

Market segmentation Analysis (Study Project)

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About Market Segmentation

I. What is marketing:

Marketing is to match the genuine needs and desires of consumers with the offers of suppliers particularly suited to satisfy those needs and desires. This process of matching the needs and offers from consumers and suppliers respectively runs an organization's marketing planning process.

II. What is Marketing planning:

Marketing planning is a logical sequence and a series of activities leading to the setting of marketing objectives and the formulation of plans to achieving them. There are two types of market plans that go together if the organization plans on getting the best out of the plan.

1. Strategic marketing plan:

Strategic marketing plan outlines long-term direction for the organization or in short sees the big picture for the future decisions taken in the organization.

The strategic marketing plan helps an organization to oversee where to get in future on the basis of demands and supplies.

2. Tactical marketing plan:

Tactical plan does the opposite of what the strategic plan does or offers. Tactical plan translates the long-term plan into detailed instructions for the short-term plans for the organization.

Tactical marketing plan helps an organization to decide what it needs to do and how in order to get to the big picture or the future plans (strategic plan).

III. *Market segmentation:*

According to the definition, market segmentation is a tool used for selecting a target market for the given product and designing an appropriate marketing mix for the same.

But, to explain it in layman terms: Market segmentation is a process to divide the market into parts based on sets of buyers/consumers.

Here, consumers are based on different characteristics like income, localities, age, gender for starters and advance analysis for further development such as a number of benefits sought when purchasing a product, a number of activities undertaken when on vacation, values held with respect to the environment, or an expenditure pattern and so on.

Market segmentation Analysis

Market segmentation analysis, at its core as given in the figure, is the process of grouping consumers into naturally existing or artificially created segments of consumers who share similar product preferences or characteristics.

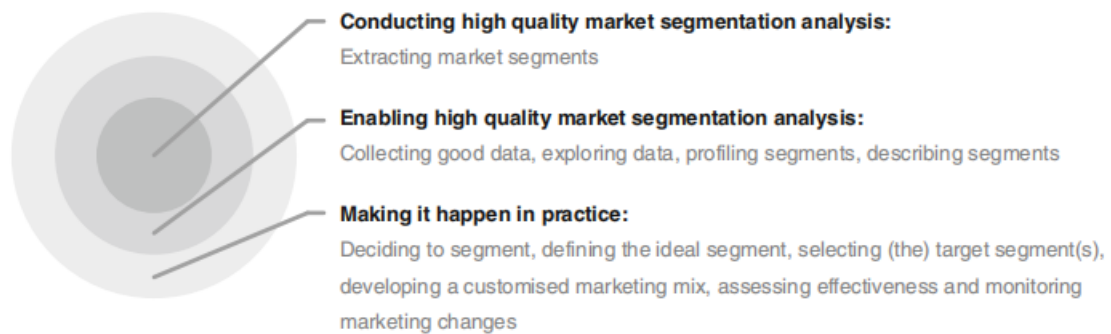


Fig 1: Layers of Market segmentation analysis

Here, the process is statistical as well as equally exploratory in nature. The tasks in the second layer range from collecting good data to describing segments are all technical in nature. Thus, a data analyst or a team of analysts who can understand both non-technical as well as technical aspects are required to do the job.

Here, the market segmentation has 2 approaches: Common-sense segmentation and data-driven segmentation.

Here, there are 10 steps that sum up the layers in the market segmentation analysis. We will see each step-in brief in the further report.

Fig 2: steps of market segmentation analysis.

Here,

Steps 1 and 2 accumulate to layer 1,

Steps 3 to 7 accumulate to layer 2 and

Step 8,9 and 10 accumulate to layer 3 respectively.



Step 1: Deciding (not) to segment

Before going towards the market analysis technical part, the analyst needs to decide if the market is right and suitable for the segment and if they can make a long-term commitment towards the same.

As we saw, here the strategy of the marketing is seen because strategy happens to be the long-term idea behind the market segmentation.

Thus, in order to overcome the first step, the strategic planning of the market segmentation should be in the right order.

Barriers while implementing the first step

However, there are two groups of barriers that can come in the way of this step.

The first group of the barriers which relate to the senior management in form of Lack of leadership, pro-active championing, commitment and involvement in the market segmentation process by senior leadership undermines the success of market segmentation. Senior management can also prevent market segmentation to be successfully implemented by not making enough resources available, either for the initial market segmentation analysis itself, or for the long-term implementation of a market segmentation strategy.

The second group A second group of barriers relates to organisational culture. Lack of market or consumer orientation, resistance to change and new ideas, lack of creative thinking, bad communication and lack of sharing of information and insights across organisational units, short-term thinking, unwillingness to make changes and office politics have been identified as preventing the successful implementation of market segmentation.

Another potential problem is lack of training. If senior management and the team tasked with segmentation do not understand the very foundations of market segmentation, or if they are unaware of the consequences of pursuing such a strategy, the attempt of introducing market segmentation is likely to fail.

Thus, by overcoming this barriers the first step could be easily solved.

Step 2: Specifying the ideal target segment

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 Step 2. While this contribution is conceptual in nature, it guides many of the following steps, most critically Step 3 (data collection) and Step 8 (selecting one or more target segments). In Step 2 the organisation must determine two sets of segment evaluation criteria.

First one being the *knock-out criteria* and second one being the *attractiveness criteria*.

Knock-out Criteria:

Knock-out criteria are used to determine if market segments resulting from the market segmentation analysis qualify to be assessed using segment attractiveness criteria. Knock out criteria mainly includes substantiality, measurability and accessibility

There are also additional criteria that are to be included in the knock out criterion. They are as follows:

- The segment must be **homogeneous**; members of the segment must be similar to one another.
- The segment must be **distinct**; members of the segment must be distinctly different from members of other segments. Step 2: Specifying the Ideal Target Segment
- The segment must be **large enough**; the segment must contain enough consumers to make it worthwhile to spend extra money on customising the marketing mix for them.
- The segment must be **matching** the strengths of the organisation; the organisation must have the capability to satisfy segment members' needs.
- Members of the segment must be **identifiable**; it must be possible to spot them in the marketplace.
- The segment must be **reachable**; there has to be a way to get in touch with members of the segment in order to make the customised marketing mix accessible to them.

Attractiveness criteria:

Attractiveness criteria are not binary in nature. Segments are not assessed as either complying or not complying with attractiveness criteria. Rather, each market segment is rated; it can be more or less attractive with respect to a specific criterion. The attractiveness across all criteria determines whether a market segment is selected as a target segment in Step 8 of market segmentation analysis.

Step 3: Collecting the data

Empirical data forms the basis of both common-sense and data-driven market segmentation. Empirical data is used to identify or create market segments and later in the process describe these segments in detail.

Segmentation Variable:

We use the term *segmentation variable* to refer to the variable in the empirical data used in common-sense segmentation to split the sample into market segments. In common-sense segmentation, the segmentation variable is typically one single characteristic of the consumers in the sample. This case is illustrated in Table below. Each row in this table represents one consumer, each variable represents one characteristic of that consumer. An entry of 1 in the data set indicates that the consumer has that characteristic. An entry of 0 indicates that the consumer does not have that characteristic. The common-sense segmentation illustrated in Table below uses gender as the segmentation variable. Market segments are created by simply splitting the sample using this segmentation variable into a segment of women and a segment of men.

Sociodemographics		Travel behaviour	Benefits sought				
gender	age	N° of vacations	relaxation	action	culture	explore	meet people
Female	34	2	1	0	1	0	1
Female	55	3	1	0	1	0	1
Female	68	1	0	1	1	0	0
Female	34	1	0	0	1	0	0
Female	22	0	1	0	1	1	1
Female	31	3	1	0	1	1	1
Male	87	2	1	0	1	0	1
Male	55	4	0	1	0	1	1
Male	43	0	0	1	0	1	0
Male	23	0	0	1	1	0	1
Male	19	3	0	1	1	0	1
Male	64	4	0	0	0	0	0
segmentation variable		descriptor variables					

Fig: Here, the table shows the data segregated in the common-sense segmentation.

Segmentation Criteria:

Here, the criteria are of basis on which features of the set of buyers or the consumers the data would be collected. For an instance, geographic conditions of a person are considered a good option to collect the data of a consumer as well as a supplier.

There are 4 types of segmentation types considered in this report.

1. Geographic conditions:

Geographic information is seen as the original segmentation criterion used for the purpose of market segmentation. Typically when geographic segmentation is used the consumer's location of residence serves as the only criterion to form market segments. Interesting examples are also provided by global companies such as Amazon selling its Kindle online: one common web page is used for the description of the base product, then customers are asked to indicate their country of residence and country specific additional information is provided.

Despite the potential shortcomings of using geographic information as the segmentation variable, the location aspect has experienced a revival in international market segmentation studies aiming to extract market segments across geographic boundaries. Such an approach is challenging because the segmentation variable(s) must be meaningful across all the included geographic regions, and because of the known biases that can occur if surveys are completed by respondents from different cultural backgrounds.

2. Socio-Demographic Conditions:

Typical socio-demographic segmentation criteria include age, gender, income and education. Socio-demographic segments can be very useful in some industries. For example: luxury goods (associated with high income), cosmetics (associated with gender; even in times where men are targeted, the female and male segments are treated distinctly differently), baby products (associated with gender), retirement villages (associated with age), tourism resort products (associated with having small children or not).

As is the case with geographic segmentation, socio-demographic segmentation criteria have the advantage that segment membership can easily be determined for every consumer. In some instances, the socio-demographic criterion may also offer an explanation for specific product preferences (having children, for example, is the actual reason that families choose a family vacation village where previously, as a couple, their vacation choice may have been entirely different). But in many instances, the socio-demographic criterion is not the *cause* for product preferences, thus not providing sufficient market insight for optimal segmentation decisions.

Haley (1985) estimates that demographics explain about 5% of the variance in consumer behaviour whereas Yankelovich and Meer (2006) argue that socio-demographics do not represent a strong basis for market segmentation, suggesting that values, tastes and preferences are more useful because they are more influential in terms of consumers' buying decisions.

3. Psychographic Segmentation:

When 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. Haley (1985) explains that the word psychographics was intended as an umbrella term to cover all measures of the mind.

Psychographic criteria are, by nature, more complex than geographic or socio demographic criteria because it is difficult to find a single characteristic of a person that will provide insight into the psychographic dimension of interest. As a consequence, most psychographic segmentation studies use a number of segmentation variables, for example: a number of different travel motives, a number of perceived risks when going on vacation.

The psychographic approach has the advantage that it is generally more reflective of the underlying reasons for differences in consumer behaviour. For example, tourists whose primary motivation to go on vacation is to learn about other cultures, have a high likelihood of undertaking a cultural holiday at a destination that has ample cultural treasures for them to explore.

4. Behavioural Segmentation:

Another approach to segment extraction is to search directly for similarities in behaviour or reported behaviour. A wide range of possible behaviours can be used for this purpose, 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. In a comparison of different segmentation criteria used as segmentation variables, behaviours reported by tourists emerged as superior to geographic variables.

The key advantage of behavioural approaches is that – if based on actual behaviour rather than stated behaviour or stated intended behaviour – the very behaviour of interest is used as the basis of segment extraction. As such, behavioural segmentation groups people by the similarity which matters most.

But behavioural data is not always readily available, especially if the aim is to include in the segmentation analysis potential customers who have not previously purchased the product, rather than limiting oneself to the study of existing customers of the organisation.

Step 4: Exploring Data

Exploring data

1. Clean and process the data
2. Offers guidance on the most suitable algorithm for extracting meaningful market segmentation.

Processes Involved:

I. Data Cleaning:

The first step before commencing data analysis is to clean the data. This includes checking if all values have been recorded correctly and if consistent labels for the levels of categorical variables have been used. For many metric variables, the range of plausible values is known in advance.

Python: can use pandas and NumPy



II. Descriptive Analysis:

Descriptive numeric and graphic representations provide insights into the data. Statistical software packages offer a wide variety of tools for descriptive analysis. graphical methods for numeric data are histograms, boxplots, and scatter plots.

Bar plots of frequency counts are useful for the visualization of categorical Variables.

Mosaic plots illustrate the association of multiple categorical variables.

Histograms visualize the distribution of numeric variables. They show how often observations within a certain value range occur. Histograms reveal if the distribution of a variable is unimodal and symmetric or skewed.

The *boxplot* is the most common graphical visualization of unimodal distributions in statistics. It is widely used in the natural sciences but does not enjoy the same popularity in business, and the social sciences more generally.

The simplest version of a boxplot compresses a data set into a minimum, first quartile, median, third quartile, and maximum. These five numbers are referred to as the five-number summary.

Python: matplotlib, seaborn

- III. *PreProcessing*: 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.

Python: Pandas

- IV. Numeric Variables

- V. *Principal Component Analysis*: 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.

Python:sklearn

Check List:

Task	Who is responsible?	Completed?
Explore the data to determine if there are any inconsistencies and if there are any systematic contaminations.		<input type="checkbox"/>
If necessary, clean the data.		<input type="checkbox"/>
If necessary, pre-process the data.		<input type="checkbox"/>
Check if the number of segmentation variables is too high given the available sample size. You should have information from a minimum of 100 consumers for each segmentation variable.		<input type="checkbox"/>
If you have too many segmentation variables, use one of the available approaches to select a subset.		<input type="checkbox"/>
Check if the segmentation variables are correlated. If they are, choose a subset of uncorrelated segmentation variables.		<input type="checkbox"/>
Pass on the cleaned and pre-processed data to Step 5 where segments will be extracted from it.		<input type="checkbox"/>

Step 5. Extracting segments

Extracting Segments:

The result of a market segmentation analysis, is determined as much by the underlying data as it is by the extraction algorithm chosen. Segmentation methods shape the segmentation solution Many segmentation methods used to extract market segments are taken from the field of cluster analysis.

most popular extraction methods used in market segmentation

Distance-based methods

use a particular notion of similarity or distance between observations (consumers), and try to find groups of similar observations (market segments). *Euclidean distance* is the most common distance measure used in market segmentation analysis. Euclidean distance corresponds to the direct “straight-line” distance between two points in two-dimensional space. *Manhattan distance* derives its name from the fact that it gives the distance between two points assuming that streets on a grid (like in Manhattan) need to be used to get from one point to another.

Model-based methods

Methods are described second. These methods formulate a concise stochastic model for the market segments

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). Divisive hierarchical clustering methods start with the complete data set X and splits it into two market segments in a first step. Then, each of the segments is again split into two segments. This process continues until each consumer has their own market segment. Agglomerative hierarchical clustering approaches the task from the other end.

The starting point is each consumer representing their own market segment (n singleton

clusters). Step-by-step, the two market segments closest to one another are merged until the complete data set forms one large market segment.

Both approaches result in a sequence of nested partitions. A partition is a grouping of observations such that each observation is exactly contained in one group. The sequence of partitions ranges from partitions containing only one group (segment) to n groups (segments). They are nested because the partition with $k + 1$ groups (segments)

Partitioning Methods:

Hierarchical clustering methods are particularly well suited for the analysis of small data sets with up to a few hundred observations. For larger data sets, dendrograms are hard to read, and the matrix of pairwise distances usually does not fit into computer memory. Instead of computing all distances between

all pairs of observations in the data set at the beginning of a hierarchical partitioning

Extracting Segments

cluster analysis using a standard implementation – only distances between each consumer in the data set and the center of the segments are computed

k-Means and k-Centroid Clustering:

The most popular partitioning method is k-means clustering. Within this method, a number of algorithms are available.

Let $X = \{x_1, \dots, x_n\}$ be a set of observations (consumers) in a data set. Partitioning clustering methods divide these consumers into subsets (market segments)

such that consumers assigned to the same market segment are as similar to one another as possible, while consumers belonging to different market segments are as dissimilar as possible. 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. The data set contains observations (consumers) in rows, and variables (behavioural information or answers to survey questions) in columns. The column-wise mean, therefore, is the average response

pattern across all segmentation variables for all members of the segment

It involves five steps with the first four steps visualised in a simplified way in

Fig. 7.7:

1. Specify the desired number of segments k .
2. Randomly select k observations (consumers) from data set X and use them as initial set of cluster centroids $C = \{c_1, \dots, c_k\}$. If five market segments are being extracted, then five consumers are randomly drawn from the data set, and declared the representatives of the five market segments. Of course, these randomly chosen consumers will – at this early stage of the process – not be representing the optimal segmentation solution. They are needed to get the step wise (iterative) partitioning algorithm started.

3. Assign each observation x_i to the closest cluster centroid to form a partition of the data, that is,

k market segments S_1, \dots, S_k where

$$S_j = \{x \in X | d(x, c_j) \leq d(x, c_h), 1 \leq h \leq k\}.$$

This means that each consumer in the data set is assigned to one of the initial segment representatives. This is achieved by calculating the distance between each consumer and each segment representative, and then assigning the consumer to the market segment with the most similar representative. If two segment representatives are equally close, one needs to be randomly selected. The result of this step is an initial – suboptimal – segmentation solution. All consumers in the data set are assigned to a segment. But the segments do not yet comply with the criterion that members of the same segment are as similar as possible, and members of different segments are as dissimilar as possible.

4. Recompute the cluster centroids (segment representatives) by holding cluster membership fixed, and minimizing the distance from each consumer to the corresponding cluster centroid.

$$c_j = \operatorname{argmin}_c$$

$$c$$

$$x \in S_j$$

$$d(x, c).$$

For squared Euclidean distance, the optimal centroids are the cluster-wise means, for Manhattan distance cluster-wise medians, resulting in the so-called k-means and k-medians procedures, respectively. In less mathematical terms: what happens here is that – acknowledging that the initial segmentation solution is not optimal – better segment representatives need to be identified. This is exactly what is achieved in this step: using the initial segmentation solution, one new representative is “elected” for each of the market segments. When squared Euclidean distance is used, this is done by calculating the average across all segment members, effectively finding the most typical, hypothetical segment members and declaring them to be the new representatives.

5. Repeat from step 3 until convergence or a pre-specified maximum number of iterations is reached. This means that the steps of assigning consumers to their closest representative and electing new representatives is repeated until the point is reached where the segment representatives stay the same. This is when the stepwise process of the partitioning algorithm stops and the segmentation solution is declared to be the final one.

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.

Hybrid Approaches

Several approaches combine hierarchical and partitioning algorithms in an attempt to compensate the weaknesses of one method with the strengths of the other.

The strengths of hierarchical cluster algorithms are that the number of market segments to be extracted does not have to be specified in advance and that similarities of market segments can be visualized using a dendrogram. The biggest disadvantage of hierarchical clustering algorithms is that standard implementations require substantial memory capacity, thus restricting the possible sample size of the data for applying these methods. Also, dendrograms become very difficult to

interpret when the sample size is large.

The strength of partitioning clustering algorithms is that they have minimal memory requirements during calculation, and are therefore suitable for segmenting large data sets. The disadvantage of partitioning clustering algorithms is that the number of market segments to be extracted needs to be specified in advance.

Partitioning algorithms also do not enable the data analyst to track changes in segment membership across segmentation solutions with different number of segments because these segmentation solutions are not necessarily nested.

The basic idea behind hybrid segmentation approaches is to first run a partitioning algorithm because it can handle data sets of any size. But the partitioning algorithm used initially does not generate the number of segments sought. Rather, a much larger number of segments is extracted. Then, the original data is discarded and only the centers of the resulting segments (centroids, representatives of each market segment) and segment sizes are retained and used as input for the hierarchical cluster analysis. At this point, the data set is small enough for hierarchical algorithms, and the dendrogram can inform the decision of how many segments to extract.

Algorithms with Integrated Variable Selection

Most algorithms focus only on extracting segments from data. These algorithms assume that each of the segmentation variables makes a contribution to determining the segmentation solution. But this is not always the case. Sometimes, segmentation variables were not carefully selected, and contain redundant or noisy variables. Pre-processing methods can identify them

When the segmentation variables are binary, and redundant or noisy variables can not be identified and removed during data pre-processing, suitable segmentation variables need to be identified *during* segment extraction. A number of algorithms extract segments while – simultaneously – selecting suitable segmentation variables. We present two such algorithms for binary segmentation variables: biclustering and the variable selection procedure for clustering binary data (VSBD)

Biclustering Algorithms

Biclustering simultaneously clusters both consumers and variables. Biclustering algorithms exist for any kind of data, including metric and binary. This section focuses on the binary case where these algorithms aim at extracting market segments containing consumers who all have a value of 1 for a group of variables. These groups of consumers and variables together then form the *bicluster*.

Biclustering is particularly useful in market segmentation applications with many segmentation variables. Standard market segmentation techniques risk arriving at suboptimal groupings of consumers in such situations. Biclustering also has a number of other advantages:

No data transformation : :

Typically, situations, where the number of variables is too high, are addressed by pre-processing data. Pre-processing approaches such as principal components analysis – combined with selecting only the first few components – reduce the number of segmentation variables by transforming the data. Any changes the information in the segmentation variables, thus risking that segmentation results are biased because they are not based on the original data. Biclustering does not transform data. Instead, original variables which do not display any systematic patterns relevant for grouping consumers are ignored.

Ability to capture niche markets: :

Because biclustering searches for identical patterns displayed by groups of consumers with respect to groups of variables, it is well suited for identifying niche markets. If a manager is specifically interested in niche markets, the control arguments for the biclustering algorithm should be set such that a high number of matches is required. This approach leads to smaller segments containing members who are very similar to one other. If the matching requirement is relaxed, larger and less homogeneous segments emerge.

Biclustering methods, however, do not group *all* consumers. Rather, they select groups of similar consumers, and leave ungrouped consumers who do not fit into any of the groups.

Variable Selection Procedure for Clustering Binary Data (VSBD)

variable selection procedure for clustering binary data sets. VSBD method is based on the *k*-means algorithm as the clustering method and assumes that not all variables available are relevant to obtain a good clustering solution. In particular, the method assumes the presence of masking variables. They need to be identified and removed from the set of segmentation variables. Removing irrelevant variables helps to identify the correct segment structure, and eases interpretation.

The procedure first identifies the best small subset of variables to extract segments. Because the procedure is based on the *k*-means algorithm, the performance criterion used to assess a

specific subset of variables is the within-cluster sum-of-squares (the sum of squared Euclidean distances between each observation and their segment representative). This is the criterion minimized by the k -means algorithm. After having identified this subset, the procedure adds additional variables one by one. The variable added is the one leading to the smallest increase in the within-cluster sum-of-squares criterion. The procedure stops when the increase in within-cluster sum-of-squares reaches a threshold. The number of segments k has to be specified in advance.

The algorithm works as follows:

. Step 1

Select only a subset of observations with size $\phi \in (0, 1]$ times the size of the original data set. Suggesting to use $\phi = 1$ if the original data set contains less than 500 observations, $0.2 \leq \phi \leq 0.3$ if the number of observations is between 500 and 2000 and $\phi = 0.1$ if the number of observations is at least 2000.

. Step 2

For a given number of variables V , perform an exhaustive search for the set of V variables that leads to the smallest within-cluster sum-of-squares criterion. The value for V needs to be selected small for the exhaustive search to be computationally feasible. Br using $V = 4$, but smaller or larger values may be required depending on the number of clusters k , and the number of variables p . The higher the number of clusters, the larger V should be to capture the more complex clustering structure. The higher p , the smaller V needs to be to make the exhaustive search computationally feasible.

. Step 3

Among the remaining variables, determine the variable leading to the smallest increase in the within-cluster sum-of-squares value if added to the set of segmentation variables.

. Step 4

Add this variable if the increase in within-cluster sum-of-squares is smaller than the threshold. The threshold is δ times the number of observations in the subset divided by 4. δ needs to be in $[0, 1]$, suggests a default δ value of 0.5.

CHECK LIST:

Task	Who is responsible?	Completed?
Pre-select the extraction methods that can be used given the properties of your data.		<input type="checkbox"/>
Use those suitable extraction methods to group consumers.		<input type="checkbox"/>
Conduct global stability analyses and segment level stability analyses in search of promising segmentation solutions and promising segments.		<input type="checkbox"/>
Select from all available solutions a set of market segments which seem to be promising in terms of segment-level stability.		<input type="checkbox"/>
Assess those remaining segments using the knock-out criteria you have defined in Step 2.		<input type="checkbox"/>
Pass on the remaining set of market segments to Step 6 for detailed profiling.		<input type="checkbox"/>

Step 6. Profiling Segments

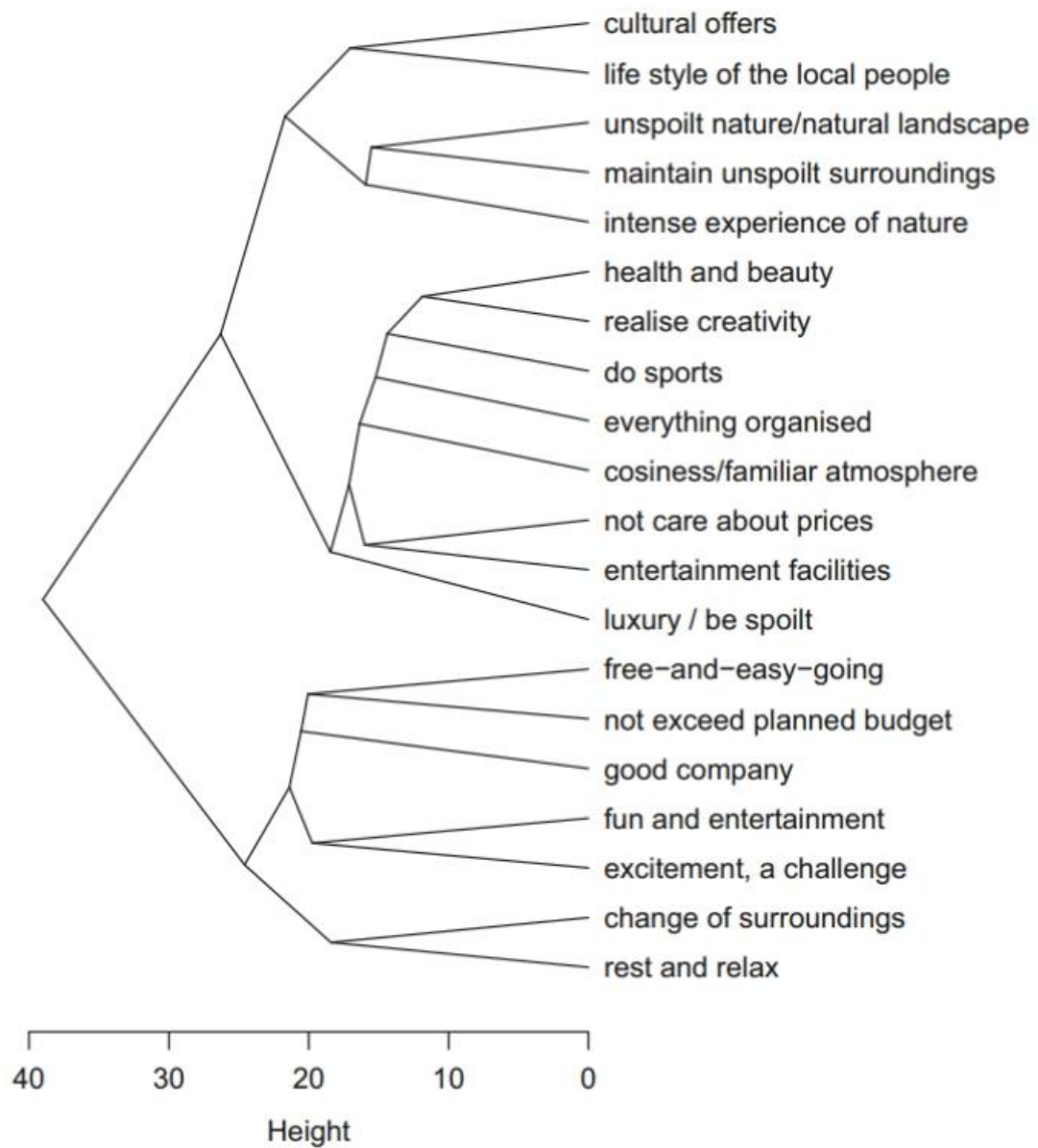
Profiling Segments

The aim of profiling step is to get to know the market segments resulting from the extraction step. Profiling is only required when data-driven market segmentation is used. For common-sense segmentation, the profile of the segments are predefined. If, for example, age is used as the segmentation variable for the common-sense segmentation, it is obvious that the resulting segments will be age groups. Therefore, Step 6 is not necessary when common-sense segmentation is conducted.

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 basic for correct interpretation of the resulting segments. Correct interpretation, in turn, is critical to making good strategic marketing decisions.

Data-driven segmentation solutions are usually presented to users (clients, managers) in one of two ways: (1) as high level summaries simplifying segment characteristics to a point where they misleadingly trivial, or (2) as large tables that provide, for each segment, exact percentages for each segmentation variable. Such tables are hard to interpret, and it is virtually impossible to get a quick overview of the key insights.

Visualizations are useful in data-driven market segmentation process to inspect, for each segmentation solution, one or more segments in detail. Statistical graphs facilitates 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. Visualizations of solutions assist the data analyst and user with this task.



Step 7. Describing Segments

Describing Segments

Step 7 (describing segments) is similar to the profiling step. 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. If committing to a target segment is like a marriage, profiling and describing market segments is like going on a number of dates to get to know the potential spouse as well as possible in an attempt to give the marriage the best possible chance, and avoid nasty surprises down the track.

We can study differences between market segments with respect to descriptor variables in two ways: we can use descriptive statistics including visualizations, or we can analyse data using inferential statistics. The marketing literature traditionally relies on statistical testing, and tabular presentations of differences in descriptor variables. Visualizations make segment description more user-friendly.

A wide range of charts exist for the visualization of differences in descriptor variables. Here, we discuss two basic approaches suitable for nominal and ordinal descriptor variables (such as gender, level of education, country of origin), or metric descriptor variables (such as age, number of nights at the tourist destinations, money spent on accommodation).

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, thus avoiding the over-interpretation of insignificant differences. As Cornelius et al. put it: Graphical representations...serve to transmit the very essence of marketing research results. The same author also find – in a survey study with marketing managers – that managers prefer graphical formats, and view the intuitiveness of graphical displays as critically important.

Step 8. Selecting the target Segments

Selecting the Target Segments

This is one of the final steps. It is used to understand out of so many segments which will be the perfect one to choose to move forward.

This process of finding a right market consists of two steps:

First is only considering those markets which have passed the knockout criteria. Once this is done the second step is to find the attractiveness of the remaining segments and the relative organizational competitiveness for these segments needs to be evaluated.

In other words, the segmentation team has to ask a number of questions which fall into two broad categories:

- Which of the market segments would the organization most like to target or which segment would the organization like to commit to?
- Which of the organizations offering the same product would each of the segments most likely to buy from?

Answering these two questions forms the basis of the target segment decision.

Most books that discuss target market selection recommend the use of a decision matrix to visualize **relative segment attractiveness** and **relative organizational competitiveness** for each market segment.

Many versions of decision matrices have been proposed in the past, and many names are used to describe them, for example, *Boston matrix* because this type of matrix was first proposed by the Boston Consulting Group.

The aim of all these decision matrices along with their visualizations is to make it easier for the organization to evaluate alternative market segments, and select one or a small number for targeting which are perfect to move forward from.

However, it is up to the market segmentation team to decide which variation of the

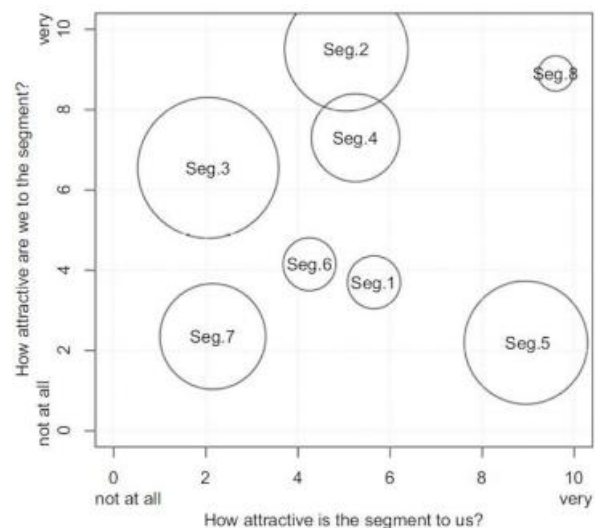
decisionmatrix offers the most useful framework to assist with decision making.

Here, we label the two axes.

- How attractive is the segment to us?
- How attractive are we to the segment?

We plot Segment Attractiveness is on X-axis and relative organizational competitiveness along the y-axis and segments appear as circles.

The size of the circles reflects another criterion of choice that is relevant to segment selection, such as loyalty or contribution to turnover.



It is to be noted that there is no single best measure of segment attractiveness or relative organizational competitiveness. It is therefore necessary for users to return to their specifications of what an ideal target segment looks like for them. The ideal target segment was specified earlier in the market segmentation analysis.

Location of each market segment = the weight of the segment attractiveness criterion X Value of the segment attractiveness criterion for each market segment. The result is a weighted value for each segment attractiveness criteria for each segment. Those values are added up, and represent a segment's overall attractiveness. The exact same procedure is followed for the relative organizational competitiveness.

The last aspect of the plot is the bubble size. Anything can be plotted onto the bubble size. Typically profit potential is plotted. Profit combines information about the size of the segment with spending and, as such, represents a critical value when target segments are selected. In other contexts, entirely different criteria may matter. For example, if a non-for-profit organization uses market segmentation to recruit volunteers to help with land regeneration activities, they may choose to plot the number of hours volunteered as the bubble size

After this, the plot is complete and the team may select markets as per the data available.

Step 9. Customizing the marketing mix

Customizing the Marketing Mix

Marketing was originally seen as a toolbox to assist in selling products, with marketers mixing the ingredients of the toolbox to achieve the best possible sales results.

In early days there were 12 ingredients points to focus on:

1. Product Planning
2. Packaging
3. Physical Handling
4. Distribution Channels
5. Pricing
6. Personal Selling
7. Branding
8. Display
9. Advertising
10. Promotions
11. Servicing
12. Fact Finding and Analysis

However, now it has been trimmed down to just 4:

1. Product
2. Price
3. Promotion
4. Place

Market segmentation does not stand alone as a marketing strategy. Instead, it goes hand in hand with the other areas of strategic marketing, most importantly:

1. Positioning
2. Competition

In fact, the segmentation process is frequently seen as part of what is referred to as

the segmentation-targeting-positioning (STP) approach.

STP approach postulates a sequential process:

1. **Market Segmentation:** the extraction, profiling and description of segments
2. **Targeting:** The assessment of segments and selection of a target segment
3. **Positioning:** The measures an organization can take to ensure that their product is perceived as distinctly different from competing products, and in line with segment needs.

Seeing Market Segmentation as the first step in the segmentation-targeting positioning approach is useful because it ensures that segmentation is not seen as independent from other strategic decisions.

Note: It is important, however, not to adhere too strictly to the sequential nature of the segmentation-targeting-positioning process. It may well be necessary to move back and forward from the segmentation to the targeting step, before being in the position of making a long-term commitment to one or a small number of target segments.

Whether it is twelve or four, all of them should be thoroughly reviewed once the target segment or the target segments have been selected.

To best ensure maximizing the benefits of a market segmentation strategy, it is crucial to customize the marketing mix to the target segment.

Below diagram shows the traditional 4Ps the development of marketing mix.



The selection of one or more specific target segments may require the modification or re- branding of existing products, changes to prices or the selection of suitable distribution channels, and the development of new communication messages and promotion strategies that are attractive to the target segment.

One option available to the organization is to structure the entire market segmentation analysis around one of the 4Ps. This affects the choice of segmentation variables.

Product:

One of the key decisions as an organization needs to make when developing the product dimension 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. Other marketing mix decisions that fall under the product dimension are:

1. Naming The Product
2. Packaging It
3. Offering or Not Offering Warranties
4. Sales Support Services.

Price:

Typical decisions an organization needs to make when developing the price dimension

of the marketing mix include setting the price for a product, and deciding on discounts to be offered.

Place:

The key decision relating to the place dimension of the marketing mix is how to distribute the product to the customers. This includes answering questions such as: should the product be made available for purchase online or offline only or both; should the manufacturer sell directly to customers; or should a wholesaler or a retailer or both be used. Based on the data we can create the following model.

Promotion:

Typical promotion decisions that need to be made when designing a marketing mix include:

1. Developing an advertising message that will resonate with the target market
2. Identifying the most effective way of communicating this message.
3. Other tools in the promotion category of the marketing mix include public relations, personal selling, and sponsorship.

Conclusion: The principle of market segmentation is that the product and services needs of individual customers differ. Market segmentation involves the grouping of customers together with the aim of better satisfying their needs whilst maintaining economies of scale.

10. Case Study

Github link: https://github.com/Vraj103/Market_Segmentation

Thus, this final step concludes our study. However, the case study given in the material has been converted into python and given for a better understanding.