

# Market Segmentation Analysis

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## 1 Introduction

Market segmentation analysis is a powerful tool that helps businesses targets their marketing efforts more effectively and efficiently. By dividing a market into distinct groups with similar needs, preferences, and characteristics, businesses can tailor their products, services, and marketing strategies to better meet the needs of these groups. In this guide, we will discuss the various aspects of market segmentation analysis, including its purpose, benefits, and challenges, as well as the steps involved in conducting a successful analysis.

### 1.1 Aim of Market Segmentation

Market segmentation is a key marketing strategy that allows businesses to better understand and cater to their target audience. By dividing the market into smaller segments, businesses can:

- Market segmentation helps businesses identify and understand their target customers more effectively.
- Segmentation allows businesses to tailor their marketing efforts and messages to different customer segments.
- Market segmentation helps businesses allocate their resources more efficiently.
- Segmentation allows businesses to better meet the needs and preferences of their customers.
- Market segmentation can provide businesses with a competitive edge. By identifying and targeting niche segments that may be overlooked by competitors, businesses can position themselves as specialists in catering to the unique needs of these segments.
- Segmentation insights can be invaluable for product development and innovation.

### 1.2 Benefits of Market Segmentation

Market segmentation offers several benefits for businesses. Here are some key benefits of market segmentation:

- Market segmentation allows businesses to tailor their marketing efforts to specific customer segments.
- By segmenting the market and understanding the specific needs of different customer groups, businesses can develop products and services that better meet customer expectations.
- Market segmentation helps businesses optimize their resource allocation. Instead of deploying resources indiscriminately across the entire market, segmentation allows businesses to identify the most profitable or promising segments to focus their efforts on.
- Market segmentation can provide businesses with a competitive edge by identifying niche segments that may be underserved or overlooked by competitors.
- Segmentation insights can inform product development and innovation. By understanding the preferences, behaviors, and pain points of different customer segments, businesses can identify opportunities for new product development or product enhancements.
- Market segmentation can guide businesses when expanding into new markets or segments.

### 1.3 Steps in Market Segmentation Analysis

Conducting a successful market segmentation analysis involves several key steps. In next few sections, we will discuss about 9 steps in detail, providing practical guidance for businesses looking to undertake a segmentation analysis.

## 2 Step 1: Deciding (not) to Segment

### 2.1 Implications of Committing to Market Segmentation

Before investing time and resources in a market segmentation analysis, it is important to understand the implications of pursuing a market segmentation strategy.

- The organization needs to commit to the segmentation strategy in the long term.
- It is dependent on the organization's willingness and ability to make significant changes and investments.
- It involves costs such as research, surveys, focus groups, packaging design, and advertising.
- Potential changes include developing new products, modifying existing products, adjusting pricing and distribution channels, and improving communication with the market.
- Strategic business units focusing on segments offer a suitable organizational structure.

For significant implications of a long-term commitment, the decision to explore market segmentation should be made at the highest executive level, and should be systematically communicated and reinforced at all organizational levels and units.

### 2.2 Implementation Barriers

Some barriers that can impede the successful roll-out of a market segmentation strategy, are following

- The first group of barriers involves senior management, including a lack of leadership, commitment, and involvement in the segmentation process.
- Insufficient allocation of resources by senior management is another barrier.
- The second group of barriers relates to organizational culture, such as a lack of market orientation, resistance to change, poor communication, and short-term thinking.
- Lack of training and a qualified marketing expert can hinder successful implementation.
- Objective restrictions, such as limited financial resources or inability to make required structural changes, can pose additional obstacles.
- Process-related barriers include unclear objectives, lack of planning or structured processes, and time pressure. At an operational level, the challenge lies in making market segmentation analysis easy to understand and presenting results in a manager-friendly way.
- Identifying and proactively removing barriers is crucial, and if barriers cannot be overcome, considering the option of abandoning market segmentation as a strategy may be necessary.
- Successful implementation requires a resolute sense of purpose, dedication, patience, and an understanding of the challenges that may arise.

## 3 Step 2: Identifying the Ideal Target Segment

Once a business has decided to pursue market segmentation, the next step is to identify the ideal target segments. This involves determining the key criteria that will be used to evaluate potential market segments.

### 3.1 Knock-Out Criteria

Knock-out criteria are essential, non-negotiable features that a market segment must possess in order to be considered for targeting. Examples of knock-out criteria include:

- **Homogeneity:** Members of the segment must be similar to one another in terms of their needs, preferences, and characteristics.
- **Distinctness:** Segments must be distinctly different from one another.
- **Size:** The segment must be large enough to warrant the investment in targeting it.

### 3.2 Attractiveness Criteria

Attractiveness criteria are used to evaluate the relative desirability of potential market segments. Examples of attractiveness criteria include:

- **Growth Potential:** The segment should show potential for growth in terms of sales and profitability.
- **Competitive Advantage:** The business should have a competitive advantage in serving the segment, such as unique products or services, or a strong brand presence.

### 3.3 Implementing a Structured Process

According to the segmentation literature, it is advantageous to evaluate market segments using an organised process. The segment evaluation plot, which displays segment attractiveness along one axis and organisational competitiveness on the other, is the most widely used structured approach. The segmentation team, which must discuss and agree upon criteria that compose both segment attractiveness and organisational competitiveness, determines the segment attractiveness and organisational competitiveness values. The market segmentation team should have a list of around six segment attractiveness criteria at the conclusion of the process, each with a weight assigned to it to indicate how significant it is to the company.

## 4 Step 3: Collecting Data

The success of a market segmentation analysis relies heavily on the quality of the data used. Businesses must carefully consider the types of data they will use, as well as the methods for collecting and analysing this data. Some possible sources of data for market segmentation analysis include:

### 4.1 Survey Data

Surveys are a common source of data for market segmentation analyses. However, survey data can be subject to biases and inaccuracies, so it's important to carefully design and administer surveys to minimize these issues.

### 4.2 Internal Data

Businesses may have access to internal data sources, such as customer purchase histories or loyalty program data that can be used for segmentation analysis. This data is often more reliable than survey data, as it is based on actual customer behaviour.

### 4.3 Experimental Data

Data from experimental studies, such as choice experiments or conjoint analyses, can also be used for market segmentation analysis. This type of data can provide valuable insights into customer preferences and decision-making processes.

## 5 Step 4: Exploring Data

### 5.1 A First Glimpse at the Data

- Before starting data analysis, it is important to clean the data by checking for correct values and consistent labels for categorical variables.
- Implausible values should be identified and corrected, indicating errors during data collection or entry.
- Categorical variables should contain only permissible values, and any other values need to be corrected during data cleaning.
- In the Australian travel motives data set, variables like Gender and Age do not require cleaning.
- The variable Income2 in the data set has categories that are not sorted in order due to how data is read into R.
- Categorical variables are stored as factors in R, and their levels are sorted alphabetically by default.
- The income variable categories can be re-ordered by creating a helper variable, storing its levels, finding the correct order, and converting it into an ordered factor in R.

## 5.2 Data Cleaning

- Understanding the data is crucial to avoid misinterpreting complex analysis results.
- Descriptive numeric and graphic representations provide insights into the data.
- The "summary()" command in R provides a numeric summary for numeric variables and frequency counts for categorical variables, including the number of missing values.
- Histograms, boxplots, scatter plots, and bar plots are useful graphical methods for analyzing data.
- Histograms visualize the distribution of numeric variables.

## 5.3 Descriptive Analysis and Data Preprocessing

- Histograms, boxplots, and scatter plots are useful graphical methods for analyzing numeric data.
- Bar plots and mosaic plots are helpful for visualizing categorical variables.
- Histograms visualize the distribution of numeric variables by creating bins and displaying the frequency of observations in each bin.
- Boxplots summarize unimodal distributions by compressing data into minimum, first quartile, median, third quartile, and maximum values.
- Boxplots can reveal distributional properties like skewness and the presence of outliers.
- Graphical methods provide a quick and intuitive overview of the data's structure.
- Dot charts can represent the percentage of agreement with different variables, offering insights into the heterogeneity of responses.
- Graphical inspection confirms the suitability of variables for segmentation analysis in market research.

## 5.4 Principle Component Analysis

- Principal components analysis (PCA) transforms a multivariate data set into a new data set of uncorrelated variables called principal components.
- Principal components are ordered by importance, with the first component containing the most variability.
- PCA preserves the relative positions of observations while changing the perspective of the data.
- PCA is based on the covariance or correlation matrix of numeric variables.
- If variables are measured on the same scale and have similar ranges, the covariance matrix can be used. Otherwise, the correlation matrix should be used.
- PCA is often used to reduce the dimensionality of high-dimensional data for visualization purposes.
- The first few principal components, which capture the most variation, are typically used for plotting.
- Scatter plots and scatter plot matrices can be used to visualize principal components.

## 5.5 Interpreting Principle Component Analysis Results

- The output of PCA provides information about each principal component, including the standard deviation, proportion of explained variance, and cumulative proportion of explained variance.
- Principal component 1 explains approximately 18% of the variance in the original data, while principal component 2 explains about 9%.
- Together, the first two principal components explain 27% of the total variation in the original data.
- Principal components 3 to 15 explain smaller proportions of the original variation, ranging from 8% to 3%.
- The low proportion of variance explained by the first few principal components suggests that all the original variables are necessary for segmentation, as they provide valuable information and are not redundant.

- From a projection perspective, this means that it is not easy to represent the data in lower dimensions if only a small number of principal components explain a significant proportion of the variance.
- Using more principal components can provide a better visual representation of the proximity of observations to each other.

## 6 Step 5: Extracting Segments

### 6.1 Grouping Consumers

- Market segmentation analysis using data-driven methods can be challenging due to the unstructured nature of consumer data and the lack of clear consumer groups. The results of segmentation methods heavily rely on the assumptions made about the structure of segments and the interaction between the data and the chosen algorithm. Different clustering methods, commonly used for segmentation, can yield different segmentation solutions. For example, k-means cluster analysis may fail to identify complex patterns in the data, while single linkage hierarchical clustering can capture such patterns. However, there is no single best algorithm for all situations, and the choice of algorithm depends on the characteristics of the data and the desired segment characteristics.
- The chapter aims to provide an overview of popular extraction methods for market segmentation. Distance-based methods focus on finding groups of similar observations based on a distance measure, while model-based methods formulate stochastic models for segments. Additionally, some methods incorporate variable selection during segmentation. Comparing alternative segmentation solutions is crucial, considering data characteristics, expected segment characteristics, sample size, and the scale level of variables. Distance measures such as Euclidean and Manhattan are commonly used.
- Hierarchical clustering methods mimic how humans would approach dividing observations into groups. Divisive hierarchical methods start with the complete data set and split it into segments iteratively, while agglomerative methods merge the closest segments until one large segment is formed. The hierarchical clustering process results in a sequence of nested partitions.
- While deterministic algorithms are commonly used for hierarchical clustering, the specific algorithm choice depends on the requirements of the analysis.

### 6.2 K-Mean and Centroid Clustering

- The goal of partitioning clustering is to divide observations (consumers) into subsets (market segments) that are similar within each segment and dissimilar between segments.
- The centroid represents a market segment and is calculated as the column-wise mean values across all members of the segment.
- The partitioning algorithm involves five steps: specifying the desired number of segments, randomly selecting initial cluster centroids, assigning observations to the closest centroid, recomputing centroids based on cluster membership, and repeating until convergence or a maximum number of iterations.
- The algorithm always converges but may take longer for large data sets or a large number of segments.
- Different random initial centroids lead to different segmentation solutions, so repetition is important for obtaining the best segmentation solution.
- Determining the optimal number of segments is a challenge, and stability analysis or indices can assist in selecting the appropriate number.
- Partitioning clustering requires specifying the number of segments in advance.
- Distance measures, such as squared Euclidean distance, Manhattan distance, or angle difference, significantly impact the resulting segmentation solution, often more than the choice of algorithm.
- The choice of distance measure influences the shape and orientation of cluster borders in the resulting partitions.

## 7 Step 6: Profiling Segments

Profiling segments is a crucial step in market segmentation analysis that involves thoroughly understanding and describing each segment based on various attributes and characteristics. Here's a detailed description of the steps involved in profiling segments:

### 7.1 Review Segmentation Criteria

Start by revisiting the segmentation criteria used to create the segments. Understand the basis on which the segments were formed, such as demographic, psychographic, behavioural, or geographic factors. This helps in focusing the profiling process on relevant attributes.

### 7.2 Collect and Analyse Data

Gather data on each segment from various sources, such as market research surveys, customer databases, or external data providers. This data should cover the attributes identified as relevant for segmentation. Clean and pre-process the data to ensure its accuracy and consistency.

### 7.3 Identify Key Variables

Determine the key variables or attributes that distinguish each segment from the others. These variables could include demographic factors (age, gender, income), psychographic traits (values, interests), behavioural patterns (purchase behaviour, brand loyalty), or any other factors specific to your market.

### 7.4 Quantitative Analysis

Conduct quantitative analysis to understand the distribution and characteristics of each segment. Calculate descriptive statistics, such as means, medians, or proportions, for relevant variables within each segment. Compare these statistics across segments to identify significant differences.

### 7.5 Qualitative Analysis

Dive deeper into the qualitative aspects of each segment. This may involve conducting focus groups, interviews, or surveys specifically targeted at the identified segments. Gain insights into their preferences, motivations, needs, and pain points through qualitative data analysis techniques.

### 7.6 Visualize Segment Profiles

Use data visualization techniques to present the segment profiles effectively. Create charts, graphs, or infographics to depict the characteristics of each segment visually. This aids in summarizing and communicating the key findings to stakeholders.

### 7.7 Describe Segment Characteristics

Develop a comprehensive description of each segment based on the analysed data. Describe their demographic composition, psychographic traits, behavioural patterns, and any other relevant attributes. Highlight the similarities and differences between segments to provide a clear understanding of their distinct characteristics.

### 7.8 Provide Insights and Recommendations

Along with describing the segments, offer insights and recommendations based on the profiling analysis. Identify the opportunities and challenges associated with each segment. Suggest marketing strategies, product customization, messaging, or positioning strategies that align with the unique needs and preferences of each segment.

### 7.9 Refine and Iterate

Continuously refine the segment profiles based on new data, insights, or market changes. Segmentation analysis is an on-going process, and updating the profiles as new information becomes available ensures their relevance and accuracy over time.

Profiling segments in market segmentation analysis allows you to gain a deep understanding of the different customer segments, their characteristics, and their specific needs and preferences. This knowledge forms the

foundation for developing targeted marketing strategies and delivering personalized experiences to each segment, ultimately leading to improved customer satisfaction and business success.

## **8 Step 7:Describing Segments**

Describing segments in market segmentation analysis involves effectively communicating the key characteristics and attributes of each segment. Here are the steps involved in describing segments:

### **8.1 Segment Overview**

Begin by providing a high-level overview of the segments. Introduce the segments and briefly describe their distinguishing features, such as demographic, psychographic, or behavioural characteristics. This sets the context for the subsequent detailed descriptions.

### **8.2 Demographic Description**

Describe the demographic profile of each segment. This includes age, gender, income level, education, occupation, and geographic location. Provide statistical information, such as average age, income range, or predominant locations, to paint a clear picture of the segment's composition.

### **8.3 Psychographic Description**

Dive into the psychographic aspects of each segment. Explain their values, attitudes, interests, and lifestyle preferences. Highlight the psychographic traits that differentiate one segment from another. For example, one segment might prioritize sustainability and eco-friendly products, while another might value luxury and status.

### **8.4 Behavioural Description**

Discuss the behavioural patterns and tendencies of each segment. Explore their purchasing behaviour, brand loyalty, frequency of purchase, product usage, and any other relevant behavioural attributes. Highlight distinctive behavioural characteristics that set each segment apart.

### **8.5 Needs and Preferences**

Detail the specific needs, desires, and preferences of each segment. Identify their pain points, challenges, and aspirations. Explain the motivations and drivers behind their purchasing decisions. Highlight the key product or service attributes that are most important to each segment.

### **8.6 Communication Channels**

Describe the preferred communication channels and touch points for each segment. Identify the platforms, media, or channels through which they are most likely to engage with marketing messages. This information helps in crafting effective communication and promotional strategies.

### **8.7 Competitive Analysis**

Discuss how each segment interacts with competitors in the market. Analyse their awareness of competitors, their consideration of alternative options, and their loyalty towards specific brands. Highlight any competitive advantages or vulnerabilities within each segment.

### **8.8 Key Insights and Opportunities**

Summarize the key insights derived from the segment descriptions. Identify the opportunities and growth potential associated with each segment. Highlight any untapped market segments or unmet needs that present opportunities for market expansion or product development.

### **8.9 Visualization and Presentation**

Present the segment descriptions in a visually appealing and concise manner. Utilize charts, graphs, or infographics to summarize the key characteristics of each segment. Use clear and concise language to convey the segment attributes and insights effectively.

## 8.10 Regular Updates

Remember that market dynamics and consumer behaviours can change over time. Regularly review and update the segment descriptions to ensure their relevance and accuracy. Stay informed about evolving trends and customer preferences to refine and enhance the segment descriptions as needed.

By describing the segments in market segmentation analysis, you provide a comprehensive understanding of their distinct characteristics, enabling stakeholders to tailor marketing strategies, product offerings, and customer experiences to effectively target and engage each segment.

## 9 Step 8: Selecting the Target Segment(s)

### 9.1 The Targeting Decision

Market segmentation is a strategic marketing tool, and the selection of one or more target segments is a long-term decision that affects the future performance of an organisation. Knock-out criteria for market segments are agreed upon, and segment attractiveness criteria are selected and weighed to reflect the relative importance of each of the criteria to the organisation. Step 8 of a market segmentation analysis is to ensure that all market segments have passed the knock-out criteria test. To evaluate the attractiveness of the remaining segments, the segmentation team must ask two broad categories: which market segments the organisation would like to target and commit to, and which organisations offering the same product would each of the segments most like to buy from. Answering these two questions forms the basis of the target segment decision.

### 9.2 Market Segment Evaluation

Decision matrices are used to visualise relative segment attractiveness and relative organisational competitiveness for each market segment. The two criteria plotted along the axes cover two dimensions: segment attractiveness and relative organisational competitiveness. There is no single best measure of segment attractiveness or relative organisational competitiveness. The market segmentation team needs to assign a value for each attractiveness criterion to each market segment to determine its overall attractiveness. Consumers use five criteria to select between alternative offers in the market, such as attractiveness of the product, price, distribution channels, and brand image. The value of each segment on the axis labelled How attractive are we to the segment? is calculated in the same way as the value for the attractiveness of each segment from the organisational perspective.

## 10 Step 9: Customising the Marketing Mix

### 10.1 Implications for Marketing Mix Decisions

Marketing was originally seen as a toolbox to help sell products. Borden (1964) proposed the 4Ps: Product, Price, Promotion and Place. Market segmentation is part of the segmentation-targeting- positioning (STP) approach, which is a sequential process that starts with market segmentation, targeting, and positioning. It is important to move back and forward from the segmentation to the targeting step before making a long-term commitment to one or a small number of target segments. The 4Ps model of the marketing mix is used to customise the marketing mix to the target segment. This can involve the design of new products, changes to prices or discount structures, the selection of suitable distribution channels, and the development of new communication messages and promotion strategies. Market segmentation analysis is not conducted in view of one of the 4Ps, but rather, insights gained from the detailed description of the target segment guide the organisation in how to develop or adjust the marketing mix to best cater for the target segment.

### 10.2 Product

The product dimension of the marketing mix involves specifying the product in view of customer needs. This includes naming the product, packaging it, offering or not offering warranties, and after sales support services. The Australian vacation activities data set provides an example of how product design or modification is driven by target segment selection. Possible product measures include developing a new product or making gardens at the destination an attraction in their own right.

### 10.3 Price

The most important details in this text are the steps used to customise the marketing mix. These steps include loading a bicluster solution, extracting rows and columns, creating a vector containing the segment membership



for each consumer, and tabulating the vector to obtain the number of consumers assigned to each segment and the number of consumers not assigned. The argument `exclude = NULL` ensures that NA values are included in the frequency table. A binary variable is created indicating if a consumer is assigned to segment 3 or not. The additional arguments specify that confidence intervals for the median estimates should be included, box widths should reflect group sizes, and the y-axis should be on the log scale.

## 10.4 Place

The key decision relating to the place dimension of the marketing mix is how to distribute the product to customers. A survey of members of segment 3 and a destination with a rich cultural heritage revealed that members of segment 3 book their accommodation online much more frequently than the average tourist. This information has implications for the place dimension of the marketing mix, as there must be an online booking option available for the hotel. It is also important to collect information about the booking of other products, services and activities by members of segment 3 to see if most of their booking activity occurs online or if it is limited to the accommodation.

## 10.5 Promotion

The most important details in this text are the promotion decisions that need to be made when designing a marketing mix. These include developing an advertising message that resonates with the target market, identifying the most effective way to communicate this message, public relations, personal selling.

## 11 Conclusion

In conclusion, market segmentation is an essential tool for understanding consumer behavior, identifying market opportunities, and developing effective marketing strategies. By implementing the nine steps outlined in this study, businesses can gain a competitive edge by delivering tailored offerings and establishing meaningful connections with their target market segments.

## 12 GitHub Links for Python Codes

1. Swarup Bej - <https://github.com/Bejswarup>
2. Snehil Gupta - <https://github.com/snehil943>
3. Bravin Bajaj - <https://github.com/bhavinbajaj/15bhavin>
4. Alwin K Antony - <https://github.com/alwin-k-antony/Market-Segmentation>