

# Project «Legends of Temnolesye – Virtual Currency & Player Behavior Study»<sup>1</sup>

The goal of the project is to study the influence of players' characteristics and their in-game characters on the purchase of the in-game currency 'Paradise Petals,' as well as to assess players' activity when making in-game purchases.

## Results and Recommendations

### 1. Results of EDA:

1.1. What share of paying players is characteristic for the entire game, and how does the character's race affect this indicator?

In the game Deepwood Motte, there are currently 22,214 registered players, of whom 18% are paying.

The most popular race is Human, accounting for 6,328 registered players. This race also leads in the number of paying players — 1,114.

The least popular races are Demon (1,229 registered players, 238 of whom are paying) and Angel (1,229 registered players, 229 of whom are paying).

The remaining races are distributed approximately evenly:

- Hobbit: 3,648 players, including 659 paying
- Orc: 3,619 players, including 636 paying
- Northman: 3,562 players, including 626 paying
- Elf: 2,501 players, including 427 paying

When calculating the share of paying players, it becomes clear that, on average, 18% of players — regardless of race — purchase artifacts/epics. The exceptions are Demon (19% paying) and Angel and Elf (each with 17% paying).

1.2. How many in-game purchases were made, and what can be said about their cost — including the minimum and maximum values, the difference (if any) between the mean and median, and the overall data dispersion?

During the reporting period, 1,307,678,686 transactions were made.  
The total revenue amounted to \$615,040.

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<sup>1</sup> **Note:** The data used in this analysis is fictional and was designed to simulate the behavior of players in a fantasy MMORPG. All races, currencies (e.g., *Paradise Petals*), and figures are part of the dummy dataset for analytical purposes only.

The minimum transaction amount was \$0, and the maximum was \$486,615.10, meaning that the dataset includes both paying and non-paying players.

This is confirmed by a significant gap between the key statistics:

Mean: \$525.69

Median: \$74.86

Standard deviation: \$2,517

Such a large difference between the median and the mean usually indicates an uneven distribution of data, the presence of outliers, or potential data errors (e.g., human error).

1.3. Are there any anomalous purchases by value, and if so, what is their number?

Descriptive statistics formed the basis for anomaly analysis. As a result, 907 transactions (less than 1%) with a zero amount were identified..

1.4. Among the epic items, are there any that are particularly popular and purchased most often?

The most purchased items are “Book of Legends” and “Bag of Holding.”

Book of Legends accounts for 73% of all transactions and is purchased by 89% of all players. Bag of Holding is purchased by 85% of players and accounts for 24% of all transactions.

## 2. Results of solving the ad hoc task

Playing as the Demon race seems easier: these players purchase the fewest epic items, and their average spending on the game is lower than that of all other races. The relatively low number of registered Demons is likely due to the “sinister” connotation of the name, leading many to prefer the Human race.

A similar pattern is observed for Orcs — their average total spending amounts to 41,761, which is also below the average across all races.

Playing as a Northman appears to be the most challenging: these players purchase epic items with real money more frequently, indirectly indicating a higher difficulty level of the game content.

The Elf role is closer to that of “hard” characters: while their average number of purchases is small, their total spending ranks second among all races. This may suggest both the high cost of epic items and the significant utility of the items obtained, which require considerable investment.

## 3. Conclusions and Recommendations

Sales distribution of epic items is heavily skewed toward a few “hit” products, while many artifacts remain unnoticed.

A comparative analysis of all epic items across key parameters would help balance their utility so that each item has its own clear value-for-money proposition.

Players also tend to prefer a certain set of favorite items, while others are barely sold. Additional analysis may be required to identify the reasons behind such purchasing behavior:

1. Do players know about other epic items?
2. Are they aware of their benefits?
3. Are all epics promoted equally?

According to the data, some players (especially Elves and Northmen) obtain epics by exchanging in-game bonus currency rather than through direct purchases. It is necessary to compare the distribution and volume of bonus currency by race and identify imbalances (races receiving bonuses in surplus or deficit).

Ultimately, to achieve balanced and sustainable revenue growth, it is necessary to:

- Equalize the utility of all epic items.
- Make them more visible to players.
- Review the distribution of bonuses across races and game levels.
- Rebalance race capabilities.

Strengthen marketing support for “hidden” artifacts, if further analysis confirms low visibility as the issue.

If it turns out that certain epics are unused due to lack of utility, they should be either redesigned or removed entirely, followed by another round of research to identify player needs for new artifacts.