

Market Segmentation Analysis – Case Study

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Strategic and Tactical Marketing

Marketing aims to align consumer needs with supplier offerings, benefiting both parties and guiding marketing planning. Marketing planning involves setting objectives and formulating plans, divided into strategic and tactical components:

- **Strategic Marketing Plan:** Outlines long-term organizational direction, identifying consumer needs, organizational strengths, weaknesses, opportunities, and threats through SWOT analysis. It focuses on segmentation, targeting, and positioning, determining the overall direction without detailing short-term actions.
- **Tactical Marketing Plan:** Converts the strategic plan into actionable, short-term steps. It covers the "4 Ps" of marketing: Product, Price, Place, and Promotion, ensuring alignment with the strategic objectives.

The analogy of a hiking expedition illustrates this: strategic decisions (which mountain to climb) set the direction, while tactical decisions (equipment, timing) ensure the journey is safe and efficient. Good strategic planning is crucial, as poor strategy cannot be compensated by tactical excellence.

Market Segmentation

Market segmentation involves dividing a broad, heterogeneous market into smaller, homogeneous segments based on consumer characteristics. This process is vital for targeting specific groups effectively and crafting a tailored marketing mix. Key points include:

- **Definitions:** Market segmentation helps select target markets and design appropriate marketing mixes, aiming for homogeneity within segments and distinctiveness between segments.
- **Approaches:** Segmentation criteria can be simple (e.g., age, gender) or complex (e.g., benefits sought, values). Strategies include concentrated (focusing on one segment), differentiated (multiple products for multiple segments), and undifferentiated (one product for the entire market).

Benefits of Market Segmentation

Segmentation offers numerous benefits, such as:

- **Enhanced Understanding:** Improves the match between organizational strengths and consumer needs, potentially leading to long-term competitive advantages and market dominance in niche segments.
- **Efficient Resource Allocation:** Focuses efforts on segments where the organization can excel, increasing return on investment and supporting smaller organizations' survival by targeting specific needs.
- **Sales and Team Building:** Effective in sales management by targeting groups and fostering team collaboration across organizational units.

Costs of Market Segmentation

Segmentation requires significant investment in time, human resources, and finances. Poor implementation can waste resources, leading to no additional returns and potentially demoralizing staff. Organizations must carefully decide whether to pursue segmentation based on informed assessments of potential benefits and costs.

Market Segmentation Analysis Overview

Market segmentation analysis involves grouping consumers with similar preferences or characteristics into segments to better tailor marketing strategies. This process is typically statistical and exploratory, requiring collaboration between data analysts and users who understand the broader organizational goals.

Three Layers of Market Segmentation Analysis

1. **Core Layer: Extracting Market Segments**
 - This involves statistical methods to group consumers based on collected data.
 - The quality of segmentation is dependent on the quality of the data.
2. **Enabling High-Quality Analysis**
 - Tasks include collecting good data, exploring the data, profiling, and describing segments.
 - Quality data collection and preliminary exploration are crucial before extracting segments.
3. **Practical Implementation**
 - Organizational decisions such as committing to a segmentation strategy, selecting target segments, and developing a customized marketing mix are essential.
 - These tasks are non-technical and wrap around the technical tasks, influencing them from start to finish.

Approaches to Market Segmentation Analysis

1. **Based on Organizational Constraints**
 - **Segment Revolution:** Starting from scratch, leading to a completely new marketing strategy.
 - **Segment Evolution:** Refining and improving existing segments.

- **Segment Mutation:** Discovering segments accidentally through exploratory or data mining processes.
- 2. **Based on Segmentation Variables**
 - **Unidimensional Segmentation:** Using a single variable, e.g., age, gender.
 - **Multidimensional Segmentation:** Using multiple variables, e.g., expenditure patterns.
 - **A Priori Segmentation:** Segments are defined before data analysis.
 - **Data-Driven Segmentation:** Segments are identified through data analysis.

Data Structure in Market Segmentation

- **Natural Segmentation:** Assumes distinct segments exist in the data.
- **Reproducible Segmentation:** Identifies segments that can be consistently reproduced.
- **Constructive Segmentation:** Segments are created when no natural structure exists in the data, still useful for targeted marketing.

Steps in Market Segmentation Analysis

1. **Decision to Segment:** Assess the benefits of segmentation for the organization.
2. **Define Ideal Segment:** Specify characteristics of the desired market segment.
3. **Data Collection:** Gather or compile necessary data.
4. **Explore Data:** Gain preliminary insights.
5. **Extract Segments:** Group consumers into segments.
6. **Profile Segments:** Create detailed profiles.
7. **Describe Segments:** Describe each segment in detail.
8. **Select Target Segments:** Choose which segments to target.
9. **Develop Marketing Mix:** Create a customized marketing strategy for each segment.
10. **Evaluate and Monitor:** Continuously assess and adjust the strategy based on changes in segment characteristics.

This structured approach ensures that market segmentation is both theoretically sound and practically applicable, enabling organizations to develop effective marketing strategies.

Step 1: Deciding (not) to Segment

3.1 Implications of Committing to Market Segmentation

Market segmentation is a significant long-term commitment, requiring substantial changes and investments. It's essential for organizations to understand the implications before investing in market segmentation. This strategy involves costs related to research, surveys, focus groups, and the creation of diverse marketing materials. The expected sales increase must justify these costs.

Implementing segmentation often requires new products, modifications of existing products, and changes in pricing, distribution channels, and communications. Organizational structures might need adjustment to focus on market segments, which can affect internal dynamics. Therefore, the decision to pursue segmentation should be made at the highest executive level and be consistently communicated across the organization.

3.2 Implementation Barriers

Several barriers can impede the successful implementation of market segmentation:

1. **Senior Management:** Lack of leadership, commitment, and resource allocation by senior management can undermine segmentation efforts. Without active involvement from the chief executive, implementing segmentation conclusions is challenging.
2. **Organizational Culture:** Resistance to change, lack of market orientation, poor communication, short-term thinking, and office politics can prevent successful implementation. A lack of training and understanding of market segmentation among senior management and the task team can also lead to failure.
3. **Formal Marketing Function:** The absence of a formal marketing function or qualified marketing experts and data analysts can be a major obstacle. Larger organizations with diverse markets require a high degree of formalization.
4. **Resource Constraints:** Limited financial resources and the inability to make necessary structural changes can restrict the organization from pursuing segmentation. Organizations with limited resources need to carefully select the best opportunities.
5. **Process-related Issues:** Undefined objectives, poor planning, lack of structured processes, unclear responsibilities, and time pressure can hinder segmentation efforts. Ensuring management understands segmentation techniques and presenting results in an easy-to-understand manner, such as through graphical visualizations, can help mitigate these issues.

Most barriers can be identified early in the segmentation study and proactively addressed. If they cannot be removed, it may be better to abandon the segmentation strategy. Successful implementation requires a resolute sense of purpose, patience, and a willingness to tackle inevitable problems.

Step 2: Specifying the Ideal Target Segment

4.1 Segment Evaluation Criteria

In market segmentation analysis, user input is crucial throughout the process, not just at the beginning or end. After committing to a segmentation strategy, organizations must determine two sets of evaluation criteria in Step 2: knock-out criteria and attractiveness criteria. Knock-out criteria are essential, non-negotiable features that segments must meet to be considered. Attractiveness criteria assess the relative appeal of segments that meet the knock-out criteria.

Various authors propose different criteria for evaluating market segments, which include factors such as measurability, substantiality, accessibility, and more.

4.2 Knock-Out Criteria

Knock-out criteria help determine if market segments qualify for further evaluation using attractiveness criteria. These criteria include:

- Homogeneity: Members must be similar to one another.
- Distinctiveness: Members must differ from other segments.
- Size: The segment must be large enough to justify customized marketing.
- Organizational fit: The organization must be able to meet the segment's needs.
- Identifiability: It must be possible to identify segment members.
- Reachability: There must be a way to contact segment members.

These criteria must be understood by senior management, the segmentation team, and the advisory committee. While some criteria are straightforward, others, like the minimum viable segment size, need precise specification.

4.3 Attractiveness Criteria

Attractiveness criteria are used to evaluate how appealing potential target segments are. Unlike knock-out criteria, attractiveness criteria are not binary; segments are rated on a scale of attractiveness. These criteria help determine which segments are chosen as target markets in Step 8. The criteria listed in the literature include factors such as market potential, growth forecasts, competitive advantage, segment saturation, and alignment with the company's strengths and image.

4.4 Implementing a Structured Process

A structured process for evaluating market segments is essential. The segment evaluation plot is a popular method, plotting segment attractiveness against organizational competitiveness. This requires agreement on the criteria for both axes. Typically, no more than six factors should be used for these criteria. A diverse team, including representatives from various organizational units, should be involved in selecting and weighting these criteria. This ensures different perspectives are considered and facilitates the implementation of the segmentation strategy across the organization.

By the end of Step 2, the segmentation team should have a list of about six segment attractiveness criteria, each with a weight indicating its importance. The weighting process involves team members distributing 100 points across the criteria and negotiating until agreement is reached. Approval from the advisory committee is recommended to ensure a broad perspective and buy-in from all organizational units.

Step 3: Data Collection

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.

Step 4: Explore Data

A Glimpse at the Data

- **Purpose:** Understand the data, identify patterns, anomalies, and relationships.
- **Processes:**
 - **Visualization:** Using plots like histograms, scatter plots, and box plots with Matplotlib and Seaborn to see distributions, correlations, and outliers.
 - **Correlation Analysis:** Using `df.corr()` to find correlations between features.
- **Libraries Used:** Pandas, Matplotlib, Seaborn.

4.2 Data Cleaning

- **Purpose:** Improve data quality by removing or correcting inaccuracies.
- **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 fix data.
 - **Dealing with Outliers:** Identifying and potentially removing outliers.
- **Libraries Used:** Pandas.

4.3 Descriptive Analysis

- **Purpose:** Summarize and understand the dataset's structure.
- **Processes:**
 - **Descriptive Statistics:** Using Pandas for basic statistics (`df.describe()`, `df.mean()`, `df.median()`).
 - **Data Summarization:** Using `df.info()` and `df.describe()` for an overview of the dataset.

- **Univariate Analysis:** Summarizing individual variables with histograms and bar charts.
- **Bivariate and Multivariate Analysis:** Examining relationships between variables using scatter plots, correlation matrices, and cross-tabulations.
- **Data Visualization:** Creating visualizations like histograms, box plots, scatter plots, and heatmaps using Matplotlib and Seaborn.
- **Handling Missing Values:** Addressing missing data through deletion, imputation, or analysis.
- **Correlation Analysis:** Computing correlation coefficients to understand relationships between variables.
- **Normality Tests:** Using Q-Q plots and other tests to check for normal distribution.
- **Libraries Used:** Pandas, Matplotlib, Seaborn.

4.4 Preprocessing

- **Purpose:** Transform raw data into a format more suitable for modeling.
- **Processes:**
 - **Feature Encoding:** Converting categorical data into numerical format using `pd.get_dummies()` or Scikit-learn's `LabelEncoder` and `OneHotEncoder`.
 - **Feature Scaling/Normalization:** Scaling features to a uniform range using Scikit-learn's `StandardScaler` or `MinMaxScaler`.
 - **Splitting Data:** Dividing data into training and test sets using Scikit-learn's `train_test_split`.
 - **Feature Engineering:** Creating new features from existing ones.
- **Libraries Used:** Pandas, Scikit-learn.

4.5 Principal Component Analysis (PCA)

- **Purpose:** Reduce dimensionality of data while retaining most of the variance.
- **Processes:**
 - **PCA Implementation:** Utilizing PCA from Scikit-learn.
 - **Fitting PCA:** Applying PCA to the data.
 - **Transforming Data:** Projecting data onto principal components.
 - **Variance Analysis:** Examining the explained variance.
- **Library Used:** Scikit-learn.

Step 5: Extract Segments

5.1. Grouping Consumers

Market segmentation involves dividing a larger market into smaller, homogeneous groups based on characteristics like demographics, psychographics, and behaviors. The goal is to identify

consumer groups with similar needs and preferences to develop targeted marketing strategies, leading to improved customer satisfaction, brand loyalty, and a better understanding of consumer needs.

5.2. Distance-Based Methods

Distance-based methods measure the similarity or dissimilarity between objects, crucial in clustering algorithms for grouping similar objects. These methods involve creating an $n \times p$ matrix where each row represents an observation and each column a variable. The choice of distance measure impacts the analysis results, making it essential to select an appropriate measure based on the data's nature.

5.3. Hierarchical Methods

Hierarchical clustering methods, which are intuitive and mimic human data grouping, come in two types: divisive and agglomerative. Divisive methods start with the entire dataset and split it iteratively, while agglomerative methods start with individual clusters and merge them. Both methods result in a sequence of nested partitions but are more suitable for small datasets.

5.4. Partitioning Methods

For large datasets, partitioning methods are more suitable. These methods create a single partition rather than nested sequences. They optimize for a specific number of segments and are more efficient than hierarchical methods for datasets with more than 1000 observations.

5.5. Hybrid Approaches

Hybrid segmentation combines hierarchical and partitioning methods to leverage their strengths and mitigate their weaknesses. Initially, a partitioning algorithm is used to handle large datasets, followed by hierarchical clustering on the reduced data, allowing for more manageable and insightful segmentation.

5.6. Model-Based Methods

Model-based clustering involves fitting probabilistic models to data, such as Gaussian Mixture Models (GMM), which assume data is generated from multiple Gaussian distributions. These methods provide a flexible framework for complex data distributions but require understanding the model assumptions and validating results based on data characteristics and analysis goals.

5.7. Algorithms with Integrated Variable Selection

These algorithms assume all segmentation variables contribute to the solution but can be hampered by redundant or noisy variables, especially with binary data. Some algorithms can simultaneously extract segments and select suitable variables, ensuring more relevant and informative segmentation.

5.8. Data Structure Analysis

Market segmentation is exploratory, and traditional validation is not feasible. Instead, stability-based data structure analysis assesses the reliability of segmentation solutions across repeated calculations. This analysis reveals whether natural, distinct segments exist and helps choose the number of segments to extract, guiding methodological decisions and ensuring meaningful segmentation solutions.

Step 6: Profile Segments

6.1 Identifying Key Characteristics of Market Segments

- **Purpose:** Understand the market segments identified during the extraction step.
- **Necessity:** Essential for data-driven market segmentation (not for commonsense segmentation).
- **Process:** Characterize each segment individually and compare them with other segments.
- **Outcome:** Effective profiling forms the foundation for interpreting segments accurately, crucial for strategic marketing decisions.

6.2 Traditional Approaches to Profiling Market Segments

- **High-Level Summaries:** Often oversimplify segment characteristics, making them misleadingly trivial.
- **Comprehensive Tables:** Detail exact percentages for each segmentation variable within each segment but are challenging to interpret and lack quick overviews.

6.3 Segment Profiling with Visualizations

- **Importance:** Data visualization is critical in statistical analysis for understanding variable relationships.
- **Usage in Segmentation:** Visualizations help examine segments in detail and evaluate the effectiveness of segmentation solutions.
- **Methods:**
 - **Segment Profile Plot:** Illustrates distinctions between each segment and the overall sample across all segmentation variables. This aids in understanding segment characteristics and making informed strategic decisions.
 - **Segment Separation Plot:** Visualizes segment overlaps across all data dimensions, providing a quick overview of segmentation solutions.
- **Benefits:** Clear visualizations enable managers to make informed long-term strategic decisions and justify significant financial investments in strategy implementation. Investing in high-quality visualizations offers substantial returns.
- **Complexity:** While effective with a few variables, visualizations can become intricate with a larger number of segmentation variables. Nonetheless, segment separation plots remain useful for complex cases.