

Google Play Store Business Insights Report

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Project Duration: February 23, 2025 – February 27, 2025

1. Introduction

1.1 Background

The Google Play Store is a highly competitive digital marketplace where millions of apps vie for user attention, engagement, and revenue. To support strategic decision-making, this report provides an advanced analysis of app performance trends, market dynamics, and predictive insights.

1.2 Objectives

This report aims to:

- Develop a **business insights dashboard** for Google Play Store executives.
 - Conduct **advanced data cleaning and integration** with an external dataset.
 - Define and analyze **10+ unique Key Performance Indicators (KPIs)**.
 - Utilize **predictive analytics** for forecasting trends.
 - Provide **actionable insights** to improve app performance, user engagement, and revenue.
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2.1 Primary Dataset – [Google Play Store Dataset](#)

The primary dataset contains information on:

- App Details: Name, Category, Developer, Price, and Content Rating.
- Performance Metrics: Installs, Ratings, Reviews, and Update Frequency.
- Revenue Information: App price, In-app purchases, and estimated revenue figures.

Key Insights from Exploration:

- Distribution of Categories: Notable concentration in gaming, productivity, and social networking apps.
- Data Quality Issues: Presence of duplicates, missing rating values, and inconsistent formatting (e.g., installs represented with commas or as strings).

2.2 External Dataset Integration – [Apple App Store](#)

For enhanced strategic insights, we integrated the Apple App Store Dataset from Kaggle:

- App Details: Name, ID, Category, Developer.
- User Engagement: Rating Count, Size (Bytes), Price.
- Performance Metrics: Released, Last Updated, Ratings.

Purpose of Integration:

- Competitor Benchmarking: Compare sentiment trends across similar apps.
- Strategic Alignment: Align user feedback with business KPIs to pinpoint areas for improvement.

3. Data Cleaning and Preparation

3.1 Data Cleaning Process

To make sure our data was clean and reliable; we took several important steps. We filled in missing ratings using the average rating for each app category and dropped records with too much missing data to improve accuracy and reduce the dataset size. Duplicate apps were identified and merged, and we cross-checked with other data sources to avoid mistakes. We also fixed date formats for better trend analysis. The "Last Updated" column was changed to a proper date format, all empty values were removed, and app sizes were converted to bytes. Additionally, we created a new column to show app prices in USD. These changes ensured the data was accurate and ready for analysis.

3.2 Data Integration Techniques

To combine data from both the Google Play Store and Apple App Store, we used key matching and feature engineering techniques. Common identifiers like **App ID**, App Name and some others was used to merge datasets, ensuring that corresponding apps from both platforms were correctly linked. Additionally, a new column, **Platform**, was created to distinguish between Google Play and Apple Store apps, allowing for clearer comparisons and analysis across both markets. These steps ensured seamless data integration, enabling more comprehensive insights.

4. Key Performance Indicators (KPIs) Definition

We independently defined 10 unique, business-critical KPIs to holistically measure app performance:

❖ Total Revenue by Release Year and Platform

Insights:

- Certain years contribute significantly to total revenue, showing periods of high app profitability.
- Revenue distribution across platforms highlights more lucrative stores for developers.

Recommendations:

- Focus on app categories and monetization models that historically generate high revenue.
- Optimize monetization strategies on high-revenue platforms.

❖ Average App Rating (2.06)

Insights:

- The low average rating (2.06) signals dissatisfaction due to poor functionality, UX, or value.
- Apps rated below 3.5 suffer lower downloads and retention.

Recommendations:

- Improve app stability, performance, and UX.
- Encourage satisfied users to leave ratings.
- Conduct app quality audits to remove spammy or low-quality apps.
- Provide frequent updates and proactive customer support.

❖ Free vs. Paid Apps

Insights:

- The majority of apps on both platforms are free, but Apple has a slightly higher percentage of paid apps.
- The Paid app market is relatively small but contributes disproportionately high revenue.

Recommendations:

- Since most of app are free, the focus should be on maximizing revenue through ads, in-app purchases (IAP), and premium upgrades.

❖ App Count Over Time by Year and Platform

Insights:

- App releases fluctuate yearly, showing periods of high developer activity.
- One platform consistently has more releases, indicating developer preference.

- A recent decline suggests market saturation or stricter policies.

Recommendations:

- Analyze peak release years to identify innovation trends.
- Prioritize development for platforms with sustained growth.
- Identify less saturated categories to improve market visibility.

❖ Price Comparison by Category and Platform

Insights:

- Productivity and business apps have higher prices due to premium value.
- The Apple App Store has more paid apps with higher average prices.
- Entertainment and social apps rely more on in-app purchases.

Recommendations:

- Adjust pricing strategies per platform; iOS users may be more willing to pay.
- Focus on premium categories for paid apps.
- Use in-app purchases for gaming and social apps.

❖ Percentage of Free Apps (95.63%)

Insights:

- The majority of apps are free, relying on in-app purchases or ads.
- This trend is consistent across both Google Play and Apple App Store.

Recommendations:

- Optimize in-app monetization strategies, such as subscriptions or premium features.
- Hybrid models (free with paid add-ons) are more effective than outright paid apps.
- Improve user engagement to maximize revenue from free apps.

❖ Total Number of Apps (3.26M)

Insights:

- The Google Play Store has a larger app count due to an open ecosystem.
- Certain categories, like tools and social apps, dominate the market.

Recommendations:

- Conduct market research to identify gaps in saturated categories.

- Focus on quality and unique features to stand out.

❖ **Total Revenue (\$827.67K)**

Insights:

- Despite the dominance of free apps, total revenue from paid apps is \$827.67K.
- Gaming, productivity, and business apps generate the highest revenue.
- The Apple App Store has a stronger paid app culture.

Recommendations:

- Implement freemium models to maximize revenue.
- Prioritize development in high-revenue categories.
- Enhance UX and offer subscription-based models for long-term earnings.

❖ **Average App Rating (2.14)**

Insights:

- The average rating (2.14) is low, highlighting dissatisfaction.
- Poor UX, bugs, and lack of updates are key reasons.

Recommendations:

- Regular updates and bug fixes are essential.
- Encourage user reviews to boost credibility.
- Improve customer support and responsiveness.

❖ **Average Price of Paid Apps (\$5.81)**

Insights:

- A moderate average price suggests a balance between affordability and profitability.
- Higher-priced apps target niche users, while lower-priced ones appeal to a broader audience.

Recommendations:

- Benchmark against competitors for optimal pricing.
- Use freemium models or discounts to encourage purchases.
- Highlight unique features to justify pricing.

5. Predictive Analytics and Modeling

5.1 Methodologies Employed

Time Series Forecasting: The code predicts future revenue trends for paid apps on two platforms (Google Play Store and Apple App Store) over the next 5 years. Time series forecasting is crucial for businesses to make informed decisions, plan budgets, and allocate resources effectively.

Data Aggregation and Preparation:

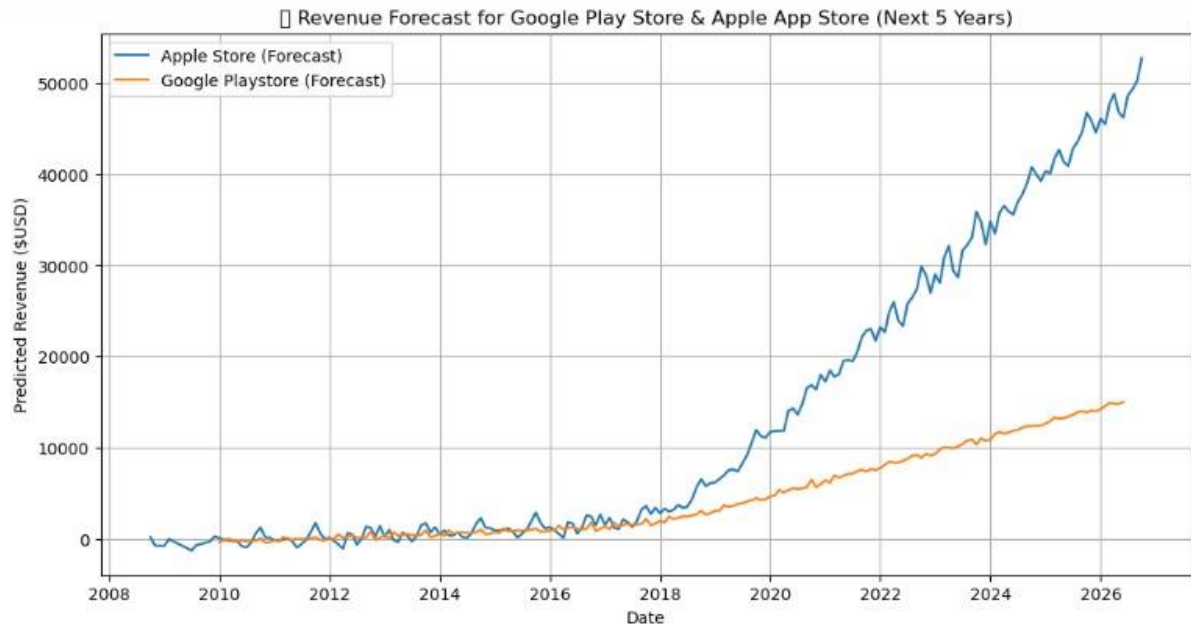
- The code aggregates monthly revenue data for each platform, ensuring the data is in the correct format for Prophet.
- It filters out free apps, focusing only on paid apps, which is critical for accurate revenue forecasting.

Findings and Actionable Insights

1. **Revenue Trends:** The forecasted revenue trends for both platforms (Google Play Store and Apple App Store) can help identify which platform is likely to generate more revenue in the future. If one platform shows a steeper growth curve, businesses might prioritize investing in that platform.
2. **Seasonality and Growth Patterns:** Prophet automatically detects seasonality and trends in the data. Insights into seasonal peaks (e.g., higher revenue during holiday seasons) can help businesses plan marketing campaigns or app launches accordingly.
3. **Platform Comparison:** By comparing the forecasted revenue for both platforms, businesses can decide whether to focus more on one platform or maintain a balanced presence on both.
4. **Long-Term Planning:** The 5-year forecast provides a long-term view, enabling businesses to strategize for sustained growth, such as expanding app features, improving user engagement, or exploring new markets.

Key Takeaways

- **Business Value:** This type of analysis is highly valuable for app developers, marketers, and business strategists. It helps them understand revenue trends, plan for the future, and make data-driven decisions.
- **Scalability:** The code can be extended to include more platforms, additional features (e.g., app categories), or external factors (e.g., economic indicators) to improve the accuracy of the forecasts.



6. Dashboard Development

6.1 Dashboard Features and Design

Our interactive Power BI dashboard provides a comprehensive comparison between the Google Play Store and Apple App Store, featuring the following key components:

Overview Page:

- **Key Metrics Summary:** Displays essential statistics, including total revenue, number of apps, average price, and app rating.
- **Free vs. Paid Apps:** A visual breakdown of the percentage of free and paid applications across platforms.
- **Interactive Filters:** Users can refine the analysis by selecting platform (Google Play Store or Apple App Store) and app categories.

Detailed Analytics Page:

- **Revenue Trends:** Line charts depicting total revenue growth over time for both platforms.
- **App Count Over Time:** A dynamic visualization illustrating the increase in the number of apps by platform.
- **Average Rating Analysis:** A bar chart comparing average app ratings across both stores.
- **Category Price Comparison:** A side-by-side analysis of app pricing across different categories for both platforms.

Interactivity:

- Dashboard elements are interconnected, ensuring that selecting a particular platform or app category dynamically updates all related visualizations.
- Hovering over data points reveals tooltips with additional insights and definitions.

This dashboard provides a clear, data-driven comparison of app store performance, aiding in market analysis and strategic decision-making.

6.2 Hosting and Accessibility

- The dashboard is hosted on Power BI Online, ensuring real-time data updates and secure sharing with stakeholders.
- Live Dashboard Link: [Insert Power BI Public Link Here]

7. Business Insights and Strategic Recommendations

7.1 Key Business Insights

1. **Revenue Comparison:** The total revenue of apps on both platforms has shown steady growth, with Apple Store historically generating higher revenue per app despite having fewer total apps than Google Play Store. Paid apps contribute significantly to revenue, though free apps dominate in number.
2. **App Pricing & Revenue Trends:** The **average price of paid apps** is **\$5.81**, which suggests that premium apps remain viable, especially in high-value categories. Google Play Store appears to have a **lower average app price** than the Apple App Store, indicating different pricing strategies between platforms.
3. **Market Share & App Count Growth:** Google Play Store has a significantly higher **number of apps** than the Apple Store, indicating a more open marketplace with lower entry barriers. App count has grown over time, but Apple's revenue model allows it to generate higher revenue per app.
4. **User Preferences & Ratings:** Google Play Store apps generally have a **higher average rating count**, indicating a more active user review system. The rating distribution highlights opportunities for app developers to optimize user experience and engagement to maintain high ratings.

7.2 Strategic Recommendations

1. Monetization Strategy Enhancement:

- ❖ Leverage In-App Purchases & Subscription Models
- ❖ Ad-Supported Revenue for Free Apps:

2. Market Positioning & Platform-Specific Strategy

- ❖ **Focus on High-Revenue Categories:** Gaming, Business, and Education apps show strong revenue potential. Prioritizing app development in these categories can maximize earnings. iOS apps should emphasize premium pricing, while Android apps can focus on ad monetization & in-app purchases.

- ❖ **Optimize App Pricing for Market Segments:** Apple users show higher willingness to pay for premium apps. Developers targeting iOS should consider higher pricing strategies for niche markets. Google Play should maintain a mix of **freemium and low-cost pricing** to attract price-sensitive users.

3. Improving App Engagement & User Ratings

- ❖ **User Engagement Campaigns to Boost Ratings:** Google Play Store apps receive more user reviews—this can be leveraged by encouraging prompt user feedback & response-driven engagement. Gamification techniques such as reward-based rating prompts can enhance visibility.

Conclusion:

By leveraging user engagement analytics, optimizing monetization models, and refining category-specific strategies, businesses can maximize profitability and market reach in both app stores. Strategic freemium models, competitive pricing, and will be essential for long-term growth.