

Market Segmentation

Market segmentation is the process of dividing a larger market into smaller groups of consumers with similar needs or characteristics. It is based on a variety of factors, such as demographics, psychographics, geographic location, behaviour, and product/service features. Effective market segmentation can help businesses understand their customers more deeply, tailor their marketing messages and promotions to specific groups, and develop new products and services that better meet the needs of their target segment.

Step 1: Deciding (not) to Segment:

Cahill recommends not to segment unless the expected increase in sales is sufficient to justify implementing a segmentation strategy, stating that One of the truisms of segmentation strategy is that using the scheme has to be more profitable than marketing without it, net of the expense of developing and using the scheme itself. Croft (1994) recommends that – to maximise the benefits of market segmentation – organisations need to organise around market segments, rather than organising around products.

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. 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 (Dibb and Simkin 2008). Process-related barriers include not having clarified the objectives of the market segmentation exercise, lack of planning or bad planning, a lack of structured processes to guide the team through all steps of the market segmentation process, a lack of allocation of responsibilities, and time pressure that stands in the way of trying to find the best possible segmentation outcome (Dibb and Simkin 2008; McDonald and Dunbar 1995).

Step 2: Specifying the Ideal Target Segment:

These criteria are used to evaluate the relative attractiveness of the remaining market segments – those in compliance with the knock-out criteria. Members of the segmentation team need to select which of these criteria they want to use to determine how attractive potential target segments are. Where knock-out criteria automatically eliminate some of the available market segments, attractiveness criteria are first negotiated by the team, and then applied to determine the overall relative attractiveness of each market segment in Step 8. Knock-out criteria are used to determine if market segments resulting from the market segmentation analysis qualify to be assessed using segment attractiveness criteria. The segment must be homogeneous, distinct, large enough, match the strengths of the organisation, be identifiable, and be reachable to make the customised marketing mix accessible. Knock-out criteria must be understood by senior management, segmentation team, and advisory committee, with some requiring further specification.

McDonald and Dunbar (2012) recommend six factors as the basis for calculating segment attractiveness and organisational competitiveness. This task should be completed by a team of people, with representatives from a wide range of organisational units being included in the process. This is because each organisational unit has a different perspective on the business and will bring different positions to the deliberations. Additionally, if the segmentation strategy is implemented, it will affect every single unit of the organisation, making them key stakeholders of market segmentation analysis. The segment evaluation plot cannot be completed in Step 2 of the market segmentation analysis, but it is beneficial to select attractiveness criteria for market segments at this early stage.

At the end of this step, the market segmentation team should have a list of approximately six segment attractiveness criteria, each of which should have a weight attached to it to indicate how important it is to the organisation. The typical approach to weighting is to ask all team members to distribute 100 points across the segmentation criteria, and approval by the advisory committee should be sought.

Step 3: Collecting Data:

Empirical data forms the basis of both common sense and data-driven market segmentation. In common sense segmentation, the segmentation variable is typically one single characteristic of the consumers in the sample, such as gender. Descriptor variables such as age, number of vacations taken, and information about five benefits people seek or do not seek when they go on vacation are used to describe the segments in detail. Data-driven market segmentation is based not on one, but on multiple segmentation variables, which serve as the starting point for identifying naturally existing, or artificially creating market segments useful to the organisation.

The most important details in this text are that data quality is essential for developing a valid segmentation solution, and that empirical data can come from a range of sources, such as survey studies, observations, scanner data, and experimental studies. Optimally, data used in segmentation studies should reflect consumer behaviour, and survey data should not be seen as the default source of data for market segmentation studies. Optimally, data used in segmentation studies should reflect consumer behaviour, and the source that delivers data most closely reflecting actual consumer behaviour is preferable.

The organisation must make an important decision before segment extraction: which segmentation criterion to use. The most common segmentation criteria are geographic, sociodemographic, psychographic and behavioural. Bock and Uncles (2002) argue that the following differences between consumers are the most relevant in terms of market segmentation: profitability, bargaining power, preferences for benefits or products, barriers to choose and consumer interaction effects. Hoek et al. (1996) note that few guidelines as to the most appropriate base to use in a given marketing context exist, but the recommendation is to use the simplest possible approach. Cahill (2006) states that if demographic segmentation will work for a product or service, then use demographic segmentation, if geographic segmentation will work because of a certain region, then use geographic segmentation, and if psychographic segmentation is sexier and more sophisticated than demographic or geographic segmentation, then use psychographic segmentation.

Geographic information is the original segmentation criterion used for market segmentation. It is often used to form market segments based on the consumer's location of residence. Examples of this include language differences across countries and global companies such as Amazon selling their Kindle online. The key advantage of geographic segmentation is that each consumer can easily be assigned to a geographic unit, making it easy to target communication messages and select communication channels to reach the selected geographic segments. The most important details in this text are that living in the same country or area does not necessarily mean that people share other characteristics relevant to marketers, such as benefits they seek when purchasing a product.

It is more likely that socio-demographic criteria are the reason for both similar choice of suburb to live in and similar car preferences. 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. An example of such an international market segmentation study is provided by Haverila (2013) who extracted market segments of mobile phone users among young customers across national borders.

Experimental data can be used to form the basis of market segmentation analysis. It can be the result of field or laboratory experiments, such as tests how people respond to advertisements. It can also be the result of choice experiments or conjoint analyses, which present consumers with stimuli consisting of specific levels of product attributes and ask them to indicate which of the products they prefer. This information can be used as a segmentation criterion.

Step 4: Exploring Data:

Exploratory data analysis is the process of cleaning and pre-processing data to identify measurement levels, investigate univariate distributions, and assess dependency structures between variables. It also helps to identify measurement levels, investigate univariate distributions, and assess dependency structures between variables. Results from the data exploration stage provide insights into the suitability of different segmentation methods for extracting market segments.

The first step before beginning 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. Additionally, levels of categorical variables can be

checked to ensure they contain only permissible values. For example, gender typically has two values in surveys: female and male, and any other values are not permissible and need to be corrected as part of the data cleaning procedure.

Statistical software packages offer a variety of tools for descriptive analysis. In R, we obtain a numeric summary of the data with command `summary`, which returns the range, quartiles, and mean for numeric variables. For categorical variables, we return frequency counts and the number of missing values for each variable. Graphical methods for numeric data include histograms, boxplots, and scatter plots. Bar plots of frequency counts are useful for the visualisation of categorical variables, while mosaic plots illustrate the association of multiple categorical variables.

Histograms visualise the distribution of numeric variables, showing how often observations within a certain value range occur. To obtain a histogram, we first need to create categories of values, such as bins, and plot how many of the observations fall into each bin using one bar for each bin. We plot the bin range on the x-axis, and the frequency of observations in each bin on the y-axis.

Principal components analysis (PCA) is a technique used to transform a multivariate data set containing metric variables into a new data set with uncorrelated and ordered principal components. The first variable (principal component) contains most of the variability, the second variable contains the second most variability, and so on. After transformation, observations (consumers) still have the same relative positions to one another and the dimensionality of the new data set is the same. PCA works off the covariance or correlation matrix of several numeric variables. In most cases, the transformation obtained from PCA is used to project high-dimensional data into lower dimensions for plotting purposes.

In this case, only a subset of principal components is used, typically the first few because they capture the most variation. More than two principal components can be visualised in a scatter plot matrix.

Step 5: Extracting Segments:

Data-driven market segmentation analysis is exploratory by nature, as consumer data sets are typically not well structured. The results from any method used to extract market segments from such data will depend on the assumptions made on the structure of the segments implied by the method. Segmentation methods shape the segmentation solution, and many are taken from the field of cluster analysis. It is important to explore market segmentation solutions derived from a range of different clustering methods and understand how different algorithms impose structure on the extracted segments.

This chapter provides an overview of the most popular extraction methods used in market segmentation. Distance-based methods use a notion of similarity or distance between observations (consumers) and try to find groups of similar observations (market segments). Model-based methods formulate a concise stochastic model for the market segments. A number of methods exist which try to achieve multiple aims in one step, such as variable selection during the extraction of market segments. Data characteristics and expected or desired segment characteristics allow a pre-selection of suitable algorithms to be included in the comparison.

The size of the available data set indicates if the number of consumers is sufficient for the available number of segmentation variables, the expected number of segments, and the segment sizes. The scale level of the segmentation variables determines the most suitable variant of an extraction algorithms. Other special structures of the data can restrict the set of suitable algorithms. If the data set contains repeated measurements of consumers over time, an algorithm that takes this longitudinal nature of the data into account is needed.

Step 6: Profiling Segments:

Profiling is the step of getting to know the market segments resulting from the extraction step. It is only required when data-driven market segmentation is used, as the profiles of the segments are predefined. Profiling consists of characterising the market segments individually, but also in comparison to the other market segments. At the profiling stage, we inspect a number of alternative market segmentation solutions. Good profiling is the basis for correct interpretation of the resulting segments, which is critical to making good strategic marketing decisions. Data-driven market segmentation solutions are not easy to interpret, and 65% of 176 marketing managers surveyed in a study by Dolnicar and Lazarevski (2009) state that they have difficulties understanding data-driven market segmentation solutions.

Visualisations are useful in the data-driven market segmentation process to inspect one or more segments in detail. Statistical graphs facilitate the interpretation of segment profiles and make it easier to assess the usefulness of a market segmentation solution. Segment separation can be visualized in a segment separation plot, which depicts the overlap of segments for all relevant dimensions of the data space. Segment separation plots are simple if the number of segmentation variables is low, but become complex as the number increases. Even in such complex situations, segment separation plots offer data analysts and users a quick overview of the data situation and the segmentation solution.

Step 7: Describing Segments:

Segment profiling is the process of understanding differences in segmentation variables across market segments. Segmentation variables are chosen early in the market segmentation analysis process, and are used to extract market segments from empirical data. Step 7 (describing segments) is similar to the profiling step, except that the variables being inspected have not been used to extract market segments. Profiling and describing market segments are like going on a number of dates to get to know the potential spouse as well as possible. For example, when conducting a data-driven market segmentation analysis, profiling means investigating differences between segments with respect to the travel motives themselves.

The segment description step uses additional information available about segment members. Descriptor variables are additional variables that can be used to gain detailed insight into the nature of market segments. These variables include age, gender, past travel behaviour, preferred vacation activities, media use, use of information sources during vacation planning, or their expenditure patterns during a vacation. Good descriptions of market segments are essential for gaining detailed insight into the nature of segments and for the development of a customised marketing mix. For example, targeting segment 4 emerged from extracting segments from the Australian travel motives data set.

Segment descriptions can be used to study differences between market segments with respect to descriptor variables in two ways: descriptive statistics including visualisations, or inferential statistics. Visualisations make segment description more user-friendly.

Step 8: Selecting the Target Segment(s):

Market segmentation is a strategic marketing tool, and the selection of one or more target segments is a long-term decision significantly affecting the future performance of an organisation. After a global market segmentation solution has been chosen, a number of segments are available for detailed inspection. In Step 8, one or more of those market segments need to be selected for targeting. The segmentation team can build on the outcome of Step 2, where knock-out criteria for market segments have been agreed upon and segment attractiveness criteria have been selected, and weighed to reflect the relative importance of each of the criteria to the organisation. Optimally, the knock-out criteria have already been applied in previous steps, such as in Step 6 by inspecting their key characteristics in terms of the segmentation variables.

The most important details in this text are the steps involved in a market segmentation analysis. In both Steps 6 and 7, it becomes clear if a market segment has needed the organisation cannot satisfy. To ensure that all the market segments that are still under consideration to be selected as target markets have passed the knock-out criteria test, the segmentation team must ask a number of questions which fall into two broad categories:

- Which of the market segments would the organisation most like to target?
 - Which of the 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.

The most important details in this text are that there is no single best measure of segment attractiveness or relative organisational competitiveness, and that users must return to their specifications of what an ideal target segment looks like for them. The ideal target segment was specified in Step 2 of the market segmentation analysis, and a number of criteria of segment attractiveness, and weights quantifying how much impact each of these criteria has on the total value of segment attractiveness. To determine the attractiveness value to be used in the segment evaluation plot for each segment, the segmentation team needs to assign a value for each attractiveness criterion to each segment. The location of each market segment in the segment evaluation plot is then computed by multiplying the weight of the segment attractiveness criterion (agreed upon in Step 2) with the value of the segment attractiveness criterion for each market segment. The value of the segment attractiveness criterion for

each market segment is determined by the market segmentation team based on the profiles and descriptions resulting from Steps 6 and 7.

The organisation has chosen five segment attractiveness criteria and assigned importance weights to them. Each segment is given a rating from 1 to 10, with 1 representing the worst and 10 representing the best value. For each segment, the rating is multiplied with the weight, and all weighted attractiveness values are added. The question asked when selecting the criteria is which criteria do consumers use to select between alternative offers in the market? Possible criteria include attractiveness of the product to the segment in view of the benefits segment members seek, suitability of the current price to segment willingness or ability to pay, availability of distribution channels to get the product to the segment, segment awareness of the existence of the organisation or brand image of the organisation held by segment members.

Step 9: Customising 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. Borden (1964) postulated that marketers have at their disposal 12 ingredients: product planning, packaging, physical handling, distribution channels, pricing, personal selling, branding, display, advertising, promotions, servicing, fact finding and analysis. Market segmentation does not stand independently as a marketing strategy, but is part of the segmentation-targeting-positioning (STP) approach. The STP approach postulates a sequential process, starting 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). It is important to not adhere too strictly to the sequential nature of the STP process, as it may be necessary 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 product dimension of the marketing mix is a key decision an organisation needs to make when developing the product. This includes specifying the product in view of customer needs, naming the product, packaging it, offering or not offering warranties, and after sales support services. The market segments obtained for the Australian vacation activities data set using bi-clustering present a good opportunity for illustrating how product design or modification is driven by target segment selection. For example, target segment 3 members in terms of vacation activities engage much more than the average tourist in visiting museums, monuments and gardens, and like to do scenic walks and visit markets. Possible product measures may include developing a new product, such as a MUSEUMS, MONUMENTS & MUCH, MUCH MORE product (accompanied by activities pass) that helps members of this segment to locate activities they are interested in, and points to the existence of these offers at the destination during the vacation planning process. Additionally, proactively making gardens at the destination an attraction in their own right.

Step 10: Evaluation and Monitoring:

Market segmentation analysis must be viewed as an ongoing strategic decision process. Lilien and Rangaswamy state that segmentation must be viewed as an ongoing strategic decision process. Haley elaborates that the world changes and the only practical option for an intelligent marketer is to monitor his or her market continuously. After the segmentation strategy is implemented, two additional tasks need to be performed on an ongoing basis: evaluation of the effectiveness of the segmentation strategy, and monitoring of the market segmentation strategy. This monitoring process can range from a regular review by the segmentation team, to a highly automatised data mining system alerting the organisation to any relevant changes to the size or nature of the target segment.

The aim of evaluating the effectiveness of the market segmentation strategy is to determine if developing a customised marketing mix for one or more segments has achieved the expected benefits for the organisation. In the short term, the primary desired outcome for most organisations will be increased profit. For non-profit organisations, it may be other performance criterion such as donations raised or volunteers recruited. A tracking study would provide insight into how the organisation is perceived in the market place. If the segmentation strategy is successful, the organisation should be perceived as being particularly good at satisfying certain needs, providing a competitive advantage for the organisation.

Segments evolve over time, and Haley (1985) recommends a tracking system to ensure any changes are identified and acted upon. To assess potential segment evolution correctly, it is important to know the baseline stability of

market segments. The MONIC framework developed by Spiliopoulou et al. (2006) allows the following segment evolution over time: segments can remain unchanged, segments can be merged, existing segments can be split up, segments can disappear, and completely new segments can emerge. This method uses a series of segmentation solutions over time, and compares those next to each other in time. For the procedure to work automatically, repeated measurements for at least a subset of the segment members have to be available for neighbouring points in time; the data needs to be truly longitudinal.

Case study on McDonald's Fast-Food chain:

[https://github.com/jtndr26/McDonalds/blob/main/McDonalds Market Segmentation.ipynb](https://github.com/jtndr26/McDonalds/blob/main/McDonalds%20Market%20Segmentation.ipynb)