**Data Exploration & Cleaning**

I am using the **pandas** library from Python for Data Exploration & Cleaning.

### Check "Task\_1.ipynb"

At first, I checked for any missing values, duplicates, or data type inconsistencies using the isnull() function from pandas. The dataset did not contain any duplicates or inconsistencies, nor any (necessary) missing values.

If any duplicate values were found, we could use drop\_duplicates() to remove those extra rows. For missing values, we could use interpolate(), which applies a linear method based on surrounding data points to fill in missing values.

#### Dataset Summary:

<class 'pandas.core.frame.DataFrame'>

RangeIndex: 20000 entries, 0 to 19999

Data columns (total 14 columns):

# Column Non-Null Count Dtype

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0 user\_id 20000 non-null int64

1 install\_date 20000 non-null object

2 last\_active\_date 20000 non-null object

3 subscription\_type 20000 non-null object

4 country 20000 non-null object

5 total\_sessions 20000 non-null int64

6 page\_views 20000 non-null int64

7 download\_clicks 20000 non-null int64

8 activation\_status 20000 non-null int64

9 days\_active 20000 non-null int64

10 pro\_upgrade\_date 20000 non-null object

11 plan\_type 20000 non-null object

12 monthly\_revenue 20000 non-null int64

13 churned 20000 non-null int64

dtypes: int64(8), object(6)

memory usage: 2.1+ MB

#### Distribution of Free vs. Pro Users:

subscription\_type

Free 79.855%

Pro 20.145%

### Check "Task\_2.ipynb"

#### Average Number of Sessions for Free vs. Pro Users:

subscription\_type

Free 76.08

Pro 154.68

#### Top 5 Most Active Users Based on Total Sessions:

user\_id total\_sessions subscription\_type

188 189 300 Pro

821 822 300 Pro

1571 1572 300 Pro

2456 2457 300 Pro

3348 3349 300 Pro

#### Top 5 Countries with the Highest Engagement:

country

India 272,202

Germany 266,319

Canada 264,217

USA 261,635

France 259,495

### Check "Task\_3.ipynb"

#### Overall Churn Rate for Free vs. Pro Users:

subscription\_type

Free 28.60%

Pro 28.25%

#### Correlation of Features with Churn:

churned 1.000000

user\_id 0.012038

download\_clicks 0.000974

total\_sessions -0.000273

page\_views -0.005605

activation\_status -0.005823

monthly\_revenue -0.008328

days\_active -0.617213

#### Top 3 Factors Contributing to Churn:

['user\_id', 'download\_clicks', 'total\_sessions']

### Check "Task\_4.ipynb"

#### Percentage of Users Who Upgraded from Free to Pro: ****20.14%****

#### Total Monthly Revenue from Pro Users: ****$235,481.00****

#### Average Time to Upgrade (in Days) by Country:

UK 87.90

USA 90.24

France 91.16

Germany 91.53

India 92.58

Canada 93.57

Australia 93.68

### Check "Task\_5.ipynb"

#### Strategies to Reduce Churn:

Users are categorized into **Low Engagement, Medium Engagement, and High Engagement** based on total\_sessions, page\_views, and days\_active:

1. **Low Engagement Users:** Need re-engagement campaigns (e.g., personalized emails, notifications).
2. **Medium Engagement Users:** Can be targeted for upselling.
3. **High Engagement Users:** Likely churned due to pricing or feature gaps; feedback collection is crucial.

#### Ways to Increase Free-to-Pro Conversions:

* Target users with Pro-like behaviour but who haven't upgraded.
* Highlight Pro features.
* Offer time-limited discounts or free trials.
* Simplify the upgrade process.
* Use exit-intent pop-ups.
* Showcase testimonials from Pro users.

#### Market Expansion Opportunities:

##### **Top 5 High-Engagement Countries:**

India, Germany, Canada, USA, France

##### **Top 5 Underpenetrated Markets:**

Australia, UK, France, USA, Canada

**Actions:**

* Invest in localized marketing.
* Partner with local influencers.
* Offer region-specific pricing & features.

### Check "Task\_6.ipynb"

#### Impact of a 10% Increase in Landing Page Conversion Rate:

* **Current Conversion Rate:** 40.29%
* **New Conversion Rate:** 44.32%
* **Estimated Additional Pro Upgrades:** 403

#### A/B Test Ideas to Improve Conversion Rate:

1. **CTA Button Design & Placement:** Test different colors, sizes, and placements.
2. **Simplified vs. Detailed Pricing Page:** Test a minimal version with FAQs.
3. **Social Proof & Testimonials Placement:** Add reviews near CTAs.

**Key Performance Indicators (KPIs):**

* **Churn Rate:** 28.52%
* **Conversion Rate (Free to Pro):** 25.23%
* **Customer Lifetime Value (CLV):** $701.36

### Check "Task\_7.ipynb"

#### Key Performance Indicators (KPIs):

* **Churn Rate:** 28.52%
* **Conversion Rate (Free to Pro):** 25.23%
* **Customer Lifetime Value (CLV):** $701.36

#### Actionable Growth Strategies:

1. **Improve Onboarding & Activation:**
   * Simplify activation with clear instructions.
   * Use pop-ups and emails to guide activation.
   * Offer incentives (free trials, discounts).
2. **Targeted Upselling Campaigns:**
   * Email campaigns for users who clicked "Upgrade to Pro."
   * Exit-intent pop-ups.
3. **Measuring Success:**
   * Compare activation & churn rates before and after implementation.
   * Use A/B testing.
   * Track revenue and CTR over time.

This structured summary ensures clarity and ease of reading, making it suitable for pasting into MS Word. 🚀