Feynn Labs - Project 2

"Market Segmentation Analysis – Case Study – Fast Food"

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Problem Statement:

McDonald's aims to leverage market segmentation analysis using empirical data from a survey research dataset, originally collected for investigating brand image. The challenge is to identify and understand distinct consumer segments with varying perceptions of McDonald's. This includes determining if negative perceptions exist within specific segments and uncovering the key drivers behind such negativity.

Objective:

- **Segmentation Identification:** Identify distinct consumer segments based on brand perceptions of McDonald's.
- **Perception Analysis:** Categorize segments into positive and negative perceptions for targeted strategies.
- **Key Driver Identification:** Analyze segments with negative perceptions to identify key drivers of dissatisfaction.
- **Insightful Marketing Strategy:** Provide actionable insights for tailored marketing strategies to strengthen positive perceptions or modify negative ones.
- **Brand Enhancement:** Enhance McDonald's brand management by addressing specific consumer segment perceptions effectively.

Steps of Market Segmentation Analysis:

Step 1: **Deciding (not) to Segment**

Step 2: **Specifying the Ideal Target Segment**

Step 3: **Collecting Data**

Step 4: **Exploring Data**

Step 5: **Extracting Segments**

Step 6: **Profiling Segments**

Step 7: **Describing Segments**

Step 8: **Selecting the Target Segment(s)**

Step 9: **Customising the Marketing Mix**

Step 1: Deciding (not) to Segment

Dhara Khamar

Implications of Committing to Market Segmentation

- Market segmentation, while a key marketing strategy, requires a long-term commitment from organizations involving substantial changes and investments.
- Cahill emphasizes that segmentation isn't free, with costs associated with research, surveys, and adjustments in product, pricing, and communication strategies.
- For successful implementation, internal organizational structures may need realignment around market segments rather than products.
- Due to the significant implications, decisions to pursue market segmentation should be made at the highest executive level and consistently communicated throughout the organization.

Implementation Barriers

- Successful implementation of market segmentation in organizations faces barriers related to senior management, including a lack of leadership, commitment, and resource allocation.
- Organizational culture barriers involve resistance to change, lack of market orientation, and insufficient training.
- Objective restrictions, such as financial limitations, and process-related barriers, like unclear objectives and poor planning, also hinder successful market segmentation.

Mayank Pujara

Implications of Committing to Market Segmentation

- It is critical to understand the consequences of pursuing a market segmentation strategy before committing resources to a market segmentation analysis.
- Market Segmentation is a long-term commitment and is in accordance with the ability and willingness of organizations to be adaptable and welcoming of significant changes.
- There are various costs associated with the implementation process of segmentation (cost of performing research, field surveys, designing packages and advertisements)
- To optimize the advantages of market segmentation, an organization needs to mold themselves around the segments rather than around their products.
- Due to the major implications of such a long-term commitment, the decision to investigate and implement market segmentation is of the highest importance for an enterprise.

Implementation Barriers

- There are various obstacles that can prevent a segmentation plan from being implemented successfully.
- Beginning with the barriers related to the senior management which basically are composed of the following factors: Lack of leadership, pro-active championing, commitment and involvement in the market segmentation process by senior leadership.
- Organizational culture is the subject of a second set of obstacles. Few of the key factors leading to creation of a barrier are: Lack of market or consumer orientation, resistance to change and new ideas, lack of creative thinking, bad communication skills and lack of sharing of information and insights across organizational unit.
- Another potential problem is lack of training which primarily arises when the senior management or the team responsible for segmentation process is not aware about the very foundations of the market segmentation or is short sighted in his approach without understanding its consequences
- Most of these barriers can be identified from the outset of a market segmentation study, and then proactively removed.

- Fundamentally as an organization/individual, a strong sense of intention and commitment is needed, balanced by tolerance and an understanding of the unavoidable challenges that will arise in the future.

Mutyala Chandra Shekar
Implications of Committing to Market Segmentation

Committing to market segmentation can have a range of implications, both positive and negative, for your business. It's crucial to weigh these considerations carefully before embarking on this strategic decision**.**

The key implication is that the organization needs to commit to the segmentation strategy on the long term. There are costs of performing the research, fielding surveys, and focus groups, designing multiple packages, and designing multiple advertisements and communicationmessages.

Implementation Barriers

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

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

Vaishnavi
Implications of Committing to Market Segmentation

Market segmentation is a significant strategic decision for organizations, requiring a long-term commitment and substantial changes. Key points include:

1. Long-Term Commitment: It's a long-term strategy, more akin to a marriage than a short-term endeavor.
2. Costs and Investments: There are significant costs involved, including research, developing multiple marketing materials, and organizational changes.
3. Profitability Must Justify Costs: The strategy should be more profitable than not segmenting, considering all associated costs.
4. Organizational Changes: Implementing market segmentation may necessitate developing new products, altering existing ones, adjusting pricing and distribution, and changing the organization's structure to align with different market segments.

Implementation Barriers in Market Segmentation

5. Senior Management Barriers: Lack of leadership, commitment, and involvement from senior management, along with insufficient allocation of resources, can significantly hinder the successful implementation of market segmentation strategies.

6. Organizational Culture Barriers: Factors such as lack of market or consumer orientation, resistance to change, poor communication, short-term thinking, and office politics within an organization can obstruct the effective roll-out of market segmentation.

7. Lack of Training: Inadequate understanding of market segmentation fundamentals and its consequences among senior management and the responsible team can lead to the failure of market segmentation initiatives.

Swarnabha Mitra

Implications of Committing to Market Segmentation

The Market Segmentation is subjected to positive and negative factors because of which the careful consideration of it is precisely required. The changes in factors and how much it changes the segment and decision is the key determining step that crucial to the development of the market segmentation.

Implementation barrier.

The dependencies like surveys, reports, model development, research and design of the segments all lead to the success of the market segmentation, these after all careful consideration are in need to be committed for short or long term as seen working or seen fit.

The people working would also be an important factor or a potential barrier to the segmentation of the market, the changes in people, personal or inter-personal issues and absence or removal of a person/people would lead to barriers which can be problematic to resolve.

Step 2: Specifying the Ideal Target Segment

Dhara Khamar

Segment Evaluation Criteria:
- Active user involvement is essential in market segmentation. Organizations use knock-out criteria, such as substantiality, measurability, and accessibility, to determine if market segments qualify for assessment using attractiveness criteria.
- These non-negotiable features, proposed by various authors, ensure that segments align with organizational strengths and are reachable.

Knock-Out Criteria & Attractiveness Criteria
- **Size of the Segment:** Assess the size of the target segment in terms of potential customers or market share.
- **Growth Potential**: Evaluate the growth prospects of the segment over time.
- Profitability: Analyze the profitability of serving the segment, considering purchasing power and repeat business.
- **Accessibility:** Determine how easily the business can reach and communicate with the target segment.
- **Compatibility with Resources:** Assess whether the business has the necessary resources and capabilities to serve the segment.
- **Competitive Intensity:** Examine the level of competition within the target segment.

- Fit with Company Mission and Values: Ensure alignment with the company's mission, values, and strategic objectives.
- **Stability:** Consider the stability of the target segment over time.
- **Unique Needs and Preferences:** Identify and understand the unique needs and behaviors of the target segment.
- **Cost of Acquisition:** Evaluate the cost-effectiveness of acquiring and retaining customers in the segment.
- **Risk Factors:** Assess potential risks associated with serving the segment.
- Compatibility with Marketing Strategies: Ensure that marketing strategies align with the segment's communication preferences.
- **Segment Reach:** Determine the geographical reach of the segment.
- **Brand Fit:** Consider whether the brand aligns with the perceptions and expectations of the segment.
- **Lifecycle Stage:** Analyze the stage of the product or service lifecycle within the target segment.

Implementing a Structured Process

- The prevalent structured approach for selecting target markets involves using a segment evaluation plot.
- This plot depicts segment attractiveness against organizational competitiveness, with values determined by the segmentation team due to the absence of a universally applicable set of criteria.
- A team of two to three people is optimal for market segmentation analysis. This core team proposes an initial solution to the advisory committee, comprising representatives from all organizational units, for collaborative discussion and potential adjustments.
- Inclusion of representatives from various units is essential for diverse perspectives, and as the segmentation strategy affects every unit, they become key stakeholders in the analysis.

Mayank Pujara

2.1 Segment Evaluation Criteria

- For market segmentation analysis to yield valuable results for an organization, it is crucial to recognize that user input should not be confined to just an initial briefing or the final development of a marketing mix.
- The user's involvement is essential throughout various stages, closely intertwining with the technical aspects of the segmentation analysis process.
- In this step, the organization needs to establish two sets of segment evaluation criteria.
- The first set, known as **knock-out criteria**, consists of essential non-negotiable features that define segments the organization would potentially target.
- The second set, known as **attractiveness criteria**, is utilized to assess the relative appeal of the remaining market segments, those that meet the knock-out criteria.

2.2 Knock-out Criteria

Knock-out criteria decide if market segments identified in segmentation analysis qualify for assessment using segment attractiveness criteria. The main principles as specified by many authors are:

a. The segment must be homogeneous
b. The segment must be distinct
c. The segment must be large enough
d. The segment must be matching
e. Members of the segment must be identifiable
f. The segment must be reachable

Senior management, the segmentation team, and the advisory committee all need a clear understanding of the knock-out criteria.

2.3 Attractiveness Criteria

- Attractiveness criteria are not binary.
- They involve rating each market segment based on its degree of attractiveness for specific criteria.
- The cumulative assessment across all criteria determines whether a market segment is chosen as a target.

2.4 Implementing a Structured Process

- A widely adopted method for assessing market segments for target selection involves using a segment evaluation plot
- This plot represents segment attractiveness on one axis and organizational competitiveness on the other.
- The segmentation team determines the values for segment attractiveness and organizational competitiveness since there is no universally applicable set of criteria for all organizations.
- By the conclusion of this step, the market segmentation team should possess a list of approximately six segment attractiveness criteria.
- Each criterion should be assigned a weight, reflecting its relative importance to the organization when compared to other criteria.

Mutyala Chandra Shekar

Segment Evaluation Criteria

When evaluating the effectiveness of your market segments, several key criteria should be considered. These criteria ensure your segments are valid, actionable, and ultimately beneficialfor your business.

In Step 2 the organisation must determine two sets of segment evaluation criteria. One set of evaluation criteria can be referred to as **knock-out criteria**. These criteria are the essential, non-negotiable features of segments that the organisation would consider targeting. The secondset of evaluation criteria can be referred to as **attractiveness criteria.**

Knock-Out Criteria

The segment must be homogeneous, distinct, large enough, matching the strengths of the organisation. Members of the segment must be identifiable and reachable.

Attractiveness Criteria

Attractiveness criteria are not binary in nature. Segments are not assessed as either complyingor not complying with attractiveness criteria. Rather, each market segment is rated; it can be more or less attractive with respect to a specific criterion.

Implementing a Structured Process

Implementing a structured process can be incredibly beneficial for individuals and organizations alike. It brings order and clarity to tasks, improves efficiency and consistency, and ultimately leads to better results.

Vaishnavi

2.1 Segment Evaluation Criteria

In the third layer of market segmentation analysis, significant emphasis is placed on user involvement throughout the process. This involvement is critical beyond just initial briefings or the final development of a marketing mix, intertwining with the technical aspects of the analysis.In this phase, the organization must define two sets of segment evaluation criteria:

- Knock-Out Criteria: These are essential, non-negotiable characteristics that market segments must possess to be considered for targeting by the organization. They serve as the baseline requirements for any segment under consideration.
- Attractiveness Criteria: These criteria are used to assess the relative appeal of the market segments that meet the knock-out criteria. They help in determining which segments are most beneficial or lucrative for the organization to target.

2.2 Knock-Out Criteria:
- Size: The segment must be large enough to justify customized marketing costs.
- Alignment with Organizational Strengths: The organization should be able to meet the segment's needs.
- Identifiability: Segment members must be distinguishable in the marketplace.
- Reachability: There must be a viable method to communicate and deliver the marketing mix to the segment.
- Understanding and Specification: These criteria should be clearly understood and defined by senior management, the segmentation team, and the advisory committee, including specifics like minimum segment size.

2.3 Attractiveness Criteria:
- Selected Based on Relevance: The team chooses relevant criteria for assessing segment attractiveness.
- Assessed for Relative Importance: Each criterion's importance is weighed according to the organization's priorities.
- Used in Evaluation: Applied in later stages to rate each segment's overall attractiveness on a scale, rather than a binary decision.
- Flexible and Varied: Allows customization to fit the specific context of the organization.
- Cumulative Assessment: The overall attractiveness of a segment is determined by aggregating its ratings across all chosen criteria, guiding the final decision on target segments.

2.4 Implementing a Structured Process in Market Segmentation
In the structured market segmentation process, key elements include:
- Segment Evaluation Plot: A tool for comparing segment attractiveness against organizational competitiveness, with criteria determined by the segmentation team.
- Criteria Selection and Agreement: The team selects and agrees on a maximum of six factors for segment attractiveness and competitiveness, ensuring clarity and manageability.
- Team Involvement and Organizational Representation: Diverse organizational unit representatives are involved for a wide range of perspectives and stakeholder buy-in.
- Early-stage Criteria Selection: Attractiveness criteria are chosen early to guide data collection and simplify later target segment selection.
- Weighting of Criteria: The team assigns weights to each attractiveness criterion, typically distributing 100 points across them, followed by a consensus process, ideally with the advisory committee's approval.

Swarnabha Mitra

2.1. Segment Evaluation Criteria

The segment evaluation is dependent on different market and how the factors influence it. Segment can be based on different criteria and depend on whether it is effective, profitable, cost minimising, time minimising etc.

Features or evaluation like Knock-Out and Attractiveness criteria give the basic and elementary idea to which the market segment will be developed.

2.2. Knock-Out Criteria

The segment cannot be compromised and should be formed using distinguishable and unique people that form the same type of market and the people can be easily categorized and sorted.

2.3. Attractiveness Criteria

The segments are sorted based on the rating they get on their performance on a factor or combination of factors and we select on the basis of their success. The criteria unlike most classification would be continuous in nature.

2.4. Implementing a Structured Process

Implementing a structured would ensure efficient, cost effective, continuous and error free integration of tasks and parts to the success of the segmentation.

Step 3: Collecting Data

Dhara Khamar
Segmentation Variables: Commonsense and Data-driven market segmentation

- In commonsense segmentation, the segmentation variable is typically one single characteristic of the consumers in the sample.
- Each row in this table represents one consumer, each variable represents one characteristic of that consumer. An entry of 1 in the data set indicates that the consumer has that characteristic. An entry of 0 indicates that the consumer does not have that characteristic.
- All the other personal characteristics available in the data serve as so-called *descriptor variables*. They are used to describe the segments in detail.
- The difference between commonsense and data-driven market segmentation is that data-driven market segmentation is based not on one, but on multiple segmentation variables.
- These segmentation variables serve as the starting point for identifying naturally existing, or artificially creating market segments useful to the organisation.

Segmentation Criteria
In this context, "segmentation criterion" has a broader meaning than "segmentation variable." While a segmentation variable refers to a single measured value, like an item in a survey or an observed expenditure category, the term "segmentation criterion" encompasses the nature of the information utilized for market segmentation.

- **Geographic Segmentation:** Divides the market based on physical locations or regions, enabling businesses to tailor products or services to the unique needs of specific geographic areas.
- **Socio-Demographic Segmentation:** Focuses on dividing the market by demographic factors such as age, gender, income, education, and social class, providing insights into consumer behaviours and preferences within specific demographic groups.
- **Psychographic Segmentation:** Divides the market based on lifestyle, values, interests, and personality traits, helping businesses understand and target consumers with similar psychographic profiles and motivations.
- **Behavioural Segmentation:** Categorizes consumers based on their behaviour, such as purchasing patterns, product usage, brand loyalty, and decision-making processes, allowing businesses to tailor marketing strategies to specific behavioural traits and preferences.

Data from Survey Studies

Survey data is commonly used in market segmentation due to its affordability and ease of collection. However, potential biases in survey responses can impact the quality of segmentation analyses. It's crucial to consider and address these biases to ensure the reliability of the obtained market insights.

A few key aspects that need to be considered when using survey data are discussed below.

- **Choice of Variables:** Careful selection of survey variables is vital, as inappropriate or irrelevant variables may lead to skewed segmentation results, affecting the overall quality of the analysis.
- **Response Options:** The design of response options in a survey influences the data quality; clear and unbiased response choices enhance the accuracy of collected information, ensuring more reliable segmentation insights.
- **Response Styles:** Awareness of response styles, such as acquiescence or social desirability bias, is crucial, as these can introduce distortions in survey data, impacting the accuracy of the segmentation analysis.
- **Sample Size:** Adequate sample size is essential for statistical validity; too small a sample may not be representative, while an excessively large sample can lead to unnecessary costs and data complexity in the segmentation process.

Data from Internal Sources

- Organizations increasingly leverage internal data, such as scanner data from grocery stores or online purchase information, for market segmentation analysis.
- The strength of this data lies in its representation of actual consumer behaviour, avoiding issues associated with self-reported data.
- However, a potential drawback is systematic bias, as it may primarily capture information from existing customers, lacking insights into potential future customers with different consumption patterns.

Data from Experimental Studies

- Data, derived from field or laboratory experiments, offer another valuable source for market segmentation. This data can arise from various experiments, such as testing consumer responses to advertisements or conducting conjoint analyses, providing insights into consumer preferences and influencing factors that can serve as segmentation criteria.

Mayank Pujara

3.1 Segmentation Variables

- Empirical data forms the basis of both commonsense and data-driven market segmentation.
- In commonsense segmentation, typically, one specific characteristic of the sample consumers is used as the segmentation variable.
- The distinction between commonsense and data-driven market segmentation lies in the fact that data-driven segmentation relies on multiple variables rather than just one, as is the case with commonsense segmentation.
- Segmentation studies gather empirical data from various sources, including surveys, observations like scanner data linked to individual customer purchase histories through loyalty programs, and experimental studies.

3.2 Segmentation Criteria

- The term "segmentation variable" pertains to a single measured value, like an item in a survey or an observed expenditure category.
- On the other hand, "segmentation criterion" refers to the nature of information employed in market segmentation, including specific constructs like benefits sought.
- The most common segmentation criteria are:

a. Geographic: Geographic segmentation is one of the earliest segmentation criterion, typically relies on the consumer's residential location as the sole basis for forming market segments.
b. Sociodemographic: Common socio-demographic segmentation criteria encompass age, gender, income, and education. These criteria prove valuable in certain industries, sometimes providing insights into specific product preferences.
c. Psychographic: Psychographic segmentation categorizes individuals based on psychological factors like beliefs, interests, preferences, aspirations, or desired product benefits. This approach is more intricate than geographic or socio-demographic criteria, often requiring multiple variables to capture the diverse psychographic dimension.
d. Behavioral: Various behaviors, such as prior product experience, purchase frequency, and amount spent per occasion, can be employed for segmentation. Behavioral approaches offer a key advantage by using actual behavior, rather than stated or intended behavior, as the basis for segment extraction.

3.3 Data from Survey Studies

Market segmentation analyses commonly rely on survey data due to its cost-effectiveness and ease of collection, making it a feasible approach for any organization. Few important aspects are:

a. Choice of variables: Create a focused questionnaire for market segmentation by asking essential and unique questions, avoiding redundancy. Supplement the survey with insights from exploratory or qualitative research to enhance question quality.
b. Response Options: Provide metric or binary response options to respondents if they are meaningful for the question, as it helps avoid complications in the data-driven segmentation analysis process related to distance measures
c. Response Styles: Response bias refers to a systematic tendency to respond to questionnaire items based on factors other than the specific content of the item. This bias can impact segmentation results because typical extraction algorithms cannot distinguish between a respondent's genuine belief and a response influenced by a particular style.
d. Sample Size: For optimal market segmentation results, the data should contain all necessary and no unnecessary items, be devoid of correlated items, consist of high-quality responses, employ binary or metric formats, be free of response styles, include responses from a suitable sample based on segmentation study goals, and have a sufficient sample size (at least 100 times the number of segmentation variables).

3.4 Data from Internal Sources

Organizations increasingly possess extensive internal data for market segmentation analysis. The value of this data stems from its representation of actual consumer behavior, avoiding the limitations associated with consumers' statements about their behavior or intentions, which can be influenced by imperfect memory and various response biases like social desirability bias or other response styles.

3.5 Data from Experimental Studies

Experimental data, derived from either field or laboratory experiments, represents another potential source for market segmentation analysis. This type of data can also arise from choice experiments or conjoint analyses, where consumers are presented with well-crafted stimuli featuring specific levels of product attributes. The consumers then express their preferences among products characterized by various combinations of attribute levels.

Mutyala Chandra Shekar

Segmentation Variables

The term segmentation variable to refer to the variable in the empirical data used in commonsense segmentation to split the sample into market segments. All the other personal characteristics available

in the data – in this case: age, the number of vacations taken, and information about five benefits people seek or do not seek when they go on vacation – serve asso-called descriptor variables.

The difference between commonsense and data-driven market segmentation is that data-drivenmarket segmentation is based not on one, but on multiple segmentation variables.

Segmentation Criteria

The decision which segmentation criterion to use cannot easily be outsourced to either a consultant or a data analyst because it requires prior knowledge about the market. The most common segmentation criteria are geographic, socio-demographic, psychographic and behavioural.

- Geographic Segmentation
- Socio-Demographic Segmentation
- Psychographic Segmentation
- Behavioural Segmentation

Data from Survey Studies

Most market segmentation analyses are based on survey data. Survey data is cheap and easy tocollect, making it a feasible approach for any organisation. But survey data – as opposed to data obtained from observing actual behaviour – can be contaminated by a wide range of biases.

- Choice of Variables
- Response Options
- Response Styles
- Sample Size

Vaishnavi

3.1 Segmentation variables

Segmentation variables are key characteristics used to divide consumers into distinct market segments. In basic segmentation, one variable (like gender) divides the sample (e.g., men vs. women). Descriptor variables (like age, vacations, preferences) provide detailed information about each segment, aiding in tailored marketing strategies. Data-driven segmentation uses multiple variables for nuanced segments, uncovering complex patterns for more effective strategies.

3.2 Segmentation Criteria

For market segmentation, organizations choose a segmentation criterion, broader than a segmentation variable, based on the type of information used. Common criteria include geographic, socio-demographic, psychographic, and behavioral factors. The choice depends on market knowledge and aims for simplicity and effectiveness.

Geographic Segmentation

Geographic segmentation, one of the earliest methods for market segmentation, primarily uses a consumer's location to define market segments. It's simple and highly relevant in certain contexts, such as language differences in international tourism or localized marketing by global companies like Amazon and IKEA.

Socio-Demographic Segmentation

Socio-demographic segmentation involves categorizing the market based on characteristics like age, gender, income, and education. It's particularly effective in certain industries, such as luxury goods (high income), cosmetics (gender-specific), baby products (gender-oriented), retirement villages (age-specific), and tourism (family composition).

Psychographic Segmentation
Psychographic segmentation categorizes people based on psychological criteria like beliefs, interests, preferences, aspirations, or benefits sought in products.

Behavioural Segmentation
Behavioral segmentation focuses on grouping people based on actual behaviors or reported behaviors related to product interactions, such as purchase frequency, spending patterns, and information search behavior.

3.3 Data from Survey Studies

Choice of Variables: The selection of segmentation variables is crucial. Including only necessary variables avoids respondent fatigue and maintains focus, while excluding unnecessary, 'noisy' variables prevents them from obscuring the segmentation solution.

Response Options: The type of response options in surveys affects the data's scale and suitability for segmentation analysis. Binary and metric data are preferable as they facilitate clear distance measurement essential for segmentation algorithms.

Response Styles: Surveys are susceptible to response biases where answers reflect a respondent's style rather than the content. This can lead to misinterpretation of data, such as falsely identifying a high-value market segment. Minimizing response style biases is critical for accurate market segmentation.

Sample Size:
Sample Size in Market Segmentation Analysis:
  ○ Insufficient sample sizes make it difficult to determine the correct number of market segments.
  ○ Sufficient sample sizes enable easy identification of the number and nature of market segments.

3.4 Data from Internal Sources
  ○ Organizations increasingly have access to vast amounts of internal data.
  ○ Examples include scanner data from grocery stores, booking data from airline loyalty programs, and online purchase data.

3.5 Data from Experimental Studies:

Experimental data can be sourced from field or laboratory experiments.

Swarnabha Mitra

3.1. Segmentation Variables

Segmentation variables are variables in data that influence the segmentation. These variables can be of different types ranging from string of words to discrete values of information. A segmentation is made based on multiple such variables.

3.2. Segmentation Criteria

Segmentation criteria is a tough decision and needs market research and informed decision. Criteria like geographic, socio-demographic, psychological, behavioural criteria all require extensive information about the market and the segmentation as a whole.

Geographic: Locational position which influence marketing, tax, person availability etc. all are dependent on this criterion.

Socio-demographic: Social standards and demographic distribution influence the market and the surveys and available people as a whole, tilted demographics might not be good for the market in certain situations.

Psychological and Behavioural: Behavioural and psychology are closely tied, things like risk taking, tendencies to loans, marketing influence etc. all are important factor for customer segmentation.

3.3. Data From Survey Studies

The market is studied through surveys mostly, because its reliably cheap, accurate and easy. Variables, segments and general consensus all are taken through this method. Surveys can be of large sample size, different response types like MCQ, short or rating of something and the different questions can be altered as required.

Step 4: Exploring Data

Vaishnavi

4.1 A Glimpse at the Data

- Purpose: To understand the data, identify patterns, anomalies, and relationships.
- What It Involves:
  - Visualization: Using plots (histograms, scatter plots, box plots) to see distributions, correlations, and outliers.
  - Identifying Patterns and Anomalies: Looking for trends, correlations, and unusual data points.
- Libraries Used: Pandas, Matplotlib, Seaborn
- Processes:
  - Visualization: Creating plots with Matplotlib and Seaborn
  - Correlation Analysis: Using df.corr() to find correlations between features.

4.2 Data Cleaning:

- Purpose: To improve data quality by removing or correcting inaccuracies.
- What It Involves:
  - Handling Missing Data: Deciding whether to fill in missing values (imputation), drop them, or mark them.
  - Removing Duplicates: Identifying and eliminating duplicate records.
  - Correcting Errors: Fixing data entry errors or inconsistencies.
  - Dealing with Outliers: Identifying and potentially removing outliers that could skew the results.
- Libraries Used: Pandas
- Processes:
  - Handling Missing Data: Filling (df.fillna()) or dropping (df.dropna()) missing values.
  - Removing Duplicates: Using df.drop_duplicates().
  - Correcting Errors: Applying functions to columns to correct data (df['column'].apply(lambda x: ...)).
  - Outlier Handling: Identifying outliers using statistical methods and possibly removing them.

4.3 Descriptive analysis:

- Descriptive Statistics: Summarizing data using means, medians, modes, ranges, and standard deviations.
- Descriptive Statistics: Using Pandas for basic statistics (df.describe(), df.mean(), df.median()).

- Data Summarization: Provides an overview of the dataset's structure, including sample size, data types, and the presence of missing values. Tools like df.info() and df.describe() in Python's Pandas library are commonly used for this purpose.
- Univariate Analysis: Focuses on individual variables, summarizing their central tendency (mean, median, mode), dispersion (range, variance, standard deviation), and frequency distributions. Histograms and bar charts are typical visualization tools for this analysis.
- Bivariate and Multivariate Analysis: Examines relationships between two or more variables. Techniques include scatter plots, correlation matrices, and cross-tabulations. This helps in understanding how variables interact with each other.
- Data Visualization: Integral to descriptive analysis, it uses graphical representations like histograms, box plots, scatter plots, and heatmaps to visualize data trends, patterns, and outliers. Libraries such as Matplotlib and Seaborn in Python are widely used for crafting these visualizations.
- Handling Missing Values: Identifying and addressing missing data through methods like deletion, imputation, or analysis based on present data, to ensure the quality and integrity of the analysis.
- Correlation Analysis: Identifies the degree to which two variables are related. This involves computing correlation coefficients to understand the strength and direction of the relationships.
- Normality Tests: Statistical tests and plots, such as Q-Q plots, are used to check if the data distribution deviates from a normal distribution, which is crucial for certain types of statistical inference.

4.4 Preprocessing:

- Purpose: To transform raw data into a format more suitable for modeling.
- What It Involves:
  - Feature Encoding: Converting categorical data into numerical format (e.g., one-hot encoding).
  - Feature Scaling/Normalization: Scaling features to a uniform range (e.g., 0-1 scaling, standardization).
  - Splitting Data: Dividing data into training and test sets.
  - Feature Engineering: Creating new features from existing ones to improve model performance.
- Libraries Used: Pandas, Scikit-learn
- Processes:
  - Feature Encoding: Using pd.get_dummies() for one-hot encoding or LabelEncoder and OneHotEncoder from Scikit-learn.
  - Feature Scaling/Normalization: Utilizing StandardScaler or MinMaxScaler from Scikit-learn.
  - Splitting Data: Employing train_test_split from Scikit-learn to divide the dataset.
  - Feature Engineering: Creating new features using Pandas operations.

4.5 Principal Component Analysis (PCA):

- Purpose: To reduce the dimensionality of data while retaining most of the variance.
- What It Involves:
  - Dimensionality Reduction: Transforming data from a high-dimensional space to a lower-dimensional space.
  - Identifying Principal Components: PCA finds new axes (principal components) that maximize variance.
  - Data Projection: Projecting data onto these new axes, reducing the number of features.
- Library Used: Scikit-learn
- Processes:
  - PCA Implementation: Utilizing PCA from Scikit-learn
  - Fitting PCA: Applying PCA to the data
  - Transforming Data: Projecting the data onto principal components
  - Variance Analysis: Examining the explained variance

Step 5: Extracting Segments

Mutyala Chandra Shekar

1. Grouping Consumers

Grouping consumers in the context of market segmentation involves dividing a larger market into smaller, more homogeneous groups based on certain characteristics. These characteristics could include demographics, psychographics, behaviors, or other relevant factors. The goal is to identify distinct groups of consumers with similar needs, preferences, and behaviors so that marketing strategies can be tailored to each segment.

Once consumers are grouped into segments, businesses can develop marketing strategies that are more relevant and effective for each segment. This can lead to improved customer satisfaction, increased brand loyalty, and a better understanding of the unique needs and preferences of various consumer groups.

2. Distance-Based Methods

Distance-based methods are a class of techniques used in data analysis and clustering to measure the similarity or dissimilarity between objects. These methods play a crucial role in clustering algorithms, where the goal is to group similar objects together.

These distance measures are fundamental in various applications, including clustering, classification, and similarity-based searches. The choice of distance measure depends on the nature of the data and the specific requirements of the analysis. Different distance measures may yield different results, and selecting an appropriate measure is crucial for the success of the analysis.

Distance Measures

Each row represents an observation (in this case a tourist), and every column represents a variable (in this case a vacation activity). Mathematically, this can be represented as an n × p matrix where n stands for the number of observations (rows) and p for the number of variables

$$X = \begin{pmatrix} x_{11} & x_{12} & \cdots & x_{1p} \\ x_{21} & x_{22} & \cdots & x_{2p} \\ \vdots & \vdots & \ddots & \vdots \\ x_{n1} & x_{n2} & \cdots & x_{np} \end{pmatrix}$$

(columns)

The vector corresponding to the i-th row of matrix X is denoted as $x_i = (x_{i1}, x_{i2},...,x_{ip})$ in the following, such that $X = \{x_1, x_2,... x_p\}$ is the set of all observations. In the example above, Anna's vacation activity profile is vector $x_1 = (100, 0, 0)$ and Tom's vacation activity profile is vector $x_7 = (50, 20, 30)$

Hierarchical Methods

Hierarchical clustering methods are the most intuitive way of grouping data because they mimic how a human would approach the task of dividing a set of n observations (consumers) into k groups (segments). Each consumer represents their own cluster. Market segmentation analysis occurs between those two extremes.

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

Agglomerative hierarchical clustering approaches the task from the other end. The starting point is each consumer representing their own market segment (n singleton clusters).

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

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

Partitioning Method

Hierarchical clustering methods are particularly well suited for the analysis of small data sets with up to a few hundred observations. For data sets containing more than 1000 observations (consumers), clustering methods creating a single partition are more suitable than a nested sequence of partitions. This means that – instead of computing all distances between all pairs of observations in the data set at the beginning of a hierarchical partitioning cluster analysis using a standard implementation.

A partitioning clustering algorithm aiming to extract five market segments, in contrast, would only have to calculate between 5 and 5000 distances at each step of the iterative or stepwise process (the exact number depends on the algorithm used). In addition, if only a few segments are extracted, it is better to optimise specifically for that goal, rather than building the complete dendrogram and then heuristically cutting it into segments.

Hybrid Approaches

Several approaches combine hierarchical and partitioning algorithms in an attempt to compensate the weaknesses of one method with the strengths of the other. The strengths of hierarchical cluster algorithms are that the number of market segments to be extracted. The biggest disadvantage of hierarchical clustering algorithms is that standard implementations require substantial memory capacity, thus restricting the possible sample size of the data for applying these methods.

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

3. Model-Based Methods

Model-based methods for extracting segments refer to clustering techniques that involve fitting probabilistic models to the data. Unlike distancebased methods, which focus on measuring similarity or dissimilarity between data points, modelbased methods assume that the data is generated from a certain underlying probabilistic model. These methods aim to find the parameters of the model that best explain the observed data and, in the context of clustering, identify distinct segments or clusters within the data.

One commonly used model-based clustering method is the Gaussian Mixture Model (GMM). GMM assumes that the data is generated from a mixture of several Gaussian distributions. Each Gaussian distribution represents a cluster, and the model estimates the parameters of these distributions, including mean, covariance, and mixing coefficients.

Model-based clustering methods provide a flexible framework for segment extraction, allowing for more complex data distributions compared to some distance-based methods. It's important to understand the

assumptions of the chosen model and validate the results based on the characteristics of the data and the goals of the analysis.

4. Algorithms with Integrated Variable Selection

These algorithms assume that each of the segmentation variables makes a contribution to determining the segmentation solution. Sometimes, segmentation variables were not carefully selected and contained redundant or noisy variables. Preprocessing methods can identify them. Variable selection for binary data is more challenging because single variables are not informative for clustering, making it impossible to pre-screen or pre-filter variables one by one.

When the segmentation variables are binary, and redundant or noisy variables cannot be identified and removed during data pre-processing, suitable segmentation variables need to be identified during segment extraction. Several algorithms extract segments while–simultaneously– selecting suitable segmentation variables.

5. Data Structure Analysis

Extracting market segments is inherently exploratory, irrespective of the extraction algorithm used. Validation in the traditional sense, where a clear optimality criterion is targeted, is therefore not possible. Ideally, validation would mean calculating different segmentation solutions, choosing different segments, targeting them, and then comparing which leads to the most profit, or most success in mission achievement.

As a consequence, the term validation in the context of market segmentation is typically used in the sense of assessing reliability or stability of solutions across repeated calculations after slightly modifying the, or the This approach is fundamentally different from validation using an external validation criterion. Throughout this book, we refer to this approach as stability-based data structure analysis.

Data structure analysis provides valuable insights into the properties of the data. These insights guide subsequent methodological decisions. Most importantly, stability-based data structure analysis provides an indication of whether natural, distinct, and well-separated market segments exist in the data or not. If they do, they can be revealed easily. If they do not, users and data analysts need to explore a large number of alternative solutions to identify the most useful segment(s) for the organisation. If there is structure in the data, be it cluster structure or structure of a different kind, data structure analysis can also help to choose a suitable number of segments to extract.

Step 6: Profiling Segments

Mayank Pujara
6.1 Identifying Key Characteristics of Market Segments

- The purpose of the profiling step is to understand the market segments identified in the extraction step.
- Profiling is necessary only in data-driven market segmentation, as for commonsense segmentation, the segment profiles are predefined.
- Profiling involves characterizing each market segment individually and comparing them to other segments.
- Effective profiling forms the foundation for accurately interpreting the identified segments. This correct interpretation is crucial for making informed and strategic marketing decisions.

6.2 Traditional Approaches to Profiling Market Segments

Data-driven segmentation solutions are typically presented to users, such as clients or managers, in one of two ways:

a. As high-level summaries that oversimplify segment characteristics to the point of being misleadingly trivial
b. As comprehensive tables detailing exact percentages for each segmentation variable within each segment. These tables are challenging to interpret, making it nearly impossible to obtain a quick overview of the key insights.

6.3 Segment Profiling with Visualizations

- Data visualization through graphics is essential in statistical data analysis as it offers insights into the intricate relationships between variables.
- In the data-driven market segmentation process, visualizations are valuable for examining one or more segments in detail for each segmentation solution.
- Statistical graphs aid in interpreting segment profiles and contribute to evaluating the effectiveness of a market segmentation solution.
- Creating a segment profile plot is an effective method to grasp the defining characteristics of each segment. This plot illustrates, for all segmentation variables, the distinctions between each market segment and the overall sample.
- Clear visualizations aid managers in making informed long-term strategic decisions based on segmentation results, which often involve significant financial commitments for strategy implementation. Therefore, investing in good visualizations yields an excellent return on investment.
- Segment separation can be effectively visualized through a segment separation plot, which illustrates the overlap of segments across all relevant dimensions of the data space.
- These plots are straightforward when the number of segmentation variables is low, they can become intricate as the number of variables increases.
- Segment separation plots offer a quick overview of data and segmentation solutions, even for complex cases.

Step 7: Describing Segments

Swarnabha Mitra

7. 1 Developing Complete Picture of Market Segmentation

Segmentation and its profiling is finding differences in different variables of the segment. The descriptor variables are used to profile different segments and to increase our understanding of the market more rather than just segregation of the market.

7.2. Visualizations for Description of Market Segmentation

Using visualizations such as charts and graphs to understand and draw insights from the empirical data so that the market as a whole can be understood. Trends and impact of different variables can be gauged in this step.

Ordinal Descriptor Variables

Use of descriptor variables are required to describe the market and effective segmentation. The use of segment number and segment plot will effectively project the different variables and the number of variables that are influencing the segment.

Metric Descriptor Variables

Use of metric variables with continuous values and trends of the variables is key to the segmentation and its success. The use of box plots, regression plots, graphs etc. are required to understand the data as a whole.

7.3 Testing for Segment Variables

The use of statistical methods and test are required for checking the success of the segmentation. Use of p and t test and sample distributions and probability theory are key tools and knowledge required to check it. The testing of model success using f1 score and R score will also be useful for successful segmentation.

7.4 Predicting Segments using Variables

We need to develop different models using different approaches like regression classifier, decision trees, etc. The models would predict segments based on the different variables given as input, and would be tested against the sample test data. The different models would be tested against each other on their relative success and the scores would determine the model that shall be used.

Binary Logistic Regression

We can make a model using binary classification variables in the data, the sample data will have to have binary descriptor variables and the model would be based on linear models and needs to be generalised to predict the segments.

Multinomial Logistic Regression

The use of logistic regression using different Metric variables and the combination of such variables is required to develop a model like this. The model requires generalisation of all the variables and we need to be cautious not overfit it with variables and the generalisation.

Tree Based Methods

The use of tree on basis of nominal descriptor or metric descriptor would be a good start to generating a model, but the combination of the two different models would be ideal and should be used after normalisation and checking for overfitting. The development with the help of statistical method and random forests would ensure proper segmentation.

Step 8: Selecting the Target Segment(s)

Vaishnavi

This step outlines a structured approach for a segmentation team meeting aimed at selecting potential target markets based on previously analysed market segments. The process involves a series of critical evaluations and calculations to ensure the selected segments are viable and align with the organization's capabilities and goals. Here's a breakdown of each task:

Convene a Segmentation Team Meeting:
- Gather key team members involved in market segmentation and strategy.
  Determine Potential Target Markets:
- Review market segments identified in Step 6 and described in Step 7.
- Focus on segments that align with the organization's objectives and capabilities.
  Ensure Compliance with Knock-Out Criteria:
- Reassess each segment against criteria like homogeneity, distinctness, size, match, identifiability, and reachability.

- Eliminate segments that do not meet these essential criteria.
  Agree on Values for Segment Attractiveness Criteria:
- Discuss and reach a consensus on how each market segment scores on various attractiveness criteria (e.g., market growth, profitability, accessibility).

Assess Organizational Competitiveness for Each Segment:
- Evaluate and agree on the organization's relative competitiveness in each segment (e.g., resources, expertise, brand strength).
  Calculate Overall Segment Attractiveness:
- For each segment, multiply the segment value by the weight of each attractiveness criterion, and sum these values to get an overall attractiveness score.
  Calculate Organizational Competitiveness for Each Segment:
- Similarly, calculate an overall score for relative organizational competitiveness for each segment.
  Plot Values on a Segment Evaluation Plot:
- Create a visual representation (such as a matrix or two-axis plot) showing segments based on their overall attractiveness and organizational competitiveness.

Make a Preliminary Selection of Target Segments:
- Based on the evaluations and plot, select the most viable segments as potential targets.
  Ensure Compatibility Among Selected Segments:
- If targeting multiple segments, ensure they are compatible and can be addressed effectively without conflicting strategies.
  Present to the Advisory Committee:
- Share the selected segments with an advisory committee for further discussion.
- Be open to reconsidering segments based on feedback.
  Finalize Target Market Segments:
- Finalize the selection of target market segments after thorough deliberation and approval from relevant stakeholders.

This process involves a mix of data-driven analysis and strategic discussion, ensuring that the selected market segments are not only attractive and reachable but also align well with the organization's strengths and strategic objectives.

Step 9: Customising the Marketing Mix

Dhara Khamar
Implications for Marketing Mix Decisions
- The widely accepted modern interpretation is the 4Ps model, focusing on Product, Price, Promotion, and Place as the key components of an effective marketing strategy.
- Market segmentation is integral to strategic marketing and is closely linked with positioning and competition.
- The segmentation-targeting-positioning (STP) approach, emphasizes a sequential process: segmentation involves profiling and describing segments, followed by targeting the selection of a specific segment, and positioning focuses on distinct product perception aligned with segment needs, differentiating it from competitors.

Product
- In developing the product dimension of the marketing mix, organizations must align product specifications with customer needs.

- This refers to the tangible or intangible goods or services that a company offers to meet the needs and wants of its target market. It involves decisions related to product design, features, quality, branding, packaging, and any additional services that accompany the product.

Price
- Price is the amount of money customers are willing to pay for a product or service.
- Pricing decisions involve determining the right balance between setting a price that covers production and distribution costs while remaining attractive and competitive in the market.
- Pricing strategies can include penetration pricing, skimming pricing, discount pricing, etc.

Place
- Place refers to the distribution channels through which a product or service is made available to customers.
- It involves decisions related to the selection of distribution channels, logistics, inventory management, and ensuring that the product is available at the right place and time for customers to purchase.
- Place also considers factors like retail outlets, online presence, and geographic reach.

Promotion
- Promotion encompasses all the activities that a company undertakes to communicate and promote its products or services to the target audience.
- This includes advertising, sales promotions, public relations, personal selling, and other promotional activities. The goal is to create awareness, generate interest, and persuade customers to make a purchase.

Case Study – McDonald – Market Segmentation Analysis

GitHub Links

1. **Dhara Khamar**
   https://github.com/DharaKhamar/Market-Segmentation---Case-Study---McDonald-s/tree/master

2. **Mayank Pujara**
   https://github.com/mayankpujara/Feynn-Labs/tree/main/Market%20Segmentation%20Analysis%20Case%20Study

3. **Mutyala Chandra Shekar**
   https://github.com/CHANDRASHEKHAR2898/FEYNN-

4. **Vaishnavi**
   https://github.com/vaishnavi17398/FeynnLabsInternship

5. **Swarnabha Mitra**
   https://github.com/DevSwarnabha/marketSegmentationAnalysis