**ASSIGNMENT**

**LEVEL 5**

# COMP50001 : Commercial Computing

# Project proposal

**COM24A1_CYS24A1**

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**Group 06**


**INSTRUCTION TO CANDIDATES**

1. **Late submission will be awarded zero (0) unless extenuating circumstances (EC) are upheld.**
2. **Cases of plagiarism will be penalized.**
3. **The assignment should be submitted as softcopy via LMS**
4. **All evidences related to the sprint implementation in group assignment must be show cased in the final documentation.**

# Contents

# CHAPTER 01

## 01. Domain Study

### 1.1 Introduction to the Supply Chain Domain

Supply chain is the system of coordinated activities used to move products from suppliers to customers. This includes a series of activities such as procurement, manufacturing, warehousing, transportation, and retailing. Supply chain management is a tightly integrated system used to manage the business process of a large, fast-moving consumer goods company such as **Nestlé**.

Nestle's supply chain has a variety of activities ranging from global procurement, local production sites, regional distribution centres, as well as a nationwide network that serves both retail and small retail outlets. All supply chain functions rely on the accurate flow of information. Nestlé's supply chain has a planning function that affects all other activities in the supply chain. Activities include the level of production carried out in the various factories, transportation activities, and the availability of products in stores. The entire supply chain has other functions that work in conjunction with the branch described. These tasks include procurement planning, inventory management, and **demand planning**. The project described targets the branch known as "**Demand planning**", which acts as the predictive brain of the Nestlé supply chain. (Anon., n.d.)

### 1.2 Why Demand Planning is Critical

Demand planning is the process of predicting future product demand and aligning supply chain operations according to that. It takes existing sales history, market trends, and human insights and turns them into future predictions. In the FMCG environment, where the margins are so thin and the product lifecycles are short, small errors in estimation have large cost implications.

Accurate demand planning ensures:

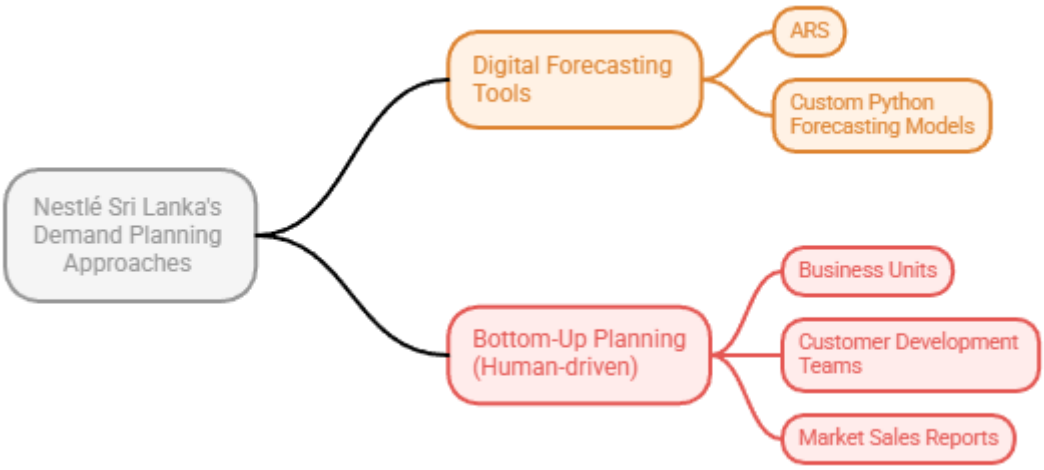
- Manufacturing runs match expected consumption
- Procurement avoids raw material shortages
- Warehouses hold optimal stock levels
- Retailers avoid stock-outs
- Expiry and wastage are minimized
- Service levels remain high

When demand planning fails to deliver as expected, the entire chain becomes reactive instead of being proactive. Issues such as excessive forecast demand leading to perishable items arise on one side. On the other hand, if demand is underestimated, the company loses customers' satisfaction. In companies like Nestle, revenue is proportional to forecast accuracy. (Anon., n.d.)

The current demand planning relies significantly on digital technologies and data-driven forecast models. Nonetheless, such technologies operate effectively only when provided with consistent and reliable sales data.

### 1.3 Current Demand Planning Processes

Nestle Sri Lanka utilizes a hybrid system, which includes the use of automated forecasting systems as well as human planning inputs.




**ARS Demand Sens**

"ARS" or "Automatic Replenishment Systems" is an enterprise-class solution that is essentially designed to help convert sales data into actual decisions around replenishments. "ARS" basically includes an engine that analyzes sales data continuously and tries to understand the patterns of sales demands, besides making recommendations accordingly.

"ARS tools work best in conjunction with live streams of POS (Point of Sale) data collected from large distributors and supermarkets. They are designed around structured digital input like SKU(product ID)-level sell-through, stock snapshots, and promotional indicators Using technologies like machine learning. Without regular updates of POS data, the ARS cannot fully detect the pulse of the market. (Anon., n.d.)

**Custom Python Forecasting**

Besides that, Nestle teams make use of their own custom python scripts for analytics pipelines. These programs analyze past history datasets and run statistical predictions based on moving averages, weighted averages, etc. Python offers a lot of scope for testing scenarios as well.

These systems are good for territory-level analysis. These systems are good for exception handling. However, like ARS systems, Python forecasting is wholly dependent on the quality of input data.

**Bottom-Up Human Planning**

Digital forecasts are supplemented by human intelligence gathered from field teams. Business Units (BU) and Customer Development Teams (CDT) provide market insights such as upcoming promotions, competitor activity, and local demand shifts. Market Sales Reports (MSR) summarize sales behavior and operational feedback.

Human inputs play an essential role in correcting purely mathematical forecasts. However, human planning is limited by visibility. If the underlying data is incomplete, even experienced planners cannot compensate fully. (Anon., n.d.)

## 1.4 Stakeholders in the Supply Chain

A supply chain refers to a shared community where an array of parties collaborate together to ensure every step goes correctly until the product is handed over to the customers. And those community called stakeholders. In the supply chain Stakeholders include:

- Procurement teams securing raw materials
- Manufacturing plants producing finished goods
- Warehouse and logistics operators managing storage and transport
- Regional distributors coordinating deliveries
- Sales representatives interacting with retailers
- Demand planners forecasting consumption
- Business Unit managers guiding strategy

If demand planners are too low on their estimates of future sales, manufacturing may make too little inventory, leading to downstream shortages. On the flip side, when sales teams fail to share this truth on the ground, planners have old assumptions to work with. This makes supply chain success hinge on synchronised sharing of information.

When narrowing focus to **Demand planning** specifically, additional actors become relevant:

- Territory sales managers
- Field execution teams
- Retail partners
- Analytics specialists
- Forecast validation teams
- BU performance analysts
- Inventory controllers
- Promotion planners
- Regional planners
- National supply chain leadership

All of these stakeholders make critical decisions that impact national product availability based on accurate demand signals.

## 1.5 Problem Statement

The majority of the country's sales are being generated from small independent grocery stores that function under the traditional market segment. These stores do not utilize digital POS systems, and therefore, the store sales/stock movement does not feed into the demand planning system.

This lack of information forms a critical need signal gap, and the demand planners are aware that distributor orders are being postponed instead of actual consumer purchases being made. Out-of-stock positions of goods in small stores do not get noticed until the sales revenue is lost. Surplus stock buildup takes place due to incorrect forecasting. Forecasts, at both the regional and national levels, become erroneous.

The end result is a supply chain that only reacts to symptoms and does not forecast demand. This is important since it has a direct impact on sales performance, business costs, and customer satisfaction.

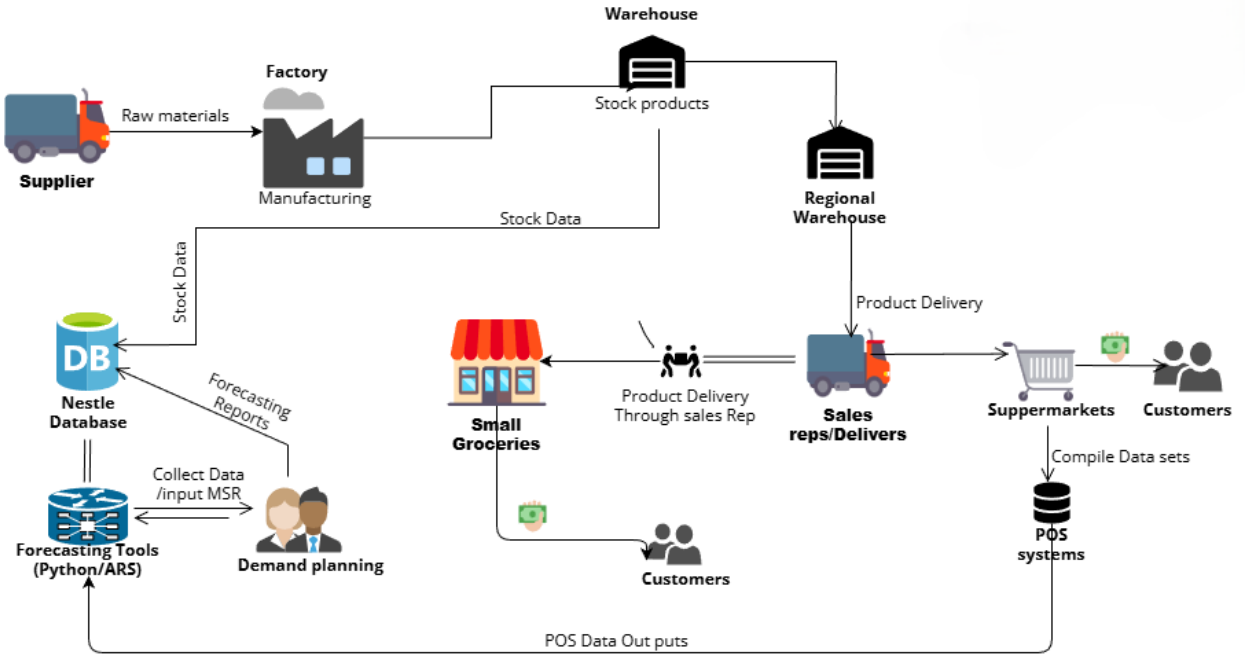
## 1.6 Scope of the Proposed System

This project is proposing a digital bridge between traditional trade and demand planning systems. The scope will be to design:

- A mobile app designed to help sales reps gather shop-level inventory levels and sales data.
- A web interface for the Business Units to monitor as well as generate ground-level data inputs to their current forecasting tools(Python program and ARS)

The system will not replace existing forecasting Tools at Nestlé. Rather, it will complement these forecasting tools by turning field observations into digital inputs. The motivation for this approach is to end the traditional small grocery trade data black hole and maintain compatibility with the current planning infrastructure

## 1.7 Nestlé Supply Chain Diagram



# CHAPTER 02

## 01. Data collection method

Data for the proposed system was collected using industry sessions and email-based questionnaires conducted with *Nestle Sri Lanka* representatives, along with supporting document analysis.

### 1.1 Industry Presentation and Q&A Session

Nestle representatives visited the university and delivered an industry presentation explaining their business operations, supply chain structure, and digital systems currently in use.

**During this session:**

- Nestle explained how sales and stock data are collected from retailers.
- They explain why demand planning is critical for them
- Nestlé explained how they currently do the demand planning
- What are the tools they use for demand planning, and how do they work?
- Students were given the opportunity to ask questions directly.
- Limitations in collecting real-time data from small retail shops were discussed.

**Key insight relevant to our problem:**

- Sales representatives collect retailer data using tables.
- Their Current demand planning tools depend on POS outputs from Supermarkets and large distributors
- Data collection from small retailers is not done daily.
- Real-time visibility is limited by how frequently sales reps visit outlets.
- No POS systems are used in small grocery shops

These insights directly highlighted the traditional trade data visibility gap.

### 1.2 Email-Based Questionnaires

After the industry session, follow-up questions were emailed to Nestlé. Responses were shared as consolidated, containing questions from multiple student groups.

Based on the responses received, only information relevant to the proposed system was extracted and analyzed to identify gaps in existing data collection processes.

**Questions and Findings**

**Q1. How are sales and stock data collected from retailers?**

- Data is entered by sales representatives using tablets.
- Information included in stock in/out, sales, and visibility.
- Data is collected *approximately once a month.*

**Q2. Is retailer sales data captured in real-time?**

- Data becomes real time only when the sales rep enters it.
- Actual data collection happens infrequently due to visit schedules.

**Q3. Do you verify sales data collected from retailers?**

- No technical verification is used.
- Data accuracy relies on agreements and trust between Nestle and retailers.

**Q4. How do Nestlé teams communicate operational information?**

- Communication is done via calls, emails, and WhatsApp groups.
- No centralized system exists for structured operational feedback.

**Relevance to our system:**

- Confirms reliance on *manual and delayed data collection.*
- Highlight lack of structured, frequent, and validated shop-level data.
- Support the need for a *dedicated sales-rep-based digital solution.*

## 1.3 Document Analysis

In addition to direct engagement, project-related documents and industry examples were reviewed.

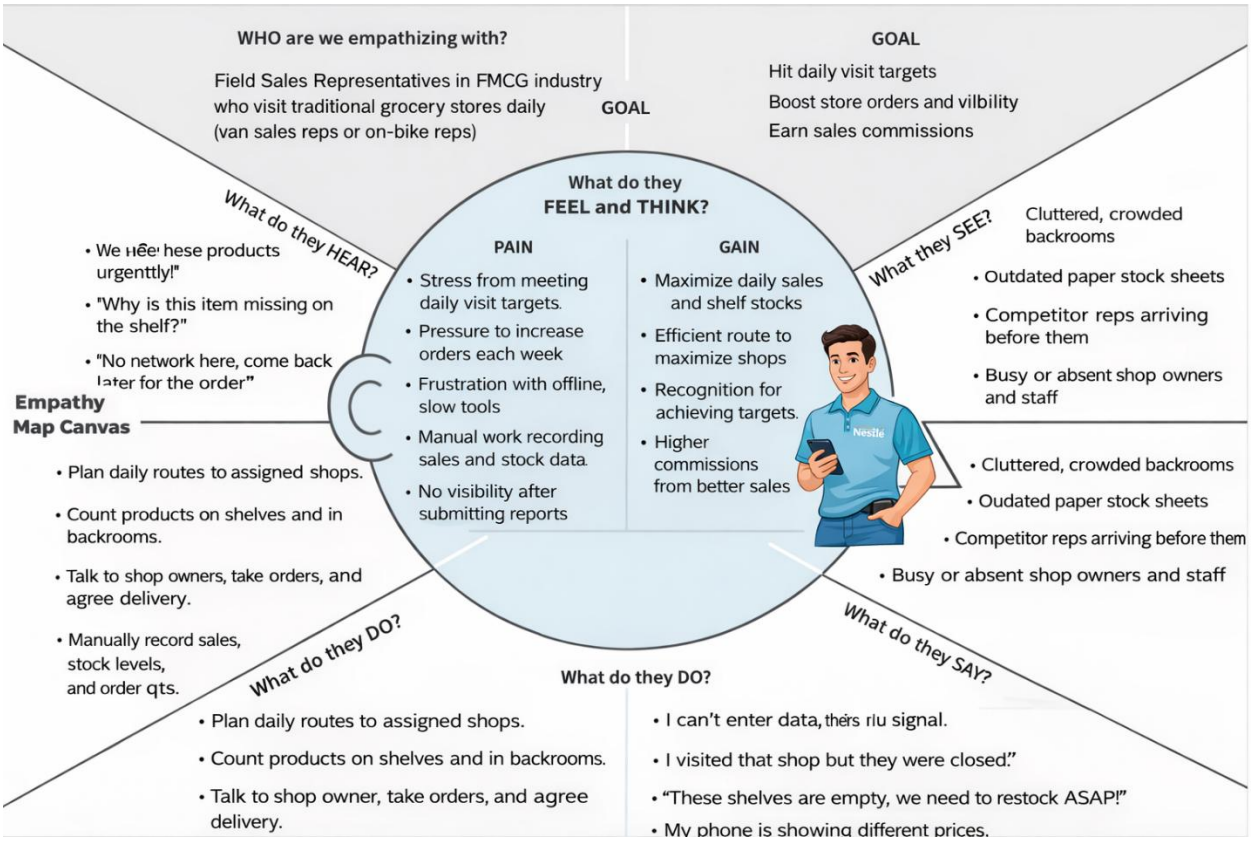
**This included:**

- Analysis of Nestle's responses on sales data collection and communication methods.
- Review of industry practices used by FMCG companies such as Unilever, Coca-Cola, and PepsiCo
- Identification of gaps in non-POS retail environments.

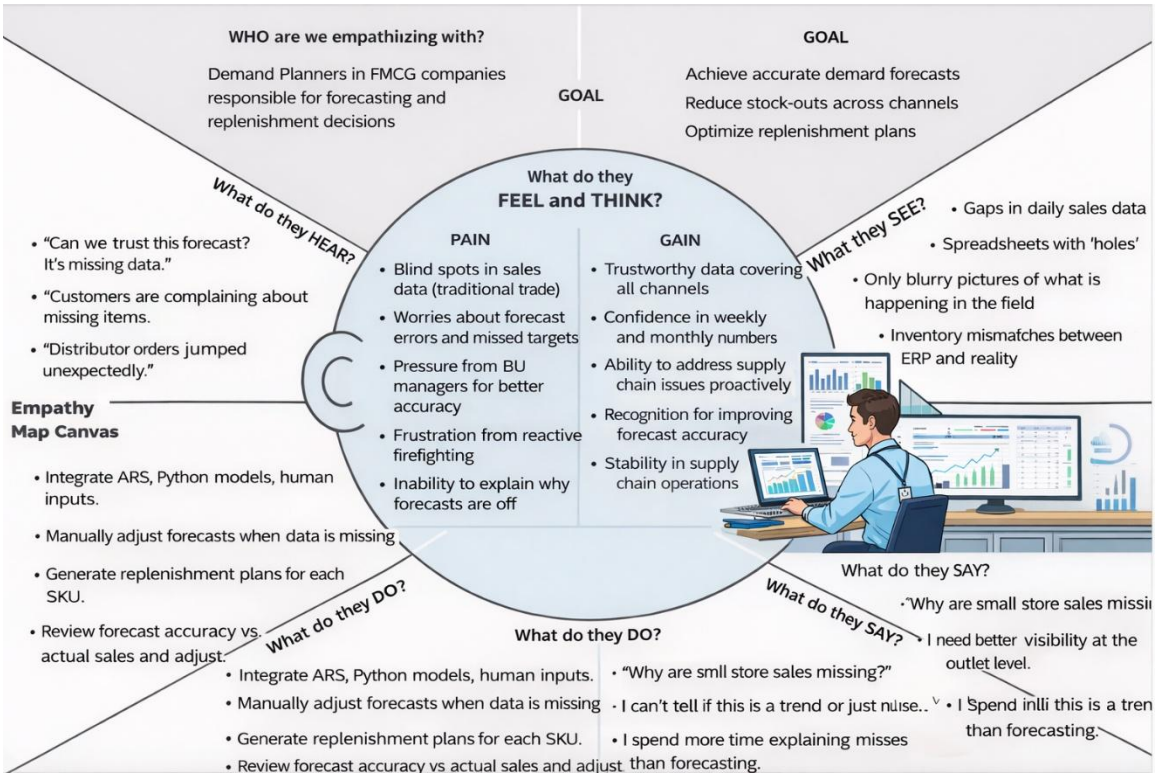
## 1.3 Empathy Map and User Personas

Empathy Map and User persona are other types of tools that are used during the design phase to better understand the genuine needs, interests, and annoyances associated with using a system before coming up with a system. Instead of basing their designs purely on hypothetical knowledge, these tools require one to interpret the actual behaviours associated with a system. In this particular project, we identified **Sales reps** and **Demand planners** as our core stakeholders, as they appear to be located at the core of every information flow between the field and the system. The former generates the information that has been obtained at the ground level, while the latter heavily relies on this information.

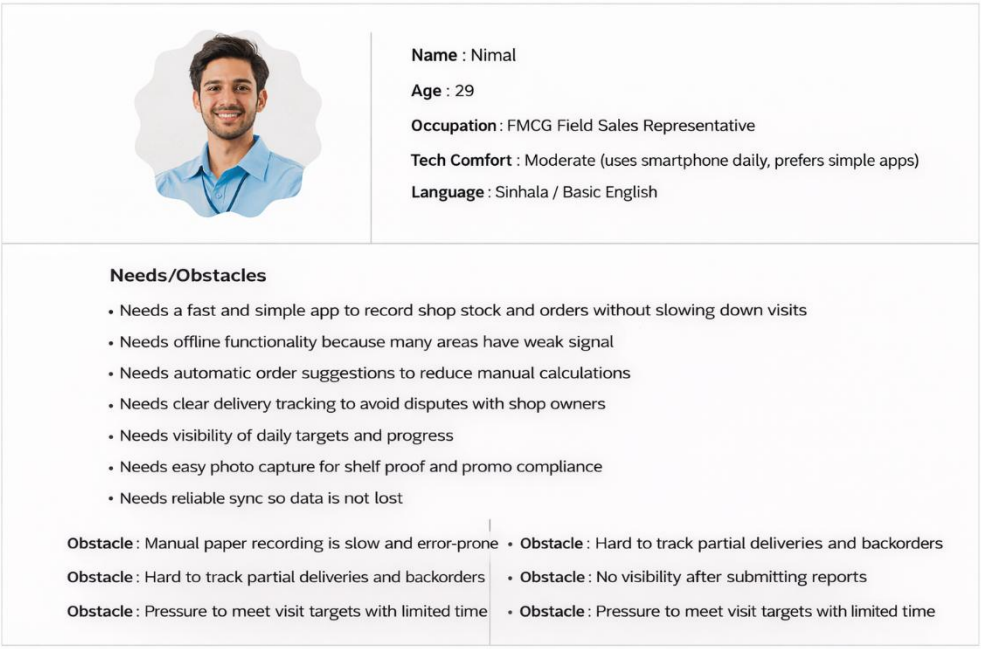
### Empathy map for Sales Reps



## Empathy map for Demand Planners:




## User persona 01:



**User Persona 02:**

**Name** : Sanjeewa

**Age** : 35

**Occupation** : Demand Planner at Nestlé

**Tech Comfort** : High (proficient with ERP, forecasting tools, Python)

**Language** : Sinhala / English

**Needs/Obstacles**

- Needs complete, clean sales data from all channels to generate accurate forecasts
- Needs ground-level demand signals from small shops
- Needs timely and reliable updates to make weekly/monthly adjustments
- Needs alerts for anomalies and exceptions in demand data
- Needs to export data to ARS and custom Python tools
- Needs POS-like data from traditional trade outlets, not just big retailers

**Obstacle**: Blind spots in traditional trade data hurt forecast

**Obstacle**: Delayed, fragmented field data is difficult to trust

**Obstacle**: Siloed ERP systems and discomected spreadsheets

**Obstacle**: Unable to identify reasons for forecast misses

- **Obstacle**: Blind spots in traditional trade data hurt forecast accu-
- **Obstacle**: Delayed, fragmented field data is difficult to trust
- **Obstacle**: Siloed ERP systems and disconnected spreadsheets
- **Obstacle**: Constant pressure from BU to hit impossible targets

## 1.4 Similar System Study

To justify the need for the proposed system, existing systems used in the FMCG industry were studied and analyzed

| System Name | Country | What the System Does | How the System Operates | Key Limitations / Deficit |
|---|---|---|---|---|
| SAP IBP (Integrated Business Planning) | Germany / Global | Enterprise demand forecasting and supply planning platform used by large FMCG firms | Uses historical sales data, statistical forecasting models, and scenario planning; exports structured datasets (CSV/API) to ERP systems | Expensive to implement, requires clean POS data; weak performance when traditional trade data is missing |
| Oracle Demantra Demand Management | USA / Global | Advanced demand forecasting and replenishment optimization tool | Uses predictive analytics and statistical modeling; integrates with ERP via structured data feeds | Complex setup, relies heavily on high-quality digital inputs |
| Blue Yonder (JDA) Demand Planning | USA / Global | AI-driven demand forecasting and supply chain optimization | Processes POS feeds, inventory data, and promotions; generates exportable planning datasets | Requires mature IT infrastructure and consistent data streams |
| Unilever – Sales Force Automation (SFA) | Global | Captures outlet-level stock and execution data from traditional trade | Sales reps use mobile workflows during visits | Focuses on execution, not forecasting; high customization cost |
| Coca-Cola – Field Sales Mobility System | Global | Tracks outlet visits and stock availability | Manual data entry by field teams | Offline reliability varies; data quality depends on rep discipline |
| POS-Based Retail Systems | Global | Generates real-time transactional sales data usable for forecasting | Automated POS machines capture transactions and export structured sales files | Not adopted by small grocery stores in traditional trade |
| Spreadsheet-Based Reporting Systems | Sri Lanka | Manual sales tracking used as ad-hoc forecasting input | Field teams enter data after visits | Error-prone, delayed, not scalable for forecasting |

### 1.5 Summary of Data Collection

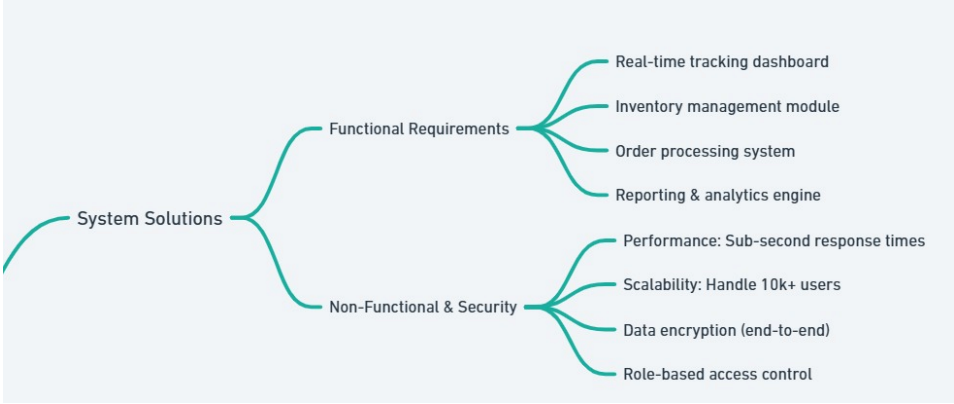
The data for the proposed system were collected through an industry presentation, email-based questionnaires with Nestle Sri Lanka representatives, and analysis of documents provided. The industry session shed more light on the process of collecting sales data as well as stock levels of small retailers. From the presentation session, it was clear that the process of collecting data is mostly manual and less frequent through the sales representatives of companies. This session also shed more light on the absence of POS data gathering in traditional trade stores. Through the email questionnaires with the industry professionals of Nestle Sri Lanka, it was confirmed that data collection occurs on a monthly basis through tablets for the company; the process lacks technical verification of the data; data collection mostly relies on the data provided by the shop owners; and the process lacks the usage of central data for structured operational feedback. Moreover, it was evident that FMCG companies also lacked data visibility of shop level data and demand through the data collection process conducted; hence the entire process confirmed the proposed system's requirements.

## 02. Mind Map

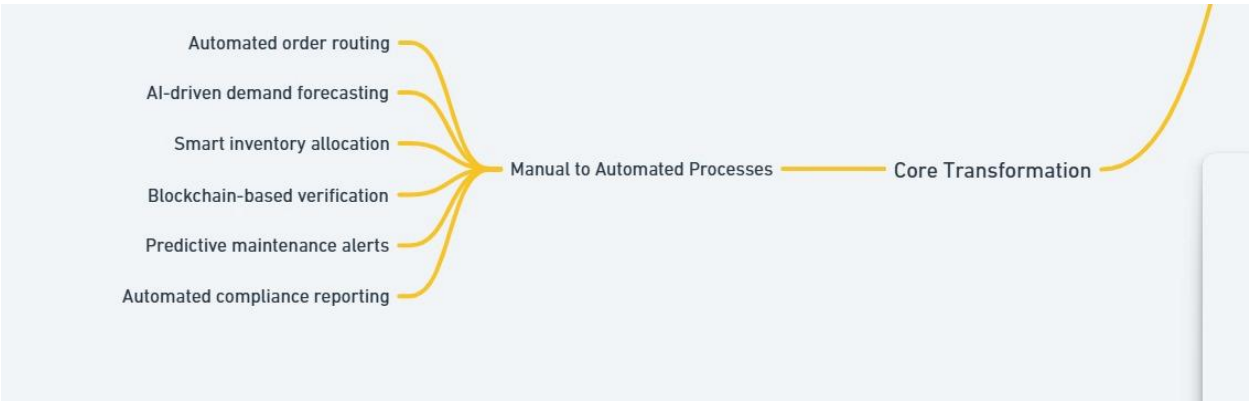
### 2.1 Overall Mind Map

## 2.2 closeup I:

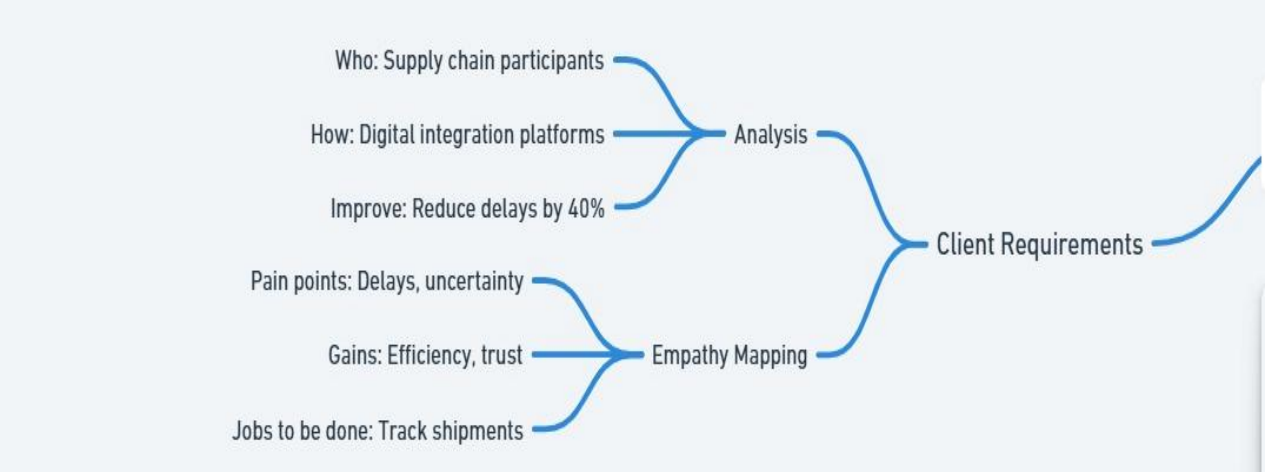

## 2.3 closeup II:




## 2.4 closeup III:



## 2.5 Closeup IV:




## 2.6 Closeup V:

# CHAPTER 03

## 01. Project Requirements

### 1.1 Justification of Project Requirements

Ultimately, the domain study, stakeholder analysis, empathy maps, and user personas asserted the significant disconnect that existed between Nestle Sri Lanka's demand planning needs and the outlet level data available through traditional trade data sources. For the demand planning staff who need structured and reliable data sources that can be input into forecasting models like ARS or Python analytics solutions, the sales staff currently utilize disjoined manual recording processes that cannot be read by machines.

Within the empathy analysis, we see that sales representatives are faced with operational pressure, less time for each visit, lower network connectivity, and are frustrated with paperwork. Meanwhile, demand planners are challenged with data sets being incomplete, blind spots within forecasts, and are in constant need to react to changes. As a whole, these points bring us to realize the need for a system that does not increase overall workload, interprets the data collected, and ultimately works well within existing infrastructure.

Therefore, the project requirements focus on three priorities:

1. Digitizing real-world sales rep workflows and Collect ground Level Data.
2. Generating POS-like structured data for forecasting.
3. Providing visibility, Demand insights, and validation for planners.

The system must support both operational efficiency and data quality, ensuring it serves the needs of field users and decision-makers simultaneously.

### 1.2 Overview of Proposed Solution

The solution will be proposed as a two-layer digital platform:

- A mobile application used by the sales representatives during shop visits.
- Web-based dashboard utilized by Business Units and demand planners that connects with mobile app

Instead of digitizing small retailers directly, this system digitizes the existing sales visit workflow. Sales reps record stock levels, deliveries, and execution data as part of their routine tasks. In turn, this information is uploaded to a central platform where it's validated, aggregated, and subsequently exported in structured formats compatible with ARS systems and custom Python forecasting pipelines. It acts as a data bridge between each of those and traditional trade and enterprise planning systems.

## 1.3 Requirement Traceability Matrix

### Functional Requirements

Functional requirements describe what the system must do to meet stakeholder needs.

| Req ID | Requirement | Features that Satisfy It | Technical Implementation | Feature Flow Summary | Why It Satisfies Requirement |
|---|---|---|---|---|---|
| FR1 | Identity & territory control | Rep login, role system, assigned outlets, QR shop identity | Token authentication + territory DB mapping | Login → validate → load territory → tag all records | Ensures clean attribution & accountability |
| FR2 | Route planning & visit execution | Today's outlet list, map routing, visit timer, skip reasons, QR check-in, GPS logging | Route engine + session tracking + GPS soft validation | Load route → scan shop → start visit → record → close | Converts visits into measurable events |
| FR3 | Shelf & stock capture | SKU checklist, OSA capture, backroom stock, expiry flags, OSA issue auto list | Local SKU master + structured JSON storage | Select SKU → mark shelf → enter stock → flag issues | Creates demand signal layer for forecasting |
| FR4 | Smart ordering & delivery tracking | Smart order suggestion, case pack rounding, MOQ warnings, repeat order, signature confirmation | Order engine formula + validation rules | Suggest order → confirm → deliver → log status | Reduces human error & preserves flexibility |
| FR5 | Lorry stock lifecycle tracking | Start-day load, van dashboard, full/partial delivery logic, return workflow | Local inventory ledger synced to central DB | Load stock → deliver → deduct → return → reconcile | Tracks real supply movement |
| FR6 | Promotion & merchandising capture | Promo library, compliance checklist, promo toggle, planogram checks, POSM tracker, photos | Promo metadata sync + image compression | Select promo → mark compliance → attach proof | Adds contextual non-POS signals |
| FR7 | Market intelligence capture | Competitor price logging, new competitor product capture, feedback notes | Tagged structured metadata records | Capture insight → attach shop/time tag | Provides demand context beyond sales |
| FR8 | Offline-first operation | Local database, sync engine, error recovery | SQLite cache + retry queue | Capture offline → auto sync → confirm | Guarantees field reliability |
| FR9 | Daily reporting & export from rep app | Daily summary, CSV export, progress tracking, lock day | Structured export schema | Close day → generate export → sync | Converts raw visits into datasets |
| FR10 | Admin monitoring & approval | Visit tracking, order monitoring, van stock tracking, approval dashboard | Rule-based anomaly detection | Receive data → flag → approve → store | Ensures trusted dataset |
| FR11 | POS-style dashboards | Sales trends, service level metrics, stock snapshots | Aggregated analytics engine | Aggregate approved data → display KPIs | Mirrors POS-style planning feeds |
| FR12 | Non-POS insight dashboards | OSA %, promo compliance, return rates, competitor tracking | Overlay analytics models | Merge execution + sales signals | Explains forecast drivers |
| FR13 | ARS/Python integration exports | CSV, JSON API, XML option, export schemas | Data normalization layer | Select range → generate → download | Enables external forecasting |

| Req ID | Requirement | Features that Satisfy It | Technical Implementation | Feature Flow Summary | Why It Satisfies Requirement |
|---|---|---|---|---|---|
| FR14 | Forecast sanity module | Moving average, weighted average, promo simulation | Lightweight statistical engine | Select SKU → compute → compare | Validates dataset behavior |
| FR15 | Context-based insights | Overlay charts (OSA vs sales, promo vs uplift, etc.) | Multi-variable correlation engine | Generate drivers report | Helps planners interpret demand |
| FR16 | Alerts & operational action lists | OSA alerts, backorder alerts, rep discipline alerts | Rule-based alert engine | Scan data → flag anomalies | Turns insights into action |
| FR17 | Audit & security controls | Activity logs, backups, sync monitoring | Role-based access + logging layer | Record every system action | Maintains governance & trust |

## Non-Functional Requirements

| Req ID | Requirement | Supporting Features | Technical Approach | Why It Matters |
|---|---|---|---|---|
| NFR1 | Usability | Fast UI, large buttons, SKU search, favorites | Optimized mobile UX | Supports time-pressured reps |
| NFR2 | Performance | Local caching + lightweight processing | Edge processing architecture | Works on low-end phones |
| NFR3 | Reliability | Offline persistence + sync queue | Fail-safe sync engine | Prevents data loss |
| NFR4 | Security | Role login + encryption | HTTPS + token auth | Protects corporate data |
| NFR5 | Scalability | Cloud modular backend | API microservice design | Supports national rollout |
| NFR6 | Data integrity | Mandatory validation + schema checks | Structured record enforcement | Clean forecasting inputs |

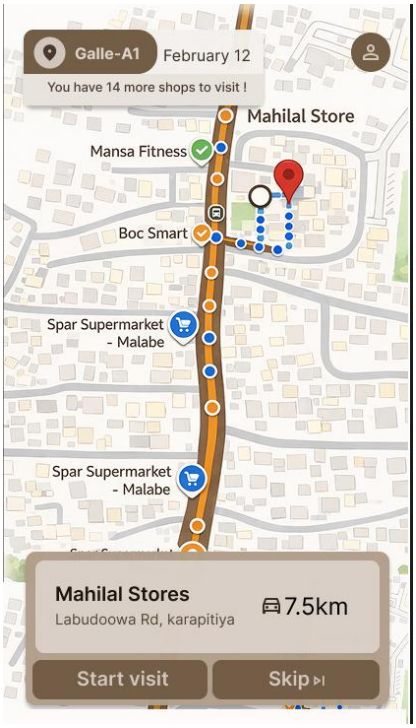
# CHAPTER 04

## 01. Core Feature Justification

The proposed system has numerous operational features; however, it has a limited number of features that address the fundamental problem introduced in Chapter 1: the unavailability of dependable and formalized demand signals from traditional trade channels. To define the core features of a system is to refer to those features developed by the system that have the potential to mitigate the data black hole problem, increase the accuracy of data, or speed up decision-making for demand planners. Accordingly, the **core features** introduced below have all been chosen as they address specific imperatives of the prevailing SC process that have the potential to add value to Nestlé's demand planning process.

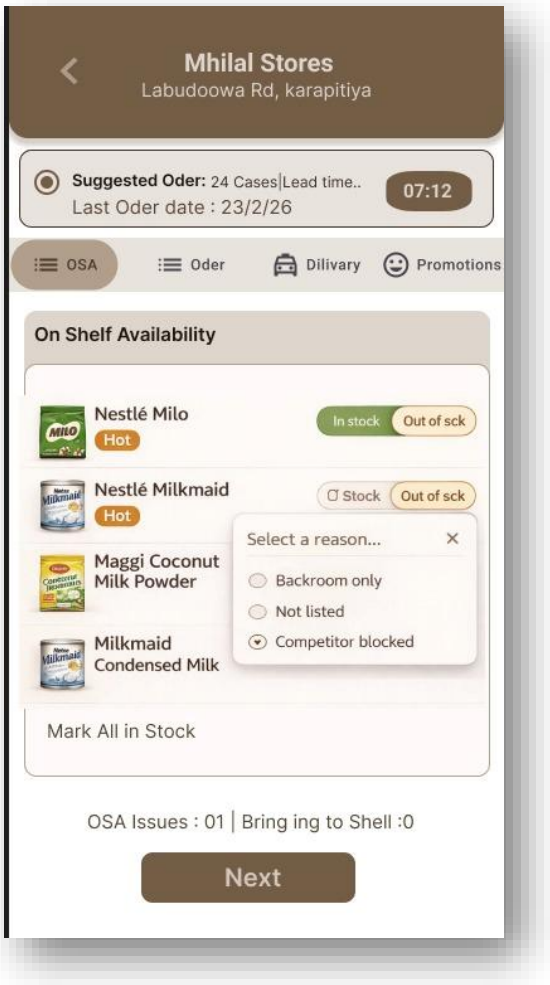
### 1.1 Core Feature 01: Route Planning & Visit Execution

The primary reason traditional trade demand data is missing is inconsistent outlet coverage caused by time pressure and inefficient routing. Demand planning depends on frequent and structured shop visits, but manual route decisions lead to skipped outlets and delayed data capture. The route planning feature solves this by automatically organizing assigned outlets into an optimized, nearest-first sequence and guiding the sales representative through a disciplined visit workflow. Each visit is digitally tracked using QR check-in, GPS timestamps, and visit status logging, converting physical field activity into measurable system events. Even in offline mode, the route remains accessible, ensuring uninterrupted operation in low-connectivity areas. By improving time management and guaranteeing systematic outlet coverage, this feature increases the volume and reliability of field data, directly strengthening the demand signals used by forecasting systems.



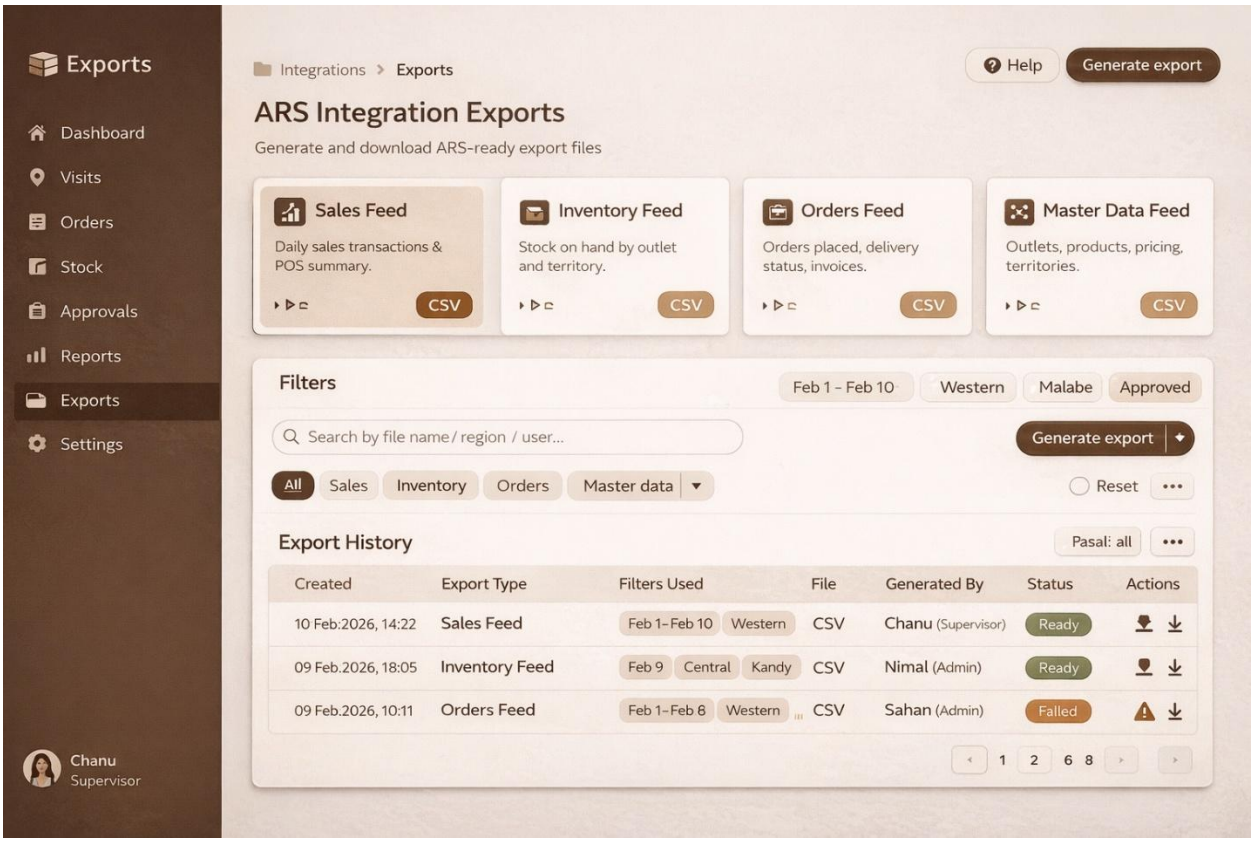
## 1.2 Core Feature 02 : Structured Field Data Collection

The core problem that the domain study identified is the lack of systematic demand signals from traditional trade, and this feature addresses it squarely by digitizing shelf checks, order capture, delivery handling, and promotional execution in one workflow. Rather than relying on memory or paper notes, sales representatives capture on-shelf availability, backroom stock, expiry problems, and order quantity via guided SKU checklists that convert observations to standardized data. Smart order suggestions, case-pack validation, and confirmation of delivery ensure that every transaction reflects actual stock movement rather than rough estimates. Promotion compliance and merchandising checks add context to explain the demand fluctuations. Technically, each entry gets stored as structured records tagged with outlet, SKU, time, and territory, and can thus be transformed into a forecasting-ready dataset instantaneously. By digitizing everyday shop interactions into clean digital signals, this feature forms the core data pipeline feeding the ARS systems and custom demand analytics.



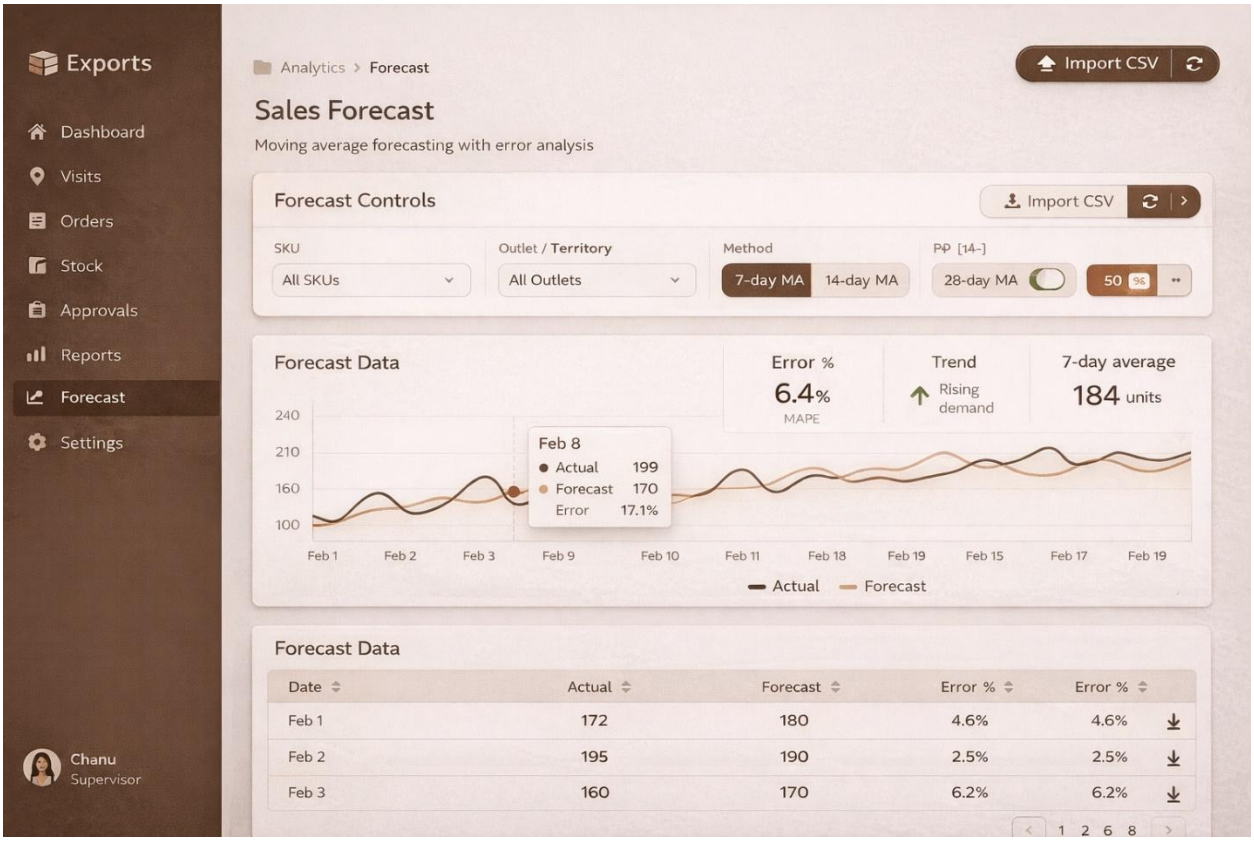
## 1.3 Core Feature 03: ARS Integration Exports

The ultimate purpose of the system is not only to collect field data but to transform it into forecasting-ready datasets that can be consumed by existing ARS tools and custom analytics programs. Without a structured export mechanism, the collected data would remain operational noise rather than becoming a demand signal. The ARS export module solves this by converting approved datasets into standardized formats such as CSV flat files, JSON API feeds, and optional XML exports. The interface allows administrators to generate four export types: sales feeds, inventory snapshots, orders feeds, and master data feeds, each aligned with common forecasting schemas. The UI is designed as a clean export dashboard where users select filters such as date range, territory, and approval status before generating files. Export history is logged, showing file type, creator, timestamp, and status, ensuring audit transparency. By bridging the gap between field execution and enterprise forecasting platforms, this feature directly closes the traditional trade data black hole and makes the system practically usable in real ARS environments.



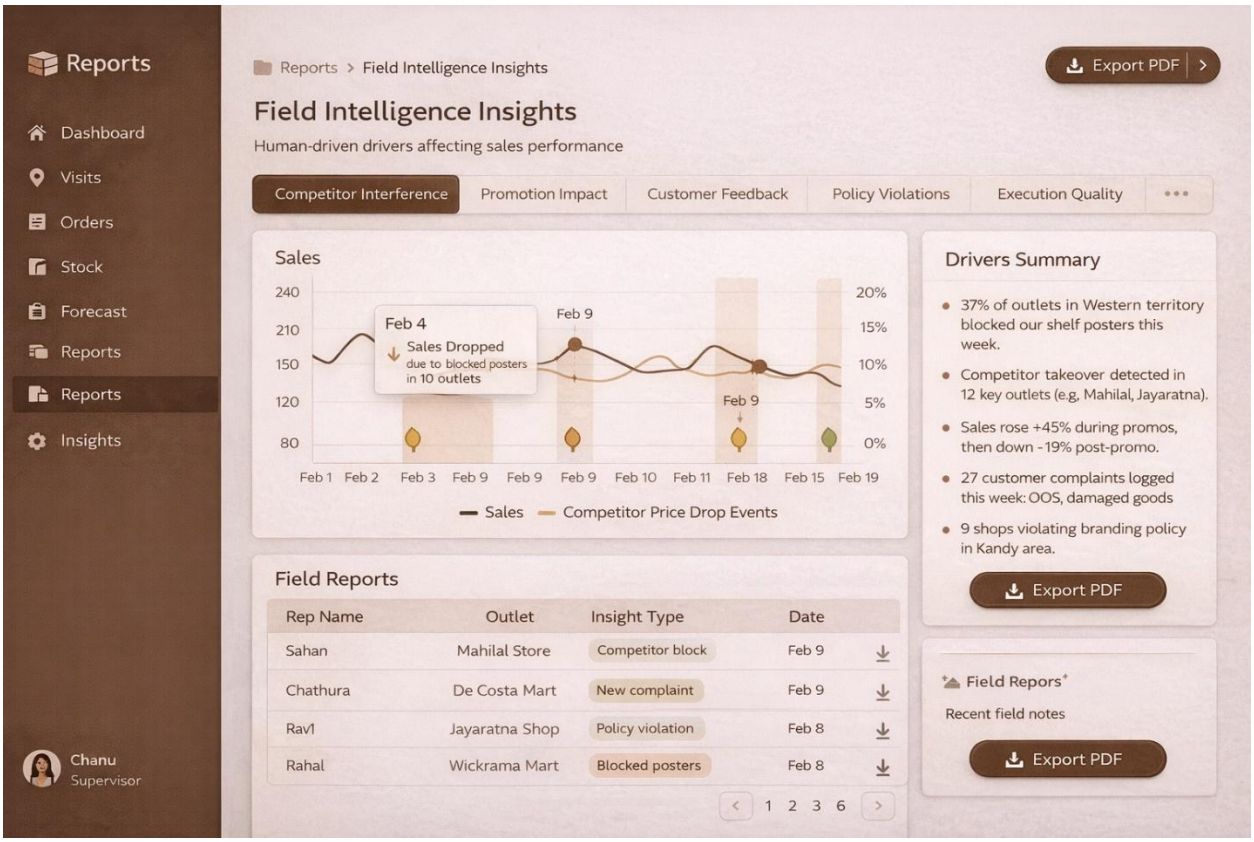
## 1.4 Core Feature 04: Forecast Validation Module

The absence of trusted data from traditional trade creates uncertainty for demand planners, and this feature exists to prove that the newly captured dataset behaves like real forecasting input. It is not designed to replace enterprise demand planning systems, but to validate that the exported signals are consistent, predictable, and usable. The module applies simple statistical methods such as 7-, 14-, and 28-day moving averages and weighted averages to estimate short-term demand. The interface allows planners to select SKU and territory filters, visualize forecast vs actual performance, and view error metrics such as percentage deviation. A promo multiplier toggle simulates demand uplift during promotional periods, helping planners test "what-if" scenarios. The UI presents forecast curves, trend indicators, and error analysis in a clear dashboard, enabling quick evaluation of data quality. By demonstrating that field data produces stable forecasting patterns, this feature provides confidence that the system can feed real ARS pipelines and support informed decision-making.



## 1.5 Core Feature 5 : Context-Based Forecast Insights (Non-POS Assisted)

The system is meant to be more of a decision-support-type window for forecast insights based upon the context of the data, as opposed to an automated forecasting engine. It consists of an overlay chart that is used to view the comparison between key operational drivers such as OSA(On shelf availability) drops vs. sales drops, backorders vs. sales dips, execution of promotions vs. sales uplifts, competitor pricing changes vs. sales fluctuations. Ultimately, the resultant forecast is delivered as a simple drivers report that is meant to summarize the data in an easy-to-consume fashion with the option of exporting the data to PDF or CSV.

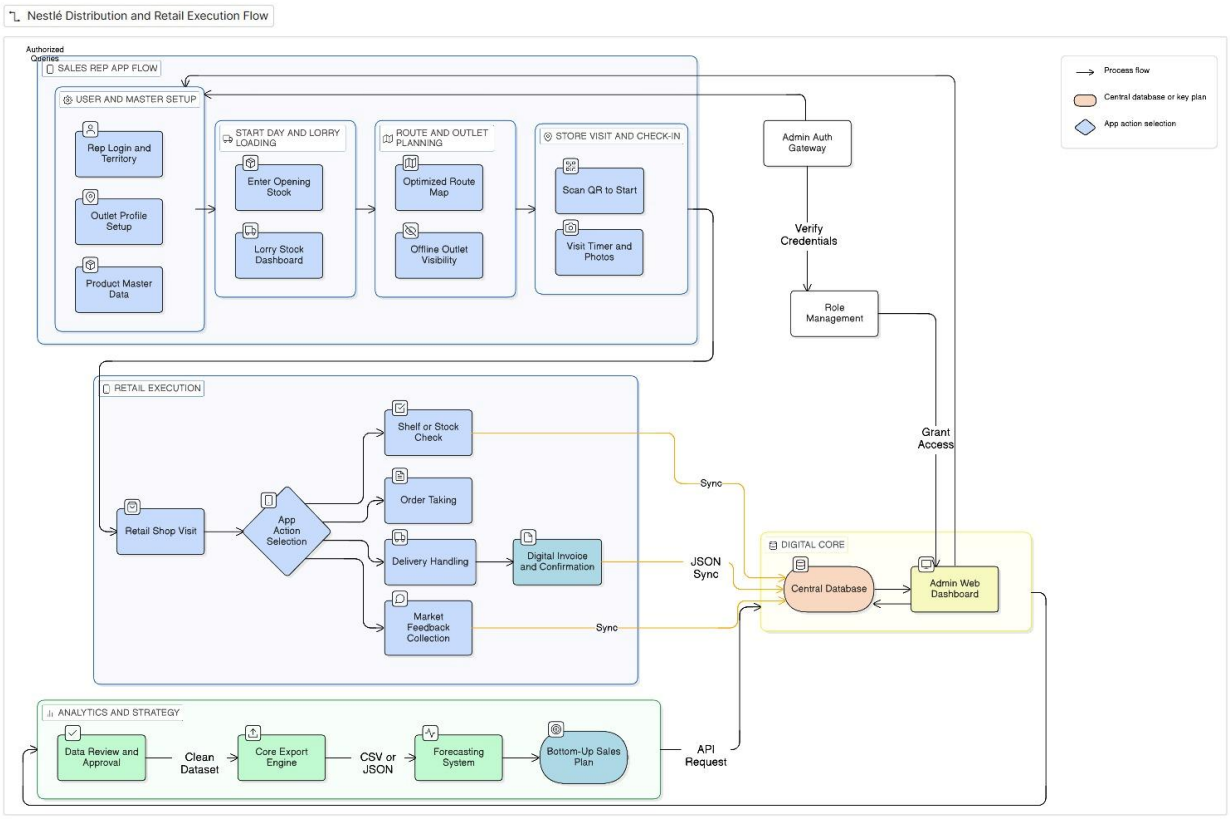


# CHAPTER 05

## 01. Project Charter

| | |
|---|---|
| Project Name | Nestlé Traditional Trade Demand Signal Platform |
| Date | 11th of FEB 2026 |
| Stakeholders | Project Owner: Dr. Tharanga Peries Academic Supervisor / Lecturer Demand Planning Team (Nestlé BU) Sales Representatives (Field Users) Regional Sales Managers System Development Team Data Analysts / Planners IT Infrastructure Support Quality Assurance Team |
| Expected Start Date | 20th of FEB 2026 |
| Expected Completion Date | 30th of MAY 2026 |
| Project Details | The project aims to design and prototype a digital platform that captures structured demand signals from traditional trade outlets where POS systems are not available. The solution consists of a mobile application for sales representatives and a web-based dashboard for demand planners and Business Units. The platform converts shelf checks, stock movement, orders, and execution data into forecasting-ready datasets that can integrate with Automatic Replenishment Systems (ARS) and custom Python analytics tools. By closing the traditional trade data gap, the system strengthens demand planning accuracy, improves supply chain visibility, and enables proactive decision-making. |
| Vision | We envision a supply chain ecosystem where even the smallest retail outlet contributes real-time digital demand signals, allowing Nestlé to operate with complete market visibility and data-driven forecasting across all trade channels. |
| Success Criteria | Successful deployment of mobile and dashboard prototypes Accurate capture of outlet-level demand signals Generation of ARS-compatible export datasets Demonstration of forecasting validation module 95%+ data synchronization reliability Positive usability feedback from simulated sales rep testing |
| Risks | Resistance to adoption by field sales representatives Data quality depends on disciplined usage Offline synchronization challenges Integration complexity with external forecasting tools Training requirements for new workflows and API configurations |

## 02. Overall System Diagram




## 03. Moscow Technique

| MUST HAVE | SHOULD HAVE | COULD HAVE | WON'T HAVE |
|---|---|---|---|
| ✔ Route planning & visits | ✔ Promotion capture | – Context forecast insights | ✘ AI forecasting |
| ✔ Shelf & stock capture | ✔ Admin dashboards | – Advanced analytics | ✘ IoT shelf sensors |
| ✔ Smart order logging | ✔ Forecast validation | – Competitor intelligence | ✘ Full ERP integration |
| ✔ Offline operation | ✔ Lorry stock tracking | – Drivers comparison charts | ✘ EDI enterprise connectors |
| ✔ ARS export (CSV/API) | ✔ Alerts system | – Extended audit history | |
| ✔ Data validation | | | |
| ✔ Login & territory control | | | |

# 06. Overall Project Summary

This project fills an critical structural gap within the trade demand visibility offered traditionally. Naturally, supermarkets now have POS data, and yet the majority of market demand continues to be invisible due to the lack of digitalization in small-scale stores. By digitalizing the processes of the sales representatives, the proposed platform would effectively provide structured forecasting.

The system does not replace existing enterprise planning solutions but adds value to these solutions by filling the gap of the data bridge between the field and forecasting systems. Key features of the system include disciplined outlet coverage, structured stock capture, export-ready data sets, and validation dashboards. This creates the necessary intelligence for the supply chain.

The proposed solution is realistic, scalable, and consistent with actual FMCG practices. Furthermore, it has highlighted the ability of new digital tools to ensure better information, improve forecasting, and therefore better decision-making in terms of supply chain intervention in a developing environment.

# References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