

Study Task

Market Segmentation Analysis

By

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“Market segmentation is a natural result of the vast differences
among people.”

— Donald Norman

1. Market Segmentation

As a marketing strategy, market segmentation is designed to help companies better market to groups that they will have the most success at meeting their needs. Market segmentation helps companies to create a market mix that allows them to target their marketing campaigns to audiences that are more likely to need their product and potentially find under-served segments to branch out to. By more narrowly targeting key markets, companies are able to be more efficient with their resources including money and time, when mounting campaigns to draw new customers.

Strategic and Tactical Marketing

For marketing, first we have to create a plan. There are basic two necessary plans for marketing which are **strategic** and a **tactical marketing plan**. The strategic plan outlines the long-term direction of an organisation, but does not provide much detail on short term marketing action required to move in this long-term direction. The tactical marketing plan does the opposite. It translates the long-term strategic plan into detailed instructions for short-term marketing action. The strategic marketing plan states where the organisation wants to go and why. The tactical marketing plan contains instructions on what needs to be done to get there.

A SWOT analysis explicitly states an organisation's **strengths (S)**, **weaknesses (W)**, **opportunities (O)** and **threats (T)**. Once we know organisational strengths, potential interference by external factors has been assessed, and

consumer needs and desires have been thoroughly investigated, two key decisions have to be made as part of the strategic marketing planning process for consumers to focus on **segmentation and targeting** and **positioning**. These decisions are critical because they determine the long-term direction of the organisation, and cannot easily be reversed. Tactical marketing planning usually covers a period of up to one year. It is traditionally seen to cover four areas: **Product, Price, Place** and **Promotion**. The tactical marketing plan depends entirely on the strategic marketing plan, but the strategic marketing plan does not depend on the tactical marketing plan.

Definitions of Market Segmentation

Market segmentation is the process of dividing prospective consumers into different groups depending on factors like demographics, behavior and various characteristics. Market segmentation helps companies better understand and market to specific groups of consumers that have similar interests, needs and habits.

In each market segment, there are typically three things that are common to all segments - **homogeneity, distinctiveness** and **reaction**. In each individual group, the potential customers are generally homogeneous meaning they are generally fairly similar in terms of their common needs. Additionally, the members of each individual grouping are distinct from the other groups or they are different in some ways than customers in other groupings. Lastly, consumers in each group have similar (or relatively similar) reactions to various marketing, advertising and products directed at their segment, and tend to perceive the full value of products differently than others in different groups.

The Benefits of Market Segmentation

Market segmentation has a number of benefits. At the most general level, market segmentation forces organisations to take stock of where they stand, and where they want to be in future. Market segmentation also leads to tangible benefits, including a better understanding of differences between consumers, which improves the match of organisational strengths and consumer needs.

A marketing mix developed to best reflect the needs of one or more segments is also likely to yield a higher return on investment because less of the effort that goes into the design of the marketing mix is wasted on consumers whose needs the organisation could never satisfy anyway. For small organisations, it may be essential for survival to focus on satisfying very distinct needs of a small group of consumers because they simply lack the financial resources to serve a larger market or multiple market segments.

The Costs of Market Segmentation

If a segmentation strategy is pursued, more human and financial resources are required to develop and implement a customised marketing mix. Market segmentation strategy, if used properly can benefit both the marketing organisations and the consumers. In the worst case, if market segmentation is not implemented well, the entire exercise is a waste of resources. Instead of leading to competitive advantage, a failed market segmentation strategy can lead to substantial expenses generating no additional return at all, instead disenfranchising staff involved in the segmentation exercise.

2. Market Segmentation Analysis

Market segmentation analysis is the process of grouping consumers into naturally existing or artificially created segments of consumers who share similar product preferences or characteristics.

Layers of Market Segmentation Analysis

There are three types of layers in market segmentation analysis. In the **First layer** the actual segment extraction takes place, the data needs to be explored to gain preliminary insight into the nature of the market segmentation. Finally, after **Second layer** consumers have been grouped into market segments, each of these segments needs to be profiled and described in detail. Profiling and describing segments help users. All these tasks are still primarily technical in nature. If all the tasks in the first (core) and second layer of market segmentation analysis have been implemented well, the result is a theoretically excellent market segmentation solution. Therefore, for any market segmentation analysis to be complete, This **Third layer** includes non technical tasks. These tasks represent organisational implementation issues, and do not sequentially follow the first and the second layer.

Approaches to Market Segmentation Analysis

There is no single standard approach that is best when conducting market segmentation analysis. Instead, approaches to market segmentation analysis can be systematised in a number of different ways. We present two systematics here, one uses as its basis the extent to which the organisation conducting the market segmentation study is willing or able to make changes to their current approach

of targeting the market or a segment of the market and has been proposed by Dibb and Simkin.

Based on Organisational Constraints

Market Segmentation Analysis has three approaches to market segmentation. Looking at each one of these approaches in more detail, In the first one **segment revolution or quantitative survey-based segmentation** approach tends to be seen as the prototypical market segmentation analysis. The key assumption underlying this approach is that the organisation conducting market segmentation analysis is willing and able to start from scratch, to forget entirely about how its marketing was conducted in the past, and commence the segmentation process with a genuinely open mind. Second one is the **existing consumer classifications** approach in that creating segments from currently targeted sectors and segments. This approach represents segment evolution rather than revolution. The benefit of this approach is that we already know our segments. The third approach is that of the **exploratory research** pointing segment. Under this approach, market segments are stumbled upon as part of an exploratory research process possibly being undertaken for a very different purpose initially.

Based on the Choice of (the) Segmentation Variable(s)

We know that there are not any standard segments for any industry. The nature of consumer characteristics used to extract market segments. Sometimes one single piece of information about consumers (one segmentation variable) is used (**Uni-dimensional**). Sometimes there will be multiple information about consumers (Multi-segmentation variables) that are used (**Multi-dimensional**).

For example in uni-dimensional we create segments depending on age groups, gender and country or state wise. In multi-dimensional we create segments on (ex.why did you want to go for vacations?) like to relax, explore new things, meet new people or get away from everyday routine.

Commonsense and **data-driven** segmentation are two extremes, the two pure forms of segmentation approaches based on the nature of the segmentation criterion. The term **commonsense segmentation** implies that users apply their common sense to choose their target segment. The aim of the segmentation analysis therefore is not to identify the key defining characteristic of the segment, but to gain deeper insight into the nature of the segments. When **data-driven segmentation** is conducted, the organisation has certain assumptions about the consumer characteristics that are critical to identifying a suitable market segment to target, but does not know the exact profiles of suitable target segments. The aim of data-driven segmentation is firstly to explore different market segments that can be extracted using the segmentation variables chosen and second one is to develop a detailed profile and description of the segment(s) selected for targeting.

Data Structure and Data-Driven Market Segmentation Approach

When conducting data-driven market segmentation, data analysts and users of market segmentation solutions often assume that market segments naturally exist in the data. In real consumer data, naturally existing, distinct and well separated market segments rarely exist. Dolnicar and Leisch distinguish three possible conceptual approaches to data-driven market segmentation: **Natural, Reproducible and Constructive segmentation.**

The term natural segmentation reflects the traditional view that distinct market segments exist in the data, and that the aim of market segmentation analysis is to find them. The term reproducible segmentation refers to the case where natural market segments do not exist in the data. But the data are not entirely unstructured either. Finally, the term constructive segmentation refers to the case where neither cluster structure nor any other data structure exists, which would enable the data analyst to reproduce similar segmentation solutions repeatedly across replications. Whichever approach the data analyst chooses, it will provide insight as to the concept of market segmentation study that can be implemented.

Market Segmentation Analysis Step-by-Step

To approach market segmentation analysis we have to go through ten steps. Every single step is described below in detail.

3. Ten Steps of Market Segmentation Analysis

Step 1: Deciding (not) to Segment

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 key implication is that the organisation needs to commit to the **segmentation strategy in the long term**. We should not segment unless the expected increase in sales is sufficient to justify implementing a segmentation strategy. Because of the major implications of such a long-term organisational commitment.

Implementation Barriers

There are some types of barriers that can impede the successful roll-out of a market segmentation strategy. The first group of barriers relates to **senior management**. In that lack of leadership, pro-active championing, commitment and involvement in the market segmentation process by senior leadership undermines the success of market segmentation. A second group of barriers relates to **organisational culture**. In that lack of market or consumer orientation, resistance to change and new ideas, lack of creative thinking, bad communication, short-term thinking, have been identified as preventing the successful implementation of market segmentation. Another potential problem is **lack of training**. Another obstacle may be objective restrictions faced by the organisation, including **lack of financial resources**.

Step 2: Specifying the Ideal Target Segment

4. Segment Evaluation Criteria

After having committed to investigating the value of a segmentation strategy in Step 1, the organisation has to make a major contribution to market segmentation analysis. In this step we must determine two sets of segment evaluation criteria. In this we focus on two segment evaluation criteria.

Knock-Out Criteria

Knock-out criteria are the non-negotiable features a segment must have to make it worthwhile. For example, it must be big enough, match your strengths and you must be able to reach the members in some way. Also members of the segment must be similar to one another and distinctly different from members of other segments.

Attractiveness Criteria

Attractiveness criteria are nice-to-have features. The former will eliminate unsuitable segments while the latter can be used to rank the remaining segments and choose the most promising ones.

Step 3: Collecting Data

5. Segmentation Variables

Empirical data is the basis for all segmentation studies, and consideration needs to be given on the best way to obtain it. The information that comes from the research is called **Empirical Data**. Empirical data for segmentation studies can come from a range of sources: from survey studies, from observations such as scanner data where purchases are recorded and, frequently, are linked to an individual customer's long-term purchase history via loyalty programs or from experimental studies. Good market segmentation analysis requires good empirical data.

Segmentation Criteria

We need to decide what type of information to collect. The most common segmentation criteria are geographic, socio demographic, psychographic and behavioural.

Geographic Segmentation

In Geographic Segmentation **consumer's location** of residence serves as the only criterion to form market segments. For example countries and states. The key advantage of geographic segmentation is that each consumer can easily be assigned to a geographic unit. As a consequence, it is easy to target communication messages, and select communication channels (such as local newspapers, local radio and TV stations) to reach the selected geographic segments.

Socio-Demographic Segmentation

In socio-demographic segmentation criteria include **Age, Gender, Income and Education**. For example luxury goods (associated with high income), cosmetics (associated with gender), etc. An advantage of this segment is segment membership can easily be determined for every consumer.

Psychographic Segmentation

In Psychographic Segmentation people are grouped according to psychological criteria, such as their **beliefs, interests, preferences, aspirations or benefits** sought when purchasing a product the term psychographic segmentation is used. The psychographic approach has the advantage that it is generally more reflective of the underlying reasons for differences in consumer behaviour.

Behavioural Segmentation

Another approach to segment extraction is Behavioural Segmentation in that we search directly for similarities in **behaviour or reported behaviour**. For example including prior experience with the product, frequency of purchase, amount spent on purchasing the product on each occasion (or across multiple purchase occasions), and information search behaviour. The key advantage of behavioural approaches is that, it is based on actual behaviour rather than stated behaviour or stated intended behaviour. As such, behavioural segmentation groups people by the similarity which matters most.

Data from Survey Studies

Most of the market segmentation analyses data based on survey data because survey data is cheap and easy to collect. But survey data as opposed to data obtained from observing actual behaviour, can be contaminated by a wide range of biases. Such biases can negatively affect on market segmentation analysis. There are some aspects that need to be considered when using survey data are discussed below.

Choice of Variables

The quality of market segmentation depends on the variable we choose. Including unnecessary variables also increases the dimensionality of the segmentation problem without adding relevant information, making the task of extracting market segments unnecessarily difficult for any data analytic technique. **Unnecessary and noisy variables must be avoided.** Including unnecessary variables can make questionnaires long and tedious for respondents, which causes respondent fatigue. The recommendation is to ask all necessary and unique questions, while resisting the temptation to include unnecessary or redundant questions.

Data from Internal Sources

Internal data access to increasingly organisations harvested for the purpose of market segmentation analysis. Typical examples are scanner data available to grocery stores, booking data available through airline loyalty programs, and online purchase data. The main objective of this type of data is that they

represent **actual behaviour of consumers**, rather than statements of consumers about their behaviour or intentions, known to be affected by imperfect memory.

Data from Experimental Studies

Experimental data can result from field or laboratory experiments. For example, they can be the result of tests on how people respond to certain advertisements. The response to the advertisement could then be used as a segmentation criterion.

Step 4: Exploring Data

6. A First Glimpse at the Data

Data exploration refers to the initial step in data analysis in which data analysts use data visualization and statistical techniques to describe dataset characterizations, such as size, quantity, and accuracy, in order to better understand the nature of the data. At a more technical level, data exploration helps to **identify the measurement levels** of the variables, **investigate the univariate distributions** of each of the variables and **assess dependency structures** between variables.

Data Cleaning

The first step prior to exploration of the data is the process of fixing or removing incorrect, corrupted, incorrectly formatted, duplicate, or incomplete data within a dataset. When combining multiple data sources, there are many opportunities for data to be duplicated or mislabeled. Similarly, levels of categorical variables can be checked to ensure they contain only permissible values.

Descriptive Analysis

The conversion of raw data into a form that will make it easy to understand & interpret, ie., rearranging, ordering, and manipulating data to provide insightful information about the provided data. Descriptive Analysis is the type of analysis of data that helps describe, show or summarise data points in a constructive way such that patterns might emerge that fulfil every condition of the data. It is one

of the most important steps for conducting statistical data analysis. It gives you a conclusion of the distribution of your data, helps you detect typos and outliers, and enables you to identify similarities among variables, thus making you ready for conducting further statistical analyses.

Pre-Processing

Real-world data is messy and is often created, processed and stored by a variety of humans, business processes and applications. As a result, a data set may be missing individual fields, contain manual input errors, or have duplicate data or different names to describe the same thing. Two pre-processing procedures are often used for categorical variables. One is merging levels of categorical variables before further analysis, the other one is converting categorical variables to numeric ones, if it makes sense to do so.

Principal Components Analysis

Principal Component Analysis is an unsupervised learning algorithm that is used for dimensionality reduction in machine learning. Principal components analysis (PCA) transforms a multivariate data set containing metric variables to a new data set with variables referred to as principal components, which are uncorrelated and ordered by importance. In most cases, the transformation obtained from principal components analysis is used to project high-dimensional data into lower dimensions for plotting purposes.

Step 5: Extracting Segments

7. Grouping Consumers

Consumers come in all shapes and sizes and their preferences can range across the full spectrum. If you are using a data-driven approach rather than ‘commonsense’ criteria, it can be difficult to pick out clear patterns. There are different data analysis techniques and algorithms to help you identify segments, though inevitably the methods you use will to some extent shape the results. “Market segmentation analysis is exploratory and data analysts need guidance to make the most critical decisions, such as how many segments to extract,” says Sara. Once you have identified segments, conduct statistical tests to check their stability, then use the ‘knock-out’ criteria to screen them. There are some methods for grouping consumers which are described below.

Hierarchical Methods

Hierarchical clustering methods are the most intuitive way of grouping data because they mimic how a human would approach the task of dividing a set of n observations (consumers) into k groups (segments). If the aim is to have one large market segment ($k = 1$). At the other extreme, if the aim is to have as many market segments as there are consumers in the data set ($k = n$), the number of market segments has to be n .

k-Means and k-Centroid Clustering

The representative of a market segment is referred to in many partitioning clustering algorithms as the centroid. For the k-means algorithm based on the squared Euclidean distance, the centroid consists of the column-wise mean values across all members of the market segment. K-Means algorithm is a centroid based clustering technique. This technique clusters the dataset to k different clusters having an almost equal number of points. A centroid is the imaginary or real location representing the center of the cluster. Every data point is allocated to each of the clusters through reducing the in-cluster sum of squares. Each cluster's k-means clustering algorithm is represented by a centroid point.

Step 6: Profiling Segments

8. Identifying Key Characteristics of Market Segments

Once you have identified the most promising segments, the next step is to understand their characteristics. Profiling is not necessary if you are using commonsense criteria, but with a data-driven approach, the characteristics of each segment are less obvious. At the profiling stage, we inspect a number of alternative market segmentation solutions. This is particularly important if no natural segments exist in the data, and either a reproducible or a constructive market segmentation approach has to be taken. Good profiling is the basis for correct interpretation of the resulting segments. Correct interpretation, in turn, is critical to making good strategic marketing decisions. The aim of the profiling step is to get to know the market segments resulting from the extraction step.

Segment Profiling with Visualisations

Good profiling is critical for correct interpretation of the results, which will provide the basis for strategic marketing decisions. However, complex sets of tables can be hard to understand, so it is worth spending extra time to produce good graphs or visualisations. Visualisations are useful in the data-driven market segmentation process to inspect, for each segmentation solution, one or more segments in detail. Statistical graphs facilitate the interpretation of segment profiles. They also make it easier to assess the usefulness of a market segmentation solution. The process of segmenting data always leads to a large number of alternative solutions. Selecting one of the possible solutions is a critical decision. Visualisations of solutions assist the data analyst and user with this task.

Step 7: Describing Segments

9. Developing a Complete Picture of Market Segments

Once you have the profiles, you can then build a more in-depth picture by using the additional pieces of information you have about each consumer. These descriptions are critical to developing a customised marketing mix. Step 7 (describing segments) is similar to the profiling step. Segment profiling is about understanding differences in segmentation variables across market segments. Segmentation variables are chosen early in the market segmentation analysis process: conceptually in Step 2 (specifying the ideal target segment), and empirically in Step 3 (collecting data). Segmentation variables form the basis for extracting market segments from empirical data. The only difference is that the variables being inspected have not been used to extract market segments. Rather, in Step 7 market segments are described using additional information available about segment members.

Using Visualisations to Describe Market Segments

Visualisation techniques make the results of a market segmentation analysis easier to interpret. Using graphical statistics to describe market segments has two key advantages: it simplifies the interpretation of results for both the data analyst and the user, and integrates information on the statistical significance of differences. Visualisations are useful in the data-driven market segmentation process to inspect, for each segmentation solution, one or more segments in detail. Statistical graphs facilitate the interpretation of segment profiles. They also make it easier to assess the usefulness of a market segmentation solution.

Testing for Segment Differences in Descriptor Variable

Simple statistical tests can be used to formally test for differences in descriptor variables across market segments. The simplest way to test for differences is to run a series of independent tests for each variable of interest. The outcome of the segment extraction step is segment membership, the assignment of each consumer to one market segment. It represents a nominal summary statistic of the segmentation variables. Therefore, any test for association between a nominal variable and another variable is suitable.

Predicting Segments from Descriptor Variable

Another way of learning about market segments is to try to predict segment membership from descriptor variables. To achieve this, we use a **regression model** with the segment membership as categorical dependent variable, and descriptor variables as independent variables. We can use methods developed in statistics for classification, and methods developed in machine learning for supervised learning. Regression analysis is the basis of prediction models. Regression analysis assumes that a dependent variable y can be predicted using independent variables or regressors x .

Step 8: Selecting the Target Segment(s)

10. The Targeting Decision

Now it is time to make the big decision. You will need to consider two key questions: **which segments do you want to commit to?** And **how likely is it that they would choose you over and above your competitors?**. Market segmentation is a strategic marketing tool. The selection of one or more target segments is a long term decision significantly affecting the future performance of an organisation. All the market segments under consideration in Step 8 should already comply with the knock-out criteria. Nevertheless, it does not hurt to double check. The first task in Step 8, therefore, is to ensure that all the market segments that are still under consideration to be selected as target markets have well and truly passed the knock-out criteria test. Once this is done, the attractiveness of the remaining segments and the relative organisational competitiveness for these segments needs to be evaluated.

Market Segment Evaluation

A lot of people recommend different types of matrix like decision matrix, Boston matrix, McKinsey matrix, market attractiveness business strength matrix. The aim of all these decision matrices along with their visualisations is to make it easier for the organisation to evaluate alternative market segments, and select one or a small number for targeting. It is up to the market segmentation team to decide which variation of the decision matrix offers the most useful framework to assist with decision making. Whichever variation is chosen, the two criteria plotted along the axes cover two dimensions: segment attractiveness, and relative organisational competitiveness specific to each of the segments.

Step 9: Customising the Marketing Mix

11. Implications for Marketing Mix Decisions

Once we choose the segments, you will need to consider how best to position your product in each and reach out to them. Market segmentation does not stand independently as a marketing strategy. In fact, the segmentation process is frequently seen as part of what is referred to as the Segmentation-Targeting-Positioning (STP). The STP approach postulates a sequential process. The process starts with market segmentation (the extraction, profiling and description of segments), followed by targeting (the assessment of segments and selection of a target segment), and finally positioning (the measures an organisation can take to ensure that their product is perceived as distinctly different from competing products, and in line with segment needs). The marketing mix provides a toolbox with the key components being the 4Ps – **product, price, promotion and place.**

Product

Product is concerned with developing the right product or service for your target market. Your product or service must satisfy a specific consumer need. One of the key decisions an organisation needs to make when developing the product dimension of the marketing mix, is to specify the product in view of customer needs. Often this does not imply designing an entirely new product, but rather modifying an existing one.

Price

When setting a price for your product, you must consider competition in your target market place, and the cost of the total marketing mix. Also estimate customers' reactions to possible product prices.

Place

This involves all the decisions in getting the right product to your target market's environment. Placement decisions, such as accessing the right distribution channels, should take into consideration where customers would expect to find a product or service like yours. Part of the place decision is also the layout of your store or shop. It should pull customers into your shop, making it easy for them to locate merchandise.

Promotion

This is about telling your target market about your product or service. It involves direct communication between sellers and potential customers. Typical promotion decisions that need to be made when designing a marketing mix include: developing an advertising message that will resonate with the target market, and identifying the most effective way of communicating this message.

Step 10: Evaluation and Monitoring

Once you have invested so much in market segmentation, it is essential to check how well the strategy is working; you will need to decide how you will assess it. There should also be ongoing monitoring. Like any market, segments evolve as consumers become savvy, move on to different stages of their lifecycle and new products enter the market. One study of banking customers found that less than a third stayed in the same category for more than two years.

GitHub Link of the Project implemented in Python :-

<https://github.com/pratikdatey/Market-Segmentation-Analysis>