Market Segmentation Study Task

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Abstract:

Businesses may not be in a position to satisfy all of their customers, every time. It may prove difficult to meet the exact requirements of each individual customer. People do not have identical preferences, so rarely does one product completely satisfy everyone. Therefore, many companies may usually adopt a strategy that is known as target marketing. This strategy involves dividing the market into segments and developing products or services to these segments. A target marketing strategy is focused on the customers' needs and wants. Hence, a prerequisite for the development of this customer-centric strategy is the specification of the target markets that the companies will attempt to serve. The marketing managers who may consider using target marketing will usually break the market down into groups (segments). Then they target the most profitable ones. They may adapt their marketing mix elements, including, products, prices, channels, and promotional tactics to suit the requirements of individual groups of consumers.

A market segment is a group of individuals, groups or organizations who may share the same interests, trajts and characteristics. The consumer segments may have similar needs, wants and expectations. Therefore, businesses should ask themselves which segments should they serve? To answer this question, the businesses must determine the most appropriate ways to distinguish and to differentiate their segments. Once the segments have been identified they must customize their offerings to satisfy each and every one of them.

STEP-1: Deciding (not) to Segment

Market segmentation is the process where the wide range of customers are categorized as groups/clusters based on similarity criteria. Usually, business organizations who aim for catering to all sections of customers choose the market segmentation model. But now the question here is will the market segmentation model hold strong for all kinds of organizations and people working in them? This step explains some of the barriers for the model, only without which it is safe to exploit the market segmentation strategy. To maximize the benefits of market segmentation, organizations need to organize around segments rather than products.

Points to consider for deciding whether or not to proceed market segmentation

1. Organization should be market-oriented
2. It should be willing to adapt to constant changes and encourage new ideas
3. It should be able to view the strategy as a long term plan
4. An organization should have well established communication across all its units.

5. The organization should have sufficient financial resources in order to cater to all sections of customers

6. Senior managers in the organization should be determined throughout the process, and have strong commitments and involvements

7. Market segmentation as a concept should be fully understood otherwise the concern teams should be well trained

8. There should be no discrepancies in market segmentation analysts, and this is the job of the senior analysts

9. Teams should consist of experts for marketing, data and analysis

10. An organization should set up committees to represent all units

11. A clear, structured process should be followed for market segmentation analysis

12. The team members should not have any work/time pressure to ensure that the work done is efficient

STEP-2: Specifying the Ideal Target Segment

Market segmentation relies heavily on user input. This user input is not limited to negotiations at the start of the process or development of a marketing mix at the end of the process. The user must be involved in most stages of the technical aspects of market segmentation analysis. In this step the organization must determine two segment evaluation criteria- knock-out criteria and attractiveness criteria.

-KNOCK-OUT CRITERIA

It is used to determine if market segments qualify to be assessed using segment attractiveness criteria This criteria includes:

- Homogeneity
- Distinctness
- Size
- Match
- Identifiability

Reachability of the segments. The market segments which dan't comply with these points can be automatically eliminated. The knock-out criteria must be understood by senior management, the segmentation team itself and the advisory committee of step-1.

-ATTRACTIVENESS CRITERIA

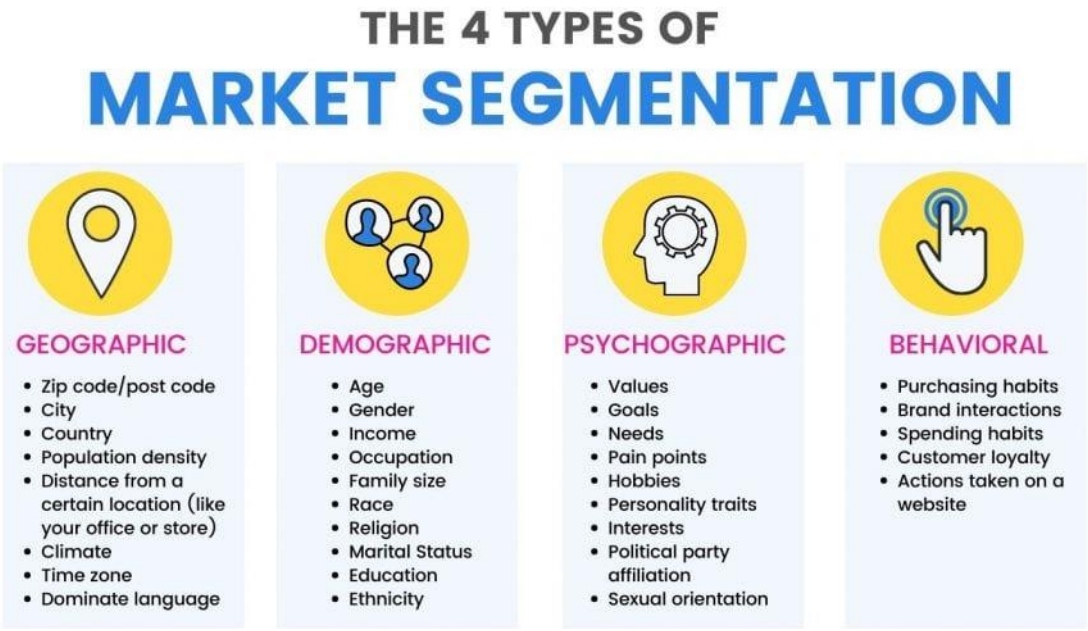
The attractiveness across all criteria determines whether a market segment is selected as a target in market segmentation analysis. The available criteria for assessment of market

segment attractiveness should be individually studied. These criteria should be discussed with fellow team members of the segmentation team and six criteria should be finalised. Certain points should be distributed to these six criteria in a way that reflects the relative importance of each of the attractiveness criteria. The weights assigned should be negotiated with the segmentation team to draw a conclusion. The final selected segment attractiveness criteria and corresponding weights need to be presented to the advisory committee for discussions, if required.

STEP 3: Collecting Data

Empirical date has a major contribution for the success of market segmentation (both common sense and data-driven wise). High quality empirical data is necessary for building a valid segmentation solution. A segmentation variable is that variable in the empirical data which is used in segmentation to split the sample into market segments. In common sense segmentation this is usually only one characteristic/feature of the consumers in the sample while in data-driven market segmentation it is a set of multiple features in general The variables spart from the segmentation variables are known as descriptor variables which are used to describe the segments in more detail. Description of segments is critical for developing a marketing mix targeting the segments

The term segmentation criterion is broader than the segmentation variable. While the segmentation variable refers to one measured value, segmentation criterion on the other hand relates to the nature of information used for market segmentation.



The most common segmentation criteria are as follows:

Geographic Segmentation - It is seen as the original segmentation criterion for market segmentation. Here, the consumer's location of residence serves as the only criterion to

form market segments. The key advantage of geographic segmentation is that each consumer can easily be assigned to a geographic unit which implies that it would be easy to target communication messages, select communication channels, etc., to reach the selected geographic segments. The disadvantage is that living in the same area doesn't necessarily mean that people share other characteristics relevant to the marketers

Socio-Demographic Segmentation -include age, gender, education and income. It has the advantage of segment membership being determined for every consumer. But often, the sociodemographic criterion is not the cause for product preferences, thus not providing sufficient market insights for optimal segmentation decisions

Psychographic Segmentation - These majorly include people's beliefs, interests, preferences, aspirations, benefits sought when purchasing a product, etc. The psychographic approach has the advantage that is generally more reflective of underlying reasons for differences in consumer behaviour. The disadvantage is that this approach has an increased complexity of determining segment memberships for consumers and that its power depends heavily on reliability of empirical measures used to capture psychographic dimensions of interest

Behavioural Segmentation Here, similarities in behaviour can directly be searched. The possible behaviours include prior experience with the product frequency of purchase, amount spent on purchasing the product on each occasion and information search behaviour. It emerged as superior to the geographic variables. The key advantage of behavioural approaches is that, if based on actual/recorded behaviour rather than stated behaviour, the very behaviour of interest is used as the basis of segment extraction

Survey data is a feasible approach for any organisation for market segmentation analysis But survey data is contaminated by biases and largely differs from actual or recorded or observed data. The biases can affect the quality of market segmentation solutions negatively. A few key aspects to be considered when using survey data are as follows

Choice of Variables - Only relevant variables should be included. This is for many reasons. Firstly, inclusion of unnecessary variables can make questionnaires lengthy for respondents which may reduce the quality of responses as questions go by Secondly, the dimension of the feature set will be unnecessarily large making market segments extraction tedious. Variables that are unnecessary are called noisy variables or masking variables.

Response Options-

- Binary or Dichotomous data Represented by Os and
- Nominal variables - Answers should be selected from a range of unordered categories
- Metric data Options that require responses in numbers like age, height,
- Ordinal data Limited number of ordered answer options larger than two

Response Styles - If a bias is displayed by a respondent consistently over time, and independently of the survey questions asked, it represents a response style Response styles

affect segmentation solutions because commonly used segment extraction algorithms fail to differentiate between a data entry reflecting a respondent's belief and response style. Therefore, it is critical to minimise response styles while capturing the data

Sample Size- With very small sample size it gets difficult to decide on segments/clusters. Addressing this issue, a Viennese psychologist named Formann recommends that the sample size should be at least 2, where p is the number of segmentation variables. Qiu and Joe suggest that the sample size should be at least ten times the number of segmentation variables times the number of segments in the data (10 p. k where p represents the number of segment variables and k represents the number of segments) for equally sized segments. If the segments are unequally sized, they suggest a sample size of at least 10 p.

STEP 4: Exploring Data Data Exploration helps:

- Identify the measurement levels of the variables
- Investigate the univariate distributions of each of the variables
- Assess dependency structures between variables Data need to be pre-processed and prepared so it can be used as input for different segmentation algorithms.

Results from the data exploration stage provide insights into the suitability of different segmentation methods for extracting market segments.

Data Cleaning : Before analysing data, ensure it's clean by verifying accurate values and consistent labels. Check for plausible ranges in metric variables and permissible values in categorical ones, correcting any discrepancies during the cleaning process.

Descriptive Analysis : Understanding data prevents misinterpretation in complex analyses. Descriptive statistics and graphical representations, such as histograms and bar plots, provide insights into numeric and categorical variables, aiding in data interpretation and visualization.

Pre- Processing : Pre-processing of categorical variables commonly involves either merging levels to simplify categories or converting them into numeric forms, depending on the context. This helps manage complexity and enhance analysis, as seen in the example of income categories simplification. The range of values in segmentation variables impacts their influence in distance-based segmentation methods. Standardizing variables, such as transforming them to a common scale, helps balance their influence on segmentation results, particularly when variables have different ranges of values, ensuring fair weighting across all variables.

PCA (Principal Component Analysis) : PCA transforms multivariate data into uncorrelated principal components, ordered by importance. It maintains relative positions of observations while offering a new perspective on the data. Typically used for dimensionality reduction in visualization, focusing on the first few principal components capturing most variation.

STEP 5: Extracting Segments

5.1 Grouping Consumers:

• Market segmentation analysis is exploratory, driven by unstructured consumer data.
• Results depend on the chosen extraction algorithm and assumptions made about segment structure.
• No single algorithm is universally superior; each has its own tendencies and limitations.
• Common extraction methods include distance-based and model-based approaches.
• Some methods incorporate variable selection during segmentation.
• Treatment of binary segmentation variables depends on the analysis objective: symmetrically or asymmetrically.
• Distance-based methods can accommodate asymmetry in binary variables, extracting segments based on shared attributes.

5.2 Distance Based Methods: - Distance Measures: Distance measures are crucial in market segmentation analysis, with Euclidean and Manhattan distances being common choices.
Euclidean Distance: Direct "straight-line" distance between points, suitable for equally scaled dimensions.
Manhattan Distance: Considers movement along grid-like streets, useful for varied scales or dimensions. Asymmetric binary distance highlights shared uncommon activities, treating 0s and 1s differently. Understanding distance measures is vital, for instance, larger numerical values in dimensions can dominate distance calculations. Selecting the right measure ensures segmentation outcomes accurately reflect data patterns.
Hierarchical Methods: Hierarchical clustering methods mimic human-like grouping of data into segments, ranging from one large segment to individual segments for each consumer, with divisive and agglomerative approaches representing two ends of the spectrum.
Divisive Method: Starts with the entire dataset and splits it iteratively into smaller segments until each consumer forms their own segment.
Agglomerative Method: Begins with each consumer as a singleton segment, gradually merging the closest segments until the dataset forms one large segment. Both methods result in a sequence of nested partitions, ranging from one segment to n segments. The Lance-Williams framework unifies agglomerative clustering algorithms, ensuring deterministic outcomes with no randomness in the process.
- Partitioning Methods Hierarchical clustering is ideal for small datasets but impractical for larger ones due to dendrogram complexity and memory limitations. For datasets over 1000 observations, single partition clustering is preferred, as it computes distances only between observations and segment centers, reducing computational load. Partitioning algorithms efficiently optimize for a specific number of segments, bypassing dendrogram construction and heuristic cutting.

5.3 Model-Based Methods:

Traditional vs. Modern Approaches: While distance-based methods have a long history in market segmentation, recent attention has shifted towards model-based methods, notably mixture methodologies.
Impact of Model-based Methods: Wedel and Kamakura predict that mixture models will have a significant influence on both academia and practice, alongside conjoint analysis, in shaping market segmentation analysis.

Pragmatic Perspective: Model-based methods are viewed as additional tools for segment extraction, offering a distinct approach to exploring data compared to traditional distancebased methods.
Assumptions of Model-based Methods: Unlike distance-based approaches, model-based methods assume segment characteristics and sizes, refining them based on empirical data rather than relying on similarities or distances. Finite Mixture Models: Model-based methods, such as finite mixture models, establish a fixed number of segments and adjust segment characteristics based on the data, providing a structured yet flexible approach to segmentation analysis.

Finite Mixtures of Distributions : Model-based clustering fits a distribution to the dependent variable only, while finite mixtures of distributions use the same segmentation variables without incorporating additional consumer information. - Normal Distributions - Binary Distributions Finite Mixtures of Regressions : Finite mixtures of distributions resemble distance-based clustering methods but offer varied outcomes, while finite mixtures of regression models provide a distinct approach to market segmentation analysis. Extensions and Variations Finite mixture models provide versatility by accommodating diverse data types and mitigating response style effects. They strike a balance between continuous distribution and distinct segment modelling, allowing for both while permitting variation within segments. These models are instrumental in clustering time series data and capturing changes in consumer behaviour over time, especially in tracking brand choices and shifts in customer value systems. They incorporate descriptor variables to capture variations in segment sizes, with concomitant variables enabling their implementation using packages like flexmix.

5.4 Algorithms with Integrated Variable Selection: Algorithms often assume all segmentation variables contribute equally, but redundant or noisy variables may exist. Steinley and Brusco's filtering approach retains only relevant variables above a threshold, while for binary data, biclustering and VSBD help select suitable variables during segment extraction. Factor-cluster analysis compresses variables into factors before segmentation, offering a streamlined approach.

Biclustering Algorithms : - Biclustering handles both consumers and variables together, useful for various data types. - Originally developed for genetic data challenges, biclustering e=ectively manages noisy variables. - Popular algorithms vary in defining biclusters, focusing on identifying consumer groups with shared variables. - Crucial for tasks like market segmentation, biclustering aims to find large consumer groups with common activities. It’s advantage and where to use : Biclustering is advantageous for market segmentation with numerous variables, avoiding suboptimal consumer groupings common in standard techniques. It doesn't require data transformation, unlike methods like principal components analysis, which may introduce bias by altering segmentation variables.

Variable Reduction: Factor-Cluster Analysis Factor-cluster analysis involves a two-step process in market segmentation, where segmentation variables are first factor analysed, and then factor scores are utilized to extract market segments. This approach is justified when empirical data stems from validated psychological test batteries, like IQ tests, designed with

variables loading onto factors. However, using factor scores should be simultaneous with group extraction or provided separately, rather than derived in a data-driven manner. In practice, factor-cluster analysis is often employed when the number of original segmentation variables is excessive. A rule of thumb suggests a sample size should be at least 100 times the number of segmentation variables, posing challenges as many studies use fewer consumers than recommended.
Running factor-cluster analysis to address the issue of an excessive number of segmentation variables relative to sample size lacks conceptual justification and entails significant drawbacks :
- Factor analysing data leads to a substantial loss of information
- Factor analysis transforms data.
- Factors-cluster results are more difficult to interpret.

5.5 Data Structure Analysis - Market segmentation is exploratory, making traditional validation targeting a clear optimality criterion impractical.
- Validation in segmentation typically focuses on assessing reliability or stability across repeated calculations. - Stability-based data structure analysis involves modifying the data or algorithm to assess the consistency of segmentation solutions.
- Data structure analysis offers insights into the presence of distinct market segments and guides methodological decisions.
- Approaches to data structure analysis include cluster indices, gorge plots, global stability analysis, and segment level stability analysis. Data structure analysis in market segmentation is crucial for assessing the reliability and stability of segmentation solutions. Traditional validation methods, which target clear optimality criteria, are often impractical due to the exploratory nature of segmentation. Instead, stability-based data structure analysis focuses on assessing the consistency of segmentation solutions across repeated calculations. This involves modifying the data or algorithm to evaluate the reliability of the results. By providing insights into the presence of distinct market segments and guiding methodological decisions, data structure analysis plays a vital role in segmentation. Various approaches, such as cluster indices, gorge plots, global stability analysis, and segment level stability analysis, are used to conduct data structure analysis and gain a deeper understanding of the underlying data properties.

Step 6: Profilling segments

Profiling is essential for data-driven market segmentation to understand the defining characteristics of resulting segments. Traditional segmentation may have predefined profiles, but data-driven segmentation requires analysis to uncover segment characteristics. It distinguishes between data-driven segmentation and commonsense segmentation, emphasizing the need for profiling in data-driven approaches. Traditional approaches to profiling involve presenting segment characteristics in tables, which can be complex and difficult to interpret. Visualizations, such as segment profile plots and segment separation plots, are introduced as effective alternatives to traditional tabular presentations. These visualizations make it easier to interpret segmentation results and assess segment separation. For example, consider a dataset containing customer information such as age, income, and spending habits. After performing segmentation analysis, we might identify three distinct segments:

Segment 1: Young adults with moderate income and high spending on technology products. Segment 2: Middle-aged individuals with high income and moderate spending on luxury items. Segment 3: Seniors with low to moderate income and conservative spending habits.

Profiling these segments helps us understand the specific needs, preferences, and behaviours of each group. This insight can then inform marketing campaigns tailored to resonate with each segment effectively.

Step 7: Describing Segments

Describing segments involves using additional information about segment members, such as demographic, psychographic, socio-economic variables, media exposure, and product attitudes. This step helps in gaining detailed insight into the nature of segments and is essential for developing a customized marketing mix tailored to each segment's characteristics. For instance, in a data-driven market segmentation analysis using the Australian travel motives dataset, profiling involves investigating differences between segments based on travel motives, while segment description includes additional variables like age, gender, past travel behavior, media use, and expenditure patterns during vacations. We use Visualisations to Describe Market Segments- It comprises distinct approaches of variables:

1- Nominal and Ordinal Descriptor Variables -variables (such as gender, level of education, country of origin)
2- Metric Descriptor Variables - (such as age, number of nights at the tourist destinations, money spent on accommodation).

For testing for Segment Differences in Descriptor Variables: We conduct statistical tests (e.g., ANOVA) to determine if there are significant differences in variables like income or usage frequency between segments. Predicting Segments from Descriptor Variables: involves predictive techniques such as

1 -Binary Logistic Regression-Binary logistic regression is a statistical method used to predict the likelihood of a binary outcome, such as whether a customer belongs to a particular segment or not. 2-Multinomial Logistic Regression-Multinomial logistic regression extends binary logistic regression to predict outcomes with more than two categories, making it suitable for predicting market segments with multiple categories.
3- Tree-Based Methods- such as decision trees or random forests, are predictive modeling techniques that use a tree-like structure to represent and predict outcomes based on input variables

STEP-8: Selecting the Target Segment(s)

This step is very crucial for any organisation. Prior to step-8, a number of segments are made, profiled and described in detail. in step-8, one or more of the market segments are chosen as targets. The very first task in this step is to ensure that all the market segments that are under consideration to be selected as targets have passed the knock- out criteria of

step-2. The major task is to evaluate the attractiveness of the segments and relative organisational competitiveness for these segments

STEP-9: Customising the Marketing Mix

The set of crucial factors that can influence the consumers to buy our products is known as marketing mix. 4 R's should be kept in mind while understanding the marketing mix: Product, Price, Promotion and Place. The segmentation process is considered to be a part of segmentation-targeting-positioning (STP) approach which is a sequential process. STP starts with market segmentation, followed by targeting and finally positioning Following this sequential process ensures that segmentation is not seen as independent from strategic decisions. Not sticking to this sequence strictly has its own benefits. To maximise the benefits of a market segmentation strategy, it is necessary to customise the marketing mix to the target segment. The 4 Fla in brief are as follows

1. Product: The product should be specified in view of the needs of a customer Few other marketing mix decision pertaining to product dimensions are naming the product, packaging it, requirement of warranties, and post sales support services.

2. Price: The decisions here include setting the price for a product, and deciding on discounts to be offered

3. Promotion: This dimension sheds light on how to distribute the product to the customers. Should the product be made available offline or online or both? Should manufacturer or retailer models be used are some of the questions to be answered

4. Place: This includes advertisements, effective modes of communication, public relations, personal selling, and sponsorship

Market Segmentation

Approaches to Market Segmentation Analysis

- Based on Organisational Constraints
- Based on the Choice of (the) Segmentation Variable(s)

Data Structure and Data-Driven Market Segmentation Approaches

When conducting data-driven market segmentation, data analysts and users of market segmentation solutions often assume that market segments naturally exist in the data. Such naturally occurring segments, it is assumed, need to merely be revealed and described. In real consumer data, naturally existing. distinct and well separated market segments rarely exist.

Implications of Committing to Market Segmentation

Although market segmentation has developed to be a key marketing strategy applied in many organisations, it is not always the best decision to pursue such a strategy. Before investing time and resources in a market segmentation analysis, it is important to understand the implications of pursuing a market segmentation strategy.

Because of the major implications of such a long-term organisational commitment, the decision to investigate the potential of a market segmentation strategy must be made at the highest executive level, and must be systematically and continuously communicated and reinforced at all organisational levels and across all organisational units.

Segment Evaluation Criteria

It is important to understand that for a market segmentation analysis to produce results that are useful to an organisation user input cannot be limited to either a briefing at the start of the process, or the development of a marketing mix at the end. Rather, the user needs to be involved in most stages, literally wrapping around the technical aspects of market segmentation analysis.

Collecting 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.

empirical data for segmentation studies can come from a range of sources: from survey studies, from observations such as scanner data where purchases are recorded and, frequently, are linked to an individual customer's long-term purchase history via loyalty programs; or from experimental studies.

Segmentation Criteria

long before segments are extracted, and long before data for segment extraction is collected, the organisation must make an important decision: it must choose which segmentation criterion to use (Tynan and Drayton 1987). The term segmentation criterion issued here in a broader sense than the term segmentation variable.

1. Geographic Segmentation

2. Socio-Demographic Segmentation

3. Psychographic Segmentation

4. Behavioural Segmentation

5. Data from Survey Studies

Data from Internal Sources

Increasingly organisationshave access to substantial amounts of intermal data that can beharvested for the purpose of market segmentation analysis. Typical examples are scannerdata available to grocery stores, booking data available through airline loyalty programs, andonline purchasedata,

Data from Experimental Studies

Another possible source of data that can form the basis of market segmentation analysis is experimental data. Experimental data can result from field or laboratory experiments. Forexample, they canbe the result of tests how people respond to certain advertisements. The response to the advertisement could then be used as a segmentation criterion. Experimental data can also result from choice experiments or conjoint analyses. The aim of such studies is to present consumers with carefully developed stimuli consisting of specific levels of specific product sttributes.

SUMMARY OF STEPS TO MARKET SEGMENTATION

Step 1: Deciding not to segment:

Implications of Committing to Market Segmentation:

The organization must be sure to make a market segmentation strategy for a long term. Thisprocess is not free. It requires performing the research, fielding surveys, and focus groups, designing multiple packages, and designing multiple advertisements and communication messages and all these require capital. The company should be sure if they need to segment their customers or not.

Implementation Barriers:

1. Lack of management from seniors A market segmentation strategy is prone to failure if the seniors of the company son not have proper commitment and involvement due to any given reason.

2. Organizational culture Market segmentation fails if the organization has one or moreof the following issues:

- Resistance to change or new ideas
- Bad communication
- Lack of creative thinking
- Lack of market or consumer orientation
- Short-term thinking
- Not sharing information
- Office politics etc.

3. Improper Training If the team associated with market segmentation does not have the proper knowledge or skillset required for the job, then it's not going to be successful.

4. Objective obstacles if the company is facing issues like lack of capital or inability to make structural changes, then success of the segmentation process is difficult.

STEP2: Specifying the Ideal Target Segment

In step 2, the organization must determine two sets of segment evaluation criteria. These are

1. Knock-out criteria These are the essentials and associates attributes like substantiality, measurability and accessibility. These are-

- The segments should be homogeneous.
- The segments must be distinct.
- The segments should be large enough for data to make sense.
- The segments should match the strength of the organization.
- Members of the segment must be identifiable - It must be possible to spot them.
- The segment should be reachable to the targeted consumer.

2. Attractiveness Criteria- These are not compulsory and can vary from company to company. Ex Segment factors (size, growth rate per year, sensitivity to price, service features and external factors, cyclicality. seasonality, bargaining power of upstream suppliers), Competition (types of competition, degree of concentration, changes in type and mix, entries and exits, changes in share, substitution by new technology, degrees and type of integration), Financial and economic factors (contribution margins, capacity utilisation, leveraging factors, such as experience and economies of scale, barriers to entry, or exit), Technological factors (maturity and volatility, complexity, differentiation, patents and copyrights, manufacturing processes), Socio-political factors (social attitudes and trends, laws and government agency regulations, influence with pressure groups and government representatives, human factors, such as unionisation and community acceptance), etc.

Implementing a Structured Process:

A team of about 6 people determine segment attractiveness and organisational competitiveness values. These criteria are important as it is necessary because there isa huge benefit in selecting the attractiveness criteria for market segments at the early stage in the process of segmentation.

Step 3: Collecting Data

Segmentation Variables:

There are primarily two kinds of variables we use in context of market segmentation. These are:

1. Segmentation Variable: When one single characteristic of the consumer plays the primary role in segmentation process, then it is called segmentation variable. Ex-Gender, age, etc.

2. Descriptor Variables, The variables used to describe a segment in detail is called Descriptor Variable. Typical descriptor variables include socio demographics, along with information about media behaviour. allowing marketers to reach their target segment with communication messages.

Segmentation Criteria:

Segmentation criteria involves a broad domain. It is mostly related to the nature of data used for data segmentation. The different types of segmentation criteria are

1. Geographic Segmentation. This involves the consumer's location of residence as the primary factor for segmentation. It is particularly easy to use and helps in target communication messages, and select communication channels (such as local newspapers, local radio and TV stations) to reach the selected geographic segments. Disadvantage is if the consumers have mostly same country, of residence or if the product doesn't necessarily facilitates location as it's key feature.

2. Socio-Demographic Segmentation socio-demographic segmentation criteria include age, gender, income and education. 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).

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. The psychographic approach has the advantage that it is generally more reflective of the underlying reasons for differences in consumer behaviour. The disadvantage is that it is not easy to implement it because of its heavy complexity..

4. Behavioural Segmentation: In behavioural Segmentation we search for similarities in behaviour or reported behaviour. Advantage is that it segments people based on similar behavioural interests, but the data for segmentation based on behaviour is not readily available.

Data from Survey Studies:

The most common source of data to be used for market segmentation is collection of data via surveys. Survey data depends on the following factors:

1. Choice of Variables: Variables relevant to the construct need to be included for segmentation and the variables that are not useful should be discarded immediately. The variable that are not useful increase dimensionality of data and increases complexity. Such variables are also called noisy variables. So it is necessary to ask relevant and necessary questions only while conducting the survey for data collection.

2. Response Options: The responses to a question to be answered by a consumer can be of following types:

- binary or dichotomous data: The options of the form yes/no, correct/incorrect with only two posibilities fall in this category.

- binary or dichotomous data: Options allowing respondents to select an answer from a range of unordered categories fall in this category.

- metric data: options allowing the customer to enter a number indicates metric data. Ex-Age.

3. Response Styles:

A wide range of response styles manifest in survey answers, including respondents' tendencies to use extreme answer options (STRONGLY AGREE, STRONGLY DISAGREE).to use the midpoint (NEITHER AGREE NOR DISAGREE), and to agree with all statements. Response styles affect segmentation results because commonly used segment extraction algorithms cannot differentiate between a data entry reflecting the respondent's belief from a data entry reflecting eth a respondent's belief and a response style.

4. Sample Size:

The size on the sample plays a crucial role in producing nice results on segmentation. If inadequate number of samples are present, it becomes impossible to determine which the correct number of market segments is.

Step 4: Exploring Data

- Measurement Levels: Understand if variables are categorical or numerical for appropriate analysis.
- Univariate Distributions: Examine individual variable distributions for patterns and anomalies.
- Dependency Structures: Assess relationships between variables for segmentation insights.
- Data Cleaning: Ensure accuracy and consistency by rectifying errors and missing values.
- Descriptive Analysis: Use stats and visuals to understand data distributions and variability.
- Pre-Processing: Transform and standardize variables for segmentation algorithms.
- PCA: Use PCA for dimensionality reduction and visualization of high-dimensional data.

Step 5: Extracting Segments

- Grouping Consumers: Discussing the exploratory nature of market segmentation analysis and the importance of choosing the right extraction algorithm.
- Distance-Based Methods: Explaining distance measures like Euclidean and Manhattan distances, as well as hierarchical and partitioning methods for clustering data.
- Model-Based Methods: Highlighting the shift towards model-based approaches, such as mixture models, and their assumptions and applications in segmentation analysis.
- Algorithms with Integrated Variable Selection: Discussing techniques to handle redundant or noisy variables during segmentation, including biclustering and factor-cluster analysis.
- Data Structure Analysis: Describing the importance of assessing the reliability and stability of segmentation solutions through various methods like cluster indices and global stability analysis.

This provides a solid understanding of the methods and considerations involved in market segmentation analysis, offering valuable insights for businesses aiming to better understand their target markets.

Step6: Profiling Segments

Identifying Key Characteristics of Market Segments:

The aim of this step-profiling segments is to get to know the generated segments from the extraction step. Profiling consists of characterising the market segments individually, but also in comparison to the other market segments.

Segment Profiling with Visualisations:

Demonstrating the segmented customers visually is considered as a much better alternative to long explanations. They are much easier to interpret and process and finally make critical decisions.

A segment profile plot is used to understand the defining characteristics of each segment, It is also called a panel-plot. Each panel represents a segment. For each segment, the segment profile plot shows the cluster centres.
Different panel and different segment have different centroids and distributions representing different kind of customers prioritizing different motives for travelling.

Step 7: Describing Segments

In step 7, we try to describe the segments using additional information like the consumer's age, gender, past travel behaviour, preferred vacation activities, media use, etc. These additional variables are called descriptive variables.

Using Visualisations to Describe Market Segments:

Nominal and Ordinal Descriptor Variables:

The Nominal and Ordinal Descriptor Variables include features like gender, level of education, country of origin etc. To visualize these variables, we first need to encode themas a categorical variable with some numeric form and then do the plotting. These plots canbe charts of different kinds to enhance visualization. Examples include bar chart and mosaic chart.

Metric Descriptor Variables

The variables are of continuous numeric datatype Examples include age, number of night set the tourist destinations, money spent on accommodation.

The best representation of these variables is done by histograms.

Otherforms of graphs can also be used to visualize data like box and whisker plot.
Predicting Segments from Descriptor Variables:

We can use regression models to predict segments from the data. Regression analysis is the basis of prediction models. Regression analysis assumes that a dependent variable y can be predicted using independent variables or regressors.

Linear Regression:

The most basic form of regression model is the linear regression model. It assumes that function is linear and that y follows a normal distribution with a mean and a variance. In linear regression models, regression coefficients express how much the dependent variable changes if one independent variable changes while all other independent variables remain constant.

y = beta0+ beta1x1+...+ beta pxp +C

Binary Logistic Regression:
We can formulate a regression model for binary data using generalised linear models by assuming that f (y| mu) is the Bernoulli distribution with success probability u and by choosing the logit link that maps the success probability mu \in (0, 1) onto (- ∞, ∞) by g(u) = eta = log(u / 1 - u)

Multinomial Logistic Regression: Multinomial logistic regression can fit a model that predicts each segment simultaneously. Because segment extraction typically results in more than two market segments, the dependent variable y is not binary. Rather, it is categorical and assumed to follow a multinomial distribution with the logistic function as link function.

Tree Based Methods:
Classification and regression trees are a supervised learning technique from machine learning. The advantages of classification and regression trees are their ability to perform variable selection, ease of interpretation supported by visualisations, and the straight-forward incorporation of interaction effects.

STEP-8: Selecting the Target Segment(s)

This step is very crucial for any organisation. Prior to step-8, a number of segments are made, profiled and described in detail. in step-8, one or more of the market segments are chosen as targets. The very first task in this step is to ensure that all the market segments that are under consideration to be selected as targets have passed the knock- out criteria of step-2. The major task is to evaluate the attractiveness of the segments and relative organisational competitiveness for these segments

STEP-9: Customising the Marketing Mix

The set of crucial factors that can influence the consumers to buy our products is known as marketing mix. 4 R's should be kept in mind while understanding the marketing mix: Product, Price, Promotion and Place. The segmentation process is considered to be a part of segmentation-targeting-positioning (STP) approach which is a sequential process. STP starts with market segmentation, followed by targeting and finally positioning Following this sequential process ensures that segmentation is not seen as independent from strategic decisions. Not sticking to this sequence strictly has its own benefits. To maximise the benefits of a market segmentation strategy, it is necessary to customise the marketing mix to the target segment. The 4 Fla in brief are as follows

1. Product: The product should be specified in view of the needs of a customer Few other marketing mix decision pertaining to product dimensions are naming the product, packaging it, requirement of warranties, and post sales support services.

2. Price: The decisions here include setting the price for a product, and deciding on discounts to be offered

3. Promotion: This dimension sheds light on how to distribute the product to the customers. Should the product be made available offline or online or both? Should manufacturer or retailer models be used are some of the questions to be answered

4. Place: This includes advertisements, effective modes of communication, public relations, personal selling, and sponsorship

Conclusion:

Market segmentation can be done in many ways; an organization must identify the right strategy for the correct people. Segments should be strategies based on people, location and needs; all factors play an important role in the success of the organization. It may require many strategies to get the best one for the betterment of its product and services. The cultural difference perception could be the key to any organization's success. Every organization should reshape its marketing strategies from time to time based on the buyer's habits.

Github Link: https://github.com/Gaurvi-bhardwaj/Market-Segmentation-Analysis/tree/main