**Final Project**

**Customer Segmentation and Clustering Summary**

**Case study: LG Corporation**

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**An overview of the LG Customer Segmentation and Clustering**

The LG customer segmentation and clustering will boost marketing techniques by optimizing the product price through proper understanding of the behaviors and preferences of customers. This project has become quite significant regarding issues that arise from a diversified consumer base and customized marketing techniques requirements. Using data-driven approaches, LG wishes to develop messages in marketing and pricing tactics that might have an appeal to categories of clients.

1. **Problem statement determination**

The two biggest problems that LG were facing were a lack of targeted marketing campaigns and an inadequate ability to segment its client base into groups based on tastes and buying behavior. As a result of this issue, the diversified needs of the client base were not being met through generalized marketing techniques, which decreased customer engagement along with overall sales. Studies have indicated that companies are able to significantly increase customer satisfaction and marketing efficiency using client segmentation (Kotler & Keller, 2016).

1. Business Objectives

To address the identified problem, the following measurable objectives have been developed for the project:

I. Improvement in Marketing Effectiveness: The marketing campaign will use targeted messaging, by consumer type, and will realize a 25% improvement in response rate within six months. This shall be measured against engagement metrics of click-through and conversion rates.

II. Price Optimization: Reach an average transaction value increase of 15% in the first quarter after deployment by adjusting the price to demand elasticity. This will require analysis of sales data to determine how price changes have positively affected customer purchasing habits.

III. Enhance the level of Customer satisfaction: Customer satisfaction should be increased by 20% within a year through the provision of incentives and product recommendations that are devised to cater to the needs of particular customer groups. The consumer satisfaction shall be measured with the use of feedback systems and questionnaires.

1. **Data Collection**

For this, relevant data were acquired from different sources, mainly by making use of the large dataset retrieved from Kaggle. The dataset contained key data on sales of consumer electronics, demographics of the customers, past purchases, and product preference. Proper segmentation does require a perfect understanding of habits of the clients, which the large dataset facilitated.

**Data Preparation and Cleaning**

Preprocessing missing values, correcting mistakes, and performing formatting were done to prepare the data for analysis. To ensure data integrity, imputation techniques were used to fill up the missing values, and outliers were searched and handled. Numerical values and categorical variables are formatted correctly such that ensuing analysis is eased.

1. **Exploratory Data Analysis**

Exploratory data analysis was done in the form of summaries, visualization, and anomalies. Scatter plots, box plots, and histograms were plotted using visualization tools to get the trends in consumer behavior and preference. Some key patterns revealed in this analysis will be relevant for deciding upon an appropriate methodology for segmentation. These include the most bought items and the frequencies at which each of the demographic segments of interest make purchases.

**4. Model Development and Analysis**

The appropriateness of the methods for grouping the clients based on their tastes and behaviors was selected at every stage of the model development process. Techniques such as hierarchical clustering and K-Means clustering were used to segment the base of clients into discrete categories. Silhouette scores and within-cluster sum of squares metrics were employed to construct and train models based on a pre-prepared dataset. These reviews enabled us to come up with the best number of clusters and improvements to the segmentation procedure.

**5. Interpretation and Visualization**

Substantial knowledge was gained once the models developed interpretation of results. Heatmaps and cluster plots have been created to visualize the characteristics of every category of consumer. These visuals allow for targeted marketing strategies tailored to the needs of each segment and thus provide explicit insights into the distinctive habits and preferences of the different groups.

**6. Communication and Reporting**

Reporting and communication channels were effectively established during the entire duration of the project. Findings and insight from analysis were compiled into a detailed report. The study included actionable recommendations on price optimization and marketing strategy, apart from the detailed descriptions of the segmentation methodology and graphic presentation of data. A presentation was given to present this to stakeholders based on the concept of openness and sharing in order to make sure cooperation. Throughout the project, all the stakeholders had been kept informed and involved through the maintenance of regular updates and feedback loops. Conclusion Conclusion With a structured approach utilizing data-driven insights and processes, the LG Customer Segmentation and Clustering project was able to manage the challenges associated with targeted marketing. The aims of the project included customer delight, an optimized pricing strategy to enhance marketing efficiency by establishing measurable objectives and Agile principles in the definition of the business requirements. The ongoing utilization of such methods will allow LG to better position itself in the face of shifting consumer preferences and changing market conditions.

References

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* Kotler, P., & Keller, K. L. (2016). *Marketing management* (15th ed.). Pearson Education.
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