

1. Introduction

Organic social media marketing has become a vital channel for e-commerce retailers, with many businesses achieving viral success through platforms like Instagram and TikTok. However, while paid advertising provides established metrics such as Cost Per Acquisition (CPA) and Return on Ad Spend (ROAS), there are currently no standardised metrics for measuring the profitability of organic social commerce activities.

This creates a significant gap in the market. Organic e-commerce sellers can see their content go viral and generate thousands of orders, yet they have no way to answer the fundamental question: "How much profit did my viral organic content actually generate?"

This project bridges that gap by developing a web-based dashboard that connects Instagram engagement metrics with Shopify sales data, introducing two novel metrics for the industry.

2. Aims & Objectives

Aim:
To develop a web-based dashboard that enables organic e-commerce sellers to measure and analyse the profitability of their viral social media content through novel metrics.

Objectives:
1. Research & Investigation: Investigate existing social commerce analytics tools, paid advertising metrics, and identify the gap in measuring organic content performance.

2. Design: Create a database schema, ETL pipeline, and web interface combining Instagram engagement with Shopify sales.

3. Implementation & Testing: Build the dashboard using PHP/MySQL with Chart.js, verifying V2O and NPV calculations.

4. Evaluation: Test with organic e-commerce sellers and gather quantitative and qualitative feedback.

3. Literature Review

The research identified a significant gap in the market:

- Triple Whale [1] serves over 60,000 Shopify merchants with sophisticated analytics, but focuses exclusively on paid advertising channels.
- Instagram's Professional Dashboard [2] provides engagement metrics (views, likes, reach) but offers no integration with e-commerce platforms.
- Zerres et al. [3] noted: "The lack of direct tracking mechanisms makes ROI calculation for organic social media inherently complex."

Neither existing tool answers: "How much profit did my viral organic content generate?" , directly motivating the V2P Dashboard.

4. Methodology

Development Methodology:
Waterfall model , sequential phases from Requirements through Design, Implementation, Testing, to Evaluation.

- Technologies:**
- Backend: PHP 8.3, MySQL,
 - Frontend: HTML5, CSS3,
 - Visualisation: Chart.js
 - Environment: MAMP on macOS

Evaluation Strategy:
28 functional test cases across 7 categories, plus 5 user evaluations with Likert-scale questionnaires.

5. Novel Metrics

V2O (Views-to-Orders per 1M Views)

$$V2O = (\text{Orders} \div \text{Views}) \times 1,000,000$$

"For every 1 million views, how many orders do I generate?"

NPV (Net Profit Value per 1M Views)

$$NPV = (\text{Net Profit} \div \text{Views}) \times 1,000,000$$

"For every 1 million views, how much actual profit do I make?"

6. Design & Implementation

The system follows a three-tier architecture:

Data Layer: MySQL database with normalised schema storing Instagram metrics (date, views, likes, shares) and Shopify data (orders, revenue, COGS, refunds).

ETL Process: PHP scripts parse uploaded CSV files, validate data formats, transform values, and load into database with date-based joining.

Presentation Layer: Web dashboard displaying KPI cards, trend line charts, data tables, waterfall profit breakdown, and cost doughnut chart.

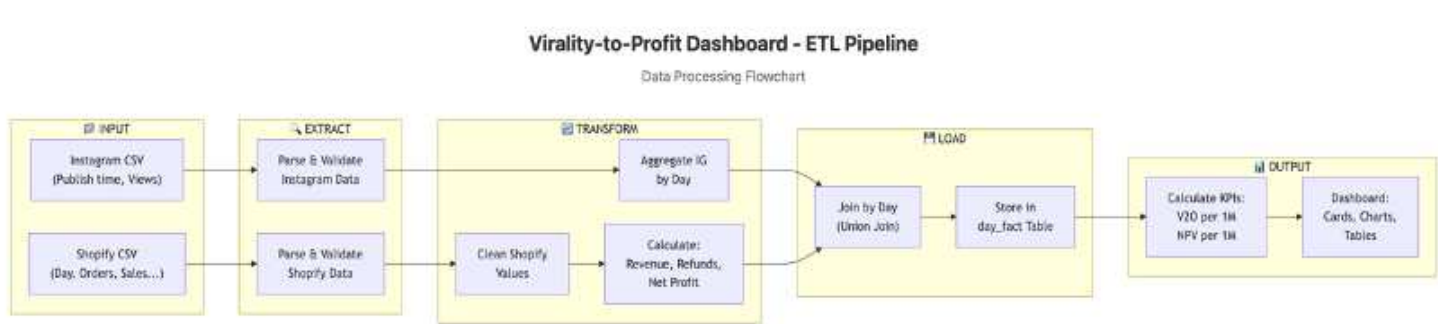


Figure 1: ETL Data Flow Architecture

7. Key Features

- KPI Cards:** Display Views, Orders, Revenue, Net Profit, V2O and NPV metrics at a glance
- Trend Charts:** Interactive line graphs showing all metrics over time with tooltips
- Waterfall Chart:** Visualises journey from Gross Revenue through Discounts, Shipping, COGS, and Refunds to Net Profit
- Doughnut Chart:** Shows proportional breakdown of cost components
- Automated Insights:** Identifies best and worst performing days with contextual recommendations

8. References

- [1] Triple Whale, "E-commerce Analytics Platform," triplewhale.com, 2026.
[2] Instagram, "Professional Dashboard," help.instagram.com, 2026.
[3] C. Zerres et al., "Measurement of Social Media Activities," Management & Marketing, vol. 16, 2021.
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[5] Chart.js Contributors, "Chart.js Documentation," chartjs.org, 2024.

9. Dashboard Interface

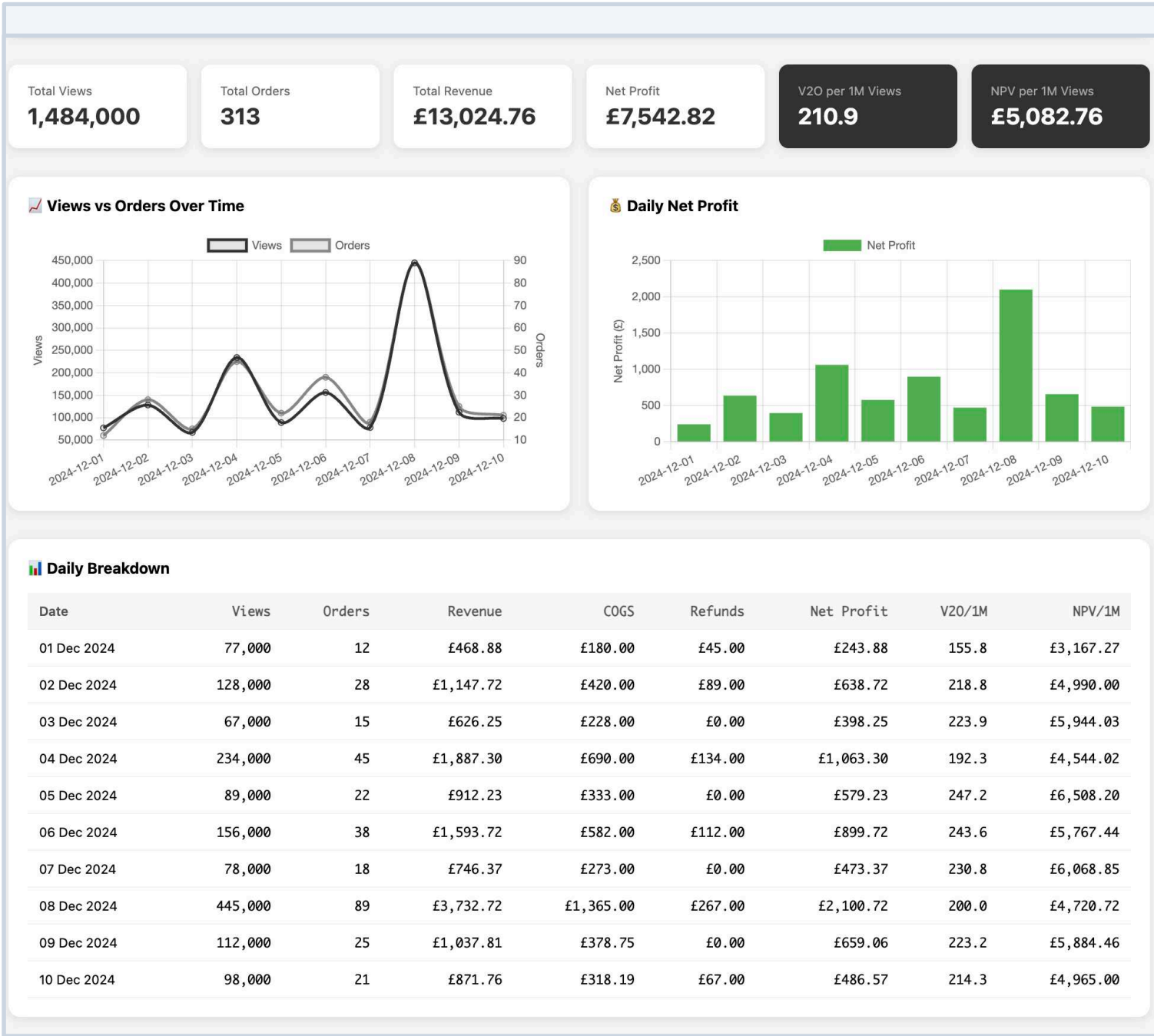


Figure 2: Main dashboard showing KPI cards, trend charts, and data table

10. Profit Analysis

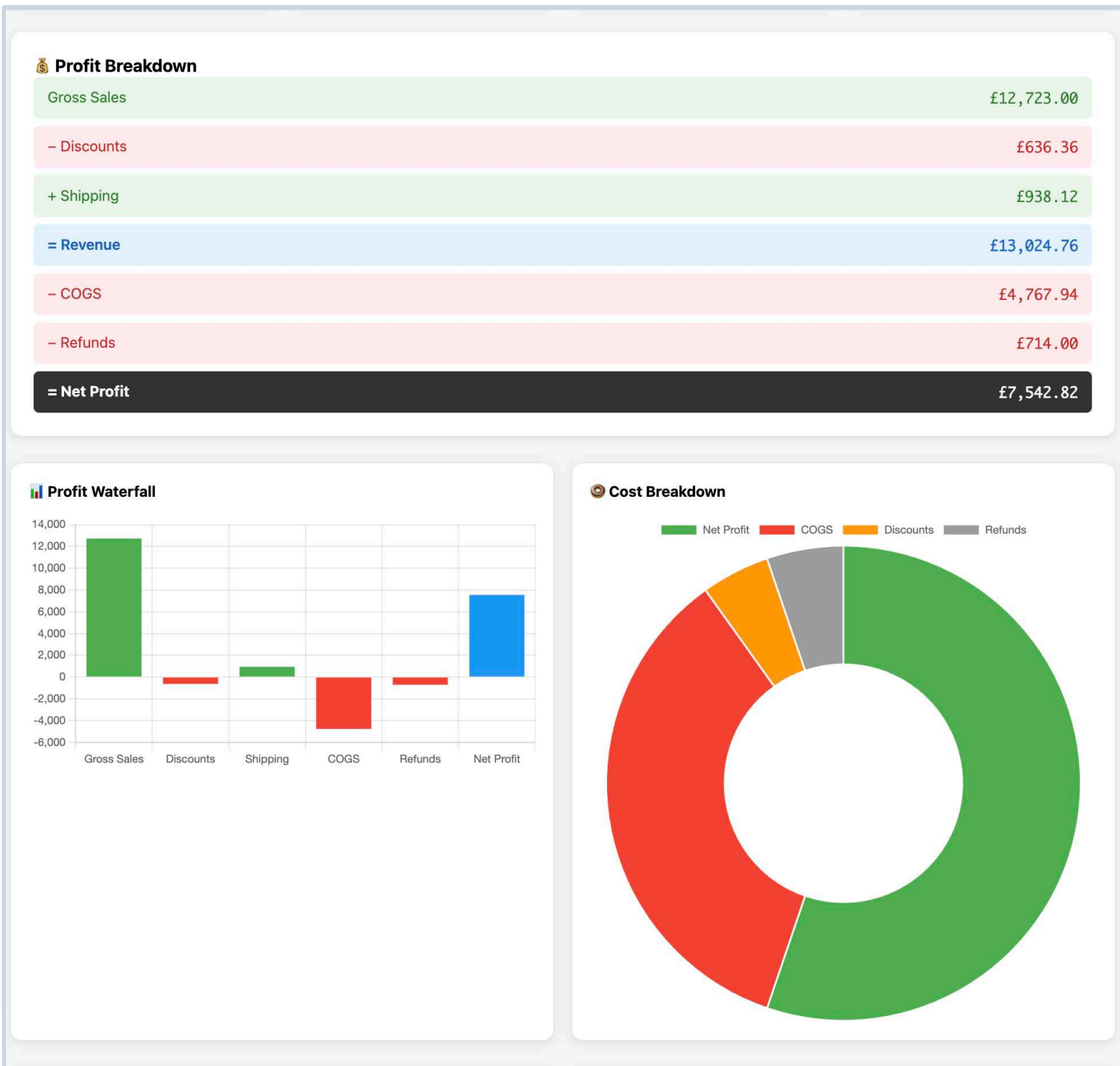


Figure 3: Waterfall breakdown chart and cost component doughnut

11. Results



System Testing: All 28 test cases passed across 7 categories: Database Connection, File Upload, CSV Parsing, Calculations, Data Join, Dashboard Display, and Profit Analysis.

Calculation Verification: All metrics verified against manual spreadsheet calculations. Sample: 1,484,000 views, 313 orders. Expected V2O: $(313 \div 1,484,000) \times 1,000,000 = 210.92$. System Output: 210.92

User Evaluation: Five organic e-commerce sellers completed evaluation tasks. Ease of Use scored 4.4/5, Understanding 4.8/5, Usefulness 4.6/5. The waterfall chart was rated "very valuable".

"The V2O metric is genius , finally a way to measure what my viral content is actually worth!"
 , Evaluation Participant

12. Conclusion

This project successfully achieved its aim of developing a functional dashboard that bridges the gap between social media analytics and e-commerce profitability.

- Key Achievements:**
- Two novel metrics (V2O and NPV) successfully implemented and verified
 - 100% test pass rate demonstrating system reliability
 - Strong user feedback validating market need (4.6/5 rating)
 - Waterfall chart praised as "very valuable" for profit understanding

Limitations: Current implementation supports Instagram and Shopify only, requires manual CSV uploads, operates at day-level granularity, and was evaluated with small sample size (n=5).

13. Future Work

- API Integration:** Connect directly to Instagram and Shopify APIs to eliminate manual CSV uploads
- Platform Expansion:** Add support for TikTok, YouTube Shorts, WooCommerce, and BigCommerce
- Post-Level Attribution:** Track individual post performance rather than day-level aggregation
- Cloud Deployment:** Deploy to cloud hosting for wider accessibility and multi-user support

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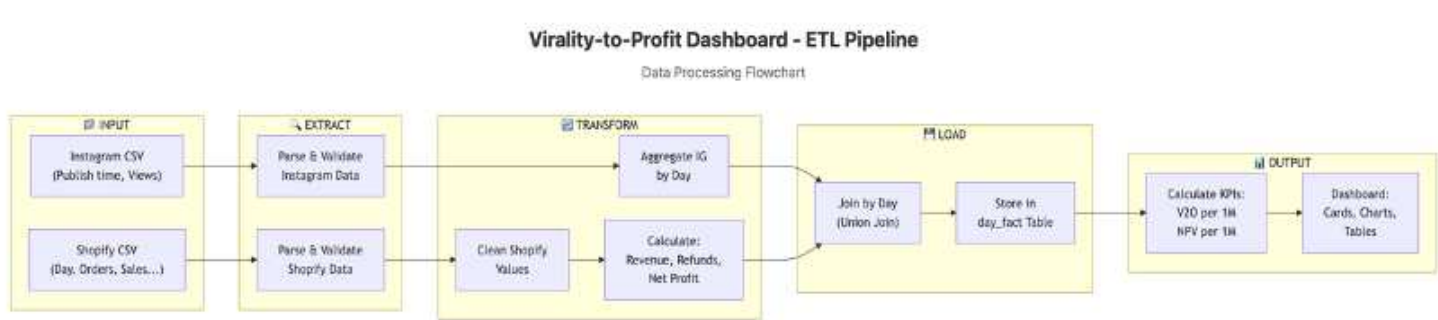


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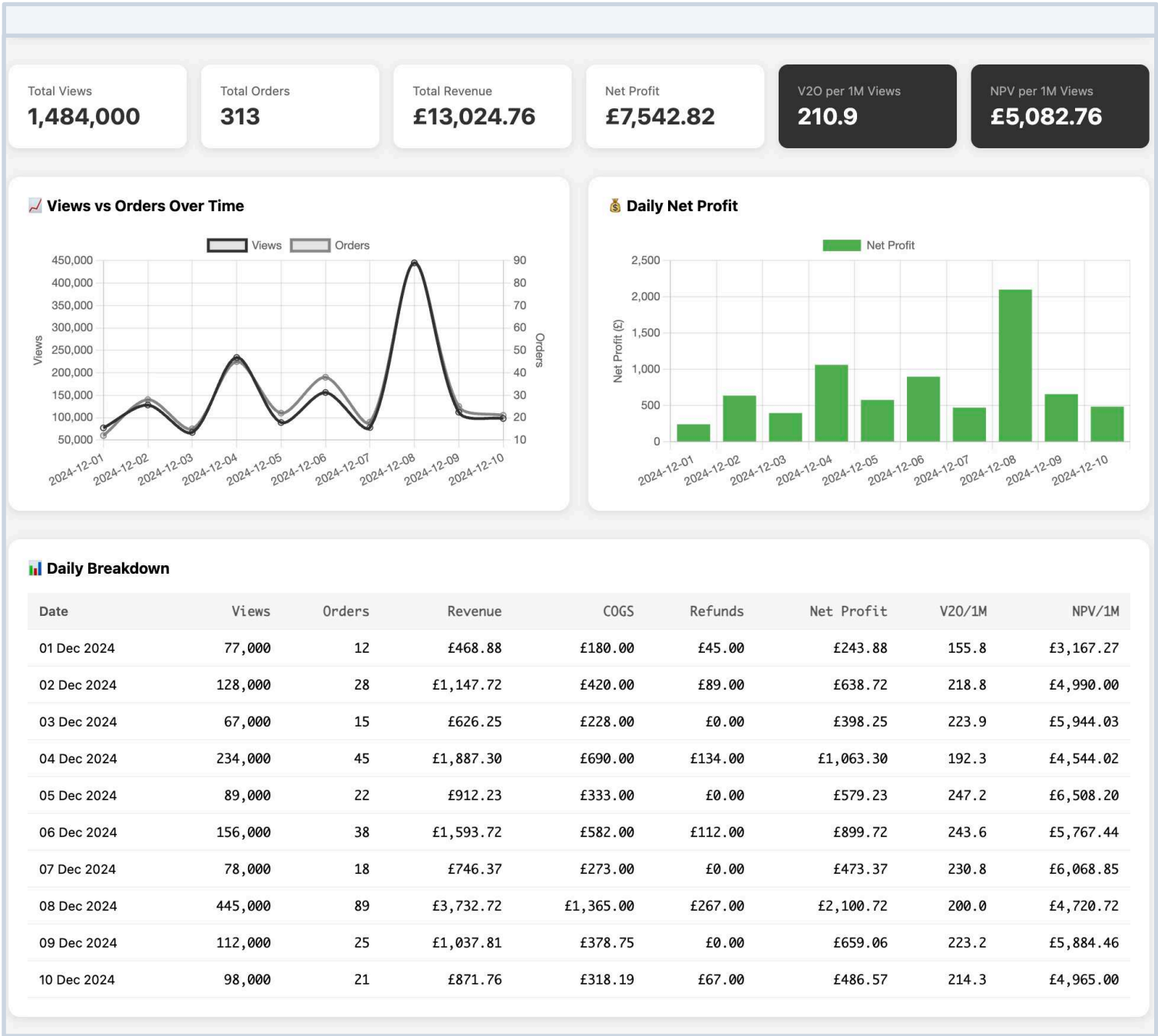


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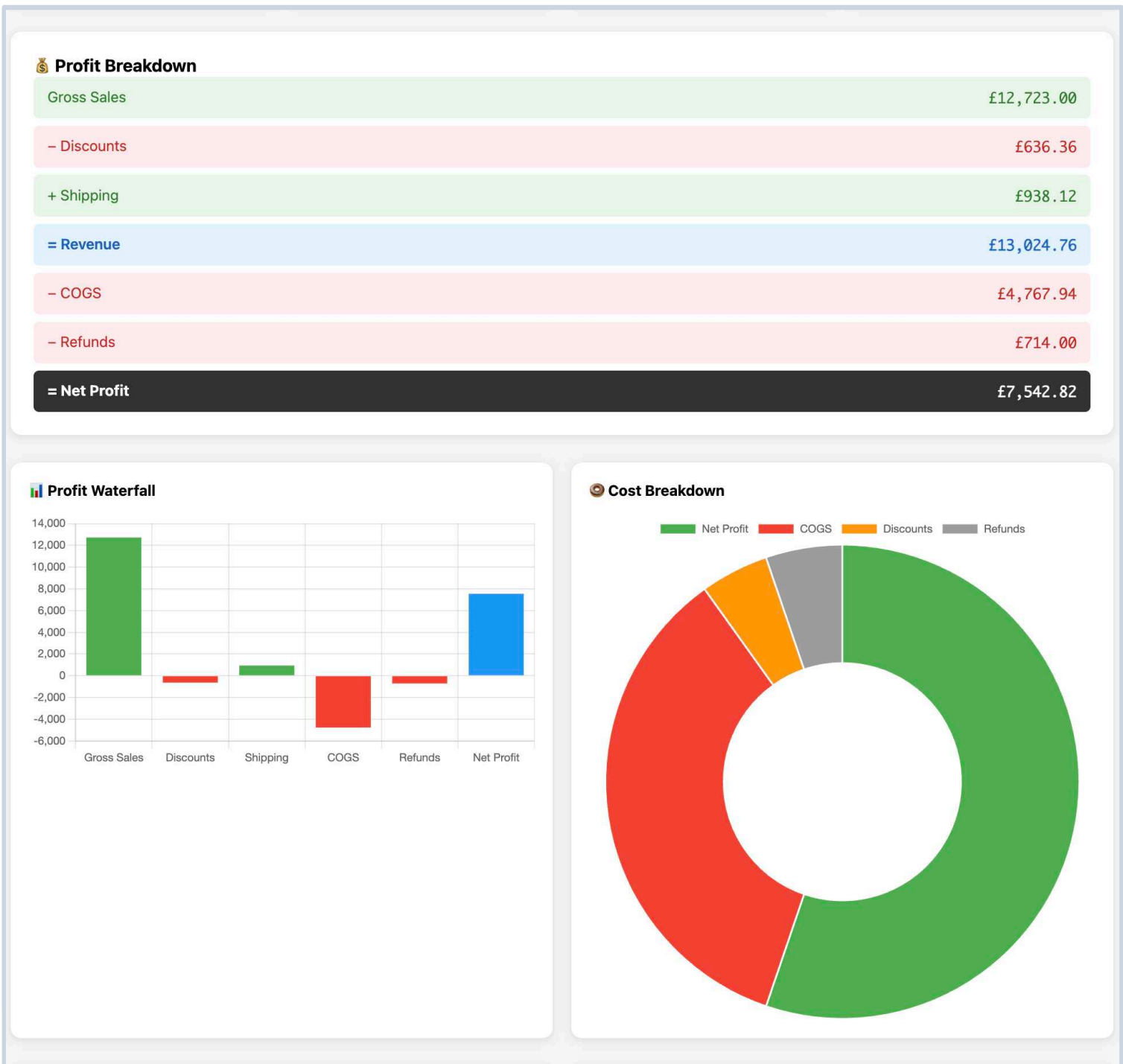


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11. Results

100%

Test Pass Rate
(28/28 cases)

4.6/5

User Rating
(5 participants)

80%

Would Use
Regularly

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