, or even manual segmentation.

**Segment Validation:** Assess the validity and relevance of the segments. Ensure that each segment is distinct, sizable, and accessible. In other words, each segment should represent a meaningful and profitable portion of the market.

**Segment Profiles:** Create detailed profiles for each segment, describing their characteristics, needs, preferences, and behaviors. This step helps in understanding and targeting each segment effectively.

**Tailored Marketing Strategies:** Develop marketing strategies, product/service offerings, and communication tactics tailored to each segment's unique characteristics and needs. The goal is to deliver value and resonate with each segment more effectively.

**Implementation:** Implement your marketing strategies and initiatives for each segment, considering the specific channels, messaging, and promotional tactics that work best for each group.

**Monitoring and Adaptation:** Continuously monitor the performance of your segmentation strategy. Gather feedback, track changes in the market, and be prepared to adapt your segmentation and marketing efforts as needed to stay relevant and responsive to customer preferences.

Extracting segments in market segmentation is a dynamic process that involves both data-driven analysis and strategic decision-making. It helps businesses target their efforts more effectively, improve customer satisfaction, and enhance their competitive advantage in the marketplace.

## K-means Clustering

K-means clustering is a popular unsupervised machine learning algorithm used for clustering or grouping similar data points together in a dataset. It's commonly used in data analysis, pattern recognition, and data mining tasks. The algorithm aims to partition a set of data points into K clusters, where each data point belongs to the cluster with the nearest mean (centroid).

**Initialization:** Start by randomly selecting K initial cluster centroids. These centroids represent the initial cluster centers.

**Assignment:** Assign each data point in the dataset to the cluster whose centroid is closest to it. This is typically done using a distance metric, commonly the Euclidean distance.

**Update:** Recalculate the centroids of the clusters based on the data points assigned to each cluster. The new centroid for each cluster is the mean of all the data points in that cluster.

**Repeat:** Steps 2 and 3 are repeated iteratively until convergence. Convergence occurs when the centroids no longer change significantly or when a specified number of iterations is reached.

**Output:** The final output of the K-means algorithm is a set of K clusters, with each data point belonging to one of these clusters.

Key considerations and variations of K-means clustering:

**Choosing K:** Determining the appropriate number of clusters, K, can be challenging. Various techniques, such as the elbow method or silhouette analysis, can help you select an optimal K value.

**Initialization:** The initial selection of centroids can impact the final clustering results. Different initialization methods, such as random initialization or K-means++ (a more sophisticated method), can be used.

**Sensitivity to Initial Conditions:** K-means is sensitive to initial centroids, and it can converge to suboptimal solutions. Running the algorithm multiple times with different initializations and selecting the best result can mitigate this issue.

**Scalability:** K-means may not perform well on large datasets, as it requires calculating distances between data points and centroids. Scalability can be improved using variations like Mini-Batch K-means.

**Cluster Shape:** K-means assumes that clusters are spherical and equally sized, which may not be suitable for all types of data. For non-spherical or unevenly sized clusters, other clustering algorithms like DBSCAN or hierarchical clustering may be more appropriate.

K-means clustering is a powerful and widely used tool for exploratory data analysis and pattern recognition, but its effectiveness depends on appropriate parameter selection and an understanding of its assumptions and limitations.

## Describing Segments

Describing segments in market segmentation involves creating detailed and meaningful profiles for each identified segment. These descriptions should provide a comprehensive understanding of the characteristics, needs, preferences, and behaviors of the individuals or groups within each segment. Here's how to describe segments effectively:

**Segment Name or Identifier:** Assign a clear and memorable name or identifier to each segment. This helps in easy reference and communication within the organization.

**Demographic Characteristics:** Include demographic information such as age, gender, income, education level, marital status, and occupation that are relevant to the segment. These factors provide a foundational understanding of the segment's composition.

**Psychographic Traits:** Describe the psychographic attributes of the segment. This includes lifestyle, values, interests, hobbies, attitudes, and motivations. Psychographic information helps you understand the segment's beliefs and aspirations.

**Behavioral Patterns:** Detail the behaviors of the segment, including buying habits, product usage, brand loyalty, and decision-making processes. Understanding how the segment interacts with products and services is crucial.

**Geographic Location:** If geographic location is a significant factor, specify the regions, cities, or areas where the segment is concentrated. This is particularly important for businesses with location-based offerings.

**Needs and Pain Points:** Identify the specific needs, challenges, and pain points that the segment faces. This information helps tailor products and services to address these issues effectively.

**Purchase Triggers:** Determine what factors influence the segment's purchasing decisions. Are they motivated by price, quality, convenience, brand reputation, or other factors? Understanding these triggers helps in marketing and product development.

**Communication Preferences:** Describe how the segment prefers to receive information and engage with brands. Some segments may prefer social media, while others may respond better to traditional advertising or email marketing.

**Media Consumption:** Detail the media channels and sources that the segment uses to gather information. This can include television, online platforms, magazines, blogs, or influencers. It's essential for planning advertising and promotional strategies.

**Segment Size and Growth Potential:** Estimate the size of the segment and its growth potential. Understanding the segment's market share and future prospects helps in resource allocation and long-term planning.

**Competitive Landscape:** Analyze the competition within each segment. Who are the key competitors targeting this segment, and what strategies are they employing? This information helps in differentiating your offerings.

**Segment Prioritization:** Based on the segment's attractiveness, size, and alignment with your business objectives, prioritize segments for targeting and resource allocation.

**Visual Representation:** Consider using visual aids like diagrams, charts, or profiles to present segment descriptions in a clear and concise manner.

**Continuous Monitoring:** Segments are not static; they can evolve over time. Continuously monitor and update segment descriptions to stay aligned with changing market dynamics.

Remember that the level of detail in segment descriptions may vary depending on the specific needs of your business and the complexity of your market. Effective segment descriptions serve as a foundation for developing targeted marketing strategies, designing products or services, and making informed business decisions.

## Using Boxplot

A boxplot, also known as a box-and-whisker plot, is a graphical representation used for visualizing the distribution, central tendency, and spread of a dataset, particularly when dealing with continuous or numerical data. Boxplots are helpful in understanding the shape of the data, identifying potential outliers, and comparing the distributions of different groups or segments. Boxplots are a valuable tool for summarizing and visualizing the distribution of numerical data, making them useful for segment analysis and other data exploration tasks. They provide insights into central tendency, spread, and potential outliers within datasets, helping you make informed decisions and identify trends or differences between segments.

## Using Mosaic Plot



A Mosaic Plot is a graphical representation used to describe and visualize relationships between categorical variables, particularly in the context of market segmentation or survey data. It allows you to display the distribution and associations between multiple categorical variables in a two-dimensional format, making it easier to understand how different segments are related.

Mosaic Plot is a useful tool for describing and exploring segments within your data by visually representing the relationships between multiple categorical variables. It can help you identify patterns, differences, and associations between segments, enabling more targeted marketing strategies and informed decision-making.

## Selecting Target Segments

Selecting target segments in market segmentation is a critical step in designing an effective marketing strategy. The goal is to identify and prioritize the segments that are most likely to respond positively to your products or services. Here's a step-by-step process for selecting target segments:

**Segment Evaluation:** Review the segments created during the segmentation process. These segments should be distinct, measurable, and relevant to your business objectives.

**Segment Attractiveness:** Assess the attractiveness of each segment based on various factors, including:

**Size:** Consider the size of the segment. Larger segments offer more potential customers, but smaller niches can sometimes be more profitable.

**Growth:** Evaluate the growth potential of each segment. Are the segments expanding or declining? A growing segment may offer more opportunities.

**Profitability:** Analyze the potential profitability of each segment. Are customers in a particular segment willing to pay more for your product or service?

**Competitive Intensity:** Consider the level of competition in each segment. A less competitive segment might be easier to penetrate.

**Alignment with Business Objectives:** Ensure that the selected segments align with your business goals and objectives. For example, if your goal is rapid growth, you might prioritize segments with high growth potential.

**Segment Accessibility:** Evaluate how easy it is to reach and communicate with each segment. Are the individuals in the segment reachable through your marketing channels?

**Compatibility with Your Offering:** Assess how well your products or services fit the needs and preferences of each segment. Prioritize segments that have a natural affinity for what you offer.

**Resource Considerations:** Consider the resources required to target and serve each segment effectively. This includes marketing budgets, product development costs, and distribution logistics.

**Testing and Validation:** If possible, conduct pilot campaigns or market tests to validate the potential of selected segments. This can help refine your targeting strategy before a full-scale rollout.

**Segment Ranking:** Based on your evaluation criteria, rank the segments in order of priority. Identify the segments that offer the best balance of attractiveness and alignment with your business goals.

**Target Market Selection:** Decide which segments to target as your primary and secondary markets. Your primary target segment should receive the most significant share of your marketing resources and attention.

**Tailored Marketing Strategies:** Develop customized marketing strategies and messaging for each target segment. Tailor your product positioning, pricing, promotion, and distribution to align with the specific needs and preferences of each segment.

**Implementation:** Execute your marketing initiatives, keeping a keen focus on the selected target segments. Monitor and measure the performance of your campaigns within each segment to ensure they are delivering the desired results.

**Continuous Evaluation:** Market conditions change, and segments may evolve. Continuously monitor the performance of your chosen segments and be prepared to adjust your targeting strategy as needed.

## Customising the marketing mix

Customizing the marketing mix, often referred to as the "4Ps" (Product, Price, Place, and Promotion), involves tailoring these elements to meet the specific needs and preferences of a particular target market or segment. This approach allows businesses to optimize their marketing strategies and offerings for different customer groups. Here's how to customize the marketing mix:

### Product Customization:

**Product Features:** Adapt the product or service features to align with the preferences and requirements of the target market. Consider factors like size, color, design, and functionality.

**Packaging:** Customize packaging to appeal to the target market. Packaging design and materials can convey quality and value.

**Branding:** Develop branding strategies that resonate with the target market's values, lifestyle, and aspirations.

**Product Variations:** If feasible, create product variations or product lines specifically tailored to different market segments.

### Price Customization:

**Pricing Strategy:** Set prices based on the perceived value to the target market. Different segments may be willing to pay different price points.

**Discounts and Promotions:** Customize discounts, promotions, and pricing structures to match the preferences and purchasing behaviors of each segment.

**Pricing Models:** Consider alternative pricing models, such as subscription-based pricing or tiered pricing, depending on the segment's preferences.

### Place (Distribution) Customization:

**Distribution Channels:** Select distribution channels that are convenient and accessible to the target market. This might include online sales, brick-and-mortar stores, or specialized retailers.

**Geographic Coverage:** Focus distribution efforts in regions or locations where the target market is concentrated.

**Supply Chain Efficiency:** Streamline the supply chain to meet the unique demands of each segment, ensuring timely delivery and availability.



**Promotion Customization:**

**Advertising and Messaging:** Tailor advertising campaigns and messaging to resonate with the values, interests, and communication preferences of the target market.

**Marketing Channels:** Choose marketing channels that are most effective for reaching each segment. This may include social media, email marketing, content marketing, or traditional advertising.

**Promotional Tactics:** Customize promotional tactics, such as events, sponsorships, or partnerships, to align with the interests of the segment.

**Additional Ps (if applicable):**

Depending on your industry and specific business, you may also consider customizing other elements of the marketing mix. For example, in the service industry, you might customize the "People" and "Process" aspects to enhance the customer experience.

**Market Research and Feedback:**

Continuously gather data and feedback from each target segment to refine your customization efforts. Monitor market trends and segment preferences to stay relevant.

**Testing and Validation:**

Conduct pilot campaigns or market tests to validate the effectiveness of customized marketing strategies before scaling up.

**Resource Allocation:**

Allocate resources (budget, personnel, time) based on the potential and importance of each target segment. Focus more resources on high-potential segments.

**Continuous Evaluation and Adaptation:**

Regularly assess the performance of your customized marketing mix strategies and make adjustments as needed to remain competitive and meet changing customer demands.

Customizing the marketing mix requires a deep understanding of your target segments and a commitment to ongoing refinement. By tailoring your product, pricing, distribution, and promotional strategies to the unique characteristics of each segment, you can enhance customer satisfaction and increase the effectiveness of your marketing efforts.

**Evaluation and Monitoring**

Evaluation and monitoring are essential processes in the realm of marketing and business strategy. These processes help ensure that your strategies are effective, goals are being met, and necessary adjustments are made to improve performance. Here's an overview of evaluation and monitoring in the context of marketing and business: Evaluation and monitoring are ongoing processes that help you stay responsive to market changes, customer preferences, and emerging opportunities. By regularly assessing your performance and making data-driven decisions, you can refine your strategies and increase your chances of achieving your business objectives.