

# *SALES DATA ANALYTICS: EXTRACTING INSIGHTS FOR BUSINESS GROWTH*

Project Overview: Comprehensive analysis of sales data to identify key patterns, classify customer segments, and extract actionable insights for sustainable business growth



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# Tool Used

Microsoft Excel	Canva	IBM Granite
Used for data cleaning, processing, and generating reports to identify key insights.	Used for creating professional visuals and presentation designs.	A large language model applied for natural language processing and generating analytical insights.
Google Colab	Replicate	LangChain
A cloud-based environment for writing and running Python code interactively, especially for data analysis.	A platform for running and deploying machine learning models via API.	A framework for building applications with large language models, enabling chaining of prompts, integration with external tools, and workflow automation.

# Tool in Action

## IBM Granite

```
from langchain_community.llms import Replicate
import os
from google.colab import userdata
# Set the API token
api_token = userdata.get('api_token')
os.environ["REPLICATE_API_TOKEN"] = api_token
# Model setup
model = "ibm-granite/granite-3.3-8b-instruct"
output = Replicate(
    model=model,
    replicate_api_token=api_token,
)
```

```
# input prompt
p = input("input prompt?: ")
# run model
response = output.invoke(p)
# show answer
print(response)
```

input prompt?: how to clean dataset in excel

1. Remove Duplicates: Select your data, go to 'Data' > 'Remove Duplicates'.

2. Handle Missing Values: You can either delete rows with missing values or fill them using Excel's 'Fill' feature or formulas like AVERAGE, MEDIAN, etc.

3. Standardize Text: Use Excel's 'Find and Replace' feature to correct inconsistencies in text data.

4. Remove Irrelevant Columns: If columns are not needed, right-click and select 'Delete'.

5. Convert Data Types: Select the column, right-click > 'Format Cells' to change data types.

6. Trim Blank Spaces: Use 'Trim' function in Excel to remove leading and trailing spaces.

7. Validate Data: Use Data Validation feature under 'Data' tab to ensure data meets specific criteria.

8. Sort and Filter: Use sort and filter options to identify and manage outliers or incorrect data.

9. Use Power Query (Get & Transform Data): For more complex cleaning tasks, use Power Query to clean, shape, and combine data.

10. Review and Validate: Always review your cleaned data to ensure accuracy and completeness.

# Tool in Action

## Microsoft Excel - Pivot Table

Sum of Total_Sales		Column Labels									
Row Labels		Sinta Numala	Rudi Hermawan	Maya Sari	Budi Santoso	Agus Wijaya	Fitri Anggraini	Riko Pratama	Dian Lestari	Sari Dewi	Lina Kartika
Jan	Rp	17.839.000	Rp 2.806.000	Rp 47.681.000	Rp 35.793.000	Rp 13.870.000	Rp 36.423.000	Rp 57.003.000	Rp 23.836.000	Rp 116.106.000	Rp 3.016.000
Feb			Rp 33.996.000	Rp 23.200.000	Rp 2.855.000	Rp 63.798.000	Rp 28.276.000	Rp 850.000	Rp 50.959.000	Rp 40.032.000	Rp 4.550.000
Mar	Rp	140.736.000	Rp 144.716.000	Rp 23.940.000	Rp 40.820.000	Rp 106.780.000	Rp 924.000	Rp 39.621.000		Rp 2.408.000	Rp 591.000
Apr	Rp	62.523.000	Rp 2.345.000	Rp 121.946.000	Rp 72.204.000	Rp 36.054.000	Rp 1.024.000	Rp 32.243.000	Rp 85.856.000	Rp 681.000	Rp 1.277.000
Mei			Rp 114.812.000	Rp 18.079.000	Rp 22.759.000	Rp 1.403.000	Rp 13.086.000	Rp 564.000	Rp 34.927.000	Rp 5.248.000	Rp 36.505.000
Jun	Rp	122.056.000	Rp 79.659.000	Rp 22.639.000	Rp 19.184.000	Rp 64.401.000	Rp 58.706.000	Rp 1.590.000		Rp 1.645.000	Rp 4.352.000
Jul	Rp	4.060.000		Rp 44.224.000		Rp 24.237.000	Rp 2.476.000	Rp 21.985.000	Rp 2.319.000	Rp 530.000	Rp 19.307.000
Agu	Rp	87.170.000	Rp 41.298.000	Rp 8.384.000	Rp 380.000		Rp 38.386.000	Rp 97.425.000	Rp 10.548.000	Rp 65.731.000	Rp 54.069.000
Sep	Rp	75.509.000	Rp 16.834.000	Rp 21.788.000	Rp 32.300.000	Rp 5.557.000	Rp 792.000	Rp 12.102.000	Rp 3.960.000		Rp 7.216.000
Okt	Rp	243.166.000	Rp 36.016.000	Rp 4.868.000	Rp 7.124.000	Rp 1.233.000	Rp 42.604.000	Rp 38.288.000	Rp 21.741.000	Rp 1.440.000	Rp 53.320.000
Nov	Rp	48.926.000	Rp 6.531.000	Rp 1.220.000	Rp 121.112.000	Rp 2.592.000	Rp 52.278.000	Rp 906.000	Rp 3.098.000	Rp 250.000	Rp 3.125.000
Des	Rp	1.336.000	Rp 78.833.000	Rp 154.633.000	Rp 29.479.000	Rp 8.791.000	Rp 38.076.000		Rp 26.217.000	Rp 27.706.000	
Grand Total	Rp	803.321.000	Rp 557.846.000	Rp 492.602.000	Rp 384.010.000	Rp 328.716.000	Rp 313.051.000	Rp 302.577.000	Rp 263.461.000	Rp 261.777.000	Rp 187.328.000

# *Data Overview & Methodology*

## DATA OVERVIEW

- 01 Dataset: 2023 Sales Records (300+ transactions)
- 02 Revenue: Rp 4.04 billion
- 03 Categories: Electronics & Fashion
- 04 Period: 12-month analysis



## METHODOLOGY

- 01 Data preprocessing & classification
- 02 Performance analysis & trend identification
- 03 Strategic insight extraction & recommendations



# Executive Summary

This comprehensive sales data analytics project examines our 2023 business performance to unlock growth opportunities and optimize revenue strategies.

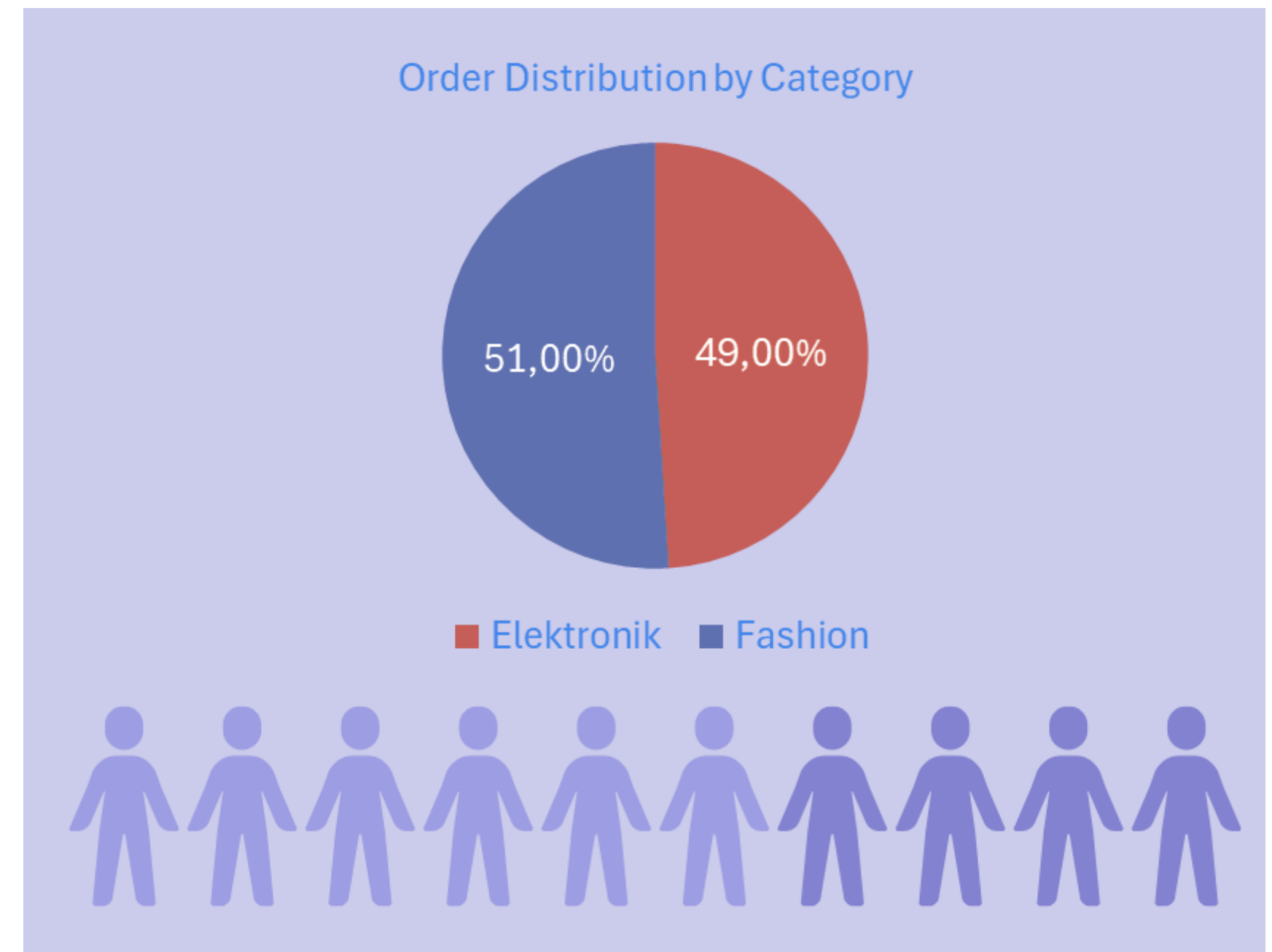
**Key Focus** Our 12-month analysis covers multi-city customer behavior, seasonal patterns, and product performance to identify growth opportunities and optimize business strategies.

**Expected Impact** Data-driven insights will enable customer segmentation optimization, product portfolio enhancement, and targeted revenue acceleration strategies.



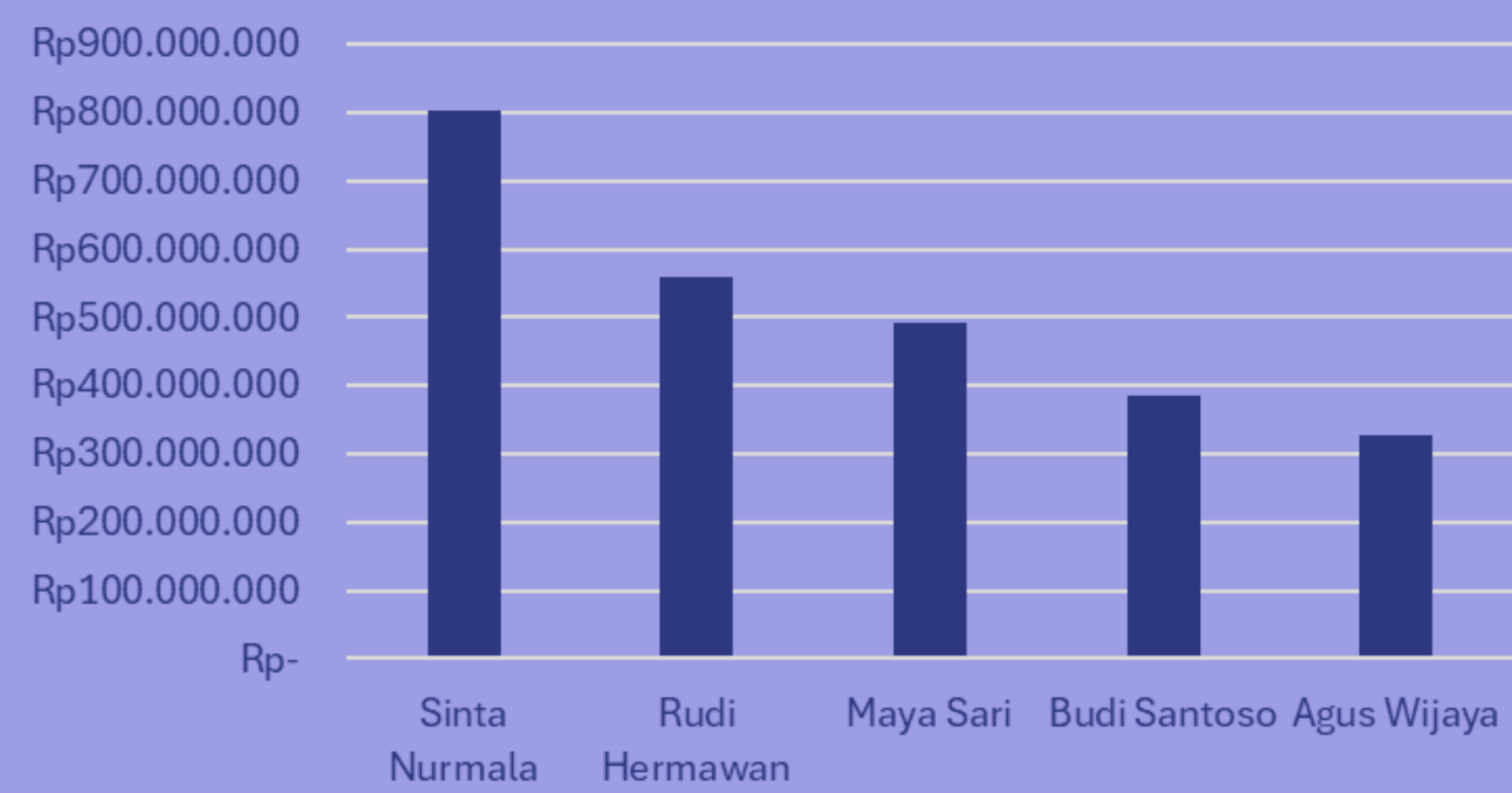
# Data Classification Results

The analysis reveals a well-balanced product portfolio with Electronics contributing 49% (147 orders) and Fashion 51% (153 orders) of total transactions. Our customer base spans multiple Indonesian cities including Jakarta, Bandung, Surabaya, and Medan, demonstrating strong geographic diversification. Temporal analysis shows consistent year-round performance with notable peaks in October (34 orders) and strong performance in August and September (27 orders each), indicating clear seasonal opportunities.



# Customer Behavior Analysis

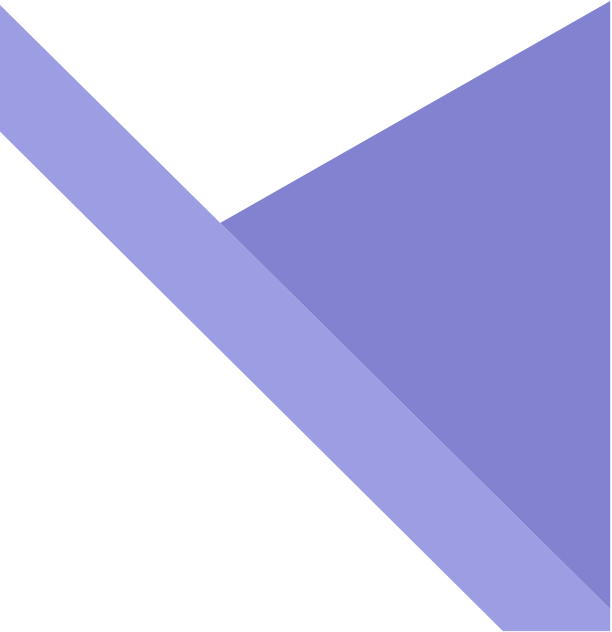
Top 5 Customers by Sales



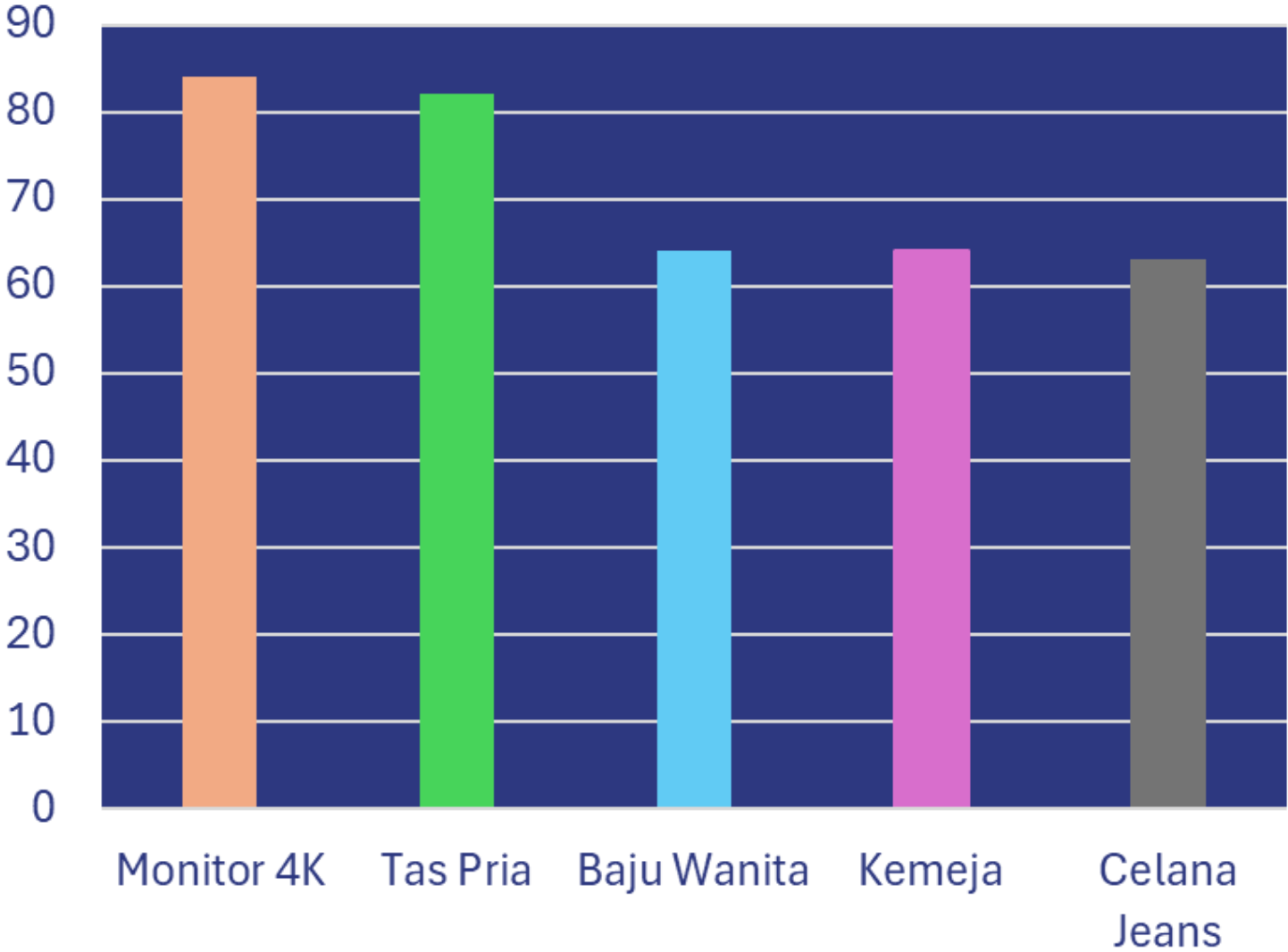
Customer performance analysis identifies significant revenue concentration among top performers, with Sinta Nurmala leading at Rp 803 million, followed by Rudi Hermawan (Rp 558M) and Maya Sari (Rp 493M). This concentration pattern reveals the critical importance of key account management and customer retention strategies. Payment method preferences show healthy diversification across Credit Card, Bank Transfer, PayLater, QRIS, and Cash on Delivery options, indicating flexible customer payment behaviors across different segments and geographic locations.



# Product Performance Insights



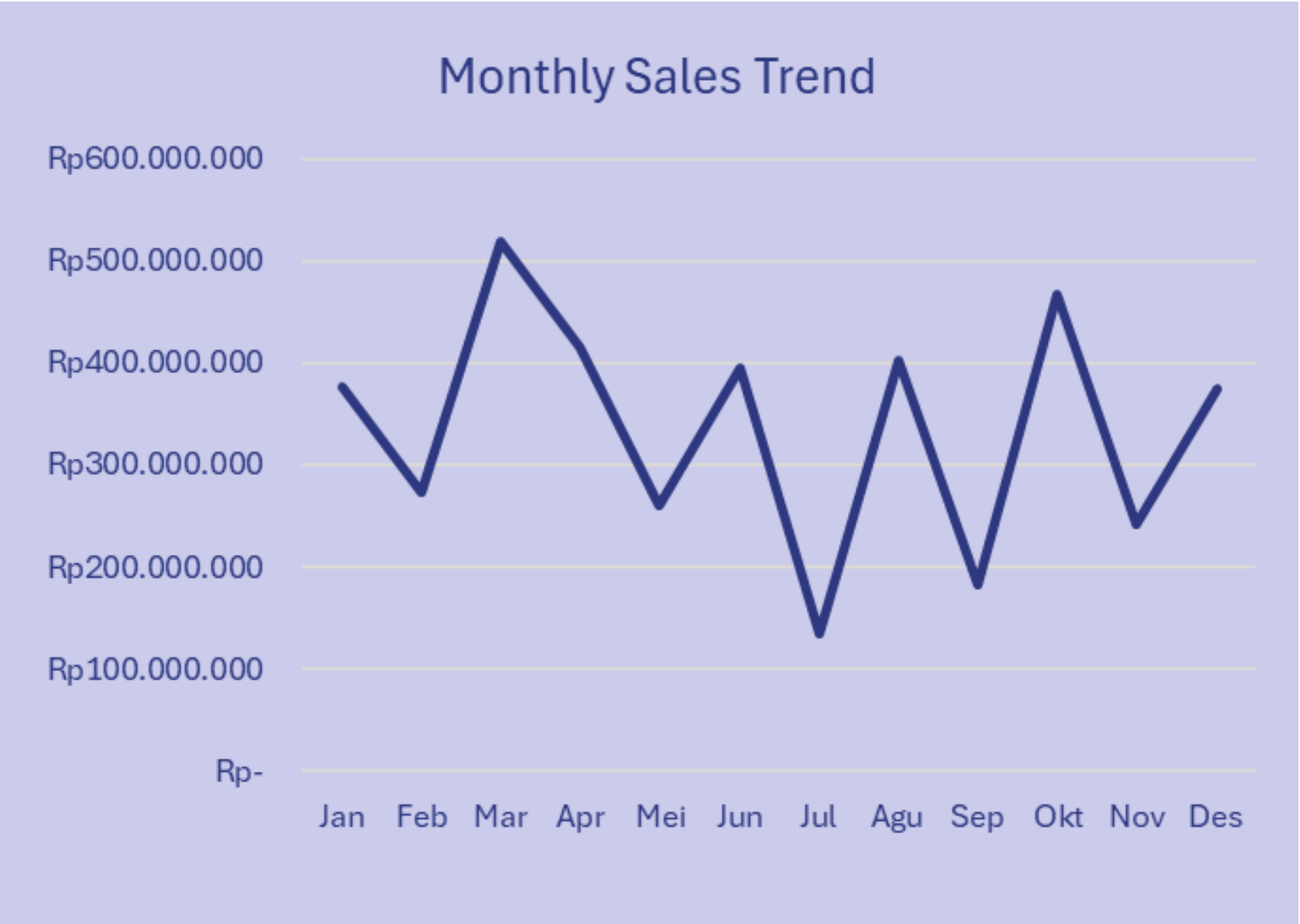
Top 5 Best-Selling Products by Quantity



Product quantity analysis reveals Tas Pria as the highest-volume seller with 83 units, closely followed by Monitor 4K (84 units) and Baju Wanita (64 units), demonstrating strong cross-category performance. Brand analysis shows XIAOMI, ASUS, LG, and SONY leading in Electronics, while NIKE, ADIDAS, ZARA, and H&M dominate Fashion categories. The data indicates consistent demand patterns throughout the year with Electronics showing seasonal peaks and Fashion maintaining steady performance, creating inventory optimization opportunities.

# Sales Performance Trends

Monthly revenue analysis demonstrates clear seasonal patterns with identifiable peak performance periods that correlate strongly with order volume fluctuations. The revenue trajectory shows consistent performance throughout 2023 with notable seasonal variations that provide forecasting opportunities. Category comparison reveals balanced contribution from both Electronics and Fashion segments, with each showing distinct seasonal characteristics that can inform targeted marketing and inventory strategies.





## *Key Business Insights*

Critical analysis reveals that customer concentration among top performers creates both opportunity and risk, requiring strategic customer relationship management. The near-equal split between Electronics and Fashion categories provides portfolio stability and reduces market dependency risks. Geographic diversity across multiple Indonesian cities demonstrates strong market penetration while revealing expansion opportunities in existing and new markets. Strong customer loyalty evidenced by repeat purchases indicates effective customer satisfaction and retention potential.



# Strategic Recommendations

Customer strategy should prioritize developing VIP programs for top revenue contributors while implementing retention strategies for mid-tier segments and pursuing geographic expansion in high-performing cities. Product optimization requires increased inventory allocation for best-selling items like Tas Pria and Monitor 4K, seasonal planning based on monthly performance trends, and cross-category bundling initiatives. Revenue acceleration opportunities include focused marketing during peak months, payment method optimization for enhanced customer convenience, and targeted acquisition campaigns for underperforming segments.

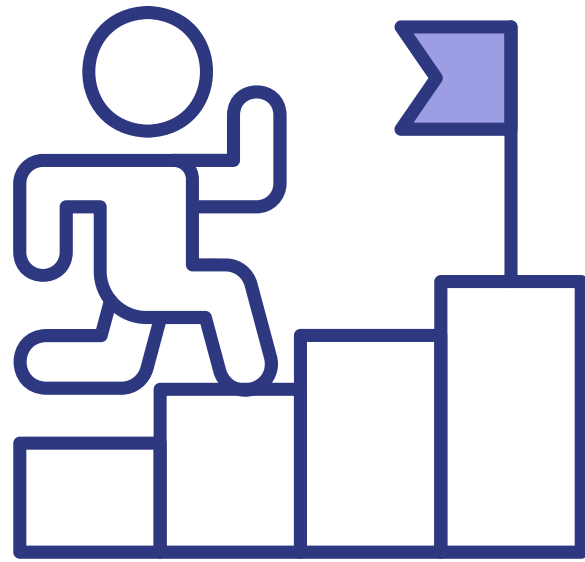




# *Implementation Roadmap*

Immediate actions for the next 1-3 months include launching a comprehensive top customer loyalty program, optimizing inventory levels for best-performing products, and implementing targeted seasonal marketing campaigns. Short-term goals spanning 3-6 months focus on geographic market expansion planning, developing cross-category product bundling initiatives, and refining customer segmentation strategies. Long-term strategy over 6-12 months involves implementing advanced analytics capabilities, developing predictive modeling for demand forecasting, and comprehensive market expansion initiatives.





## *Conclusion & Next Steps*

This comprehensive sales data analytics project successfully transforms raw transaction data into strategic business intelligence, revealing critical insights about customer behavior, product performance, and market opportunities. The balanced portfolio between Electronics and Fashion, strong customer loyalty indicators, and clear seasonal patterns provide solid foundation for growth. Next steps include immediate implementation of recommended strategies, establishing performance monitoring systems, and developing advanced analytics capabilities for continuous business optimization and sustainable growth acceleration.

# *Thank You*

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