Project Documentation

Project Title:

ChurnQuest: Navigating the Waves of Customer Retention in Telecommunications

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1. Project Overview

Objective:

To analyze customer churn in a leading telecommunications company and uncover actionable insights to reduce churn, improve retention, and optimize customer satisfaction.

Scope of Work:

- Investigate key factors leading to customer churn.

- Identify high-risk customer segments and behaviours.

- Provide data-driven recommendations to reduce churn.

Business Impact:

- Lower churn rates, reducing customer acquisition costs.

- Increased customer loyalty and revenue retention.

- Enhanced operational efficiency through targeted interventions.

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2. Dataset Overview

- **Data Size: 4,250 customer records.**

- **Key Fields:**

  o Customer demographics (area code, account tenure).

  o Service features (voice mail plans, international plans).

  o Usage metrics (day, evening, night, and international minutes).

  o Customer service interactions (number of calls).

  o Churn indicator (yes/no).

3. Support Columns (Calculated Fields)

1. norm_churn:

- **Formula**: IF(T2="no", "Not Churn", "Churn")
- **Purpose**: Converts churn status into binary categories for better analysis.

2. num_churn:

- **Formula:** IF(T2="yes", 1, 0)
- **Purpose:** Converts churn status into numeric values for statistical calculations.

3. segmentation_number_customer_service_calls:

- **Formula:** IF(S2<=2, "Low (0-2)", IF(S2<=5, "Moderate (3-5)", "High (6+)"))
- **Purpose:** Groups customers by service call volume to study service interaction patterns.

4. categorize_account_length:

- **Formula:** IF(B2<=12, "New (0-12 months)", IF(B2<=36, "Medium (13-36 months)", "Long (37+ months)"))
- **Purpose:** Segments customers by tenure to analyze lifecycle behaviour.

5. total_intl_calls_charge_categories:

- **Formula**: IF(R2<=1.8, "Low (≤0-1.8)", IF(R2<=3.6, "Medium (1.8–3.6)", "High (>3.6)"))
- **Purpose:** Categorizes customers based on international call charges for pricing sensitivity analysis.

6. vmail_messages_categories:

- **Formula**: IF(F2<=5, "Low Usage (0-5)", IF(F2<=15, "Moderate Usage (6-15)", "High Usage (>15)"))
- **Purpose:** Groups customers by voicemail usage to study its impact on churn.

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4. Key Findings

1. Customer Tenure (Account Length):

- Churned customers have a slightly longer average tenure (102.14 days) compared to non-churned customers (99.92 days).

2. International Plans:

- Customers with international plans have a significantly higher churn rate (42%) compared to those without (11%).

3. Customer Service Calls:

- **High Call Volume (6+ calls):** 64% churn rate.

- **Low Call Volume (0–2 calls):** 11% churn rate.

4. Call Usage and Charges:

- **Day Minutes:** Churned customers average 208.99 minutes compared to 175.56 for non-churned customers.

- **Day Charges:** Higher for churned customers (35.53 vs. 29.84).

- **Evening Usage**: Slightly higher evening charges for churned customers (17.85 vs. 16.88).

5. International Minutes and Charges:

- Churned customers make fewer international calls but incur higher charges, indicating dissatisfaction with pricing**.**

6. Voice Mail Plans:

- Customers with voice mail plans have a lower churn rate (7%) compared to those without (16%).

7. Area Code and Churn:

- Area Code 415 has the highest churn rate (13.6%), followed by Area Code 510 (15%).

8. Cluster Analysis:

- **Cluster 2:** Highest churn rate (17%) with distinct customer behaviour patterns.

9. Customer Service Call Reasons:

- High churn correlates with frequent unresolved issues or dissatisfaction during service calls.

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5. Recommendations

1. Target High-Risk Segments:

- Design retention campaigns for international plan users with affordable pricing and loyalty benefits.

2. Enhance Customer Support:

- Train service teams to identify and resolve dissatisfaction earlier.

- Prioritize customers with 3+ unresolved service issues.

3. Optimize Pricing Strategies:

- Revise international call charges for high-usage customers.

- Offer budget-friendly options to price-sensitive segments.

4. Voice Mail Plans:

- Increase voice mail plan adoption through promotions or bundle offers.

5. Area-Specific Strategies:

- Focus retention efforts in high-churn areas like Area Code 415 and Area Code 510.

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6. Task Breakdown

1. **Data Preparation:**

   o Cleaning raw customer data and creating support columns.

2. **Exploratory Data Analysis (EDA):**

   o Investigating churn trends, usage metrics, and customer behaviours.

3. **Segmentation & Clustering:**

   o Grouping customers to identify patterns in churn behaviour.

4. **Visualization & Reporting:**

   o Developing dashboards in Tableau and Power BI for better stakeholder understanding.

5. **Insight Generation:**

   o Identifying top churn factors and proposing actionable recommendations.

6. **Documentation:**

   o Delivering a comprehensive report with visual aids and key findings.

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7. GitHub Repository

Access the full project, code, and visualizations here:
GitHub Repository

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8. Let's Connect!

📬 **For collaborations or discussions:**

🔗 **LinkedIn Profile**