MARKET SEGMENTATION STUDY REPORT

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Abstract

The process of segmenting a market involves breaking it up into homogeneous groupings that share similar needs, interests, and/or behaviours. Measurability, accessibility, substantiality, and responsiveness of the identified segments are used to gauge how effective the segmentation process is. Due to resource limitations, businesses frequently must focus on a small number of the segments they have identified instead of pursuing all of them (s).
Targeting is the term for this. Here, we'll briefly go over the approaches typically used to divide markets into consumer and commercial segments. It is described how to segment consumers using geographic, demographic, psychographic, and product-related criteria.
In the last we try to implement McDonald model using market segmentation that helps to understand that how the market segmentation helps us to analyse and affect any company.

Introduction

The technique of market segmentation divides the target market into smaller groups based on shared features like age, income, personality traits, behavior, interests, requirements, or geography. To maximize sales, marketing, and other activities, these categories might be leveraged.

Based on how different consumer types see the total value of various goods and services, segmentation enables companies to develop strategies for each group of customers. They may therefore deliver a more tailored message with confidence that it will be well-received in this way.

Market segmentation makes the assumption that various market groups require various marketing strategies, including various products, pricing, promotions, distribution, and other marketing elements. Market segmentation is not only intended to determine the most lucrative categories, but also to create profiles of important segments in order to comprehend their demands and motives for making purchases. The formulation and planning of marketing strategies is then supported by insights from segmentation analysis.

Many marketers use the S-T-P approach (Segmentation → Targeting → Positioning) to provide the framework for marketing planning objectives. That is, a market is segmented, one or more segments are selected for targeting, and products or services are positioned in a way that resonates with the selected target market or markets.

 The overall aim of segmentation is to identify *high-yield segments—that* is, those segments that are likely to be the most profitable or that have the most growth potential—so that they can be selected for special attention (i.e. become <u>target markets</u>). Many different ways to segment a market have been identified. Business-to-business (B2B) sellers might segment the market into different types of businesses or countries, while business-to-consumer (B2C) sellers might segment the market into demographic segments, such as lifestyle, behavior, or socioeconomic status.

Step 1: Deciding (NOT) to segment

1.1 Implications:

The decision to embark on a market segmentation procedure must be evaluated in light of the potential ramifications and outcomes. Because the commitment is long-term in nature, any error or unanticipated event could prove to be costly to the business. To justify the expenses of marketing and resource allocation, the benefits and revenues from segmentation must be adequate. It is advised not to segment and to keep using the current marketing plan until these requirements are accomplished. Prices for different products, net worth, market impact, and internal corporate structure are all subject to change. These significant changes require careful consideration and discussion.

1.2 Barriers:

The difficulties of choosing to move on with market segmentation must be taken into account. Senior management problems when the absence of a motivating leader may cause a loss of direction and direction. Office politics, inflexibility, a lack of communication, and a disregard for new ideas are all factors in management problems where the company's structure and hierarchy are not maintained. This could eventually prevent the organization from implementing the desired segmentation approach. As a result, the business needs to be ready to meet and overcome these obstacles.

Step 2: Specifying the ideal target segment

The next step after deciding to segment is choosing the best segment to work on. Numerous variables have a role in decision-making, including the degree of substance, ease of accessibility, quantifiability, market size, profitability, and price sensitivity as well as sociopolitical influences, compatibility, adaptability, and risk-return ratios. These can be divided into just two groups.

2.1 Knockout Criteria

These are the fundamental, non-negotiable requirements for segmentation. They offer a way to narrow down market categories so that attractiveness criteria can be used later.

1. Homogeneity and Distinctiveness: Each segment's members must be sufficiently similar to one another and sufficiently different from those of other segments.

2. Size and Identity: The company must have a sufficient number of members to generate a respectable profit while also standing out in the broad scheme of the market.

3. Reachability and Compatibility: The business must be able to meet the needs of segment participants and should facilitate an open two-way communication channel.

The senior authority of the organization needs to fully comprehend these.

2.2 Attractiveness Criteria

Several attractiveness criteria can be used to further evaluate a market segment after it has been qualified. They aren't binary in nature; instead, a random scale is used to assign ratings to the portions.

2.3 Structured Process

Plots of segment attractiveness in relation to organizational competitiveness are created for different target segments. There are no more than six potential influences on these two variables that are selected after discussion. Since the segments are still unavailable, these plots cannot be finished in this step. To best describe the target segments, six attractiveness factors (with varying weights) are chosen.

Step 3 Collecting Data

3.1 Segmentation Variables: 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.

In common-sense segmentation, one segmentation variable is utilized to divide the sample into market categories. Descriptor variables are other personal traits found in the data. In a data-driven market, segmentation is based on numerous segmentation characteristics rather than just one. These segmentation factors are used to discover naturally occurring or intentionally created market categories that are beneficial to the company.

3.2 Segmentation Criteria

Geographic segmentation

Segmenting customers by geography means understanding the environment where the customer lives.

Potential consumers' demands and interests differ depending on their geographic area, climate, and region, and knowing this enables you to decide where to sell and market a brand, as well as build a firm.

Demographic segmentation
Demographic segmentation is the process of partitioning a market based on factors such as age, gender, nationality, level of education, family size, employment, and income.
Because it is based on knowing how consumers use your products and services and how much they are prepared to pay for them, this is one of the most extensively utilized kinds of market segmentation.

Psychographic segmentation

Psychographic segmentation is the process of dividing a target audience into groups based on their actions, lifestyles, attitudes, and interests.

Market research approaches such as focus groups, surveys, interviews, and case studies can be useful in accumulating this sort of conclusion to understand the target population.

Behavioral segmentation

Consumer behaviors, trends, and the way customers go through their decision-making and purchase processes are the subjects of behavioral segmentation.

Behavioral segmentation refers to how people feel about your brand, how they use it, and how conscious they are of it.

This sort of data is collected in the same way as psychographic data is collected. This enables marketers to create a more focused strategy.

3.3 Data from Survey Studies

Most market segmentation analyses are based on survey data. Survey data is cheap and easy to collect, making it a feasible approach for any organization.

3.3.1 Choice of Variables: The quality of the market segmentation solution depends on carefully picking the factors that are used as segmentation variables in common-sense segmentation or as segmentation variables in data-driven segmentation.

3.3.2 Response Options: Binary or dichotomous data is generated when respondents can only answer in one of two ways. Nominal variables are options that allow respondents to choose a response from a list of unordered categories. Nominal variables may be turned into binary data by inserting a binary variable for each of the answer alternatives. Metric data is generated through options that allow respondents to enter a number, such as age or number of nights spent at a hotel.

3.3.3 Response Styles: Because most segment extraction algorithms can't tell the difference between a data entry expressing a respondent's belief and a data entry indicating both a respondent's belief and a response style, answer styles have an impact on segmentation findings.

3.3.4 Sample Size: The accuracy of the retrieved segments improves as the sample size grows. The capacity of an algorithm to discover the optimal market segmentation solution is constantly improved by larger sample sets. The sample size should be large enough for an algorithm to extract the appropriate parts.

3.3.5 Data from Internal Sources and Experimental Studies: Organizations have increasing access to large volumes of internal data that may be mined for market segmentation studies. Scanning data available to grocery shops, booking data available through airline loyalty programs, and internet transaction data are just a few examples. The power of such data comes from the fact that it represents actual customer behavior. Experiments in the field or in the laboratory can yield data. They might, for example, be the product of studies on how people react to various commercials.

Step 4 Exploring Data

Exploratory Data Analysis (EDA) is a method of analyzing data via the use of visual approaches. With the use of statistical summaries and graphical representations, it is used to find trends, patterns, and test assumptions.
Data Cleaning:
The act of finding and fixing faulty, incomplete, duplicated, erroneous, and irrelevant data from a reference set, table, or database is known as data cleansing.

Descriptive analysis is the type of analysis of data that helps describe, show, or summarize data points in a constructive way such that patterns might emerge that fulfill every condition of the data.

Pre-processing:

- **Categorical Variables:** Merge the levels of categorical variables before further analysis. This is another analysis. If it makes sense, convert the categorical variable to a numeric variable. Merging the levels of categorical variables is useful if the original category is the same.
- **Numerical Variable:** A segmentation variable's range of values influences its relative relevance. Extraction of segments using a distance-based technique. If your data contains outliers (observations that are extremely different from the rest of the data), you may need to use a different standardization procedure.

Principal Component Analysis (PCA) turns a multivariate dataset into new datasets including variables called Principal Components, which are uncorrelated and arranged by significance. The first variable (principal component) includes most of the variability, the second principal component is Components, and so on. The dimensions of the new dataset are the same since the principal components analysis produces as many new variables as old variables. Observations (consumers) have the same relative position to each other after conversion.

STEP 5 – EXTRACTING SEGMENTS

In this step we use Data Science and Machine Learning model to find and create the segments, it emphasizes over grouping consumers and revealing the naturally existing or creating artificial market segment model. Extraction method is used for this purpose
There are various types of extraction methodologies
We can broadly classify them as k-means clustering analysis, binary distributions, and finite mixture of regressions.

1. **Grouping Consumers:** Data Science used market analysis is basically evident in Grouping Consumers. Client knowledge sets a measure which is usually unstructured. Consumers are presented with all the available forms of experiences which happened in their past, but a two dimensional plot of consumer's product preferences don't provide the adequate information. But the Data which is cleaned and visualized by creating a segmented grouping through any methodology for a client by a Data Scientist often resolves the issue. Assumptions could be made by applying this strategy and implementing for betterment of client's business and their consumer experience in future.
2. **Distance-Based Methods:** Distance measurement plays a vital role in Machine Learning. They provide a stepping stone for many popular

algorithms involved in Machine Learning like the K-nearest neighbors for supervised learning and K-means clustering for unsupervised learning.The measure and the usage of the type of measure depends on the type of problems, some of the distance are described below-

- **Hamming Distance:** Hamming Distance calculates the distance between two binary vectors, also termed as binary strings or bitstrings.
  Formula of Hamming Distance = summation i to N abs(v1[i] - v2[i]).
- **Euclidean Distance:** Euclidean distance calculates the distance between two real-valued vectors, we likely use euclidean distance when calculating the distance between two rows of data that have numerical values, like floating points or integers. If columns have values with different scales, but we have to normalize or standardize the numerical values across all columns before calculating euclidean distance, otherwise columns having larger values will dominate.
  Formula of Euclidean Distance = sqrt(sum for i to N(v1[i]-v2[i])^2).
- **Manhattan Distance:** Manhattan Distance which is better known as Taxi-cab distance or City Block distance, calculates the distance between two real-valued vectors. It is perhaps more useful to vectors that describe objects on a uniform grid. The Taxicab name for measure refers to intuition for what the measure calculates. For two vectors in an integer feature shape we must use Manhattan Distance instead of Euclidean Distance.
  Example of Manhattan Distance = summation i to N sum|v1[i] - v2[i]|.

3.   Hierarchical Methods: Hierarchical clustering methods are a better way of grouping data because they tell how a person would approach the task of dividing a set of n observations into segments. If the aim is one market segment k=1, the only possible solution is one big set of data, if there are k consumers then there will be k segments. Each consumer represents their own cluster.

4.   Partitioning Methods: For large data sets dendrograms are hard to read, and the matrix of pairwise distance does not fit into the computer's memory. For data sets having more than thousand observations, clustering methods creating a single partition are more suitable than a nested sequence of partitions.Only distances between each consumer in the data set and the center of the segments are computed.

- **K-Means and K-Centroid Clustering-**
  1. Specify number of clusters K.
  2. Initialize centroids by shuffling the dataset and randomly selecting K data points for the centroids without replacement.
  3. Keep iterating until there is no change to the centroids.

5. **Model Based Methods:** Newer alternative for distance based methods is Model Based Methods.

- **Finite Mixture of Regressions:** Finite mixtures of distributions are similar to distance-based clustering methods and in many cases – result in similar solutions.
- **Finite Mixtures of Distributions:** Finite mixture distributions are a particular class of probability distributions that are particularly useful for modeling data thought to contain relatively distinct subgroups of clusters of observations.
  These are of two types:
  1. Normal Distributions
  2. Binary Distributions
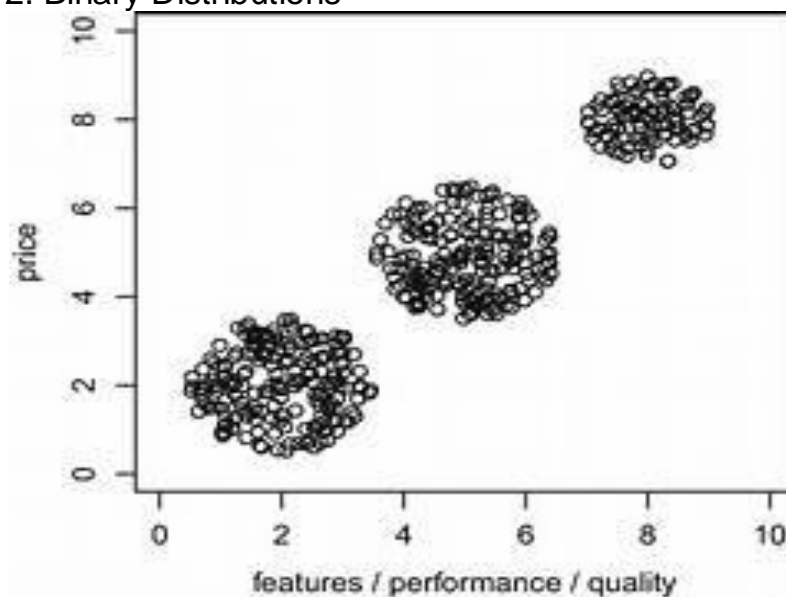
STEP 6 – PROFILING SEGMENTS

Profiling segments is the sixth step and it is done after the extraction step. It is done when data-driven market segmentation is used.

Traditional approaches to profiling market segments include large tables that provide, for each segment, exact percentages for each segmentation variable or high level summaries simplifying segment characteristics. However, these approaches can be hard to interpret.

Visualization techniques can be used to solve this problem.

Identifying Defining Characteristics of Market Segments:

The segment plotting shows for all segmentation variables, how each market segment differs from the overall sample. Good visualizations facilitate

interpretation by managers who make long-term decisions based on segmentation results.

Assessing Segment Separation:

Segment separation can be visualized in a segment separation plot. The segment separation plot depicts the overlap of segments. Segment separation plots depend on the complexity of the variables . The segment separation plot consists of

(1) A scatter plot of the (projected) observations coloured by segment membership and the (projected) cluster hulls.

(2) A neighborhood graph. Neighborhood graphs (black lines with numbered nodes) indicate similarity between segments. The width of the black line is thicker if more observations have these two segment centers as their two closest segment centers.

STEP 7 – DESCRIBING SEGMENTS

Segment profiling is about understanding differences in segmentation variables across market segments.

This part is similar to the profiling step.The difference is the variables being inspected have not been used to extract market segments.

Segment descriptions are essential for developing a customized marketing mix.

Using Visualization to describe Market Segments

There are two basic approaches for nominal and ordinal descriptor variables or metric descriptor variables.

These methods have advantages like it simplifies the interpretation of results,and integrates information on the statistical significance of differences, thus avoiding the over-interpretation of insignificant differences.

Testing for Segment Differences in Descriptor Variables

Run a series of independent tests for each variable of interest.The outcome of the segment extraction step is segment membership Segment membership can be treated like any other nominal variable.

It represents a nominal summary statistic of the segmentation variables

Predicting Segments from Descriptor Variables

In this a regression model with the segment membership as a categorical dependent variable, and descriptor are used.

Also the variables are independent variables.

Various methods used are:

1) Binary Logistic Regression
2) Multinomial logistic regression
3) Tree-Based Methods

STEP 8 – SELECTING THE TARGET SEGMENT(s)

In this step, the selection of market segments occurs. The selection of market segments is a critical decision since it affects the future performance of the company.
While selecting a market segment the user has to target things like the organization's target market.

The main component for selecting the Target segment are:
Segment Attractiveness
Relative organizational competitiveness

a) MARKET SEGMENT EVALUATION

The market evaluation is done with the help of a decision matrix. Decision matrices along with their visualization help the user evaluate different market segments. The market segmentation team has to decide which variation of the decision matrix needs to be
used in order to get the most useful framework for the organization

Few factors that make the market attractive

- **Market Size:**
  In the selection of the target market segment, one of the important factor is size as many times larger markets are considered more attractive than small ones. Also, Larger markets are more competitive as many suppliers are targeting the same market.

- **Market growth:**
  It has been observed that a growing market gets a lot of attention than a declining market.

While targeting market segments growth rate of the segment should be considered.

- **Attractiveness:**
It is also an important factor for evaluating the target market segment. The company generally looks for low-risk, high-growth rate segments while selecting a target market segment.
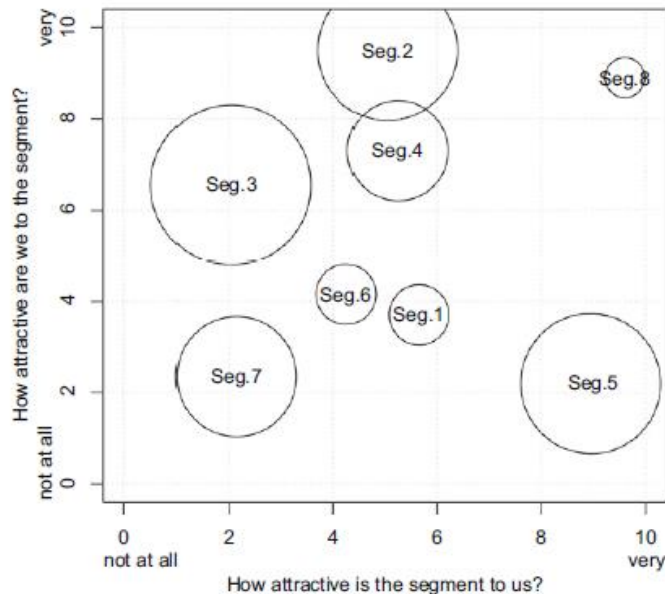
This fig is an example of segment evaluation plot

STEP 9 – CUSTOMIZING THE MARKETING MIX

Marketing strategy is not just Market segmentation.There are other areas such as positioning and competition which should be considered after segmentation.

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 organization can take to ensure that their product is perceived as distinctly different from competing products, and in line with segment needs).

It is however important to not strictly adhere to the sequential nature of segmentation-targeting-positioning process.

| How the target segment decision affects marketing mix development

For the Targeting process there are 4Ps which are important which are Product,Promotion,Place and Price.

Product:
For developing products we need to specify the product in view of customer needs. Some of the decisions involving it are naming the product, packaging it, offering or not offering warranties, and after 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.
Ideally, we want to have information about actual
expenditures across a wide range of expenditure categories, or information about price elasticity, or reliable information about the segment's willingness to pay for a range of products.
It helps us to know the price dimension can be used to best possibly harvest the targeted marketing approach.

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 wholesaler or a retailer or both be used.

Promotion:
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. Other tools in the promotion category of the marketing mix include public relations, personal selling, and sponsorship.

STEP 10– EVALUATING AND MONITORING

Market segmentation analysis does not end with the selection of the target segment,and the development of a customized marketing mix.

We further need to evaluate effectiveness of segmentation strategy
Much effort goes into conducting the market segmentation analysis, and customizing the marketing mix to best satisfy the target segment's needs. These efforts should result in an increase in profit, or an increase in achievement of the organizational mission. If they did not, the market segmentation strategy failed.

We also need to Monitor as the market is not static.
This monitoring process can range from a regular review by the segmentation team, to a highly automated data mining system alerting the organization to any relevant changes to the size
or the nature of the target segment.

Evaluating the Success of the Segmentation Strategy:

The aim of evaluating the effectiveness of the market segmentation strategy is to determine whether developing a customized marketing mix for one or more segments did achieve the expected benefits for the organization.

In the short term,the primary desired outcome for most organizations will be increased profit. For non for profit organizations it may be some other performance criterion, such as the amount of donations raised or number of volunteers recruited. These measures can be monitored continuously to allow ongoing assessment of the segmentation strategy. In addition, taking a longer term perspective, the effectiveness of targeted positioning could be measured.

Stability of Segment Membership and Segment Hopping:

Changes in segment membership are problematic if
(1) segment sizes change (especially if the target segment shrinks), and if
(2) the nature of segments changes in terms of either segmentation or descriptor variables.

Changes in segment size may require a fundamental rethinking of the segmentation strategy. Changes in segment characteristics could be addressed through a modification of the marketing mix.

The changes discussed so far represent a relative slow evolution of the segment landscape. In some product categories, segment members change segments regularly, they segment hop. Segment hopping does not occur spuriously. It can be caused by a number of factors. For example, the same product may be used in different situations, and different product features may matter in those different situations; consumers may seek variety; or they may react to different promotional offers.

Accepting that segment hopping occurs has implications for market segmentation analysis, and the translation of findings from market segmentation analysis into marketing action. Most critically, we cannot assume that consumers are well behaved and stay in the segments. Optimally, we could estimate how many segment members are hoppers. Those may need to be excluded or targeted in a very specific way.

Segment Evolution:
Segments evolve. Like any characteristic of markets, market segments change over time. The environments in which the organization operates, and actions taken by competitors change.

A number of reasons drive genuine change of market segments, including:evolution of consumers in terms of their product savviness or their family life cycle; the availability of new products in the category; and the emergence of disruptive innovations changing a market in its entirety.

First organization to adapt to change is a source of competitive advantage. And, in times of big data where fresh information about consumers becomes available by the second, the source of competitive advantage will increasingly shift from the ability to adapt to the capability to identify relevant changes quickly. Relevant changes include changes in segment needs, changes in segment size, changes in segment composition, changes in the alternatives available to the segment to satisfy their needs as well as general market changes, like recessions.

Case Study: McDonalds Market Segmentation Analysis

The purpose of this case study is to offer another illustration of market segmentation analysis using a different empirical data set.

The dataset used in this case study:
https://homepage.boku.ac.at/leisch/MSA/datasets/mcdonalds.csv

The GitHub link for McDonald MSA in Python:

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