full_note_cafe_andino_20251001

October 1, 2025

1 Business Intelligence Dashboard

Automated insights for data-driven decisions

[33]:

```python
# input_file = 'data/auto_partes/auto_partes_transactions.csv'  # Input CSV file
input_file = 'data/cafe_andino/cafe_andino_transactions.csv'  # Input CSV file

config = {
    'project_name': 'cafe_andino',       # Project name
    'out_dir' : 'outputs',               # Output directory

    # Data mapping
    'date_col': 'fecha',
    'product_col': 'producto',
    'description_col': 'glosa',
    'revenue_col': 'total',
    'quantity_col': 'cantidad',
    'transaction_col': 'trans_id',
    'cost_col': 'costo',

    # Analysis settings
    'analysis_date': '2024-12-01',      # Or 'current' for today
    'top_products_threshold': 0.2,
    'dead_stock_days': 30,
    'currency_format': 'CLP',
    'language': 'EN',
}

save = False  # True to save outputs, False to just print
```

[34]:

```python
from modules.business_analytics import BusinessAnalyzer
from modules.dashboard import ExecutiveDashboard
from modules.advanced_analytics import AdvancedAnalytics
from modules.reports import *
from modules.utils import *

# Initialize with AdvancedAnalytics (includes all functionality)
# AdvancedAnalytics -> BusinessAnalyzer -> Business (inheritance chain)
```

```
analyzer = BusinessAnalyzer(data_source=input_file, config=config)

# Create dashboard and advanced analytics instances
dashboard = ExecutiveDashboard(analyzer)
advanced = AdvancedAnalytics(analyzer)
```

```
Data date range: 2024-09-01 to 2024-11-30
Business initialized with data from:
data/cafe_andino/cafe_andino_transactions.csv (27475, 13)
Output directory: outputs\cafe_andino\20251001_2014
  All base metrics calculated
BusinessAnalyzer initialized for project: cafe_andino
Dashboard output directory: outputs\cafe_andino\20251001_2014
AdvancedAnalytics initialized for project: cafe_andino
```

1.1 Quick Summary

[35]:

```
summary = dashboard.create_quick_summary()
print_info(summary, analyzer.out_dir, "DASH_quick_summary.txt", save=save)
```

```
============================================================
DASHBOARD SUMMARY
============================================================

  KEY METRICS:
  • Total Revenue: $ 65.200.600
  • Growth Rate: 1.0%
  • Transactions: 27,475

  KEY INSIGHTS:
  • Top 20% of products = 63.1% of revenue
  • Inventory Health: 20% healthy
  • Dead Stock: 0 products

============================================================
```

1.2 KPIs

[36]:

```
kpis = analyzer.get_kpis()
print_info(analyzer.print_kpis(), analyzer.out_dir, "BA_kpi.txt", save=save)
```

```

  Periods considered for growth:
  • Previous: 2024-09-01 -> 2024-10-16
  • Current:  2024-10-16 -> 2024-11-30
  Growth: 1.0%

  Revenue: $ 65.200.600
  Transactions: 27,475
```

1.3 Alerts & Actions

[37]:
```
alerts = analyzer.get_alerts()
print_info(analyzer.print_alerts(), analyzer.out_dir, "BA_alerts.txt",␣
 ↪save=save)
```

```
 SUCCESS INDICATORS:

  Revenue well distributed across products
    Next Step: Maintain current portfolio balance
```

1.4 Revenue Concentration Analysis

[38]:
```
pareto = analyzer.get_pareto_insights()
print_info(analyzer.print_pareto(), analyzer.out_dir, "BA_pareto.txt",␣
 ↪save=save)
```

```
 TOP INSIGHT: Your top 5 products (20% of catalog) generate 63.1% of revenue!

Concentration Risk Level: Medium

 Top 5 Revenue Generators:
  1. AMERICANO REGULAR: $ 10.962.000
  2. CAPPUCCINO GRANDE: $ 10.879.000
  3. LATTE REGULAR: $ 8.856.000
  4. ESPRESSO DOBLE: $ 5.545.500
  5. MOCHA CHOCOLATE: $ 4.895.000

 80/20 Rule: Top 20% = 63.1% of revenue
```

1.5 Inventory Health Check

[39]:
```
inventory = analyzer.get_inventory_health()
print_info(analyzer.print_inventory_health(), analyzer.out_dir, "BA_inventory.
 ↪txt", save=save)
```

```
 Inventory Health Score: 20%

 Dead Stock Alert: 0 products
```

1.6 Operational Efficiency

[40]:
```
peak_times = analyzer.get_peak_times()
print_info(analyzer.print_peak_times(), analyzer.out_dir, "BA_peak_times.txt",␣
 ↪save=save)
```

```
 Peak Performance Windows:
  • Best Day: Thursdays
```

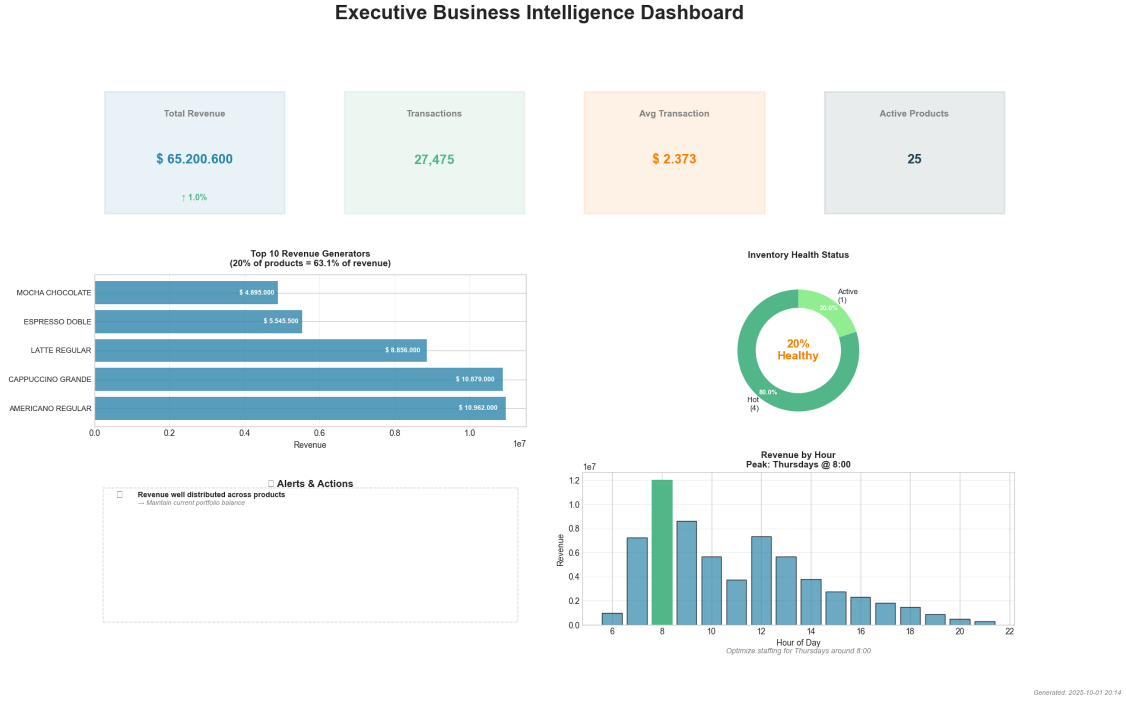
- Peak Hour: 8:00
- Slowest Day: Sundays

```
Optimize staffing for Thursdays around 8:00
```

2 Visuals

2.1 Executive Dashboard

```
[41]: # Create and display the executive dashboard
fig = dashboard.create_full_dashboard(figsize=(20, 12))
print_fig(fig, dashboard.analyzer.out_dir, "DASH_executive.png", save=save)
```



□ Revenue well distributed across products

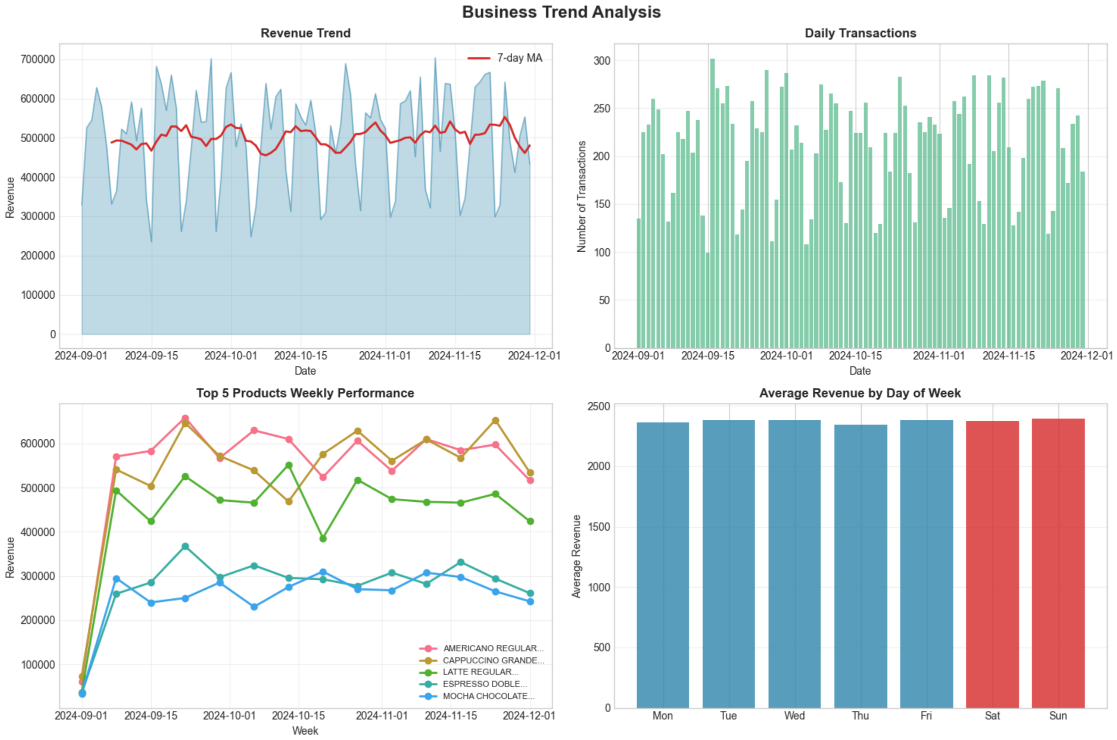
→ *Maintain current portfolio balance*

Optimize staffing for Thursdays around 8:00

Generated: 2025-10-01 20:14

2.2 Trend analysis

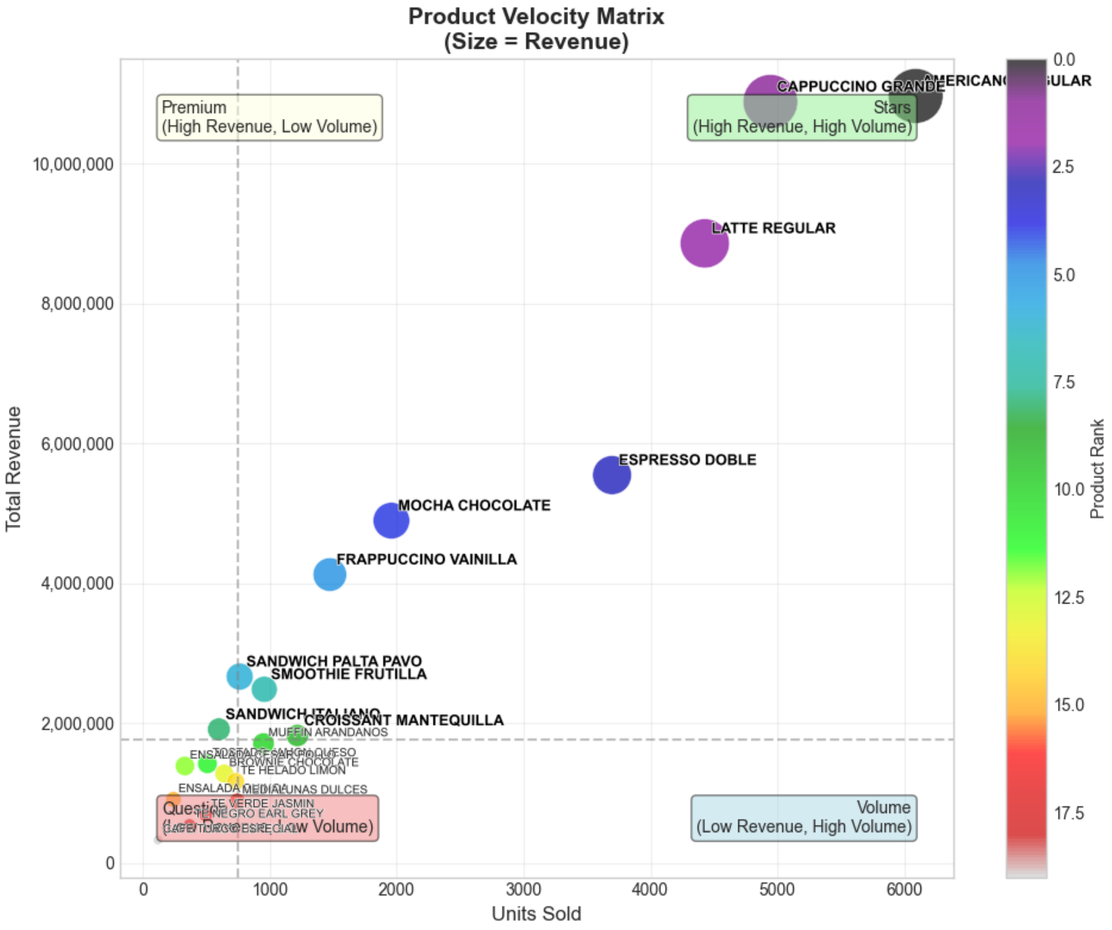
```
[42]: trend_fig = advanced.create_trend_analysis(figsize=(15, 10))
print_fig(trend_fig, dashboard.analyzer.out_dir, "DASH_trend.png", save=save)
```



2.3 Product velocity

[43]:

```
velocity_fig = product_velocity_matrix(analyzer)
print_fig(velocity_fig, dashboard.analyzer.out_dir, "DASH_velocity.png", save=save)
```



3 Advanced Analytics

3.1 Forecast

```
[44]: forecast = advanced.calculate_revenue_forecast(days_ahead=30)
print_info(advanced.print_revenue_forecast(), analyzer.out_dir, "ADV_forecast.
 ↪txt", save=save)
```

```
 Revenue Forecast for next 30 days:
Daily:
- Average: $ 480.371
- Std Dev: $ 127.511
- 95% Confidence Interval: ($ 230.451, $ 730.292)
Total:
- Forecast: $ 14.411.143
- 95% Confidence Interval: ($ 6.913.515, $ 21.908.770)
- Trend: Decreasing
```

3.2 Cross-sell opportunities

[45]:
```
cross_sell = advanced.calculate_cross_sell_opportunities(limit=3)
print_info(advanced.print_cross_sell_opportunities(), analyzer.out_dir,␣
 ↪"ADV_cross_selling.txt", save=save)
```

```
 No significant cross-sell opportunities found.
```

3.3 Anomalies

[46]:
```
anomalies = advanced.calculate_anomalies(limit=3)
print_info(advanced.print_anomalies(), analyzer.out_dir, "ADV_anomalies.txt",␣
 ↪save=save)
```

```
 No anomalies detected.
```

3.4 Top Recommmendations

[47]:
```
recommendations = advanced.calculate_recommendations()
print_info(advanced.print_recommendations(), analyzer.out_dir,␣
 ↪"ADV_recommendations.txt", save=save)
```

```

 TOP RECOMMENDATIONS:

1. [HIGH] Address Declining Revenue Trend
   Revenue showing downward trend in recent period
   Action: Review pricing strategy and launch customer retention campaign
   Impact: Stabilize revenue decline | Timeline: Immediate
```

4 Reports

4.1 Weekly Comparison Report

[48]:
```
weekly_comparison_report = weekly_comparison_report(analyzer)
print_info(weekly_comparison_report, analyzer.out_dir, "REPORTS_weekly_compare.
 ↪txt", save=save)
```

```
============================================================
WEEKLY COMPARISON REPORT
============================================================

Revenue:
  Last Week:     $ 3.034.000
  Previous Week: $ 3.713.000
  Change:          ↓ 18.29%

Transactions:
  Last Week:     1,311
  Previous Week: 1,544
  Change:         ↓ 15.09%

Products Sold:
  Last Week:     24
  Previous Week: 24
  Change:         → 0.00%

Avg Transaction:
  Last Week:     $ 2.314
  Previous Week: $ 2.405
  Change:         ↓ 3.76%
```