Market Segments

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Imagine you're the captain of a ship, navigating through the vast ocean of the marketplace. Your goal? To find the most valuable islands,those hidden gems of customer groups that hold the greatest potential for your business. But the journey isn't easy; it requires careful planning, smart decisions, and the right tools. Here's how you get on this adventure

Step 1 Deciding (Not) to Segment :

Why Segment? -- Market segmentation allows you to hone in on specific customer groups, making your marketing more targeted and effective. It's about understanding who your customers are and tailoring your approach to meet their unique needs.

Challenges-- Implementing segmentation can be challenging. It may face resistance within the company, be complex to manage, and require high-quality data. However, by addressing these challenges head-on, you can unlock the full potential of your segmentation strategy.

For Example..-**The Decision to Set Sail :**

First, you face a critical decision: should you embark on this journey of market segmentation? You know that by setting sail, you can discover new lands.

specific customer groups where your marketing efforts can flourish. But you also recognize the challenges: navigating through internal resistance, handling the complexity of managing multiple islands, and ensuring you have the right data to guide your ship. Yet, you know that the rewards

reaching customers more effectively, make this journey worth the effort.

Set Criteria: Establish clear guidelines to help you evaluate and choose the most promising customer segments. These criteria ensure that your decisions are grounded in logic and aligned with your business goals.

Step 2 - Choosing the Right Segments

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Exclude Weak Segments: Not every customer group will be worth pursuing. If a segment doesn’t meet basic requirements, like having enough customers or potential for growth, it’s best to exclude it early on.

Evaluate Attractiveness: Look for segments that are not only large and growing but also align well with what your company does best. This way, you focus your efforts on areas where you can truly excel.

Use a Structured Process: A systematic approach ensures that you’re making decisions based on solid criteria rather than gut feelings. This process leads to better, more reliable outcomes.

For Example.

Charting the Course -

With the decision made, it's time to chart your course. You can't just wander aimlessly; you need a map

a set of criteria to evaluate which islands (or segments) are worth your time. You look for the most promising ones

those that are large, growing, and aligned with your strengths as a captain. Some islands might seem appealing but lack the resources you need; those are the ones you mark as unworthy and move on. Your map is clear, your course is set, and you know exactly where you're headed.

Step 3- Gathering the Right Data :

Identify Key Variables: Determine which customer characteristics like age, income, or purchasing behaviour are most important for your segmentation. These variables help you distinguish between different customer groups effectively.

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Collect Relevant Data: Gathering the right data is crucial. Make sure the data you collect is relevant and aligned with your segmentation strategy, so you can accurately identify and target your chosen segments.

For Example.

Gathering the Crew and Supplies

Before you set sail, you need to gather your crew and supplies. In this case, your crew is the data you need.

Information about customer traits like age, income, and buying behavior.

You make sure you have the right data to navigate your journey effectively. With your ship well-stocked and your crew ready, you're fully equipped to sail towards your chosen islands, confident that your voyage will lead to success

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Step 5: Extracting Segments

7.1 Grouping Consumers : Grouping consumers is a key aspect of market segmentation, where you categorize potential customers into distinct groups or segments based on shared characteristics. These characteristics help businesses tailor their products, marketing strategies, and communication to meet the specific needs of each group. Here's how consumers can be grouped:

1. Demographic Segmentation:

- **Age**: Different age groups have varying preferences and needs.
  - **Example**: Children's toys are targeted at young families, while retirement planning services are aimed at older adults.
- **Gender**: Marketing strategies can differ based on gender.
  - **Example**: Beauty products often have specific lines for men and women.
- **Income**: Consumers are grouped based on their income levels.
  - **Example**: Luxury brands target high-income consumers, while discount retailers focus on budget-conscious shoppers.
- **Education**: Education level can influence purchasing decisions.
  - **Example**: Advanced tech gadgets might be marketed to highly educated professionals.
- **Occupation**: Grouping by job type can help target specific needs.
  - **Example**: Professional attire is marketed to office workers, while work boots are aimed at construction workers.
- **Family Size**: The number of family members can impact buying behavior.
  - **Example**: Family-sized food packages are marketed to larger households.

2. Geographic Segmentation:

- **Region**: Consumers can be grouped based on the geographic area.
  - **Example**: Winter clothing is marketed more heavily in colder regions.
- **Country**: National borders often define distinct consumer preferences.
  - **Example**: Food products might be customized to meet local tastes in different countries.
- **Urban vs. Rural**: Urban and rural consumers often have different needs.
  - **Example**: Compact cars are popular in urban areas, while trucks might be more common in rural regions.
- **Climate**: Climate can influence product demand.
  - **Example**: Air conditioners are marketed in hotter climates, while heating systems are targeted at colder areas.

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3. Psychographic Segmentation:

- **Lifestyle**: Grouping consumers based on their lifestyle choices and values.
  - **Example**: Fitness brands target active, health-conscious individuals.
- **Personality**: Products can be tailored to fit different personality traits.
  - **Example**: Adventurous individuals might be targeted with outdoor gear.
- **Social Status**: Consumers can be grouped based on perceived social status.
  - **Example**: Luxury brands target consumers who aspire to a high social status.
- **Interests**: Grouping based on hobbies and interests.
  - **Example**: Photography enthusiasts might be targeted with high-end cameras and accessories.

4. Behavioral Segmentation:

- **Occasion**: Consumers are grouped based on when they buy or use a product.
  - **Example**: Seasonal products like holiday decorations or gifts.
- **Usage Rate**: Consumers can be categorized by how often they use a product.
  - **Example**: Heavy users of a product might be targeted with loyalty programs.
- **Brand Loyalty**: Grouping by how loyal consumers are to a brand.
  - **Example**: Loyal customers might be rewarded with discounts or special offers.
- **Benefits Sought**: Consumers are grouped based on the benefits they seek from a product.
  - **Example**: Some consumers might buy toothpaste for whitening, while others might focus on cavity protection.

5. Firmographic Segmentation (B2B):

- **Industry**: Businesses can be grouped by the industry they operate in.
  - **Example**: Software companies might market different products to healthcare vs. retail industries.
- **Company Size**: Grouping by the size of the company.
  - **Example**: Small businesses might be offered more affordable, scalable solutions.
- **Location**: Businesses can be segmented geographically, similar to consumer markets.
  - **Example**: A local supplier might focus on nearby businesses to reduce shipping costs.
- **Revenue**: Grouping by the company's revenue size.
  - **Example**: High-revenue companies might be targeted with premium products.

6. Hybrid Segmentation:

- **Combining Criteria**: Sometimes, businesses use a combination of the above methods to create a more specific segment.
  - **Example**: A luxury car brand might target wealthy, middle-aged professionals in urban areas who value exclusivity and high performance.

7.2 Distance-Based Methods

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7.2.1 Distance Measures

Euclidean Distance: Measures the straight-line distance between two points in space. It is the most common distance measure in market segmentation analysis.

Example: The Euclidean distance between Anna and Bill's vacation activity profiles, given their activity preferences, is calculated as 0 since they have identical profiles.

Manhattan Distance: Represents the distance between two points on a grid (like the streets of Manhattan) and sums the absolute differences across dimensions.

Example: The Manhattan distance between Anna and Michael could be calculated based on how differently they spend time on vacation activities like beach, action, and culture.

Asymmetric Binary Distance: This measure applies to binary vectors where only shared 1s (positive attributes) contribute to the similarity between two observations.

Example: Two tourists sharing the activity of horse riding during their vacation will have a lower asymmetric binary distance compared to others who don’t share this activity.

7.2.2 Hierarchical Methods

Hierarchical clustering methods aim to group data by creating a tree of clusters called a dendrogram.

Single Linkage: Clusters are formed based on the nearest neighbor, which may reveal non-linear structures.

Example: In a dataset of consumer preferences, Single Linkage may connect consumers based on the closest match of one aspect of their preferences.

Complete Linkage: Considers the furthest pair of points in the two clusters.

Average Linkage: Averages the distance between all points in the two clusters.

Ward's Method: Minimizes the total within-cluster variance. It’s suitable for identifying compact clusers.

Example: Ward’s method can be used to create a hierarchical cluster based on customer satisfaction metrics across different service providers.

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7.3 Model-Based Methods

Model-based methods differ from distance-based methods by assuming that the data come from a mixture of several distributions (finite mixture models).

Finite Mixture Models: Assume that data are generated by a finite number of segment-specific models, with each segment characterized by specific parameters.

Example: In market segmentation, a finite mixture model may categorize consumers based on their buying behavior into segments like budget-conscious, quality-focused, etc.

1. Introduction to Model-Based Methods

- **Probabilistic Approach**: Model-based methods assume that the data is generated by a mixture of several distributions, where each distribution corresponds to a market segment. The goal is to identify these segments and assign consumers to them probabilistically.
- **Advantages**: These methods provide a clear statistical framework and allow for the estimation of uncertainty in segment membership. They also accommodate more complex data structures and relationships between variables.

2. Finite Mixture Models

- **Definition**: A finite mixture model assumes that the population is composed of a finite number of segments, each described by its own probability distribution. The overall population distribution is a weighted sum of these segment-specific distributions.
- **Model Components**:
    - **Segment-Specific Distributions**: Each segment has its own distribution for the observed data.
    - **Mixing Proportions**: These are the probabilities of a consumer belonging to each segment.
    - **Latent Variables**: These variables indicate the segment to which each consumer belongs but are not directly observed.
- **Estimation**: Parameters of the finite mixture model are typically estimated using the Expectation-Maximization (EM) algorithm, which iteratively refines the estimates of the model parameters until convergence.

to group consumers or businesses into distinct segments.

1. Latent Class Analysis (LCA)

- **Concept**: Latent Class Analysis (LCA) is a statistical technique used to identify unobserved (latent) subgroups within a population based on observed variables. It assumes that the population is composed of a finite number of segments, and each individual belongs to one of these segments.
- **How It Works**:
    - **Data Input**: LCA uses categorical or ordinal data, such as survey responses or behavioral data.

    - **Model Estimation**: The algorithm estimates the probability that an individual belongs to each latent class (segment) based on their responses.
    - **Class Assignment**: Individuals are assigned to the class (segment) with the highest probability.
- **Example**: A retail company might use LCA to segment its customer base into groups based on purchasing behavior and demographic information, identifying segments like "price-sensitive shoppers," "brand-loyal customers," and "impulse buyers."

2. Finite Mixture Models (FMM)

- **Concept**: Finite Mixture Models (FMM) extend the idea of LCA by allowing for more flexibility in the data distribution. Unlike LCA, which assumes that the data is categorical, FMM can handle continuous data and assumes that the overall population distribution is a mixture of several component distributions.
- **How It Works**:
    - **Data Input**: FMM can use continuous or categorical data.
    - **Model Estimation**: The model estimates the parameters of each component distribution (e.g., means, variances) and the probability that each data point belongs to each component.
    - **Segment Identification**: The model identifies the different segments by fitting the mixture of distributions to the data.
- **Example**: A financial institution might use FMM to segment its clients based on their investment behavior, identifying segments like "risk-averse investors," "moderate risk-takers," and "high-risk investors."

3. Clusterwise Regression

- **Concept**: Clusterwise Regression is a technique that combines clustering and regression analysis. It identifies clusters (segments) within the data and simultaneously fits a separate regression model for each cluster. This method is useful when different segments have distinct relationships between the independent and dependent variables.
- **How It Works**:
    - **Data Input**: The method uses data that includes both independent and dependent variables.
    - **Clustering and Regression**: The algorithm clusters the data based on similarities in the independent variables and fits a regression model for each cluster.
    - **Segment Interpretation**: Each cluster represents a segment with a unique regression model, reflecting how the independent variables influence the dependent variable differently across segments.
- **Example**: A car manufacturer might use Clusterwise Regression to segment its market based on customer preferences for vehicle features (independent variables) and their willingness to pay (dependent variable), identifying segments like "value-seekers" and "feature-oriented buyers."

4. Conjoint Analysis

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- **Concept**: Conjoint Analysis is a technique used to understand how consumers value different attributes of a product or service. It helps in identifying the combination of features that are most preferred by different market segments.
- **How It Works**:
  - **Data Collection**: Consumers are presented with a set of product profiles, each with different combinations of attributes.
  - **Preference Estimation**: The model estimates the relative importance of each attribute and the preferred combination of attributes for each segment.
  - **Segment Identification**: Based on the preferences, the model identifies distinct segments that value different attributes of the product.
- **Example**: A smartphone company might use Conjoint Analysis to segment its market based on preferences for attributes like battery life, camera quality, and price, identifying segments such as "tech enthusiasts," "budget-conscious buyers," and "photography lovers."
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5. Structural Equation Modeling (SEM)

- **Concept**: Structural Equation Modeling (SEM) is a multivariate statistical technique that allows for the estimation of complex relationships between observed and latent variables. SEM is used in market segmentation to model the relationships between consumer characteristics, behaviors, and preferences.
- **How It Works**:
  - **Model Specification**: The researcher specifies a theoretical model that includes latent variables (e.g., customer satisfaction) and observed variables (e.g., survey responses).
  - **Model Estimation**: The SEM algorithm estimates the relationships between the variables, including direct and indirect effects.
  - **Segment Identification**: The model can reveal latent segments based on the relationships between the variables.
- **Example**: A hospitality company might use SEM to segment its customers based on factors like perceived value, service quality, and customer loyalty, identifying segments such as "loyal repeat customers" and "price-sensitive newcomers."

6. Bayesian Approaches

- **Concept**: Bayesian approaches to market segmentation involve the use of Bayesian statistics to update the probability of a segment's characteristics as more data becomes available. These methods provide a flexible framework for incorporating prior knowledge and handling uncertainty.
- **How It Works**:
  - **Prior Distribution**: A prior distribution is specified based on existing knowledge or assumptions about the segments.
  - **Data Update**: As new data is collected, the prior distribution is updated to form a posterior distribution, which reflects the updated understanding of the segments.
  - **Segment Identification**: Segments are identified based on the posterior distribution, allowing for more robust and adaptable segmentation.

- **Example**: An e-commerce platform might use Bayesian methods to continually refine its customer segments based on ongoing purchase data, improving the accuracy of its recommendations over time.

7.4 Algorithms with Integrated Variable Selection

This section focuses on clustering algorithms that incorporate variable selection into the segmentation process. The goal is to identify the most relevant variables for clustering while also grouping the observations into clusters. This approach is particularly useful when dealing with high-dimensional data, where many variables may be irrelevant or redundant.

7.4.1 Biclustering Algorithms

Biclustering: This technique clusters both rows (observations) and columns (variables) simultaneously, rather than clustering them separately. The advantage of biclustering is that it can identify submatrices within the data that show a high degree of similarity, meaning that a particular group of variables is particularly relevant for a specific group of observations.

Application Example: In a consumer preference study, biclustering can identify a group of consumers who share specific product preferences (e.g., a segment of consumers who prefer eco-friendly products and high-end electronics). It does this by clustering both the consumers and the variables (product categories) simultaneously.

Patterns in Biclustering:

Constant Pattern: Biclusters where all elements have the same value.

Constant Column/Row Pattern: Biclusters where values in each row/column of a bicluster are constant, but different across rows/columns.

Coherent Patterns: Biclusters where values increase or decrease together.

7.4.2 Variable Selection Procedure for Clustering Binary Data (VSBD)

VSBD: This method is tailored for clustering binary data, where each variable is either present (1) or absent (0). The VSBD algorithm selects the most informative variables for clustering by evaluating their contribution to the clustering quality.

How It Works: The algorithm starts by assuming all variables might be useful for clustering. It then iteratively tests and removes variables that do not contribute to the differentiation between clusters, thereby reducing the dimensionality of the data and improving the interpretability of the clusters.

Application Example: In a binary survey dataset, where each question has a yes/no answer, the VSBD procedure might identify that only a subset of questions are relevant for distinguishing between different customer segments, ignoring questions that are uniformly answered across segments.

Advantages:

Focuses on the most relevant variables, reducing noise and improving clustering performance.

Particularly useful in datasets with many binary variables where not all variables contribute to meaningful segmentation.

7.4.3 Factor-Cluster Analysis

Factor-Cluster Analysis: This method first applies factor analysis to reduce the number of variables into a smaller set of underlying factors (latent variables), and then uses these factors as the basis for clustering.

Factor Analysis: A statistical method used to identify a smaller number of unobserved variables (factors) that explain the patterns of correlations within a larger set of observed variables.

Clustering: Once the factor analysis reduces the dimensionality of the data, the resulting factors are used as inputs for a clustering algorithm (e.g., k-means).

Application Example: In a psychological study with a large number of test items, factor-cluster analysis might first reduce these items into a few underlying psychological traits (like extroversion or conscientiousness) and then cluster individuals based on these traits.

Advantages:

Reduces the complexity of the dataset by summarizing the original variables into factors.

Makes the clustering process more efficient and interpretable, especially when dealing with large numbers of correlated variables.

Disadvantages:

The choice of the number of factors is crucial and may affect the quality of the clustering.

Interpretability of factors can be challenging, depending on the nature of the original variables.

7.5 Data Structure Analysis

Data structure analysis is a crucial step in market segmentation to understand the underlying structure of the data and to evaluate the quality and stability of the identified segments. This step involves assessing the number of segments, their stability, and how well the data supports the identified segmentation solutions.

7.5.1 Cluster Indices

Cluster Indices: These are statistical measures used to determine the optimal number of clusters in a dataset. Several indices exist, each providing a different perspective on the quality of clustering.

Silhouette Index: Measures how similar an object is to its own cluster compared to other clusters. A higher silhouette value indicates that the object is well-matched to its own cluster and poorly matched to neighboring clusters.

Example: A silhouette value close to 1 suggests that a consumer's preferences are very similar to those in the same segment but different from those in other segments.

Davies-Bouldin Index: Evaluates the average similarity ratio of each cluster with its most similar cluster. Lower values indicate better clustering solutions.

Example: A low Davies-Bouldin index might suggest that tourist segments based on activity preferences are distinct from each other.

Gap Statistic: Compares the within-cluster dispersion with that expected under a null reference distribution. The optimal number of clusters is identified where the gap statistic is maximized.

Example: When segmenting customers based on their purchase history, the gap statistic helps determine the number of segments that best explain the variation in the data.

7.5.2 Gorge Plots

Gorge Plots: These plots are used to visually assess the separation between segments. A gorge plot displays the distance between the nearest points in different clusters and can help in understanding how well-separated the segments are.

How It Works: The plot typically shows the distance between clusters on one axis and the clusters themselves on another. Significant “gorges” or gaps in the plot indicate good separation between clusters.

Application Example: In a dataset of consumer behavior, a gorge plot might reveal whether segments based on spending habits are clearly separated, suggesting distinct consumer groups.

Advantages:

Helps in visually identifying whether the clusters are well-separated or if there are overlaps.

Useful for determining if the chosen number of clusters is appropriate for the data.

7.5.3 Global Stability Analysis

Global Stability Analysis: This analysis checks how stable the entire clustering solution is when the data or parameters are slightly changed. It helps in understanding the robustness of the identified segments.

Bootstrap Methods: A common approach where the data is resampled multiple times, and clustering is performed on each sample to see if the same segments are identified consistently.

Example: In a customer segmentation analysis, if the same segments are consistently identified across different bootstrap samples, the segmentation solution is considered stable.

Advantages:

Ensures that the identified segments are not overly sensitive to minor changes in the data.

Provides confidence in the robustness of the segmentation solution.

7.5.4 Segment Level Stability Analysis

Segment Level Stability Analysis: Focuses on the stability of individual segments rather than the overall clustering solution. It evaluates how consistently individual segments are identified across different samples or parameter settings.

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SLSW (Segment Level Stability Within solutions): This measures the stability of segments within the same clustering solution. It assesses how consistently the same segment is identified when clustering is performed multiple times on the same data.

SLSA (Segment Level Stability Across solutions): This measures the stability of segments across different clustering solutions, often with varying numbers of segments. It helps in understanding whether a segment identified in one solution persists as the number of segments changes.

Example: When performing SLSA on a tourist segmentation, if a specific segment (e.g., adventure seekers) remains stable across solutions with different numbers of clusters, it indicates that this segment is a core, well-defined group.

Advantages:

Provides detailed insight into which segments are robust and which are more dependent on the specific clustering solution.

Helps in making decisions about the final number of segments by identifying stable core segments.

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Step 9: Customising the Marketing Mix

Customising the marketing mix involves tailoring the four elements of the marketing mix—Product, Price, Place, and Promotion—to meet the needs of the selected target segments identified in the market segmentation process. This step ensures that the marketing strategy is aligned with the specific characteristics and preferences of each target segment, maximizing the effectiveness of the marketing efforts.

11.1 Implications for Marketing Mix Decisions

Product: The product should be designed or adapted to meet the specific needs, preferences, and expectations of the target segment. This might involve modifying the product features, quality, packaging, or even developing new products to satisfy the unique demands of different segments.

Example: A company might offer a luxury version of a product for high-end segments while providing a budget-friendly version for cost-conscious consumers.

Price: Pricing strategies should reflect the perceived value of the product to the target segment. Different segments might have varying price sensitivities, so it’s crucial to set prices that align with each segment's willingness to pay.

Example: Offering discounts or payment plans to price-sensitive segments while maintaining premium pricing for segments that associate higher price with higher quality.

Place (Distribution): Distribution channels should be selected based on where the target segments prefer to purchase and how they want to access the product. This could involve choosing the right retail locations, online platforms, or even direct-to-consumer channels.

Example: For a tech-savvy segment, the product might be primarily sold through online platforms, while a more traditional segment might prefer brick-and-mortar stores.

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Promotion: Promotional strategies need to be customized to communicate effectively with each target segment. This includes selecting the right messages, advertising mediums, and promotional tactics that resonate with the segment's values and behaviors.

Example: Using social media and influencer marketing to reach younger segments while employing television and print ads for older demographics.

11.2 Product

Product Variation: Products can be customized for different segments by varying features, designs, and functionalities. This is especially important when segments have distinct preferences or usage scenarios.

Example: A smartphone company might offer models with varying levels of functionality—basic models for everyday users and advanced models with more features for tech enthusiasts.

Branding: Branding should align with the segment's identity and values. Each segment may perceive the brand differently, so the branding strategy might need to be adjusted to appeal to different segments.

Example: A health-focused brand might emphasize sustainability and wellness in its messaging for eco-conscious consumers while focusing on performance for athletes.

11.3 Price

Differentiated Pricing: Pricing strategies should reflect the value perceived by each segment. Techniques like price discrimination, bundling, or tiered pricing can be used to match the willingness to pay across different segments.

Example: Offering a subscription model with basic, premium, and VIP tiers to cater to different customer segments.

Price Sensitivity: Understanding the price elasticity of demand for each segment is crucial. Some segments may be highly sensitive to price changes, while others might prioritize quality or exclusivity over cost.

Example: A luxury car brand may offer finance options or leasing plans to make its products more accessible to price-sensitive segments.

11.4 Place (Distribution)

Channel Selection: Different segments may prefer different purchasing channels. The distribution strategy should ensure that the product is available where and when the target segment is most likely to make a purchase.

Example: A company might distribute its products through specialty stores for niche segments while using mass retailers for broader segments.

Geographic Considerations: For segments defined by geography, it's important to consider local preferences, regulatory environments, and logistical challenges in distribution.

Example: A company might offer region-specific products or adapt its distribution strategy to local market conditions.

11.5 Promotion

Message Customization: Promotional messages should be tailored to resonate with the values, emotions, and motivations of each target segment. This might involve different slogans, visuals, and narratives for different segments.

Example: A cosmetics brand might emphasize natural ingredients for health-conscious segments while focusing on glamour and fashion for trend-focused segments.

Media Selection: The choice of media for promotion should be based on the media consumption habits of the target segment. This could range from traditional media like TV and radio to digital channels like social media, search engines, and email marketing.

Example: Targeting younger segments with influencer marketing on social media platforms like Instagram or TikTok, while using email marketing for professionals.

Promotional Tactics: Different promotional tactics like discounts, loyalty programs, contests, or personalized offers can be employed to engage different segments effectively.

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Example: Offering limited-time discounts to attract price-sensitive segments, or exclusive early access to new products for loyal customers.