

Smart - Cost : A Hybrid AI - Driven POS and Cost Analytics System for Micro -SMEs



**AI-Driven POS and
Cost Management System**
for Micro-SMEs Cafés and Bakeries



R26-IT-026

Information Technology (IT)
Sri Lanka Institute of Information Technology

Manage Costs | Predict Tomorrow | Grow Smarter

SMART COST OUR TEAM



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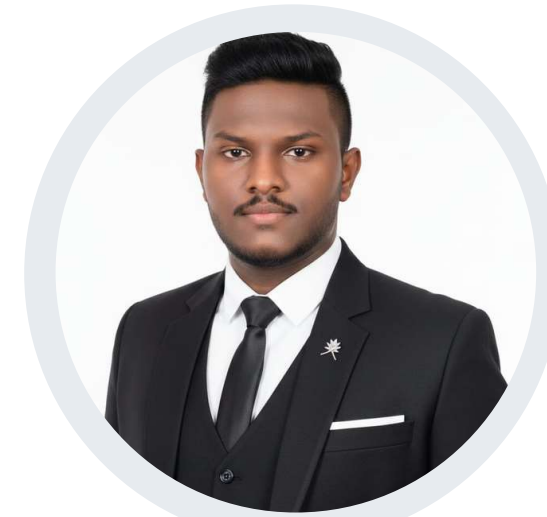
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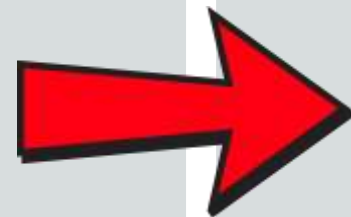


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PROBLEM, IMPACT AND STAKEHOLDERS

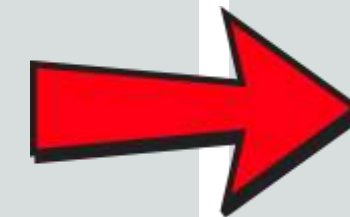
Main Problems Faced by SMEs :

- SMEs use traditional POS systems.
- No future demand prediction.
- Difficult to track profits and costs.
- Inventory wastage happens frequently.
- No customer behavior analysis.
- No smart product recommendations.



Impact / Gravity of the Problem :

- Financial losses increase.
- Product wastage becomes higher.
- Stock shortages affect sales.
- Poor business decisions occur.
- Customer satisfaction decreases.
- Business growth becomes slower.



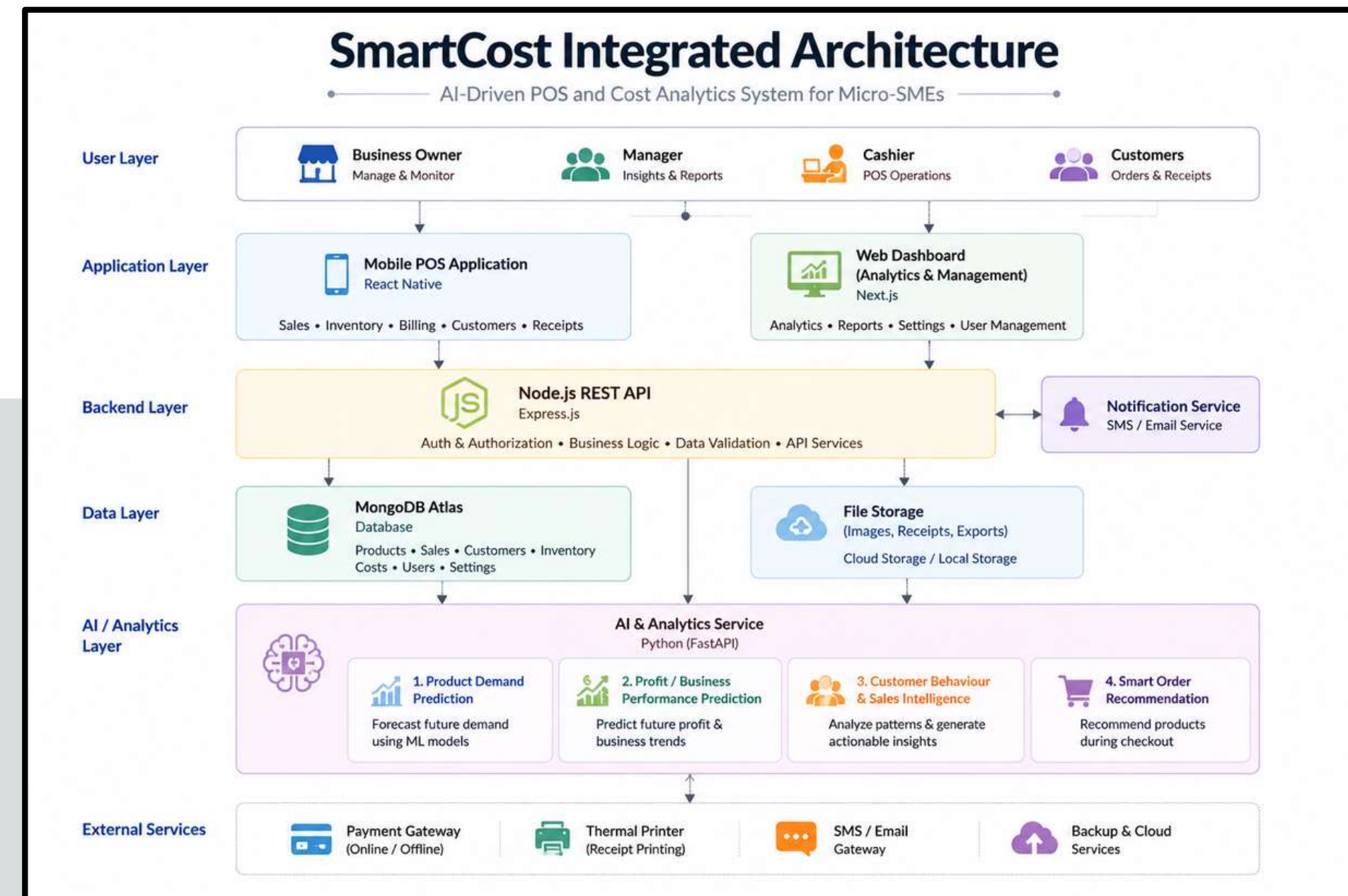
Beneficiaries:

- Bakery owners
- Café owners
- Small retail businesses
- Business managers
- Cashiers and staff
- Customers

SOLUTIONS – SMARTCOST



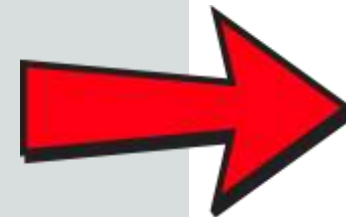
- Manage Sales
- Track Costs and Profits
- Predict Product Demand
- Analyze Customer Behavior
- Recommend Relevant Products
- Improve Inventory Management
- Reduce Wastage
- Support Smarter Business Decisions



PP2 - FEEDBACKS AND IMPROVEMENTS

PP2 FEEDBACKS :

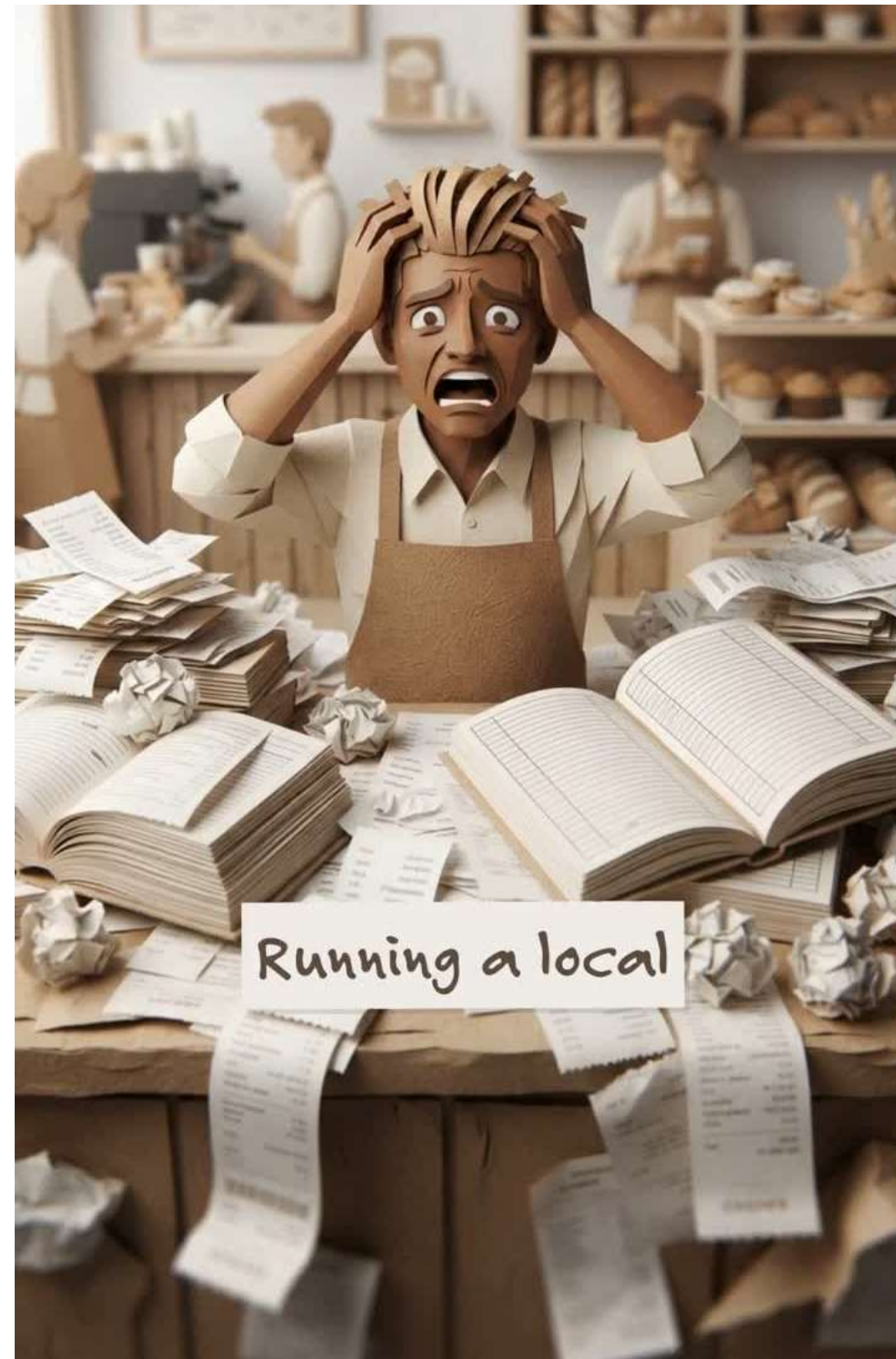
1. Improve Research Depth
2. Focus on Research Contributions
3. Demonstrate Individual Research Value
4. Compare with Existing POS Systems
5. Investigate Alternative Technical Approaches
6. Conduct Experimental Validation
7. Provide Evidence



IMPROVEMENTS MADE:

1. Enhance Research Quality
2. Prioritize Research Novelty
3. Highlight Individual Contributions
4. Compare Existing POS Solutions
5. Evaluate Alternative Approaches
6. Strengthen Experimental Validation
7. Present Evidence - Based Findings

VIDEO DEMO



Running a local

RESEARCH GAP & OBJECTIVES

Research Gap :

- POS systems mainly focus on transactions.
- Limited AI-based demand and profit forecasting.
- Customer behaviour is underutilised.
- Traditional systems provide limited business insights.
- No integrated platform for analytics and POS.
- Real-time recommendation features are rarely available for SMEs.

Main Objective :

- To design and evaluate SmartCost, a hybrid AI-driven POS and cost analytics system that uses historical business data to provide predictive insights and intelligent decision support for micro-SMEs.

Sub-Objectives :

- Develop four specialized AI/analytics components for demand, profit, customer behaviour, and recommendations.
- Integrate the components into a unified POS and cost management architecture.
- Evaluate performance using appropriate datasets, baseline comparisons, and quantitative metrics.

NOVELTIE 01 . BUSINESS PERFORMANCE PREDICTION

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BUSINESS PERFORMANCE PREDICTION – USES AI AND MACHINE LEARNING TO PREDICT FUTURE BUSINESS PERFORMANCE, PROFITABILITY, AND PROFIT MARGINS BASED ON HISTORICAL SALES, COSTS, AND EXPENSES.

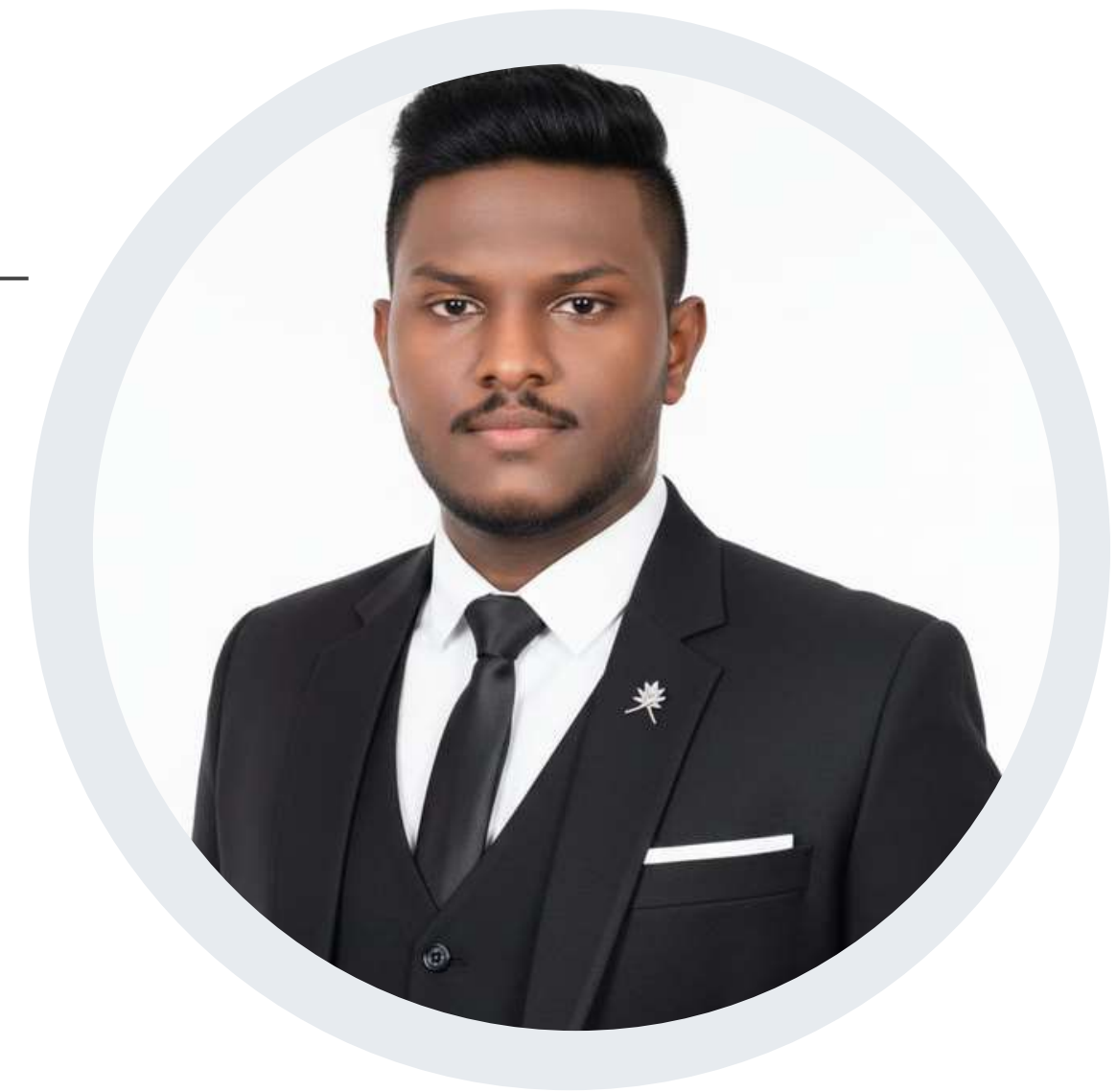
NOVELTIE 02 . CUSTOMER BEHAVIOR ANALYSIS & SALES INSIGHTS

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CUSTOMER BEHAVIOR ANALYSIS & SALES INSIGHTS – ANALYZES CUSTOMER PURCHASING BEHAVIOR, TRANSACTION PATTERNS, AND SALES TRENDS TO PROVIDE ACTIONABLE INSIGHTS FOR BUSINESS DECISION-MAKING.

NOVELTIE 03 . PRODUCT DEMAND PREDICTION



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PRODUCT DEMAND PREDICTION – USES HISTORICAL POS SALES DATA AND HYBRID FORECASTING MODELS (PROPHET AND NEURAL NETWORKS) TO PREDICT FUTURE PRODUCT DEMAND, SUPPORTING INVENTORY AND PRODUCTION PLANNING.

NOVELTIE 04 . SMART ORDER RECOMMENDATION SYSTEM

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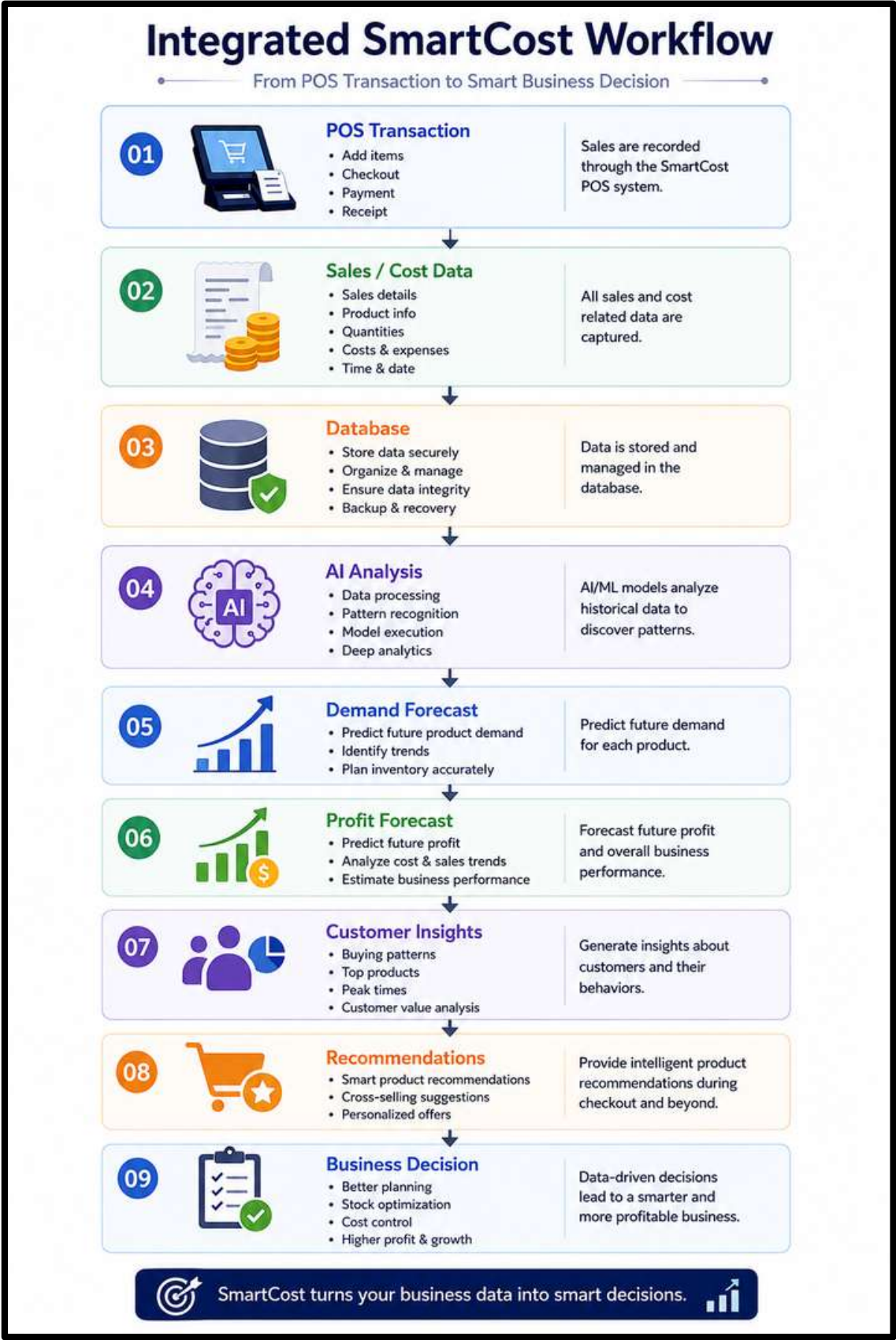


SMART ORDER RECOMMENDATION SYSTEM – USES ASSOCIATION-RULE MINING AND TRANSACTION DATA TO IDENTIFY FREQUENTLY PURCHASED PRODUCT COMBINATIONS AND RECOMMEND RELEVANT PRODUCTS DURING CHECKOUT, IMPROVING CROSS-SELLING OPPORTUNITIES.

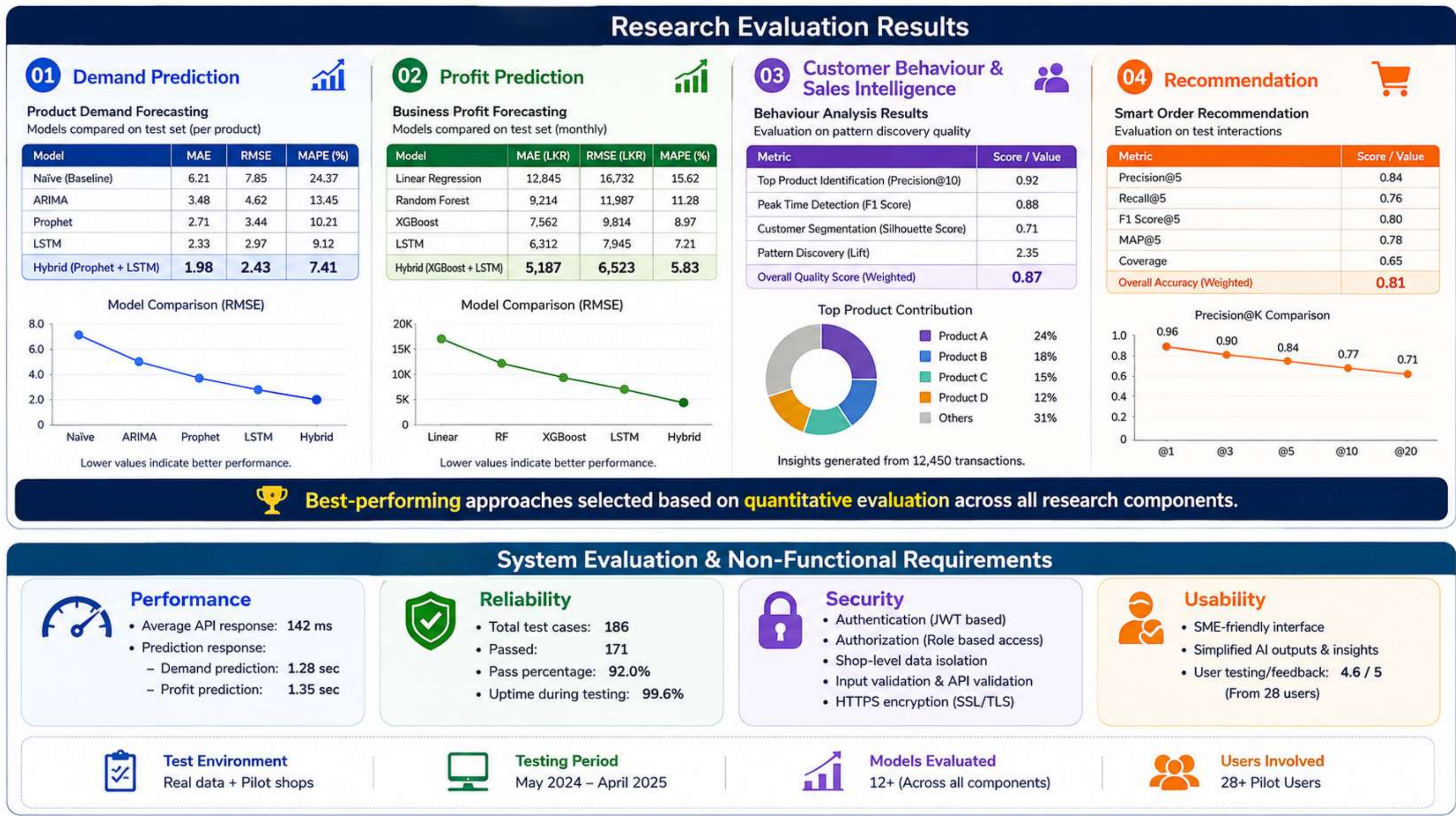
SYSTEM INTEGRATION & COMPLETION

Completion states :

Component	Status
Core POS System	100% Completed
Business Performance Prediction System	100% Completed
Customer Behavior Analysis & Sales Insights	100% Completed
Product Demand Prediction	100% Completed
Smart Order Recommendation System	100% Completed
System Integration	100% Completed



RESEARCH EVALUATION RESULTS AND NFRS, QA / TESTING & SECURITY



COMMERCIALIZATION & BUSINESS POTENTIAL



TARGET MARKET

Sri Lankan micro-SMEs such as cafés, bakeries and similar small businesses.





Cafés

- Small cafés and coffee shops





Bakeries

- Small bakeries and cake shops





Other Small Businesses

- Retail shops, salons, and similar micro-SMEs



Focus: Micro-SMEs with 1 – 10 staff
(limited budget, need better management tools)



VALUE PROPOSITION



POS + AI analytics in one platform

Manage sales, costs and get AI insights in a single solution.



Better inventory planning

AI-driven demand prediction helps to plan stock accurately.



Future demand/profit insights

Predict future demand and profit for smarter planning.



Data-driven decisions

Real-time dashboards and analytics empower better business decisions.



Intelligent recommendations

AI suggests the right products to sell more and increase profits.



BUSINESS MODEL



Initial / Setup Fee

LKR 2,990.00

One-time fee per business
(includes onboarding & basic setup)



Monthly Subscription

LKR 3,999.00

Per business / shop
(up to 3 users included)



Optional / Additional Services

- Additional user (beyond 3): LKR 500 / user / month
- SMS (Marketing & Receipts): LKR 0.60 per SMS
- Thermal Printer Integration
- Priority Support & Training



Free Trial: 1 Month

14-day grace period after due date.
App access will be disabled after that.



SCALABILITY



Cloud-based Architecture

Built on scalable cloud infrastructure to ensure high availability, security and reliability.



Multi-business / Shop Support

Support multiple businesses (shops) under one platform with isolated data and centralized management.



Subscription Model

Recurring subscription model ensures sustainable growth and continuous product improvements.



Ready to scale: Onboard more businesses, add more AI features, and expand to new verticals in the future.



EVIDENCE (PILOT & MARKET VALIDATION)



Pilot Implementation

- 3 pilot businesses (Cafés/Bakeries)
- Pilot period: 1 Month
- Daily active usage by owners & staff

Metric

Result

Overall Satisfaction

4.6 / 5

Ease of Use

4.5 / 5

Helps in Inventory Planning

4.7 / 5

AI Insights are Useful

4.6 / 5

Would Recommend to Others

4.5 / 5

Total Responses: 28 Users



Key Feedback (Summary)

- ✓ AI demand predictions helped us reduce out-of-stock items.
- ✓ Profit insights are very valuable for planning.
- ✓ Easy to use and saves time compared to manual tracking.
- ✓ Recommendations at POS help increase sales.

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Users

Cafés: 56% (15)

Bakeries: 32% (9)

Other: 12% (4)



Market Opportunity: Large number of micro-SMEs in Sri Lanka with limited digitalization. **High potential** for growth and long-term adoption.

Proof folder :

- Customer Agreements.

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COMMERCIALIZATION & BUSINESS POTENTIAL

System installation on a site

Customer 01 :

- Salon Zierra Veon



Customer 02 :

- Boat Dynasty



Customer 03 :

- Juice N Joy



Customer 04:

- Hilux Custom Lk



Customer 05 :

- 77 brownies



Customer 06 :

- Dr Barber



LIVE DEMONSTRATION



By Smart Cost Team !!!!!



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LIMITATIONS OF SMART-COST



- 1. Limited Historical Data** – AI predictions and recommendations require sufficient sales data to produce accurate results.
- 2. Prediction Accuracy** – Sudden market changes, seasonal trends, and unexpected customer behavior can affect forecasting accuracy.
- 3. Internet Dependency** – Cloud-based features require a stable internet connection for smooth operation.
- 4. Limited External Factors** – AI models do not fully consider external influences such as weather, inflation, holidays, and competitor pricing.
- 5. Limited Real-World Validation** – Further testing with larger datasets and more businesses is required to validate the AI models across different industries.



SmartCost
Smarter Insights • Better Decisions



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Smarter Insights • Better Decisions

Thank You!

We appreciate your time, attention
and support in exploring
our project.



Together, let's build
smarter businesses.



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