Market Segmentation Analysis

Introduction

Marketing is the significant part of any business. Its purpose is to efficiently match the needs of the desired customers and the suppliers that supply that demands.

Strategic and Tactical Marketing

There are mainly two types of Marketing plans:

1. **Strategic marketing plan:** It describes the long-term plan of the business.

2. **Tactical marketing plan:** It describes the multiple short-term plans under single long-term plan.

The above plans help achieve organizational goals and find the solution for the following questions:

1. Where are we?

2. Where do we want to go?

3. How do we get there?

Market Segmentation

Smith defines market segmentation as viewing a heterogeneous market as a number of smaller homogeneous markets.

Market Segment Analysis

The process of grouping consumers into naturally existing or artificially created segments of consumers who share similar product preferences or characteristics.

Approaches to market segmentation analysis

1. Based on Organizational Constraint

2. Based on the Choice of the Segmentation Variable(s): based on the nature of consumer characteristics used to extract market segments.

3. Data Structure and Data-Driven Market Segmentation Approaches.

Steps of Market Segmentation Analysis

Step 1: Deciding (not) to Segment

- Implications (results) of committing market segmentation must be considered by an organization before investing time and resources into it.

- The key implication of market segmentation is that it is a long-term strategy.

- Recommendations are not to segment unless the expected increase in sales is sufficient to justify implementing a segmentation strategy.

Implementation Barriers of Market Segmentation

- The initial barrier is related to the senior level management team. They are the ones who either achieve or undermine the success of market segmentation. This barrier might be due to lack of resources provided either at the start of segmentation or for the long-term implementation.

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

- Another potential problem is lack of training. The team assigned for the purpose of market segmentation task lacks the skills and strategy required, which might lead to failure.

- Another obstacle may be objective restrictions faced by the organization. It includes lack of financial resources, or the inability to make the structural changes or do not have clarification of the objectives. A company with limited resources needs to pick only the best opportunities to pursue.

All the above barriers must be proactively removed before deciding to work on the market segmentation analysis tasks in an organization. If not removed, it will have a significant impact on the organization.

Step 2: Specifying the Ideal Target Segment

After deciding to carry out the Market Segmentation, it's time to specify the target segment.

Segment Evaluation Criteria

1. **Knock-out criteria:** This evaluation criterion is the set of essential and non-negotiable features which are used to determine whether the market segments qualify for the further assessment of attractiveness criteria. It includes the following criteria:

   - Members of the segments must be Homogenous.
   - Members in different segments must be distinct.
   - The segments must be large enough, i.e. it must contain enough consumers so that it would be worthwhile to spend extra money on customizing marketing.
   - The segments should be matching the strengths of the organization, i.e. the organization must have the capability to satisfy segment members' needs.
   - The segment members must be Identifiable and Reachable in order to easily spot and access them in the marketplace.

   Knock-out criteria must be understood by senior management, the segmentation team, and the advisory committee.

2. **Attractiveness criteria:**

- Like Knock-out criteria, Attractiveness criteria are not binary in nature.
- Segments are not assessed as either to agree or not agree with attractiveness criteria.
- Instead, it follows the rating criteria to decide attractiveness of the market segment based on certain criteria.

Step 3: Collecting Data

For creating meaningful Market segments, we need proper relevant data. This data contains different types of variables:

- **Segmentation Variables:** It refers to the variable in the data used in commonsense segmentation to split the sample into market segments.
- **Descriptor Variables:** It refers to all the other variables remaining other than segmentation variable.

Segmentation Criteria

- An organization must choose the segmentation criteria long before the data is collected or the segments are to be extracted.
- The term segmentation criteria are used in a broader sense than the term segmentation variable. Variable refers to any single value whereas the term segmentation criterion relates to the nature of the information used for market segmentation.

Types of Segmentation Criteria

1. **Geographic Segmentation:**

   - Geographic information is seen as the original segmentation criterion used for the purpose of market segmentation.
   - In this criterion, the geographic location of the consumers is considered for segmentation.
   - The key advantage of geographic segmentation is that it is easy to assign a consumer into a segment based on their geographic location.
   - For example, Amazon services ask users for their country before starting to their website. This helps them to recommend relevant products based on the consumer preference in that country.

2. **Socio-Demographic Segmentation:**

   - Typical socio-demographic segmentation criteria include age, gender, income, and education. In some industries, this criterion might be very useful for segmentation.
   - For example, people with higher incomes would purchase luxury products, baby products are preferred for smaller age groups, cosmetic products differ with different genders, etc.

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.

4. **Behavioural Segmentation:**

   - The behaviours of consumers include prior experience with the product, frequency of purchase, amount spent on purchasing the product on occasion, and information search behaviour.
   - In a comparison of different segmentation criteria used as segmentation variables, behaviours reported by tourists emerged as superior to geographic variables.
   - The problem with this approach is that the behavioural data is not always readily available, it needs to be captured when they use any service.

Data From Survey Studies

Most market segmentation analyses are based on survey data and it is cheap and easy to collect. Few aspects need to be considered about survey data are:

1. **Choice of Variables:** The choice of information to collect is an important factor during the survey. Asking only the relevant questions to the consumer should be done. Unnecessary questions impact negatively on the organization as it is a tedious task for the consumers to invest their time answering a bunch of questions and also making the task of extracting market segments unnecessarily difficult for the analysts.

2. **Response Options:** The response options provided to the consumers should be in a selective format. Example, Binary option, ordinal or nominal data format, response as a numerical quantity, etc.

3. **Response Styles:** The response includes tendencies to choose extreme values, agree with statements irrespective of content, random responses, etc.

Data from Internal Sources

- **Internal data:** generated from consumers' interactions with the company, which is valuable as it accurately represents consumer behaviours, avoiding the inaccuracies and biases of self-reported data.

- Additionally, such data is typically automatically generated, simplifying collection. However, a potential issue with using internal data is that it may over-represent current customers.

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.

Step 4: Exploring Data

A First Glimpse at the Data : Exploring the data is the phase after collecting the required data. Data exploration stage is carried out to analyze and investigate the collected data. At a more technical level, data exploration helps to:

- Identify the measurement levels of the variables

- Investigate the univariate distributions of each of the variables

- Assess dependency structures between variables.

Also, the data is needed to be properly pre-processed in order to feed it to the Market Segmentation Algorithms.

Data Cleaning

Data cleaning is an essential process required to convert the raw data into the proper format. It is performed with the help of various methods. They are as follows:

- Handling missing values

- Checking for duplicates

- Removing inconsistencies from data

- Assessing the Data types of the variables

- Handling the outliers

Descriptive Analysis

Being familiar with the data avoids misinterpretation of results from complex analyses. Descriptive numeric and graphic representations provide insights into the data. There are different types of graphical methods for analysing numeric as well as categorical data.

- Histogram – For frequency distribution within some interval.

- Boxplots – For detecting outliers using quartiles.

- Scatter plots – Bivariate Analysis

- Bar plots – For frequency counts of categorical variables.

Pre-Processing

- **Categorical Variable:** The categorical can be pre-processed using two methods:

  - **Merging levels:** If there are too many unique values present in particular, we just merge certain values with its adjacent values to minimize the count of unique values in that variable.
    E.g.- If we have an 'Income' variable with salary too many salary ranges. Consider salary ranges $2000 - $5000 and $5000 - $10000, merging them together as $2000 - $10000 to minimize the unique values.

  - **Transforming into Numeric:** The categorical values need to be transformed into numeric using some encoding technique so that it will be useful for making the segments out of it.

- **Numeric Variable:** Scaling or Normalizing is an important preprocessing step carried out for the numerical variables.

Principal Component Analysis

- Principal components analysis (PCA) transforms a multivariate data set containing metric variables to a new data set with variables.

- The first variable (principal component) contains most of the variability, the second principal component contains the second most variability, and so on.

- The transformation obtained from principal components analysis is used to project high-dimensional data into lower dimensions for plotting purposes.

Step 5: Extracting Segments

Grouping Consumer

- **Clustering Algorithms and Data:** Market segmentation uses exploratory clustering methods on unstructured consumer data. Different algorithms impose unique structures on segments, influenced by their inherent tendencies.

- **Algorithm Selection and Data Characteristics:** No single clustering method is best for all scenarios. Each algorithm has strengths and weaknesses, depending on data characteristics. Effective segmentation requires understanding algorithm tendencies and the nature of the data.

- **Exploration and Comparison:** Investigating and comparing various segmentation solutions is critical for arriving at the best result.

- **Data and Distance Measures:**

  - Data is represented as an n × p matrix, with rows as observations and columns as variables. Distance measures include Euclidean, Manhattan, and asymmetric binary distances.

- **Hierarchical Clustering:**

  - Divisive and agglomerative approaches are used, with linkage methods like single, complete, and average linkage.
  - These methods are used to group observations based on distance measures, producing dendrograms to illustrate the hierarchy.

- **Application:**

  - The R function `dist()` calculates distances, while `hclust()` performs hierarchical clustering, useful in market segmentation analysis to group consumers with similar behaviors.

Model Based Methods

1. **Concept and Advantages:** Model-based methods, particularly finite mixture models, offer an alternative to distance-based clustering by assuming each market segment has specific sizes and characteristics, which are empirically derived.

2. **Parameter Estimation:** Parameters such as segment sizes and characteristics are estimated using methods like maximum likelihood estimation and Bayesian approaches, requiring iterative algorithms due to complexity.

3. **Model Selection:** Criteria like AIC, BIC, and ICL guide the selection of the optimal number of segments by balancing model fit and complexity, with visual tools like uncertainty plots aiding in assessing the quality of segment assignments.

GitHub Repository

`https://github.com/amansaini49393/Feynn_Labs_internship_project2.git`