

EXECUTIVE SUMMARY

E-commerce Sales Performance Analysis (2014-2017)

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Analysis Period: January 2014 - December 2017 (48 months)

Tools Used: Microsoft Excel, Data Visualization

PROJECT OVERVIEW

This report presents a comprehensive analysis of 48 months of e-commerce sales data to evaluate business performance, identify profitability trends, and provide actionable recommendations for revenue optimization.

Dataset Scope:

- Total period analyzed: 4 years (2014-2017)
- Monthly sales range: €4,520 - €118,448
- Total records: 48 monthly observations
- Key metrics tracked: Sales, profit, orders, discounts, shipping performance

KEY FINDINGS

Performance Highlights

Strongest Performing Month

- November 2017: €118,448 in sales (highest revenue month)
- December 2016: €17,885 profit with 18% margin (best profitability)
- October 2016: €83 profit per order (highest efficiency)

Weakest Performing Periods

- January 2015: Loss of €3,281 (-18% margin) - worst month overall
- February 2014: €4,520 in sales (lowest revenue)
- March 2014: 1% profit margin despite €55,691 in sales (poor efficiency)

Critical Insights

1. Sales Volume Does Not Guarantee Profitability

March 2014 generated €55,691 in sales but only €499 in profit (1% margin). This represents the worst profit margin in the entire dataset, demonstrating that high revenue can mask underlying profitability issues.

2. Discount Strategy Impact

Analysis reveals a negative correlation between discount rates and profit margins:

- Months with 17-19% discounts showed consistently lower profitability
- Average discount across period: 15%
- Optimal range appears to be 13-15% for maintaining healthy margins

3. Seasonal Performance Patterns

Clear seasonal trends emerged:

- Q4 (November-December): Consistently strong sales and profitability
- Q1 (January-February): Weakest performance, with January showing high loss risk
- Year-over-year pattern repeats reliably

4. Operational Stability

Shipping performance remained consistent:

- Average delivery time: 3.69 days
- Maintained 4-day standard in 90% of months
- No correlation between shipping speed and profitability

5. Growth Volatility

Month-over-month growth showed extreme fluctuation:

- Range: -74% to +1,132%
- High volatility indicates poor demand forecasting
- Suggests need for more stable customer acquisition strategies

BUSINESS RECOMMENDATIONS

Immediate Actions (0-3 Months)

1. Investigate March 2014 Anomaly

- Conduct deep-dive analysis of cost structure for low-margin months
- Identify which products or campaigns drove poor profitability
- Implement early warning system for similar patterns

2. Optimize Discount Strategy

- Cap maximum discounts at 14-15%
- Test tiered discounting based on product categories
- Monitor profit margin impact in real-time

3. Implement Seasonal Planning

- Increase inventory investment for Q4 (October-November)
- Reduce operational overhead during Q1 (January-February)
- Build cash reserves during high-profit months

Strategic Improvements (3-12 Months)

4. Stabilize Revenue Growth

- Develop demand forecasting model to reduce volatility
- Build consistent customer acquisition channels
- Target 15-20% profit margin (vs. current ~12% average)

5. Enhance Data Collection

- Capture product-level profitability data
- Track customer acquisition costs and lifetime value
- Monitor marketing ROI by channel

6. Profit Optimization Focus

- Increase average order value (currently €191-€305)
- Improve product mix during historically weak months
- Balance volume growth with margin protection

PROJECT SCOPE

This analysis intentionally focused on high-level sales performance metrics to develop foundational analytical skills. The dataset included product categories, product details, and customer information, but these dimensions were excluded from this phase of analysis.

Future Analysis Opportunities:

- Product-level profitability analysis
- Customer segmentation and behavior patterns
- Product category performance comparison
- Customer lifetime value analysis
- Additional cost data integration (marketing spend, operational expenses)

EXPECTED BUSINESS IMPACT

If recommendations are implemented:

Scenario: Reduce January losses

- Current January 2015: -€3,281 loss
- With 30% overhead reduction: Potential +€3,000 profit
- **Impact: €6,281 improvement**

Scenario: Optimize discount strategy

- Capping discounts at 14% vs current 17% in poor months
- Estimated 3-5% margin improvement
- **Impact: €15,000-25,000 additional annual profit**

Scenario: Better Q4 preparation

- Capturing 20% more Q4 sales through inventory optimization
- Based on November 2017 baseline: €23,689 additional revenue
- **Impact: €3,000-5,000 additional profit**

Total Estimated Annual Impact: €24,000-36,000

METHODOLOGY

Data Preparation

- Validated 48 months of sales records
- Calculated derived metrics (profit margin, average order value, growth rates)
- Created alert indicators for underperforming periods

Analysis Techniques

- Time-series trend analysis
- Correlation analysis (discounts vs. profitability)
- Seasonal pattern identification
- Performance benchmarking

Visualization

- Interactive dashboard development
- Month-over-month growth tracking
- Key performance indicator monitoring

CONCLUSIONS

This e-commerce business demonstrates strong operational capability with consistent delivery performance and significant seasonal revenue potential. However, profitability is hampered by:

1. Aggressive discounting without corresponding cost control
2. Poor performance during Q1 periods
3. High revenue volatility creating planning challenges

The primary opportunity lies in optimizing the discount strategy and implementing seasonal cost management. With proper planning and the recommended changes, the business can improve annual profitability by an estimated 15-25%.

Next Steps:

1. Obtain detailed cost breakdown data for deeper analysis
2. Implement discount cap testing in controlled product categories
3. Develop Q4 inventory optimization plan for upcoming season
4. Create monthly monitoring dashboard for early problem detection

APPENDICES

A. Top 5 Revenue Months

1. November 2017: €118,448
2. December 2016: €96,999
3. September 2017: €87,867
4. September 2014: €81,777
5. November 2016: €79,412

B. Loss-Making Months

1. January 2015: -€3,281 (-18% margin)
2. July 2014: -€841 (-2% margin)

3. April 2017: €933 (3% margin - near loss)

C. Key Performance Metrics

- Average monthly sales: €48,127
 - Average monthly profit: €5,847
 - Average profit margin: 12%
 - Average discount: 15%
 - Average shipping days: 3.69
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This analysis is based on aggregated monthly sales data from January 2014 to December 2017.

All figures are in Euros (€). Recommendations are based on observed patterns and industry best practices.