**Segmentation and Profiling Project |** Adeline Casali

**From Data to Strategy: A Comprehensive Segmentation and Profiling Analysis for Telecommunications Retention**

**Executive Summary**

In this report, we undertook a comprehensive segmentation and profiling analysis for a telecommunications company to support effective customer retention efforts. Leveraging two distinct segmentation techniques, namely Value Segmentation and Decision Tree Segmentation, we aimed to uncover insights into customer behavior and preferences. Below is a detailed overview of key findings and recommendations.

**Introduction**

We aimed to develop customer segments to enable targeted retention strategies aligned with the company’s overarching goals of maximizing customer satisfaction, engagement, and long-term profitability. In the competitive landscape of the telecommunications industry, where customer loyalty is paramount, our segmentation analysis aimed to uncover actionable insights to empower the company to proactively address customer churn, drive revenue growth, and maintain a competitive edge.

**Methodology and Approaches**

First, the available data was reviewed, encompassing a wide array of variables, including business purchases, demographics, and financial information. Following this, two segmentation techniques were selected: Value Segmentation and Decision Tree Segmentation, each with unique advantages. Value Segmentation emerged as the ideal method due to its simplicity and intuitive interpretation, making it well-suited for understanding customer behavior based on both tenure and spending patterns. By categorizing customers into groups based on the number of months they have been with the company and their average monthly spending, Value Segmentation provided a clear framework for decision-making and actionable insights into customer dynamics. Additionally, Decision Tree Segmentation was conducted, and the model was considered for its ability to capture complex relationships between customer attributes and the target variable. However, it was not chosen in this context due to concerns regarding potential complexity and less intuitive results for segmentation purposes. With Value Segmentation as the chosen approach, the data was categorized into distinct segments based on their tenure with the company and monthly spending. This method identified nine unique customer segments, each with its own combination of loyalty and spending behaviors. By understanding the composition and characteristics of each segment, we laid the foundation for targeted retention strategies tailored to their specific needs and preferences.

**Segmentation Results**

The analysis revealed diverse customer segments, each contributing differently to the company’s sales and customer base composition. Notably, the findings underscored the pivotal role of the Loyal Spenders segment, which accounted for over a third of total monthly sales despite representing only 15% of the customer base. This segment’s commitment to the company, evident in their long-term tenure averaging over five years and substantial spending, highlights their significance as high-value patrons. Conversely, segments such as the Entry Economizers, though comprising a sizable portion of the customer base, exhibited minimal contribution to overall sales, shedding light on opportunities for targeting interventions to bolster their engagement and spending habits. Additionally, certain groups with higher spending patterns, such as Loyal Spenders, Active Enthusiasts, and Emerging Engagers, were much more likely to pay for premium services, such as wireless data, or rent their equipment from the company, indicating an opportunity for targeted marketing. By examining the profiles of each segment, we gained valuable insights into their behavior, preferences, and potential for retention.

**Recommendations**

Building upon the segmentation profile results, targeted retention recommendations were formulated to maximize customer engagement and loyalty. Below are the recommended customer retention strategies.

1. *Focus on Loyal Spenders* by offering personalized incentives and premium services.
2. *Engage Active Enthusiasts* with targeted marketing campaigns highlighting new offerings.
3. *Nurture Emerging Engagers* by investing in initiatives to enhance their overall experience.
4. *Implement retention strategies for Entry Economizers* focused on value and affordability.

**Conclusion**

Overall, our segmentation and profiling analysis provided valuable insights into customer behavior and preferences, paving the way for targeted retention strategies tailored to each segment's diverse needs. By strategically targeting each segment with personalized initiatives aligned with their specific characteristics and preferences, the company can optimize its customer retention efforts, cultivate long-term relationships, and position itself for sustainable growth and competitive advantage in the telecommunications market.

**Segmentation Methodology and Approaches**

In this segmentation analysis, we aimed to develop customer segments to support effective customer retention efforts for a telecommunications company. We employed two distinct segmentation techniques: Value Segmentation and Decision Tree Segmentation. The data was previously cleaned, and feature engineering was completed. Below is a detailed overview of each approach.

**Justification of Approaches**

Value Segmentation was selected as a method due to its simplicity and intuitive interpretation, making it suitable for understanding customer behavior based on both tenure and spending patterns. By categorizing customers into groups related to both tenure and spending patterns, it is easy to discern broad trends and patterns in customer behavior, facilitating targeted retention strategies tailored to each segment’s characteristics. Additionally, Decision Tree Segmentation was chosen for its ability to capture non-linear relationships between customer attributes and the target variable, offering a deeper understanding of the underlying segmentation dynamics. This approach enables the identification of key predictors driving customer segmentation and uncovers hidden patterns that may not be evident through traditional methods.

**Value Segmentation**

For Value Segmentation, the data was reviewed, and two key variables were identified to form the basis of the segmentation analysis: ‘PhoneCoTenure’ and ‘SpendingPerMonth’. The variables were chosen for value segmentation due to their relevance in assessing customer loyalty and purchasing behavior, both of which are crucial aspects of customer value. ‘PhoneCoTenure’ provides insights into the duration of the customer-company relationship, reflecting loyalty and the likelihood of a continued relationship. Additionally, ‘SpendingPerMonth’ offers a tangible measure of customer spending habits, a critical measure of engagement with the company’s products and services. By combining these variables, the segmentation analysis captures the intersection of tenure and spending, enabling the identification of distinct customer segments with varying levels of value to the company.

* *Data Preparation*:
  + The field ‘SpendingPerMonth’ was calculated by dividing ‘TotalOverTenure’ (representing the total spent by a customer over their tenure with the company) by ‘PhoneCoTenure’. NAs resulting from division by 0 were replaced with 0.
  + Both ‘PhoneCoTenure’ and ‘SpendingPerMonth’ were then binned into three categories: Low, Medium, and High based on predefined quantiles.
* *Customer Grouping*:
  + The number of customers in each category were calculated to ensure a comparable distribution of customers across the different segments.
  + Next, the customer groups were named based on their unique combinations of tenure and spending levels.
* *Segmentation Export*:
  + These segments were applied across the data and exported for further analysis and visualization in Tableau.

**Decision Tree Segmentation**

For Decision Tree Segmentation, we aimed to identify segments based on a composite value score calculated from ‘PhoneCoTenure’ and ‘TotalSpentLastMonth’.

* *Data Preparation*:
  + A new column named ‘ValueScore’ was created by multiplying ‘PhoneCoTenure’ with ‘SpendingPerMonth’. Customers with higher spending and tenure would score highly, as they are more valuable to the company.
  + The value score was then binned into Low, Medium, and High categories.
* *Model Construction*:
  + A decision tree model was constructed using the rpart package in R to predict the category of ‘ValueScore’. The predictors selected for the model encompass a diverse set of factors and include demographic variables such as gender, job category, generation, years of education, and household size, financial variables such as credit card tenure, household income, debt-to-income ratio, and loan default status, and business-related variables like whether they rent their equipment or subscribe to wireless data services. Each attribute was carefully chosen to capture different dimensions of customer behavior and demographics, ensuring a comprehensive understanding of the factors influencing customer value scores.
* *Model Visualization and Analysis*:
  + The decision tree model was visualized, providing insights into the hierarchical segmentation of customers based on the selected attributes (*Figure 1*).

A diagram of a computer network

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*Figure 1*: Decision Tree Model results visualized for telecommunications segmentation analysis.

**Segmentation Results Selection**

Overall, the Value Segmentation method was chosen for further analysis due to its simplicity and intuitive interpretation, making it particularly suitable for understanding customer tenure and spending patterns at an individual and combined level. By binning customers into distinct categories of tenure and spending, it is easy to identify different segments of customers with varying levels of loyalty and spending habits. This approach allows for a straightforward comparison of customer groups, enabling targeting retention strategies tailored to each segment’s specific characteristics. Additionally, this method provides a clear framework for decision-making, offering a practical and actionable approach to customer segmentation. While Decision Tree Segmentation offers the advantage of capturing complex relationships between customer attributes and the target variable, it was not chosen for further analysis in this context. Given the focus on simplicity and ease of interpretation in understanding customer behavior, the decision tree model was deemed more complex and less intuitive for segmentation purposes. On the other hand, the value segmentation method provides sufficient granularity and easily digestible results in segmenting customers, making it the preferred choice for this analysis.

**Segmentation Profile Results**

Nine segments were identified, each with unique loyalty and spending habits (*Figure 2*). The most loyal customers, with high tenure, make up only a third of the customer base but half of all sales, with the Loyal Spenders accounting for a notable 34.4% of sales alone. The largest segment is the Entry Economizers, with 814 customers. However, although they account for 16.51% of customers, they only contribute 3.83% to total sales. In the following section, we will dive into each individual segment profile to identify their respective characteristics.

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*Figure 2*: Overview of identified segments, including a brief description, total sales, and number of customers.

**Loyal Spenders**

The most high-value group identified is the Loyal Spenders, characterized by both high tenure and spending habits (*Figure 3*). These are long-term customers who consistently invest and invest heavily. They show loyalty to the company and financial commitment, with an average tenure of more than five years. This segment consists mostly of older adults and accounts for the largest chunk of the company’s monthly sales. These customers are more likely to have premium services such as wireless data and rent their equipment.

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*Figure 3*: Loyal Spenders’ customer segment profile.

**Steady Investors**

Steady Investors are customers with a long tenure who maintain stable spending, reflecting a balanced approach (*Figure 4*). They are a large customer segment with 758 customers but have a much lower average monthly spending than the Loyal Spenders, at $22.04 per month compared to $81.19. Like the Loyal Spenders, this group consists of mostly older customers, however, with much lower education levels. This segment is also very unlikely to pay for premium services such as wireless data or rent their equipment.

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*Figure 4*: Steady Investors’ customer segmentation profile.

**Economic Veterans**

This customer segment consists of long-standing customers who prioritize reliability over spending, opting for more cost-effective options (*Figure 5*). They are a much smaller group of customers, comprising only 3% of the customer base and having an even lower sales contribution at 1.4%. They are mostly older customers with lower education levels who are extremely unlikely to pay for premium services or rent equipment.

A map of the united states with colorful circles and numbers

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*Figure 5*: Economic Veterans’ customer segmentation profile.

**Active Enthusiasts**

These customers have a relatively shorter tenure than the previous groups, with an average tenure of just over 3 years, but they spend generously and show engagement with offerings and services (*Figure 6*). This segment consists of mostly middle-aged customers with higher education levels. They are much more likely to explore premium services and offerings, as well as rent their equipment.

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*Figure 6*: Active Enthusiasts’ customer segmentation profile.

**Balanced Supporters**

These moderately tenured customers also maintain moderate spending levels, valuing both reliability and affordability (*Figure 7*). They are mostly middle-aged customers, but unlike the Active Enthusiasts, they are less likely to pay for premium services or rent their equipment. This segment is a relatively stable, middle-of-the-road customer group.

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*Figure 7*: Balanced Supporters’ customer segmentation profile.

**Modest Maintainers**

The Modest Maintainers make up 13% of the customer base, but only 5% of sales, indicating low-spending habits and a preference for basic services without excess (*Figure 8*). They are once again mostly middle-aged customers, but with much lower education levels, and many customers have less than a high school diploma. They are extremely unlikely to pay for premium services or rent equipment, reflecting their modest approach to services.

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*Figure 8*: Modest Maintainers’ customer segmentation profile.

**Emerging Engagers**

Although these customers are new in tenure, they exhibit high spending patterns, showing enthusiasm and growth potential (*Figure 9*). This segment consists of mostly younger, more educated customers who are very likely to pay more for services and equipment. Although a relatively small section of the customer base, they are an excellent target for long-term growth and engagement.

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*Figure 9*: Emerging Engagers’ customer segmentation profile.

**Fresh Connectors**

This customer segment consists of individuals who have recently joined the company and show moderate spending levels (*Figure 10*). These customers have a more cautious approach and are mostly younger customers, with Gen Z making up roughly 40% of the customer base.

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*Figure 10*: Fresh Connectors’ customer segmentation profile.

**Entry Economizers**

Finally, the segment with the largest number of customers is the Entry Economizers, making up 16.5% of the total customer base (*Figure 11*). They have the lowest tenure and the lowest spending habits, focusing or value and affordability. These are mostly younger, less educated individuals who are unlikely to splurge on premium services and equipment rental.

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*Figure 11*: Entry Economizers’ customer segmentation profile.

**Customer Retention Recommendations**

Several customer retention recommendations can be inferred based on the segmentation profile results. These recommendations stem from an understanding of each customer segment’s diverse needs and preferences, allowing for tailored retention strategies that resonate with each segment’s specific characteristics. By aligning these strategies with the company’s overarching goals, retention efforts can be strategically directed toward maximizing customer engagement, satisfaction, and, ultimately, long-term profitability. This customer-centric approach not only aims to enhance retention rates but also positions the company for sustainable growth and competitive advantage in the telecommunications market.

1. *Focus on Local Spenders*: Given their significant contribution to total sales and their high level of loyalty, it’s imperative to implement strategies to maintain and enhance their customer experience. Offering personalized incentives, exclusive benefits, and premium services tailored to their preferences can help solidify loyalty further.
2. *Engage with Active Enthusiasts*: While they may not have the longest tenure, Active Enthusiasts exhibit high spending patterns and a willingness to explore premium services. Engaging with this segment through targeted marketing campaigns highlighting new offerings and service upgrades can encourage continued spending and foster long-term loyalty.
3. *Nurture Emerging Engagers*: Although relatively new in tenure, Emerging Engagers show promising growth potential with their high spending patterns. Investing in initiatives to enhance their overall experience, such as providing comprehensive onboarding support and rewards for continued engagement, can help solidify their loyalty and maximize their lifetime value.
4. *Consider Retention Strategies for Entry Economizers*: While they represent the largest portion of the customer base, they have the lowest tenure and spending habits. Implementing targeted retention strategies focused on value and affordability, such as offering cost-effective service bundles, flexible payment options, and promotions tailored to more budget-conscious preferences, can help retain these customers and potentially increase their spending over time as they grow with the company.

By strategically targeting each segment with personalized retention initiatives aligned with their specific characteristics and preferences, the company can optimize its customer retention efforts and cultivate long-term relationships with its customer base.