NOTES
on
Market Segmentation Analysis

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Topics Covered :

1. Deciding to Segment .
2. Specifying the Ideal target Segment.
3. Collecting Data.
4. Describing Segments.

- # **Deciding (not) to Segment :**

- # **Implications of Committing to Market Segmentation**

- **Market Segmentation Implications:**
  - Market segmentation is a key marketing strategy.
  - Not always the best decision; important to understand implications.
  - Commitment to segmentation is a long-term commitment, likened to a marriage.
  - Involves willingness and ability to make substantial changes and investments.
  - Costs include research, surveys, focus groups, designing packages, and communication.
  - Cahill's recommendation: Only segment if the expected sales increase justifies costs.
- **Potential Required Changes:**
  - Development of new products, modification of existing products.
  - Changes in pricing, distribution channels, and communication strategies.
  - Likely influence on internal organizational structure.
- **Organizational Adjustment:**
  - Croft's recommendation: Organize around market segments, not just products.
  - Strategic business units dedicated to segments ensure ongoing focus on evolving segment needs.
- **Decision-Making Process:**
  - Decision to explore market segmentation must be made at the highest executive level.
  - Requires systematic and continuous communication and reinforcement across all organizational levels and units.

- # **Implementation Barriers**

- **Barriers to Successful Market Segmentation:**
  - Senior Management Barriers:
    - Lack of leadership, pro-active championing, commitment, and involvement.
    - Insufficient resource allocation by senior management.
  - **Organizational Culture Barriers:**
    - Lack of market or consumer orientation.
    - Resistance to change, new ideas, and lack of creative thinking.
    - Poor communication and lack of information sharing.
    - Short-term thinking, unwillingness to make changes, and office politics.
  - **Training and Expertise Barriers:**
    - Lack of understanding and awareness among senior management and segmentation team.
    - Lack of formal marketing function or qualified marketing experts.
    - Absence of a qualified data manager and analyst.
  - **Objective Restrictions and Resource Limitations:**
    - Financial constraints and inability to make structural changes.

• Segment Evaluation Criteria

- **User Involvement in Market Segmentation:**
  - User input is crucial throughout various stages of market segmentation analysis.
  - Involvement extends beyond the initial briefing and marketing mix development.
- **Contribution to Market Segmentation:**
  - After committing to segmentation in above Step , organizations play a vital role in Steps.
  - Organizations contribute conceptually, guiding data collection and target segment selection.
- **Segment Evaluation Criteria:**
  - **Knock-Out Criteria:**
    - Essential, non-negotiable features that automatically eliminate segments.
  - **Attractiveness Criteria:**
    - Longer and diverse set used to assess the relative attractiveness of remaining segments.
    - A shopping list for the segmentation team.
- **Attractiveness Criteria Examples:**
  - Measurable, distinguishable, accessible, substantial, compatible with the company.
  - Competitively advantageous, profitable, actionable, influential market factors.
- **Negotiation and Application:**
  - Knock-out criteria automatically eliminate segments.
  - Attractiveness criteria are negotiated by the team and applied to assess segment attractiveness.
- **Criteria Variation in Literature:**
  - Various criteria proposed in the literature, e.g., size, growth rate, competition, financial factors, and more.
- **User Input Importance:**
  - Continuous user involvement ensures useful segmentation results for the organization.

• Knock-Out Criteria

- **Purpose of Knock-Out Criteria:**
  - Used to assess if market segments qualify for evaluation using attractiveness criteria.
- **Key Knock-Out Criteria (Suggested by Kotler and Others):**
  - Substantiality, measurability, and accessibility are initial knock-out criteria.
  - Additional criteria recommended include homogeneity, distinctiveness, size, matching organization's strengths, identifiability, and reachability.
- **Understanding Knock-Out Criteria:**
  - Essential for senior management, the segmentation team, and the advisory committee.
  - Some criteria, like size, are non-negotiable, while others may require specific specifications.

• Attractiveness Criteria

- **Attractiveness Criteria Overview:**
  - Extensive list in Table provides diverse segment attractiveness criteria for the segmentation team.
- **Nature of Attractiveness Criteria:**
  - Non-binary; segments are rated on each criterion.
  - Assessments contribute to determining overall attractiveness.
- **Role in Target Segment Selection:**
  - Influence the selection of target segments in Step 8 of market segmentation analysis.

• Implementing a Structured Process

- **Structured Process Benefits:**
  - General consensus in segmentation literature on the benefits of a structured process.
- **Popular Approach:**
  - Segment evaluation plot widely used for assessing target market segments.
- **Determining Segment Attractiveness and Competitiveness:**
  - Use of a plot with attractiveness and competitiveness axes, values determined by the segmentation team.
- **Negotiation of Criteria:**
  - Factors constituting attractiveness and competitiveness require negotiation and agreement.
- **Involvement of Organisational Units:**
  - Advisory committee, representing diverse units, crucial for perspectives and stakeholder involvement.
- **Importance of Early Criteria Selection:**
  - Early selection of attractiveness criteria ensures capturing relevant information during data collection .
- **Weighting Criteria:**
  - Approx. six criteria selected, each assigned a weight reflecting its importance.
- **Weighting Process:**
  - Team members allocate 100 points across criteria, negotiation until agreement; approval from the advisory committee is optimal.

- # **Collecting Data :**

- # **Segmentation Variables**

- Segmentation Variable in Commonsense Segmentation:
    - Refers to a single characteristic (e.g., gender) used to split the sample into market segments.
    - Illustrated with an example using gender as a segmentation variable.
- Descriptor Variables:
    - Other personal characteristics in the data used to describe segments in detail.
    - Critical for developing an effective marketing mix targeting the segment.
- Difference Between Commonsense and Data-driven Segmentation:
    - Data-driven segmentation uses multiple segmentation variables.
    - Serves as the starting point for identifying naturally existing or artificially created market segments.
- Quality of Empirical Data:
    - Critical for developing a valid segmentation solution in both commonsense and data-driven approaches.
- Market Segmentation Analysis Requirements:
    - Good empirical data required for assigning individuals to correct segments and developing effective marketing strategies.
- Sources of Empirical Data for Segmentation Studies:
    - Can come from survey studies, observations (e.g., scanner data), or experimental studies.
    - Survey data, while common, may be unreliable for reflecting certain behaviors.
- Optimal Data Source:
    - Data reflecting actual consumer behavior is preferable for effective segmentation analysis.

- # **Segmentation Criteria**

    - Organization must decide on the segmentation criterion before extracting segments or collecting data.

    - Segmentation criterion is broader, encompassing the nature of information used for segmentation.
    - Can relate to constructs like benefits sought.

    - Geographic, sociodemographic, psychographic, and behavioral are common segmentation criteria.

    - Not easily outsourced; requires prior market knowledge.

- # **Geographic Segmentation**

- **Geographic Segmentation**:
  - Original segmentation criterion.
  - Consumer's residence location forms market segments.
  - Often simple and appropriate, especially for language or cultural differences.
- **Examples**:
  - National tourism organizations targeting neighboring countries.
  - Global companies adapting web content based on customer's country.
- **Advantages:**
  - Easy assignment of consumers to geographic units.
  - Facilitates targeted communication and channel selection.
- **Disadvantages:**
  - Location alone may not reflect relevant characteristics for marketers.
  - Differences in preferences often stem from socio-demographic factors.
- **Illustrative Case:**
  - Luxury suburb residents may share car preferences, but location isn't the main factor.
- **Revival in International Studies:**
  - Geographic information's revival in international market segmentation.
  - Challenges include finding meaningful segmentation variables across regions.
  - Potential biases in surveys from respondents of diverse cultural backgrounds.
- **Example Study:**
  - Haverila (2013) conducted an international market segmentation study on mobile phone users among young customers.

- # **Describing Segments**

- # **Developing a Complete Picture of Market Segments**

- **Segment profiling:** Understanding differences in segmentation variables across market segments.

- **Segmentation variables :** Chosen in early steps, forming the basis for extracting market segments from empirical data.

- **(Describing Segments):** Similar to profiling, but uses additional information about segment members.

- **Profiling vs. Describing**: Profiling investigates differences in chosen variables; describing uses additional descriptor variables.

- **Importance of Descriptions**: Critical for detailed segment insight and developing a customized marketing mix.

- **Example:** Australian travel motives data set - profiling involves travel motive differences, while describing uses additional variables like age, gender, and past travel behavior.

- **Customized Marketing Mix:** Segment descriptions guide the development of tailored marketing strategies.

- **Methods of Study:** Differences in descriptor variables can be studied through descriptive statistics, visualizations, or inferential statistics.

- **Visualizations:** Make segment description more user-friendly compared to traditional statistical testing.

• Using Visualisations to Describe Market Segments

- **Visualization Approaches:** Two basic approaches for nominal/ordinal and metric descriptor variables.
- **Advantages of Visualizations:**
  - Simplifies interpretation for both data analysts and users.
  - Integrates information on statistical significance, preventing over-interpretation of insignificant differences.
- **Quote from Cornelius et al. (2010):**
  - Graphical representations convey the essence of marketing research results.
  - Managers prefer graphical formats and consider the intuitiveness of graphical displays crucial.
- **Efficiency of Graphical Processing:**
  - Survey study suggests higher efficiency in processing graphical results compared to tabular ones.

• Nominal and Ordinal Descriptor Variables

- **Nominal and Ordinal Variables:**
  - Basis for visualizations and statistical tests is a cross-tabulation of segment membership with the descriptor variable.
  - Australian travel motives data set has several descriptor variables.
- **Gender Differences Example:**
  - Stacked bar chart used to visualize gender differences across segments.
  - Mosaic plot employed to address challenges when comparing proportions in segments of unequal sizes.
- **Income and Segment Membership:**
  - Mosaic plot shows a moderate association between income and segment membership.
  - Segment 4 (cultural and local interest) associated with higher income; Segment 3 (luxury and entertainment) with lower income.
- **Travel Motives and Moral Obligation:**
  - Mosaic plot illustrates a strong association between travel motives and stated moral obligation to protect the environment.
  - Segment 3 (entertainment seekers) has lower moral obligation; Segment 6 (nature lovers) has higher moral obligation.

• <u>Metric Descriptor Variables</u>

- **Metric Descriptor Variables**:
  - R package lattice and ggplot2 provide conditional plots for visualizing differences in metric descriptor variables.
  - Conditional plots divide sections for different subsets, such as market segments.
- **Segment Profile Plot Example**:
  - R package lattice used to generate a segment profile plot.
  - Suitable for displaying age distribution or moral obligation scores for each segment.
- **Histograms for Age and Moral Obligation:**
  - Histograms created for age and moral obligation scores by segment.
  - Difficult to assess differences between segments from the plots alone.
- **Parallel Box-and-Whisker Plot**:
  - Provides a clearer view of the distribution of the variable for each segment.
  - Example: Box-and-whisker plot for age by market segment.
- **Insights from Box-and-Whisker Plot**:
  - Minor differences in age across segments observed visually.
  - Statistical testing needed to confirm these differences.

• <u>Testing for Segment Differences in Descriptor Variables</u>

- **Testing for Segment Differences:**
  - Use simple statistical tests to formally test differences in descriptor variables across market segments.
  - Treat segment membership as a nominal variable for testing.
- **Association Tests**:
  - Visualize association between nominal/ordinal variables using cross-tabulation (e.g., mosaic plot).
  - χ^2-test for independence assesses significance.
- **Example - Gender Distribution**:
  - Use χ^2-test to check gender distribution differences across Australian travel motives segments.
  - Non-significant p-value suggests no significant difference, confirmed by the mosaic plot.
- **Association Test for Moral Obligation**:
  - Significant association found in χ^2-test between segment membership and moral obligation to protect the environment.
- **Segment Membership and Metric Variables**:
  - Visualize association using parallel boxplots for metric variables like age, nights, and spending.
  - ANOVA tests for significant differences in means across multiple segments.

- # **Predicting Segments from Descriptor Variables**

- **Predicting Segments from Descriptor Variables:**
  - Use regression models with segment membership as the categorical dependent variable.
  - Regression models help predict segment membership based on descriptor variables.
- **Linear Regression Model:**
  - Assumes a linear relationship between the dependent variable and independent variables.
  - Coefficients indicate mean differences in the dependent variable for each segment.
- **Generalized Linear Models (GLM):**
  - Accommodate a wider range of distributions for the dependent variable.
  - Useful when the normal distribution is not suitable, especially for categorical variables .
- **Link Functions in GLM:**
  - Introduce a link function to transform the mean value of the dependent variable.
  - Allow modeling with a linear function, addressing limitations of the normal distribution.
- **Special Cases of GLM:**
  - Binary and multinomial logistic regression discussed for cases where the dependent variable follows a binary or multinomial distribution.

- # **Binary Logistic Regression**

- **Binary Logistic Regression:**
  - Formulate a model for binary data using generalised linear models.
  - Assume Bernoulli distribution with logit link for success probability μ.
- **Model Fitting in R:**
  - Use glm() function in R, specifying family = binomial(link = "logit") or family = binomial().
  - Fit a model to predict the likelihood of belonging to segment 3 based on age and moral obligation score.
- **Interpreting Coefficients:**
  - Intercept provides the linear predictor value when independent variables are 0.
  - Inverse logit function transforms intercept to predicted probability.
  - Regression coefficients indicate changes in log odds or log odds ratios for each independent variable.
- **Effects Package in R:**
  - Use the effects package to simplify interpretation and visualize predicted probabilities.
- **Plotting Predicted Probabilities:**
  - Plot shows predicted probability changes with age (left) and moral obligation categories (right).
  - **Interpretation:**
    - For a 20-year-old tourist with average moral obligation, the predicted

• <u>Multinomial Logistic Regression</u>

- **<u>Multinomial Logistic Regression:</u>**
  - Fits a model predicting multiple segments simultaneously.
  - Assumes a categorical dependent variable following a multinomial distribution with the logistic function as the link function.
- **<u>Model Fitting in R:</u>**
  - Use multinom() function from the nnet package in R.
  - Specify the model with a formula and a data frame for evaluation.
  - Use trace = 0 to avoid displaying progress information during fitting.
- **<u>Regression Coefficients:</u>**
  - Matrix form with rows representing categories of the dependent variable (segments) and columns representing effects of independent variables.
- **<u>Summary of Coefficients:</u>**
  - Use summary() function to obtain regression coefficients and their standard errors.
- **<u>Assessing Model Fit:</u>**
  - Use Anova() function to test if dropping a single variable significantly reduces model fit.
  - Dropping variables corresponds to setting their regression coefficients to 0.
  - Output includes a table with Type II tests for each variable.
- **<u>Model Selection with step():</u>**
  - step() function performs model selection by starting with the full model and iteratively dropping variables.
  - Determines which variables significantly contribute to the model.

• <u>Tree-Based Methods</u>

- **<u>Classification and Regression Trees (CARTs):</u>**
  - Alternative modeling approach for predicting binary or categorical dependent variables.
  - Supervised learning technique from machine learning.
  - Advantages include variable selection, ease of interpretation, and incorporation of interaction effects.
  - Well-suited for a large number of independent variables.
  - Disadvantage: Results can be unstable, sensitive to small changes in data.
- **<u>Tree Construction Procedure:</u>**
  - Stepwise process involving recursive partitioning.
  - Consumers are split into groups based on independent variables to create pure groups regarding the dependent variable.
  - Nodes represent groups, and terminal nodes are not split further.
  - Predictions are made by moving down the tree based on independent variable values.
- **<u>Tree Constructing Algorithms:</u>**
  - Differ in binary vs. multi-way splits, selection criteria for variables and split points, stopping criteria, and final predictions at terminal nodes.
  - Implemented in R packages such as rpart and partykit.