Part 2: Design Alternatives

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Project Description:

LogistX is an advanced delivery and inventory management system designed to support logistics operations of various scales. It helps businesses automate the tracking of deliveries, manage warehouse stock, and generate digital receipts, all in real time. The system is tailored to reduce errors, cut down on delays, and offer full visibility across all logistics processes. Through seamless integration of features such as QR code scanning and vehicle tracking, LogistX ensures that delivery personnel, warehouse staff, and managers can work more efficiently. The application serves as a central hub where all logistics activities are recorded and monitored, providing a reliable foundation for decision-making and continuous improvement.

Requirements Summary:

Functional Requirements:

- The system will allow user registration, login, and role-based profile management.
- The system will enable QR code scanning to update inventory in real time.
- The system will automatically generate digital delivery receipts after each transaction.
- The system will allow managers to assign vehicles and monitor delivery progress.
- The system will provide a dashboard to view live updates on deliveries and inventory.
- The system will enable users to search and filter transactions, products, and delivery records.
- The system will support tracking of vehicle locations and delivery statuses.
- The system will allow users to configure system settings and preferences.

Non-Functional Requirements:

- The system will ensure data security through encrypted authentication and role-based access.
- The system will have a responsive and intuitive interface for both mobile and desktop platforms.
- The system will provide real-time performance with minimal delays in syncing data.
- The system will be scalable to support increased users and transactions as the business grows.
- The system will be reliable, with minimal downtime and robust error handling.
- The system will be maintainable with modular architecture for easy updates.
- The system will support compatibility with common devices and barcode/QR scanners.

Design Space:

What requirements may be difficult to realize?

Some of the more challenging requirements include real-time synchronization of inventory and delivery data, especially in areas with limited or unstable internet connectivity. Ensuring smooth offline functionality and secure, consistent data syncing once reconnected is complex. Another difficult requirement is vehicle tracking, which may require integration with third-party GPS APIs and raise concerns about data privacy and location accuracy. Additionally, designing a system that scales well without performance degradation as transaction volume grows may pose implementation and infrastructure challenges.

What are some tradeoffs that you should or did explore?

One key tradeoff involves balancing **feature richness** with **usability**. For example, adding advanced filtering and reporting options is valuable to managers but could overwhelm delivery personnel if not carefully designed. Another tradeoff is between **real-time updates** and **battery/data usage**—frequent syncing and GPS tracking drain mobile device resources, so we need to balance frequency and accuracy. Lastly, there's a tradeoff between **security** and **convenience**: robust encryption and access control may slow down the login or scanning process if not optimized.

Which tasks will be easiest to support? Which are the hardest?

The **easiest tasks** to support are static or low-interaction features such as digital receipt generation and user login/profile management. These follow standard patterns and can be implemented using common frameworks. Basic inventory updates via QR scanning are also relatively straightforward with existing libraries.

The **hardest tasks** are those that rely on real-time or external dependencies—such as vehicle tracking, real-time dashboards, and ensuring accurate inventory updates across multiple users and locations simultaneously. These tasks require robust backend infrastructure, constant data syncing, and careful handling of concurrency issues.

Design Summary:

During our design process, we explored various approaches to address the fundamental challenges of logistics management: scattered service providers, poor shipment visibility, inconsistent pricing transparency, and complicated delivery coordination. Through iterative ideation sessions and user feedback analysis, we developed three distinct design directions that each prioritize different aspects of the logistics experience.

Design concepts we considered but ultimately rejected:

- An auction-based delivery system: Users would post shipment requirements and logistics providers would compete with bids. However, this approach introduced unnecessary delays and complexity that conflicted with users' need for immediate shipping solutions.
- A geolocation-centric interface: The entire experience would revolve around interactive mapping features. We determined this wasn't suitable given bandwidth limitations and user preferences for traditional list-based browsing patterns.
- Provider-specific sub-applications: Rather than creating separate interfaces for each logistics partner, we decided to maintain a cohesive experience by integrating all services within a single platform architecture.

Justifications for the final three designs: Our final concepts address distinct user workflow preferences:

- **Comprehensive service browser** — tailored for users who value detailed comparison shopping and want complete visibility into all available logistics options before committing.
- **Real-time monitoring hub** — designed for users whose primary concern is maintaining oversight of current shipments through live status updates and delivery notifications.
- **Streamlined repeat booking interface** — optimized for power users who require rapid access to frequently used services and one-click reordering capabilities.

The Designs:

In this section, we present the three design alternatives we developed as a group. Each design offers a unique approach to solving the core challenges we identified: dispersed logistics providers, limited shipment visibility, pricing transparency issues, and coordination difficulties across multiple delivery services.

For each design, we include:

- A conceptual overview of the approach

- Visual representations and interface mockups
- User journey illustrations demonstrating real-world usage
- Analysis of each design's effectiveness and trade-offs

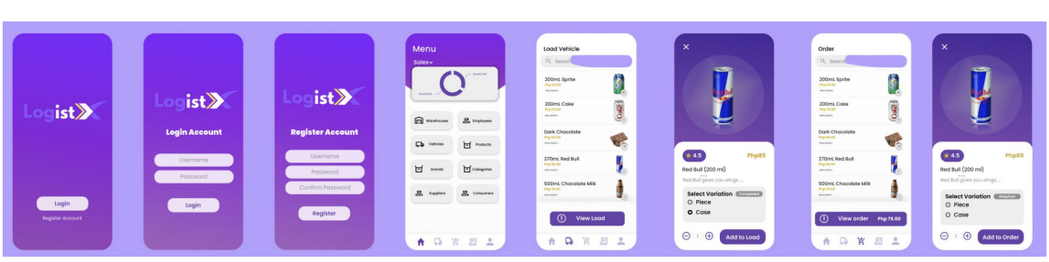
DESIGN 1

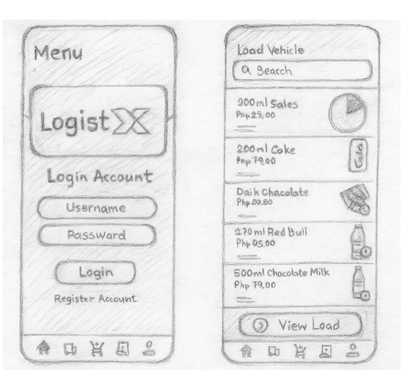
Our first design concept presents a comprehensive logistics management platform built around a dashboard-centric approach. The interface flows from branded purple splash screens through streamlined authentication to a central menu system organizing key logistics functions including Statistics, Warehouse, Employees, Vehicles, and Products. The core workflow demonstrates load and order management capabilities where users can view product inventories, coordinate vehicle loading with detailed item specifications, and process orders with real-time cost calculations. This design emphasizes operational control and centralized access to all logistics functions, making it suitable for businesses requiring comprehensive oversight of their entire supply chain from inventory tracking through delivery coordination.

Storyboard:

This 4-panel storyboard follows a warehouse supervisor managing his daily operations through LogistX. In the first panel, he logs into the platform expressing relief at how straightforward the process is. The second panel shows him using the inventory scanning feature, commenting that it's much more efficient than writing everything down manually. He then tracks live deliveries on his phone, noting that a shipment is arriving in 10 minutes and he has complete visibility. The final panel depicts him generating automated reports within seconds, emphasizing how the system eliminates the time-consuming manual reporting he used to do.

Wireframes and Sketches:



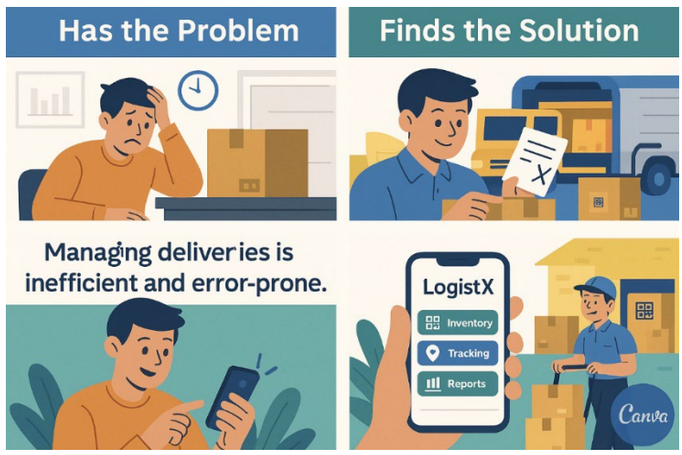


DESIGN 2

Our second design concept focuses on comprehensive administrative control through dedicated management modules for personnel and inventory oversight. The interface showcases dual functionality with employee management capabilities allowing supervisors to maintain staff records including detailed profiles for team members like Adrian Raphael Villacorta, complete with contact information, positions, and operational status. The product management system enables detailed inventory control with comprehensive item specifications including supplier relationships, brand categorization, pricing structures, and critical stock level monitoring. This design prioritizes data organization and administrative efficiency, making it ideal for operations managers who need detailed control over both human resources and inventory assets within their logistics operations.

Storyboard:

This problem-solution narrative illustrates the transformation from inefficient delivery management to streamlined logistics control. The story begins with a frustrated warehouse manager overwhelmed by manual processes, surrounded by packages and struggling with time constraints as delivery coordination becomes increasingly error prone. The solution emerges through LogistX's platform, which provides organized access to three core functions: comprehensive inventory management for tracking stock levels, real-time delivery tracking for monitoring shipment progress, and automated reporting systems for operational insights. The final panel shows a satisfied delivery worker efficiently managing packages with digital support, demonstrating how the platform transforms chaotic manual processes into organized, technology-driven logistics operations.



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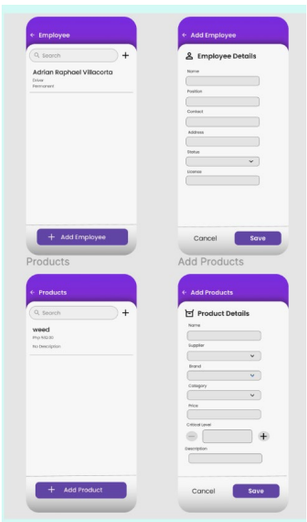


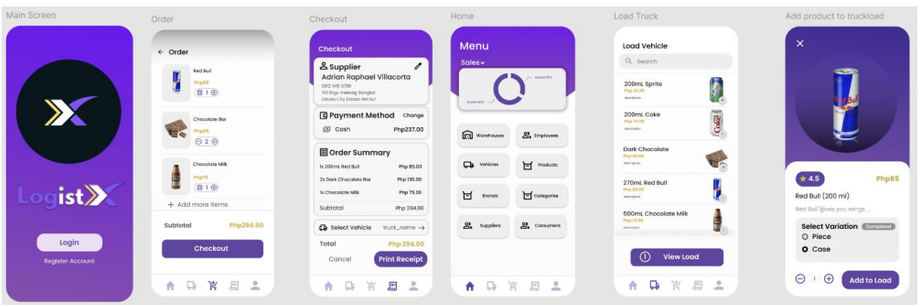
DESIGN 3

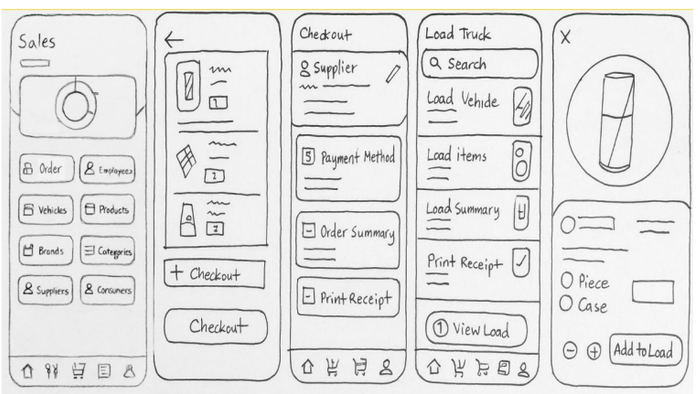
Our third design concept emphasizes streamlined transaction processing and operational efficiency through an integrated order-to-delivery workflow. The interface progresses from the familiar LogistX branding through a comprehensive ordering system that allows users to build carts with items like Red Bull, Chocolate Bar, and Chocolate Milk with real-time pricing calculations. The checkout process features detailed supplier information, multiple payment methods, and complete order summaries before finalizing transactions. The platform seamlessly transitions into operational management with dashboard access to sales analytics, warehouse coordination, employee oversight, and vehicle management. The load management functionality enables precise cargo planning with detailed product specifications, ratings systems, and flexible loading options for different delivery scenarios.

Storyboard:

This 4-panel narrative demonstrates the evolution from fragmented manual processes to integrated digital logistics management. The first panel shows a logistics coordinator celebrating the consolidation of multiple tracking systems into LogistX's unified platform, exclaiming relief at having everything centralized. The second panel features a warehouse worker using mobile scanning technology for inventory management, noting how digital tracking surpasses traditional paper-based methods. The third panel depicts a delivery coordinator providing real-time updates to customers through the tracking system, maintaining complete visibility over shipment status and arrival times. The final panel shows an operations manager generating comprehensive performance reports instantly through automated analytics, emphasizing how the system transforms hours of manual data compilation into seconds of digital efficiency.

Wireframes and Sketches:





Requirement Changes:

During our LogistX design process, we discovered that our initial requirements were too focused on basic package tracking and needed to expand significantly. User feedback revealed that logistics operations require comprehensive inventory management, employee coordination, and vehicle loading capabilities - not just simple shipment monitoring. We added multi-supplier checkout functionality when we learned that logistics managers frequently work with multiple vendors simultaneously, and we included automated reporting features after realizing that manual data analysis was consuming too much operational time.

We also removed several features that seemed important initially but proved unnecessary during testing. The social networking capabilities between logistics providers and gamification elements for delivery staff were eliminated because they created complexity without adding real operational value. These changes happened through user interviews and prototype testing with actual logistics managers, who showed us that the platform needed robust administrative tools and data integration rather than consumer-friendly social features. The design process taught us that logistics software requires practical functionality over flashy interfaces.