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1 Introduction

1.1 Introduction to Topic

Small businesses shops, retail stalls make a very important branch of the economy of most developing states, including Nepal. But great numbers of these businesses are still dependent upon hand record-keeping, handwritten ledger, or unofficial notebook, to record credit sales, dues, payments and any other financial transactions. Human errors, the absence of standardization and poor availability of data plague such practices and hence the inability to control customer credit and evaluate the performance of business accurately. As more smartphones and mobile payment systems are penetrated, it is a better time to create a customized system to use by Nepalese small businesses (Khanal, 2025). The contribution of MSME or SME to the Nepalese economy is high. It contributes 80% of the employment, 70% of the gross value of exports and 90% of industrial GDP (Madan, 2020).

Hisab Khata is a project that is meant to create an elaborate digital credit and transaction management solution, which incorporates mobile applications and an administration web interface that will allow tracking credit and digital payments, analytics, and other innovative capabilities to bridge the gap between the old business model and the new fintech-based model of operation.

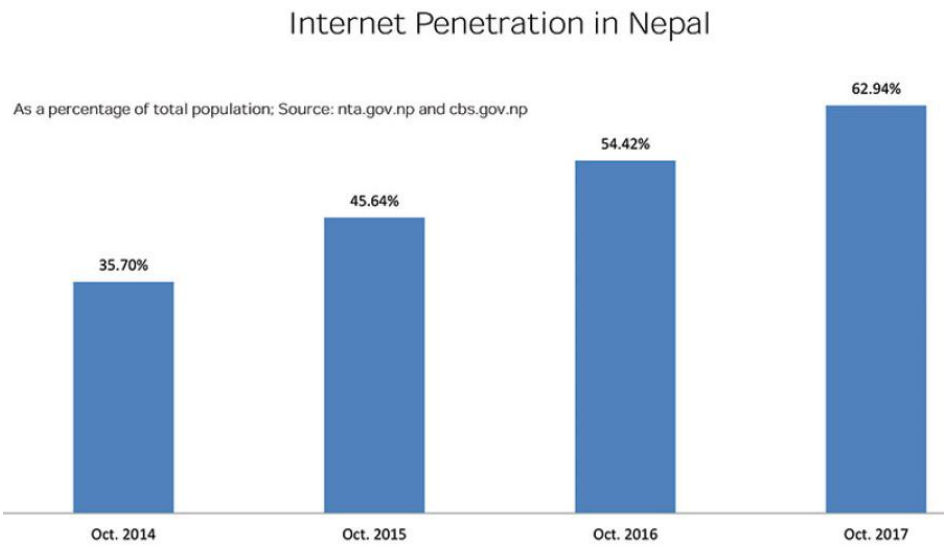

Figure 1: Internet Penetration in Nepal

Market context of digital transformation

1.2 Problem Scenario

Small businesses in the Nepal face significant challenges with their credit and Transaction management practices.

- **Manual Record-Keeping leads to errors:**
  - Paper-based records are used by many small firms. These are handwritten ledgers or spread sheets, which can be lost or misplaced, or contain errors or inconsistencies. Empirical research on SMEs around the world indicates that many of them do not keep proper accounting records (Qubbaja & Talahmeh, 2020).

- **Lack of transparency in credit which creates distrust:**
  - Without an official or shared system both customer and business shopkeepers may disagree about the current balance, transactions history, payment history and due amount and vice versa.

- **Manual payment collection is time consuming:**
  - The process of collecting payments either in cash or tracking partial payment manually is time consuming and inefficient.

- **Business insights are not-existent:**
  - Traditional record-keeping rarely provides proper information: e.g. total outstanding dues, who owes most, income vs expense breakdowns, or trends over time, and business owners can hardly make data-driven decisions.

- **Digital payment integration gap:**
  - Although digital payments are becoming popular in Nepal. A large number of small businesses in Nepal are not integrating it appropriately into their credit systems. The trend in Nepal with the increasing use of fintech among SMEs is a sign that the adoption is increasing, however, there are gaps in the adoption because of trust, literacy and infrastructure (Manoj Kumar Chaudhary et al., 2024).

1.3 Project as a Solution

These are some solutions to overcome the problems:

- **Digital transaction management:**
  - All credit and payment transactions are digitally recorded in real time, and this removes the errors of manual recording.

- **Transparent customer access:**
  - Customers have access to their own dues, payment history and transaction statements directly via their own mobile application and this means that misunderstandings are minimized and trust is established.

- **Digital payment integration:**
  - Integration with common Nepal payment gateways (e.g. Khalti and eSewa) to make integration of digital payments straightforward and avoid the use of cash.

- **AI powered efficiency :**
  - An automatic receipt scanning (photo) or voice-based data entry to accelerate the recording of transactions and reduce manual efforts.

- **Business intelligence dashboard:**
  - Analytics designed to allow shopkeepers to have a simple view of total outstanding dues, customers with highest/lowest dues, income and expenses, and business health overtime.

- **Loyalty point reward system:**
  - Encourage timely paying and frequently paying customers by Gazab Customer Points to build customer trust.

- **Localization for Nepal:**
  - The entire interface including currency, words, UI design, data and even dates are localized for Nepali users.

2 Aims and Objectives

2.1 Aims

The primary aim of the Hisab Khata is to develop a mobile-first digital credit and transaction management platform that enables small businesses in Nepal to efficiently track, manage, and collect credit transactions while providing complete transparency to customers.

2.2 Objectives

2.2.1 Functional Objectives

- To enable businesses and customers to record transactions and due.
- To allow customers to view their payment, transactions, and pay through the system.
- To develop Real-Time communication features between business and customer.
- To enable generation and download statements as PDF
- To provide admin function for user management, support and system monitoring.
- To provide a user-friendly interface that is easy to use and understand.
- To build AI powered mobile application for both shopkeepers and customers.

3 Expected Outcomes and Deliverables

3.1 Hisab Khata Mobile App (Flutter)

- **Key Features for business users:**
    - **Transaction Management:** Business/Shopkeeper has the capability of recording normal and due transaction. He/she can view the total pending due to the corresponding in the customer dashboard. Business users can also view, filter and search the entire transaction history and make the customer payments.

    - **Customer Management:** Business can request or accept the request from new customers to connect with them. They can quickly search for connected customers by their name, ID or email. They can view individual customer profile and their complete transaction with the business. The real time chat with customer feature is also there.

    - **Dashboard and Analytics:** Business users can see the sum of all outstanding amounts or total due overview. They can also see the total list of customers with their current pending and paid balance. They can identify the highest due customer and lowest due person. They can see all the analytics like expense vs income chart, paid vs pending amount chart etc. They can customize their profile, which can be easier for the customer to figure out the shops.

    - **Other Advance Features:** If the transaction is huge and can take time then the business user can scan a photo of receipt, and the system will automatically fill the transaction details. Also, if the business user is busy but need to add a transaction fast then there is a feature of (Chharito-Hisab) transaction through voice. They can send payment reminders to the customers or whole users. They can download PDF which contains overall monthly statistics. There is a feature of AI chat bot (Byapar d-AI). Business can switch to Hybrid account which is the combination of both business + customer. They can raise tickets if any issue happens.

- **Key Features for customer users:**
    - **Core Features:** Customer can see their personal dues with one or multiple businesses or shops. They can accept or send requests to businesses to connect with them. They can see the transparent history of all transactions with associated business. There is a digital payment option in app through which customers can directly make digital payment. They can have real time chat with the business users. Favorite business option is also available.

    - **Advance Features:** Customers get Due reminder notification. They can download complete transaction statement PDF. Customer can upgrade to Hybrid account which is a combination of both business and customer account. Loyalty point (Gazab Customer Point) is there which helps business accounts to trust the customer more. They can customize their profile. They can raise tickets if any issue happens.

- **Deliverable Format:**
    - APK file for android installation

3.2 Hisab Khata Admin Web Panel (Django Templates)

- **Key Features:**
    - **User and System Management:** Admin users can monitor overall platform statistics like number of business/customers, active users, total transactions etc. and many more. They can manage Business owner by setting them verified or not verified. Admins also can activate and deactivate any users. They can manage and view customer accounts across the platform. Admin can provide role-based access control for all users. User support management is also there to respond to the help ticket raised by other users.

    - **Data Insights and Platform Health:** Admin can view system-wide analytics and trends and monitor for any fraud activity or platform abuse.

    - **Other Features:** Admin can broadcast important notification to all the users like: new features please update your app, maintenance etc.

- **Access:**
    - Web based interface accessible via any browser

3.3 Documentation Deliverables

- Software Requirements Specifications (SRS)

4 Projects risks, Threats and Contingency plans

Every software project can face potential risks that could impact scope, timeline or quality.

4.1 Technical Risks

- **Third party API failures or changes:**
  - Hisab Khata relies on external services like eSewa, Khalti, Firebase, AI APIs that could experience downtime or API changes.
- **Database Performance Degradation:**
  - As data volume grows, unoptimized queries could show down the overall system.
- **Data Security and privacy risk:**
  - Data breach could impact the reputation of the system.

4.2 Resource and Timeline Risks

- **Underestimation of Development Time:**
  - Complex features (AI integration, payment gateways) may take longer than estimated, causing schedule delays.

5 Methodology

5.1 Considered Methodologies

5.1.1 Waterfall Model

The Waterfall model is a traditional software development model, based on the plan. It is a series of clearly defined stages, and one stage should be successfully finished before another is started (Adobe for Business Team, 2025).

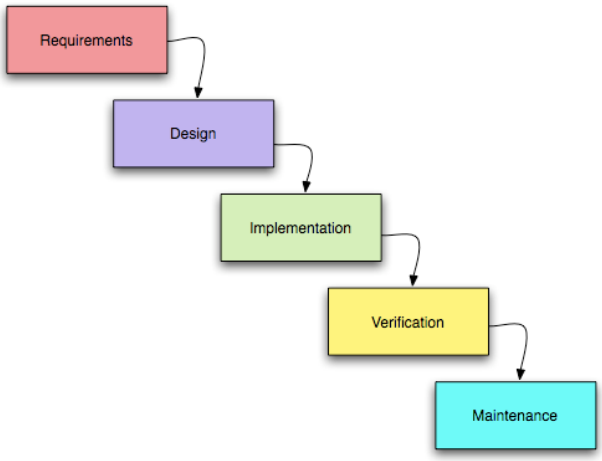

Figure 2: Waterfall model

Reasons for not selecting waterfall model:

- It lacks flexibility and adaptability. Once the phage is done there is not going back option or going back may be difficult and costly.
- Customers cannot give feedback because testing will be later and there is little chance of updating based on client's feedback.
- There is no proper working software until near the end. For a project like Hisab Khata, early working prototype with minimum core functionalities would be useful for testing.

5.1.2 Agile/Scrum

Agile is a mixture of software development methods that are found on iterative and incremental development and focus on collaboration, flexibility, customer feedback and adaptive planning (Laoyan, 2025).

Figure 3: Agile Methodology

Reasons for not selecting Agile/Scrum methodology:

- It demands a great degree of discipline, communication and self-organizing team.
- Reduce the focus on documentation where minimal documentation may be a disadvantage to a system such as Hisab Khata where reliability, auditability, future maintainability, and perhaps more formal support is required.

5.1.3 Prototype-Based / Iterative-Prototyping Methodology

A prototype-based or iterative-prototyping methodology places developers in a situation where they create rough prototypes or mockups at the initial stages, collects user feedback, refines requirements and then creates successive versions in an iterative way (Indeed Editorial Team, 2025).

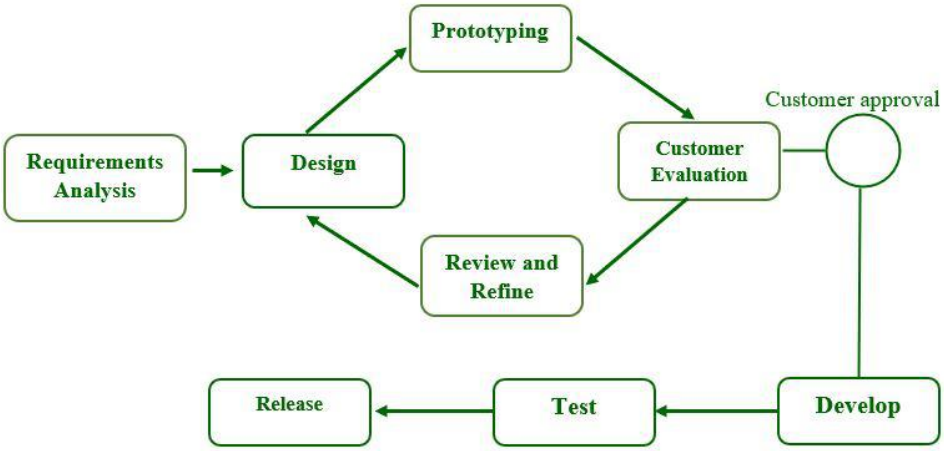

Figure 4: Prototype based methodology

Reasons for not selecting Prototype based methodology:

- Prototyping provides excellent early feedback and user-centric design validation, both user-facing features and usability are desirable but the complexity of Hisab Khata (backend, payment, AI, multi-role support) demands a good architectural foundation and design. Simple prototype-based approach is dangerous in the sense that it can result in a low-quality end system or technical debt given time limitations.

5.2 Selected Methodology: Rational Unified Process (RUP)

RUP is a phase-based process framework of software development, which is iterative. It breaks down the development into four key stages: Inception, Elaboration, Construction, and Transition, and promotes the iterative development of each of the stages, which enables refinement, risk reduction, and incremental delivery (Biscontini, 2024).

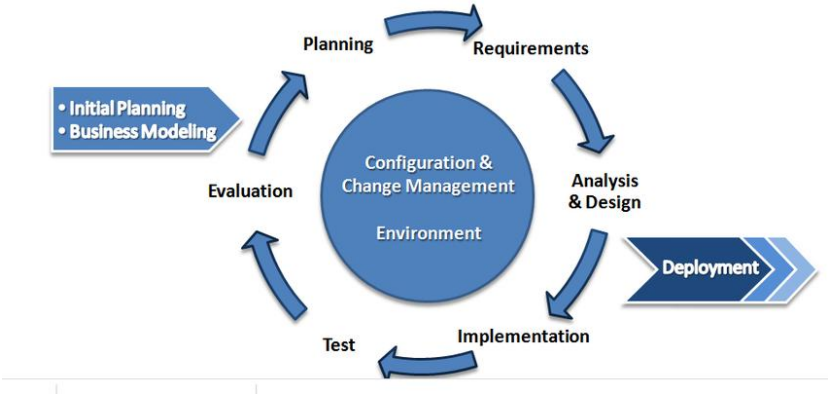

Figure 5: Process of RUP Methodology

Reasons for selecting RUP Methodology:

Considering the nature and scope of Hisab Khata, which includes several modules (mobile apps with various roles, an administrative panel), complex features and the necessity of reliability, maintainability, and scalability, a pure Waterfall would be overly rigid, a pure Agile too unpredictable and light in documentation, and prototyping would be too shallow and risky in terms of architectural integrity.

RUP offers the right balance. It is structured but flexible, architectural and adaptable, documented and flexible. Its focus on early architecture, cyclical development, and capacity to customize workflows is in line with the requirements of the project. Also, it focusses on documentation and traceability and provides a sense of clarity and maintainability, which is advantageous not only in evaluation but also in the event of the project being continued in the future.

6 Resource Requirements

6.1 Hardware Requirements

6.1.1 Laptop/Desktop Computer:

- Intel Core i5 (10th gen) or equivalent (AMD Ryzen 5) processor
- 8 GB minimum, 16 GB RAM recommended
- 256 GB SSD Storage
- Operating System: Windows 10/11, macOS 10.14+
- Stable internet connection

6.1.2 Android Device (for testing):

- OS: Android 7.0 or higher
- 2 GB minimum RAM
- Storage: 100+ MB free space
- Camera: Rear camera (for receipt scanning)
- Microphone: Functional (for Quick Hisab)
- Internet: Wi-Fi or mobile data

6.2 Software Requirements

6.2.1 Backend Development

- Python
- Django/Django REST Framework
- MySQL

6.2.2 Frontend Development

- Flutter SDK
- Dart
- Android Studio
- VS code

6.2.3 Development, Design and Documentation Utilities

- Git
- GitHub
- Postman
- Figma
- Draw.io
- Microsoft Office

6.2.4 Third party services and APIs

- Firebase Cloud Messaging (FCM)
- Khalti API
- eSewa API
- ChatGPT API
- Gmail SMTP

7 Work Breakdown Structure

Work Breakdown Structure is used to divide all project work into manageable parts in a hierarchical manner that is in line with RUP phases.

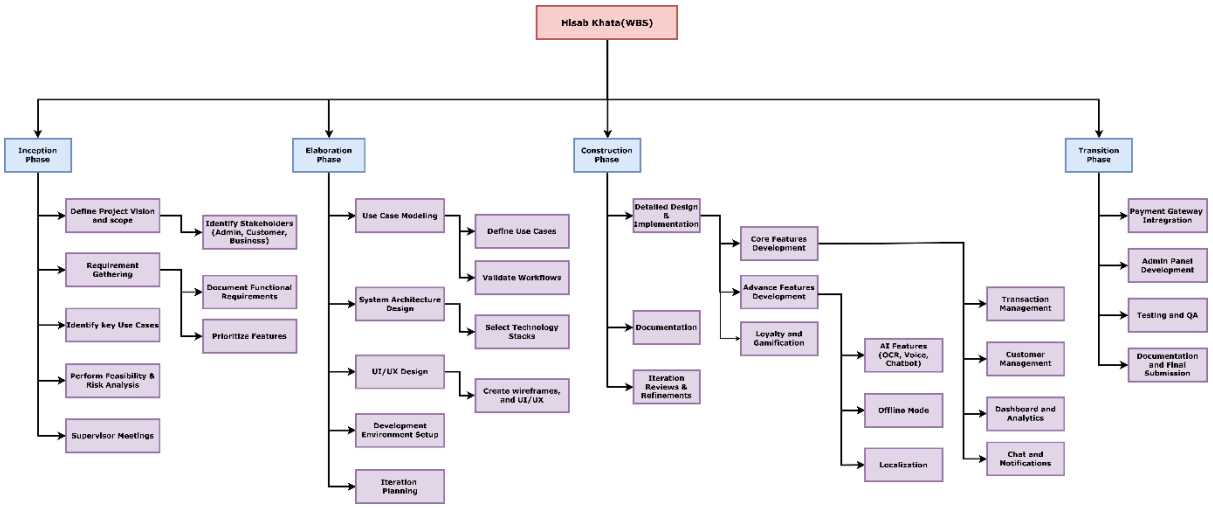

Figure 6: Work Breakdown Structure

8 Milestone Chart

Milestones are decision points and deliverables that are important milestones in the project.

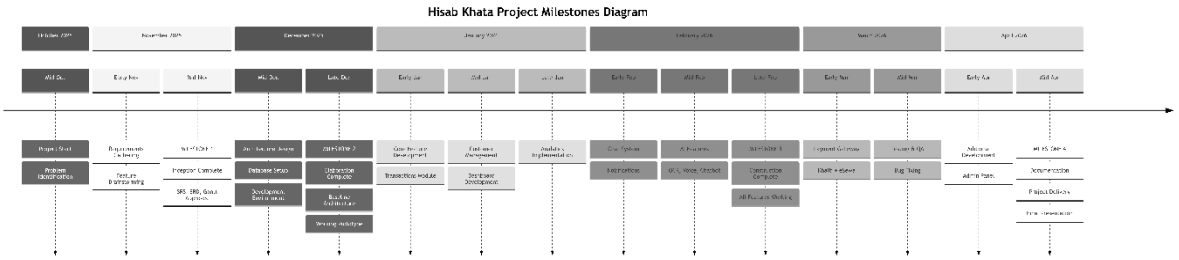

Figure 7: Milestone Diagram

9 Project Gantt Chart

This section displays the overall project development phages with milestones in the form of appropriate date.

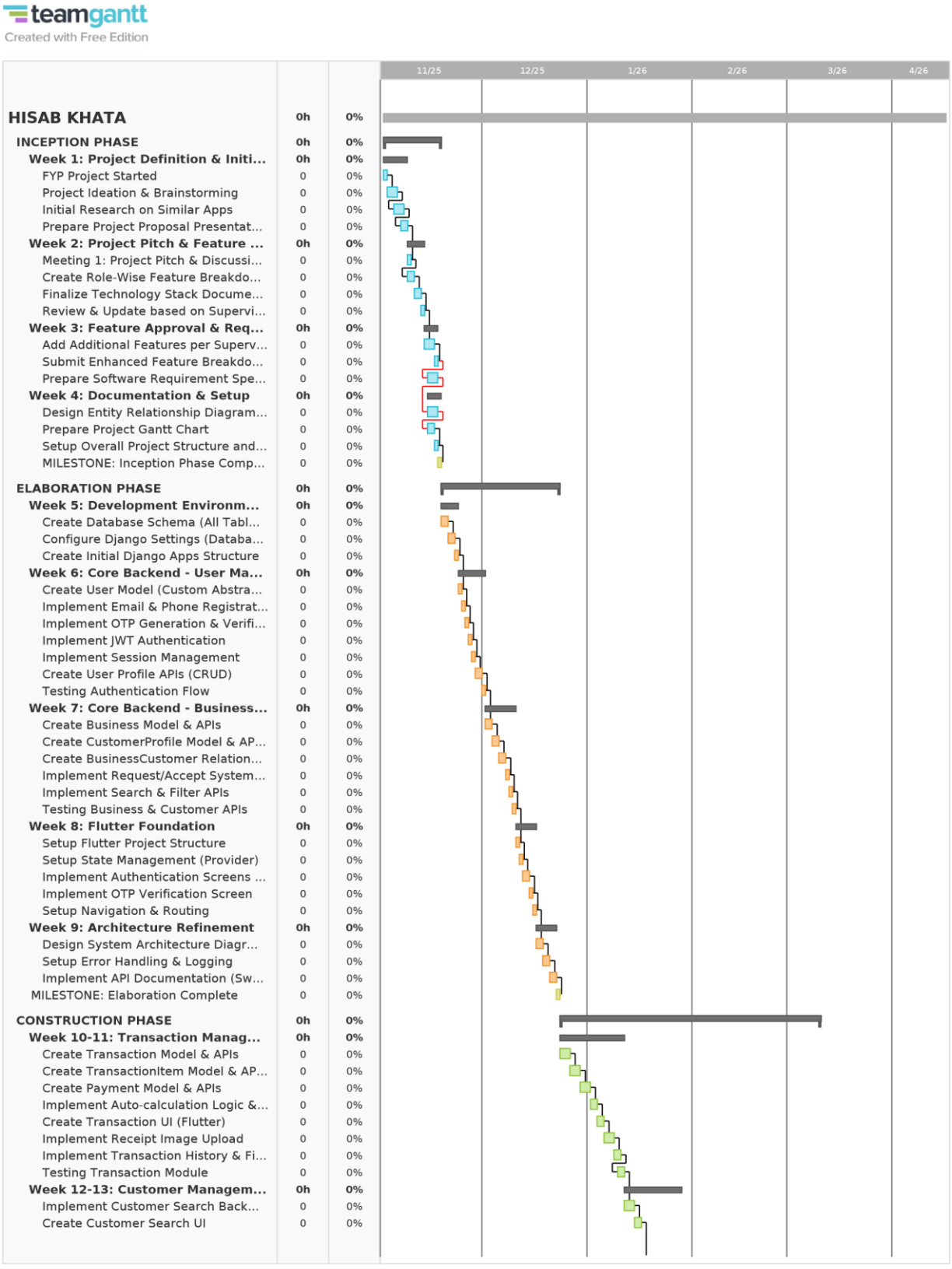

Figure 8: Gantt Chart 1

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Implement Request System (Backe...	0	0%
Create Request Management UI	0	0%
Implement Customer Profile View	0	0%
Implement Favorite Shops Feature	0	0%
Create Customer-side Business List	0	0%
Implement Loyalty Points System	0	0%
Testing Customer Management	0	0%
Week 14: Dashboard & Analytics	**0h**	**0%**
Create Business Analytics APIs	0	0%
Create Customer Analytics APIs	0	0%
Design Dashboard UI Layout	0	0%
Implement Dashboard Charts (fl_c...	0	0%
Implement Total Due Overview	0	0%
Implement Highest/Lowest Due Dis...	0	0%
Testing Dashboard Module	0	0%
Week 15-16: Chat & Notification ...	**0h**	**0%**
Setup WebSocket/Firebase for Chat	0	0%
Create ChatRoom Model & APIs	0	0%
Create ChatMessage Model & APIs	0	0%
Implement Chat UI (Flutter)	0	0%
Setup Push Notifications (FCM)	0	0%
Implement Notification Model & AP...	0	0%
Create Notification UI	0	0%
Implement Payment Reminder Sys...	0	0%
Testing Chat & Notifications	0	0%
Week 17: AI Features (Advanced)	**0h**	**0%**
Research & Setup OCR Library	0	0%
Implement Receipt Scanning Back...	0	0%
Create Receipt Scan UI	0	0%
Implement Voice Transaction (Spe...	0	0%
Setup AI Chatbot (Hisab-AI)	0	0%
Testing AI Features	0	0%
MILESTONE: Construction Complete	0	0%
TRANSITION PHASE	**0h**	**0%**
Week 18: Payment Gateway & A...	**0h**	**0%**
Integrate Khalti Payment Gateway	0	0%
Integrate eSewa Payment Gateway	0	0%
Implement Payment Gateway UI	0	0%
Implement PDF Report Generation	0	0%
Implement Budget Alert Feature	0	0%
Testing Payment & Offline Features	0	0%
Week 19: Admin Panel & System...	**0h**	**0%**
Create Admin Dashboard (Django ...	0	0%
Implement User Management	0	0%
Implement Platform Statistics Das...	0	0%
Implement Support Ticket System	0	0%
Implement Fraud Detection Alerts	0	0%
Testing Admin Panel	0	0%
Week 20-21: Testing QA	**0h**	**0%**
End-to-End Testing (All Modules)	0	0%
Bug Fixing & Issue Resolution	0	0%
Performance Optimization (Backen...	0	0%
Performance Optimization (Fronte...	0	0%
Write Final Documentation & User...	0	0%
Prepare Final Presentation	0	0%
Final Submission & Handover	0	0%
MILESTONE: Project Completed	0	0%

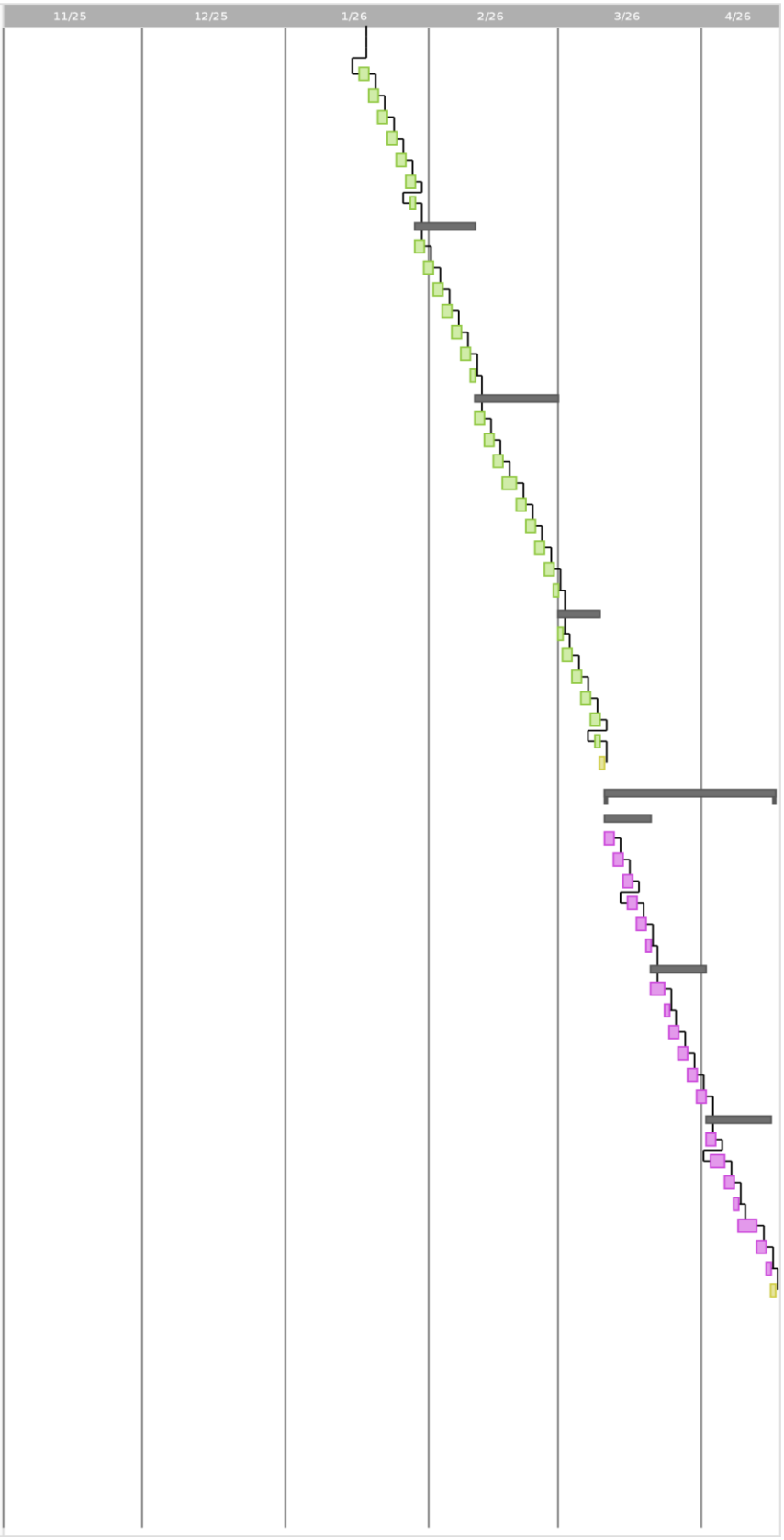

Figure 9: Gantt Chart 2

10 Conclusion

Hisab Khata, is designed to revolutionize credit and transaction management of small businesses in Nepal by providing a digital platform. The system will address the long-standing problems of manual record-keeping, inefficiency, and lack of visibility through digitization of credit records, transparency of transactions, built-in digital payments, AI-supported entry, and analytics dashboard. In this way, it will enable the shopkeepers to effectively monitor debts, payments, and business performance, and customers to keep track of their dues and trust.

Overall, Hisab Khata can become a very important enhancement of traditional credit-based transactions in the small-business sector of Nepal, which will lead to the financial inclusion, the efficiency of business operations, and more open business-customer relations. It may become a valuable resource to both shopkeepers and customers in Nepal with proper implementation, testing, and user friendly, modernizing the olden-day credit methods without losing flexibility and trust. Additionally, the project takes into account ground realities by creating the system with localization in language, payment methods etc.

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12 Appendix

12.1 Appendix A: Acronyms and Abbreviations

Table 1: Acronyms and Abbreviations

Acronym	Full Form
AI	Artificial Intelligence
API	Application Programming Interface
APK	Android Package Kit
ERD	Entity-Relationship Diagram
FCM	Firebase Cloud Messaging
JWT	JSON Web Token
OCR	Optical Character Recognition
OTP	One Time Password
REST	Representational State Transfer
RUP	Rational Unified Process
SDK	Software Development Kit
SMB	Small and Medium-sized Business
SRS	Software Requirements Specification
UI/UX	User Interface / User Experience
WBS	Work Breakdown Structure

12.2 Appendix B: Market context of digital

The digital transformation of Nepal is increasing day by day:

- Smartphone coverage: 73.2% (2023) of the population.
- Users of the internet: 65.3 of the total population.
- Adoption of digital payments: Digital wallet usage increases up to 200 percent (2022-2024).

This presents a great opportunity to a mobile-first solution that would meet the needs of Nepali shopkeepers specifically (My Republica, 2023).