Find-It Mall: A Web-Based Lost and Found Management System for Malaysian Retail Environments

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ABSTRACT

This paper presents Find-It Mall, a web-based Lost and Found Management System designed to digitalize and streamline item recovery processes in large commercial complexes. Traditional logbook-based systems are inefficient, error-prone, and lack transparency, often leading to delayed item recovery and poor customer satisfaction. Find-It Mall addresses these challenges by integrating a centralized digital platform that connects the public and mall staff in managing lost and found items. The system features a public portal for reporting and claiming items, a staff dashboard for managing records, and an automated email notification system to enhance communication between stakeholders. Developed using PHP for server-side scripting, MySQL for database management, and Bootstrap for a responsive user interface, the system follows the Agile development methodology to ensure iterative refinement and usability. Testing results demonstrate that Find-It Mall significantly improves operational efficiency, reduces manual workload, and enhances transparency in lost and found management. The system provides a scalable, secure, and user-friendly solution that modernizes customer service standards within the Malaysian retail sector.

Keywords: Lost and Found, Web-Based System, PHP, MySQL, Bootstrap, Agile, Retail

INTRODUCTION

The management of lost-and-found items in large commercial venues such as shopping malls remains a persistent operational challenge. Traditional paper-based logbooks and ad-hoc procedures lead to data loss, slow processing, and limited public visibility of recovered items, which in turn reduces return rates and undermines customer satisfaction. The shift toward digital solutions addresses these problems by enabling centralized records, searchable item galleries, and automated communication channels that reduce staff workload and improve transparency [1].

Digital transformation is not merely the adoption of new technologies but a strategic reconfiguration of processes, capabilities, and touchpoints that reshape how organisations deliver value to customers [2]. Recent reviews show that firms that successfully digitalize frontline services achieve measurable gains in operational efficiency and customer satisfaction, if system quality, information quality, and service quality are appropriately managed [2], [3]. These findings underscore why a purpose-built web platform for lost-and-found operations which combining a public portal with a staff dashboard and automated notifications is a pragmatic response to the limitations of paper systems.

Applied case studies and project reports of web-based lost-and-found solutions in campus and retail environments document practical benefits such as faster item matching, simpler claim workflows, and higher user engagement [4] These implementations typically emphasize responsive interfaces, image attachments for verification, role-based staff access, and exportable logs for recordkeeping — design choices that align with both user expectations and institutional operational needs. Incorporating these features in a mall context can therefore increase recovery rates and reduce the manual effort required from staff.

From a development process perspective, iterative, feedback-driven methods such as Agile enable rapid delivery of usable increments and close alignment with stakeholders' requirements. Empirical studies of Agile in industry show that proactive strategies for managing non-functional and quality requirements are essential to ensure reliability and usability in deployed web systems [5]. For a lost-and-found platform, Agile practices help incorporate user feedback (e.g., from mall staff and claimants) early and throughout development, improving both functionality and acceptance.

In this paper we present Find-It Mall, a web-based Lost and Found Management System designed to digitalize item reporting, inventory management, and the claiming process in a shopping-mall context. The system couples a public-facing item gallery and claim form with a secure, role-based staff dashboard, automated email notifications, and exportable reporting features. The design and implementation decisions follow best practices identified in the literature — prioritizing system and information quality, usability, and an iterative development cycle to address the operational and user-experience problems of traditional lost-and-found workflows.

BACKGROUND

Digitalization has reshaped retail operations by enabling real-time tracking, process automation, and improved customer touchpoints; these changes have important implications for service areas that historically relied on manual procedures, such as lost-and-found management. Empirical work in retail digitalization demonstrates that firms adopt technologies — including e-commerce channels, automation, and real-time tracking, primarily for the business value they deliver (operational efficiency, transparency, traceability), and these investments can materially improve customer service delivery when properly aligned with organizational processes [6]. For lost-and-found workflows, the same capabilities (centralized databases, searchable public catalogues, timestamps, and media attachments) directly tackle the core failure modes of paper logbooks: record loss, slow retrieval, and poor discoverability.

Usability and iterative user testing are central to delivering web tools that staff and the public use. Recent studies on web-tool development emphasize multi-step, mixed-methods usability testing to refine navigation, content, and interactive features; iterative feedback loops help prioritize changes that increase clarity and reduce user error, which is crucial for systems that must be reliable under routine staff turnover and occasional high-load situations [7]. In the context of lost-and-found platforms, applying structured usability testing improves form design (for reporting found items), gallery browsing, and claim submission flows — all of which increase the likelihood that finders will report items promptly and claimants will successfully identify matches.

Automated communications such as triggered emails and push notifications are proven mechanisms to increase user engagement and to drive desired outcomes in automated service workflows. Controlled studies on triggered email campaigns report measurable uplifts in responses and conversions when messages are timely and tailored to user actions [8]. For a lost-and-found system, automated notifications (e.g., confirmation to a finder, claim submission receipts for claimants, and staff alerts for newly reported items) both reduce administrative overhead and provide reassurance to users, improving perceived service quality and speeding up recovery cycles.

Beyond usability and notifications, customer engagement with digitalized interactive platforms matters because engagement mediates the relationship between system features and user outcomes. Research on customer engagement in retail contexts shows that platform features which satisfy psychological needs (autonomy, competence, relatedness) and present useful, context-aware content led to deeper and more sustained engagement [9]. Translating that insight to lost-and-found systems suggests that providing clear search & filter tools, image evidence, and contextual information (found location, date, storage status) helps claimants and finders make quicker, confident decisions — thereby increasing successful matches and reducing back-and-forth with staff.

Practical implementations of web-based lost-and-found systems have been trialled in campus and public settings and report similar operational benefits: centralized indexing, searchable galleries, and simplified claim workflows reduce manual effort and speed up item recovery [10]. Those applied projects also underscore common technical and social challenges. For example, balancing privacy with sufficient item detail for verification, ensuring robust media handling for images, and maintaining staff training and process discipline — all of which informed the design choices made in the Find-It Mall project.

Related Work

Research and development on digital lost-and-found systems span several technical approaches and application settings. A growing thread of work focuses on image-based matching to automate item identification. Zhou et al. (2024) propose LostNet, a lightweight image-matching framework that integrates MobileNetV2, CBAM attention, and perceptual hashing to achieve 96.8% matching accuracy while remaining efficient enough for on-device deployment. Their work demonstrates how deep learning and perceptual-hash methods can accelerate matching between owner-submitted images and staff-reported items [11].

Other studies explore decentralized and tamper-resistant recordkeeping for lost-and-found services. Xue and Ma (2022) examined a blockchain-based platform to improve transparency and auditability in item recovery operations across multiple locations. Their findings indicate that blockchain enhances record integrity and accountability but introduces challenges related to transaction costs and query latency in real-world scenarios [12].

Lightweight QR-code–based systems have been increasingly adopted for quick item identification and verification. Sinha et al. (2024) developed a campus lost-and-found system integrating personalized QR tags that allow users to register belongings and enable rapid scanning for recovery verification. This low-cost, smartphone-friendly method emphasizes simplicity, usability, and efficiency in lost-item reporting workflows [13].

Complementary research has focused on RFID-enhanced search protocols, where tagged objects can be rapidly located through secure, privacy-preserving algorithms. Chun and Noh (2021) introduced an RFID tag-search scheme that protects reader and data privacy while supporting efficient item lookup, which is relevant for high-value inventory or environments with many tagged assets [14].

Finally, work by Zhang et al. (2023) proposed a two-level QR code scheme that enhances information encoding and security using a region matrix image secret-sharing algorithm. Although originally intended for secure information exchange, the technique offers potential for lost-and-found systems where QR labels could store encrypted identifiers, reducing risks of tampering or unauthorized data access [15].

Collectively, these studies inform the design of Find-It Mall. The project adopts verifiable image attachments (inspired by LostNet), a centralized database with audit trails (informed by blockchain systems), user-friendly QR mechanisms, and security-conscious data management (guided by RFID and QR encryption research).

Table1. Summary Of Existed System

Ref	Objective / Focus	Key Findings	Relevance to *Find-It Mall*
[11]	To develop a lightweight deep-learning model (*LostNet*) for matching lost-and-found item images.	Achieved 96.8% image-matching accuracy with low computational cost.	Inspired the inclusion of photo-based verification for improved item matching.
[12]	To design a blockchain-based platform for tamper-proof lost-and-found records.	Blockchain enhances accountability but introduces transaction-cost challenges.	Informed audit trail and data-integrity considerations for centralized database design.
[13]	To enhance campus lost-and-found services using QR codes linked to item registration.	Simplified claim verification and reduced search time for items.	Supported inclusion of QR code functionality and user-friendly reporting forms.
[14]	To propose a privacy-preserving RFID tag-search system for mobile readers.	Achieved efficient tag searching with enhanced data privacy.	Highlighted privacy and security design aspects for system data handling.
[15]	To develop a two-level QR code encryption model using region matrix image secret sharing.	Provided secure, tamper-resistant QR code structure for information protection.	Guided secure encoding strategies for QR-based item identification.

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METHODOLOGY

The development of the Find-It Mall: Lost and Found Management System followed the Agile methodology, which emphasizes iterative development, continuous feedback, and incremental delivery of functional software. This approach was chosen to accommodate evolving user requirements and to facilitate regular validation throughout the project lifecycle. The project was structured into several key phases:

Planning and Requirement Analysis

The development of the Find-It Mall: Lost and Found Management System was structured around a systematic, step-by-step process, beginning with a critical Planning and Requirement Analysis phase. This initial stage was foundational, aimed at thoroughly understanding the problem domain and defining a clear roadmap for the project. The analysis commenced with an investigation into the existing manual lost-and-found procedures in Malaysian shopping malls, which revealed significant inefficiencies. These included a heavy reliance on physical logbooks vulnerable to damage or loss, a time-consuming process for staff who spent up to 40% of their time on related tasks, and a frustrating experience for the public, with over 65% of items failing to be reclaimed due to limited access to information.

To systematically address these challenges, the project objectives were formalized. The primary goals were to replace manual logbooks with a secure digital database, create a public-facing portal for browsing and claiming items, design a role-based staff dashboard for efficient management, and implement an automated email notification system. Subsequently, both functional and non-functional requirements were meticulously specified. The functional requirements detailed the system's capabilities, such as user login, item and claim management, and report generation. Concurrently, non-functional requirements covering security, performance, usability, and reliability were established to ensure the system would be robust and user-friendly.

A pivotal outcome of this phase was the creation of the Context Diagram, presented in Fig 1. This diagram provided a high-level visual representation of the entire system as a single process, clearly defining its boundaries and interactions with key external entities: the Finder, the Claimant, and the Mall Staff. It illustrated the fundamental data flows, such as the submission of a "Lost Item Report" from a Finder into the system and the output of "Claim Status" information to a Claimant. This model was instrumental in solidifying the scope of the system and ensuring a common understanding among stakeholders before proceeding to the detailed design and implementation stages, thereby setting a precise and actionable foundation for the entire project.

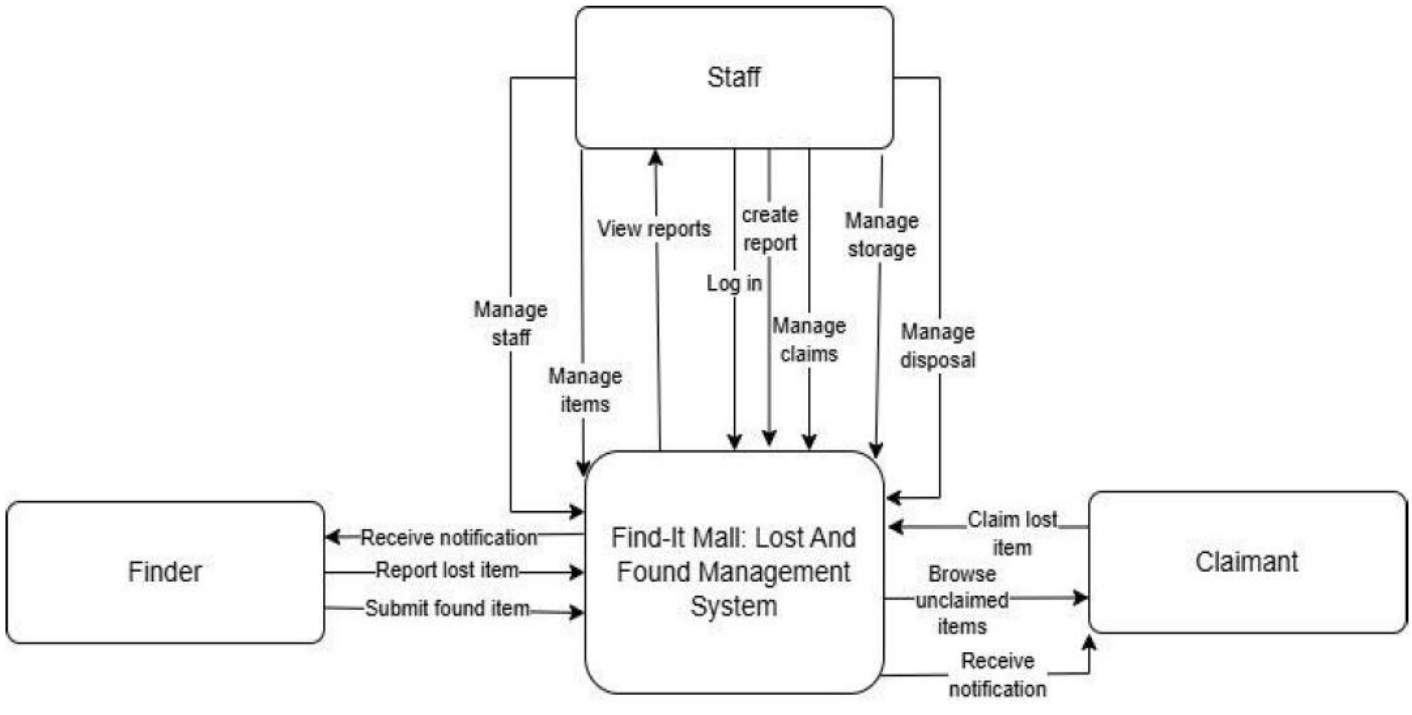

Fig. 1. Context diagram of Find-It Mall

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System Design

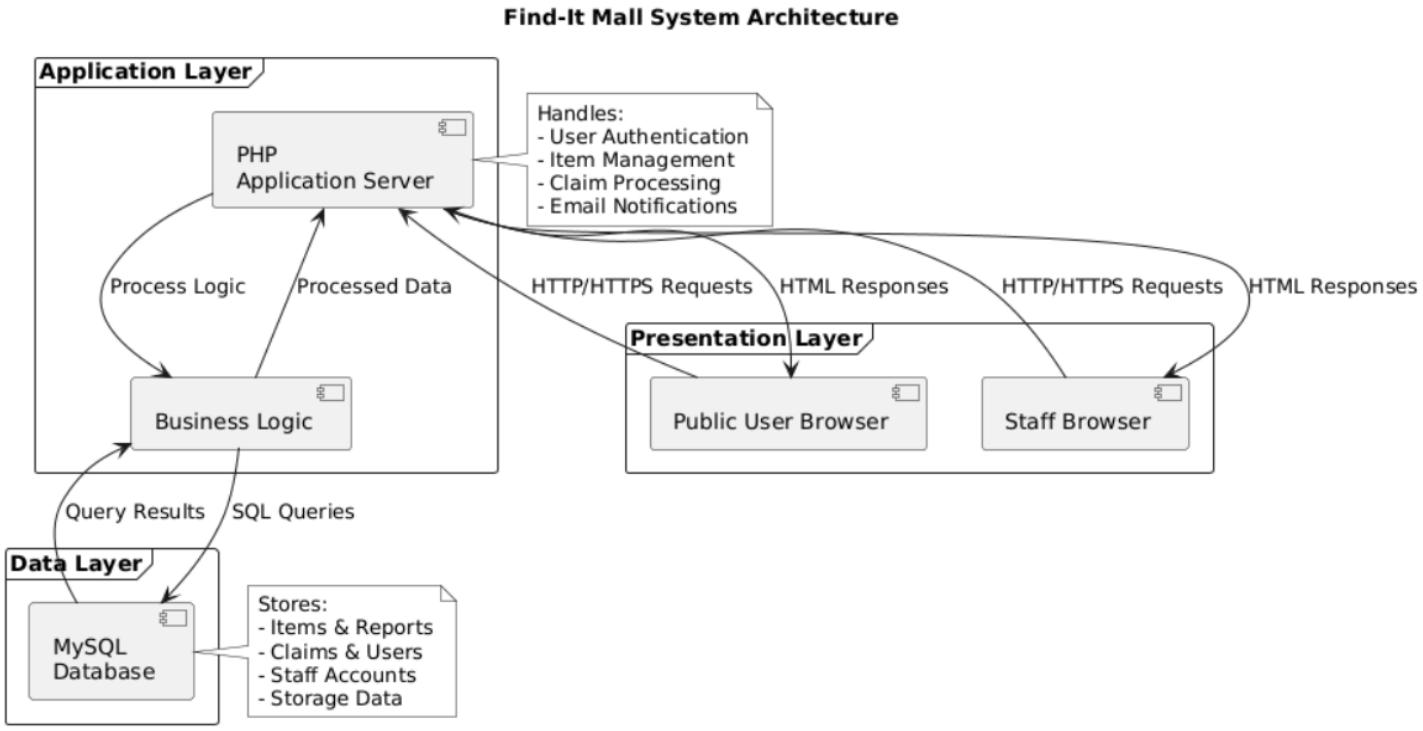

Fig. 2. Three-tier Architecture diagram of Find-It Mall

Following the thorough planning and analysis, the project progressed to the System Design phase, where the conceptual requirements were translated into a detailed and actionable architectural blueprint. The core of this design was a three-tier client-server architecture, chosen to ensure modularity, scalability, and ease of maintenance. This structure cleanly separated concerns across three distinct layers: the Presentation Layer, implemented with HTML, CSS, and the Bootstrap framework to create a responsive and intuitive user interface for both public users and staff; the Application Layer, developed in PHP to encapsulate the core business logic, process requests, and manage the workflow for reporting, claiming, and managing items; and the Data Layer, which utilized MySQL as the relational database management system to securely store, retrieve, and manage all system data, including item details, user information, and claim records.

To define the system's data foundation, a detailed Entity-Relationship Diagram (ERD) was constructed. This ERD outlined the key entities, such as Item, Report, Claim, Claimant, Finder, and Staff and their relationships, establishing a normalized structure to ensure data integrity and minimize redundancy. This logical model was then translated into a physical database schema, complete with defined data types, primary keys, and foreign keys. Furthermore, the logical processes identified during analysis were formalized using Data Flow Diagrams (DFDs), which included a Level 0 DFD to decompose the major system processes like "Process Report" and "Manage Claim," and Level 1 DFDs to provide a more granular view of the data flows between these processes, external entities, and data stores. Collectively, the three-tier architecture, ERD, and DFDs provided a comprehensive and coherent design framework that effectively guided the subsequent implementation phase, ensuring the final system would be robust, secure, and aligned with the initial user requirements.

Implementation

With the architectural blueprint established during the design phase, the project moved into the Implementation stage, where the conceptual designs were translated into a fully functional web application. The development was carried out within a standardized environment using XAMPP as the local server stack, which provided the necessary Apache web server and MySQL database infrastructure. Visual Studio Code served as the primary Integrated Development Environment (IDE), facilitating efficient code writing and debugging. The implementation strictly adhered to the three-tier model: the front-end was constructed with HTML, CSS, and Bootstrap to create a responsive and user-friendly interface for both the public portal and the staff dashboard; the server-side logic was engineered using PHP to handle critical operations such as user authentication, form

processing, and business rules; and the MySQL database was populated with tables structured according to the physical design, enabling robust data management for items, reports, claims, and users.

The core functionalities were implemented as interconnected modules, realizing the system's key features. A public-facing portal was developed, allowing individuals to report found items and browse a searchable gallery of unclaimed property. Simultaneously, a secure staff dashboard was built, providing authorized personnel with comprehensive tools to manage the entire lost-and-found lifecycle from validating and promoting public reports to processing claims and managing storage locations. Furthermore, an automated email notification system was integrated, which sends confirmation emails to claimants upon submission and thank-you notifications to finders when their reported item is successfully claimed. Data Manipulation Language (DML) statements: INSERT, UPDATE, DELETE and complex SQL queries were written and embedded within the PHP scripts to enable dynamic interaction with the database, ensuring that all user actions on the front-end were accurately reflected in the back-end data store. This phase successfully culminated in a working prototype that integrated all designed modules into a cohesive and operational system, ready for rigorous testing.

Testing and Validation

A rigorous and systematic testing regime was implemented to ensure the Find-It Mall system was robust, secure, and performed as specified. The testing strategy was bifurcated into Functional and Non-Functional testing to comprehensively evaluate all aspects of the system.

Functional Testing was conducted to verify that all features and business logic behaved according to the specified requirements. A series of detailed test cases were executed for each core module. For the Login Module, tests confirmed that valid credentials granted access while invalid inputs produced appropriate error messages, and the password reset functionality operated correctly. The Staff Management Module was validated for creating, reading, updating, and deleting staff accounts, including email notifications for new staff members. The Reporting Module was tested to ensure both the public and staff could successfully submit and promote item reports, with all validations working as intended. Furthermore, tests for the Claim, Storage, and Disposal Modules confirmed that the entire lifecycle of a lost item from being reported and stored to being claimed or disposed of functioned seamlessly. All test cases passed, demonstrating that the system's core functionalities were fully operational and met the defined functional requirements.

Complementing this, Non-Functional Testing assessed the system's quality attributes. Performance was evaluated by monitoring the live-updating dashboard statistics, which confirmed the system responded promptly to data changes. Usability testing involved task-based scenarios, where users were able to navigate the interface and report lost items without confusion, indicating an intuitive user experience. Security was a key focus, with tests confirming that the login system was resilient to common threats like SQL injection and provided only generic error messages for failed attempts, thereby not exposing system vulnerabilities. These non-functional tests collectively proved that the system was not only functional but also performant, user-friendly, and secure, forming a solid foundation for deployment.

Table1. Black-Box Testing Results For Find-It Mall

Test Case	Input Condition	Expected Output	Actual Output	Result
TC-L1: Valid Staff Login	Correct email and password	Redirect to staff dashboard	Redirected to staff dashboard	PASS
TC-L2: Invalid Login	Wrong email or password	Show generic error message	Error "invalid email or password" shown	PASS
TC-L3: Admin Login	Valid admin credentials	Redirect to admin dashboard	Redirected to admin dashboard	PASS
TC-L4: Forgot Password	Registered email address	Password reset link sent to email	Reset link successfully delivered	PASS
TC-S1: Add New Staff	New staff details (name, email, role)	Staff account created and notification email sent	Staff added and email notification triggered	PASS

TC-S2: Delete Staff	Select staff member and delete	Staff record removed from database	Staff data successfully deleted from system	PASS
TC-S3: Update Staff Details	Modified staff phone number	Staff information updated in database	Staff details successfully updated	PASS
TC-R1: Report Lost Item	Complete form with all required details	Report created, user receives confirmation email	Report created and confirmation email received	PASS
TC-R2: Report with Missing Email	Submit form without email address	System prompts user to fill required field	"Please fill out this field" message displayed	PASS
TC-R3: Promote Report to Item	Staff validates and promotes a report	Report moved to public item gallery	Item successfully displayed in public gallery	PASS
TC-R4: Modify Finder Report	Staff edits report details and assigns storage	Report details updated with storage location	Report successfully modified and stored	PASS
TC-C1: Submit Item Claim	Complete claim form with proof of ownership	Claim record created with "pending" status	Claim ID generated, status set to "pending"	PASS
TC-C2: Staff Approves Claim	Staff clicks "Approve" on a claim	Claim status changes to "Approved", thank-you email sent to finder	Status updated and email sent successfully	PASS
TC-C3: Staff Rejects Claim	Staff clicks "Reject" on a claim	Claim status changes to "Rejected", item returns to gallery	Status updated, item visible in gallery again	PASS
TC-C4: Search Claims by Item Name	Keyword "bag" in claim search	Show all claims with "bag" in item name	All relevant claims displayed	PASS
TC-ST1: Add New Storage	Input new storage location details	New storage location created in system	Storage location successfully added	PASS
TC-ST2: Edit Storage Name	Modify existing storage location name	Storage name updated in database	Storage name successfully changed	PASS
TC-ST3: Delete Storage	Select storage location and delete	Storage removed from system	Storage successfully deleted	PASS
TC-ST4: View Storage Items	Click "View Items" on storage location	Display all items in selected storage	All items in storage shown correctly	PASS
TC-D1: Dispose Expired Item	Staff selects disposal method for unclaimed item	Item status changes to "Disposed", disposal logged	Item disposal recorded successfully	PASS
TC-D2: Undo Disposal	Staff clicks "Undo" on a disposed item	Item status reverts to previous state	Item successfully restored to pre-disposal state	PASS
TC-F1: Search Items by Keyword	Enter keyword "wallet" in search field	Display all items containing "wallet" in name/description	All relevant items displayed correctly	PASS
TC-F2: Filter by Claim Status	Filter items by "Unclaimed" status	Show only items with "Unclaimed" status	Filtered results match expected status	PASS
TC-F3: Search Reports by Status	Keyword 'w' with status 'pending'	Show pending reports containing 'w'	All matching reports displayed	PASS
Test Case	Input Condition	Expected Output	Actual Output	Result
TC-L1: Valid Staff Login	Correct email and password	Redirect to staff dashboard	Redirected to staff dashboard	PASS

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RESULT

The implementation of the Find-It Mall system resulted in a fully functional web application with distinct interfaces for public users and administrative staff. The system successfully delivered all core functionalities through carefully designed interfaces that facilitated seamless interaction between different user roles.

Public-Facing Interface

The public portal (Fig 3) served as the primary entry point for general users, featuring an intuitive design with clear call-to-action buttons for "Report a Found Item" and "Search Lost Item." The interface incorporated live statistics displaying "Total Found Items," "New Found Item," and claim statuses, providing real-time system transparency. For item reporting, a comprehensive form (Fig 4) captured essential details including finder information, item characteristics, discovery location, and optional image uploads. The lost item gallery (Fig 5) enabled users to browse unclaimed items with filtering capabilities by category and search functionality, while the claim submission form (Fig 6) facilitated ownership claims with detailed proof descriptions.

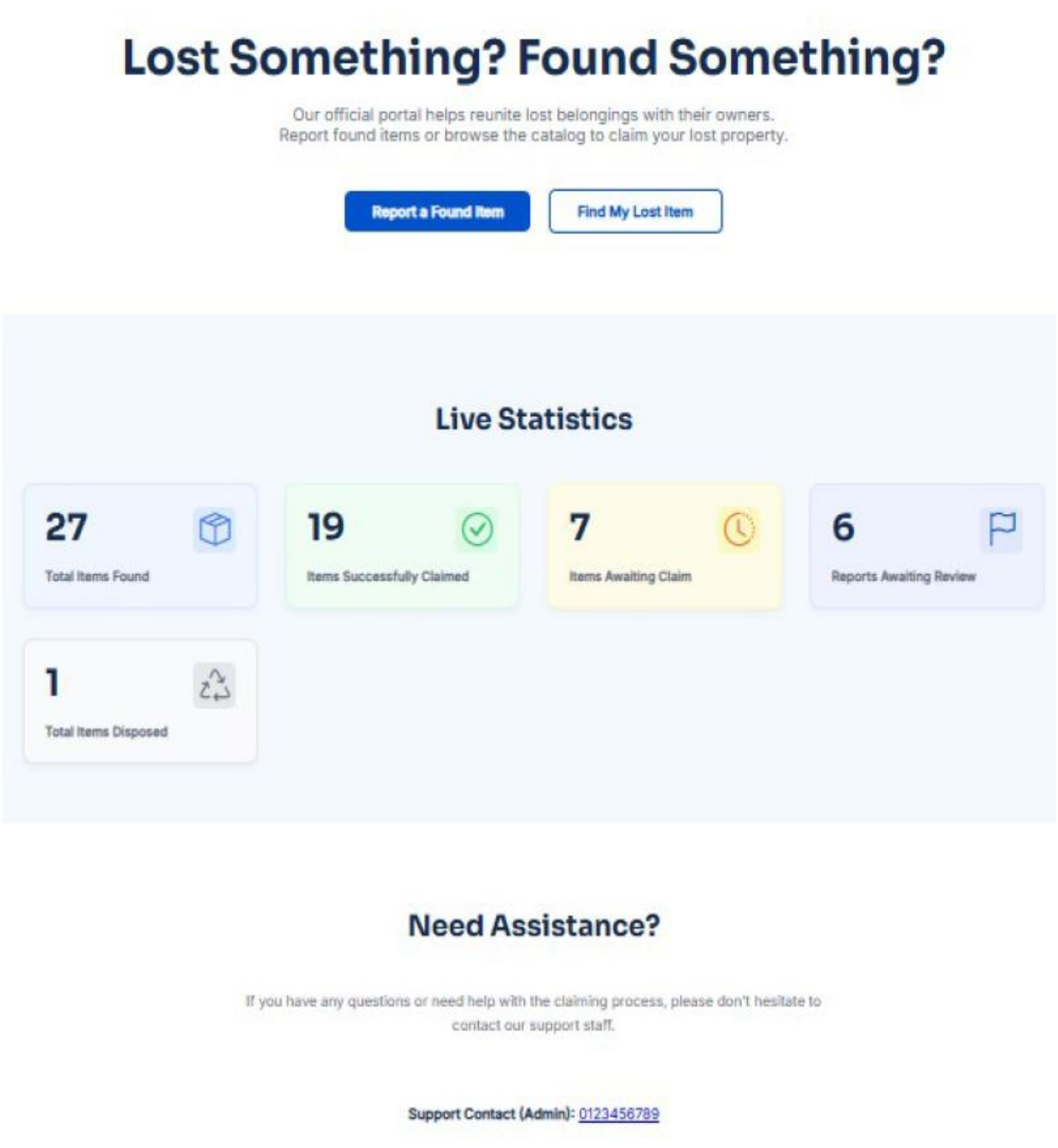

Fig. 3. Public portal page

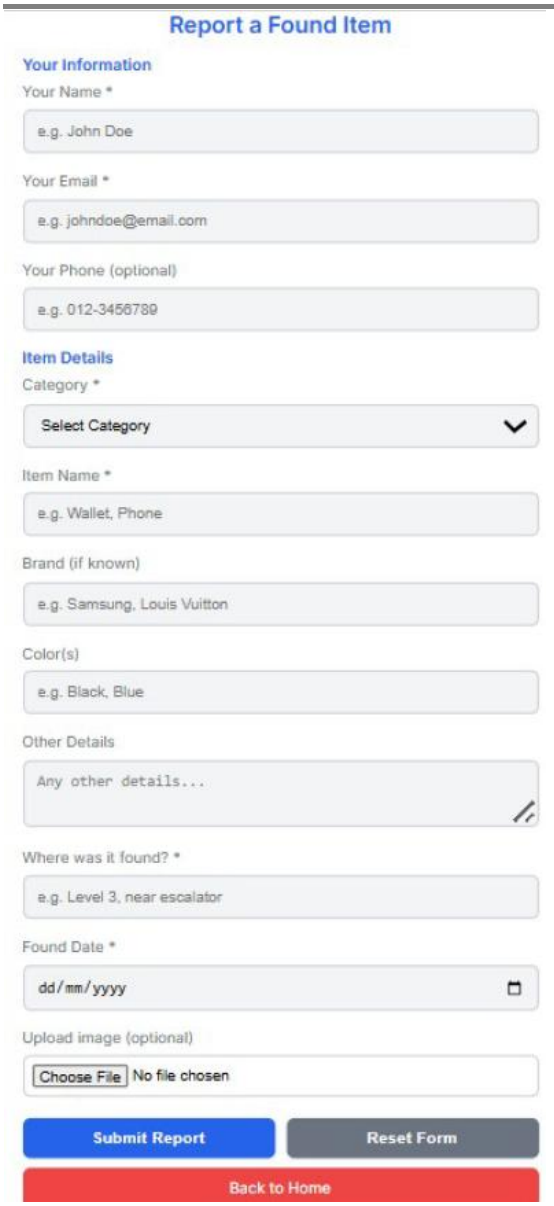

Fig. 4. Report form page

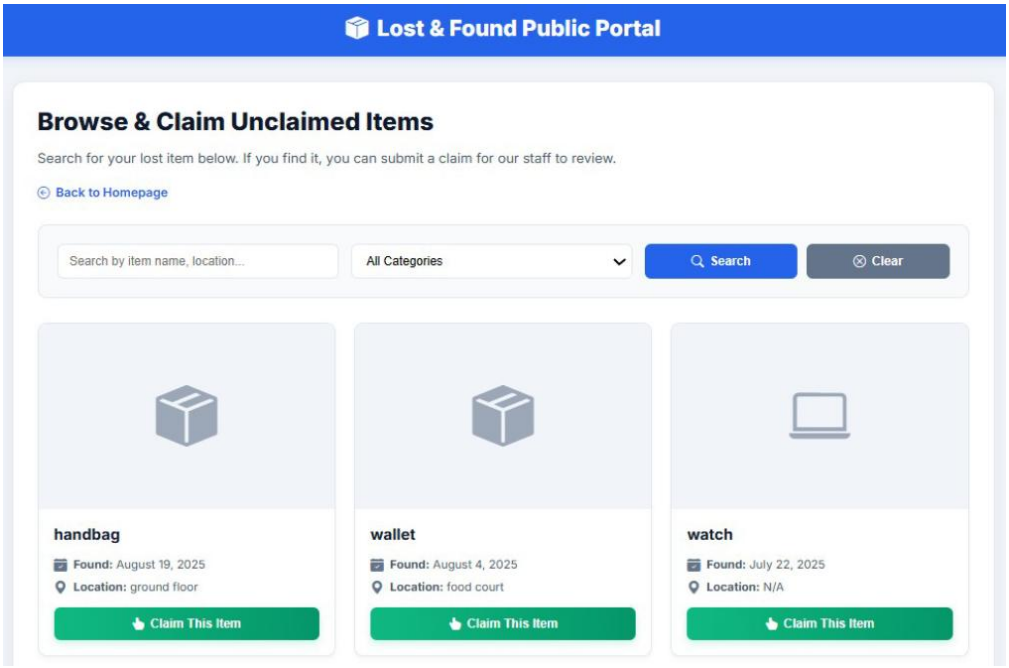

Fig. 5. Unclaimed items page

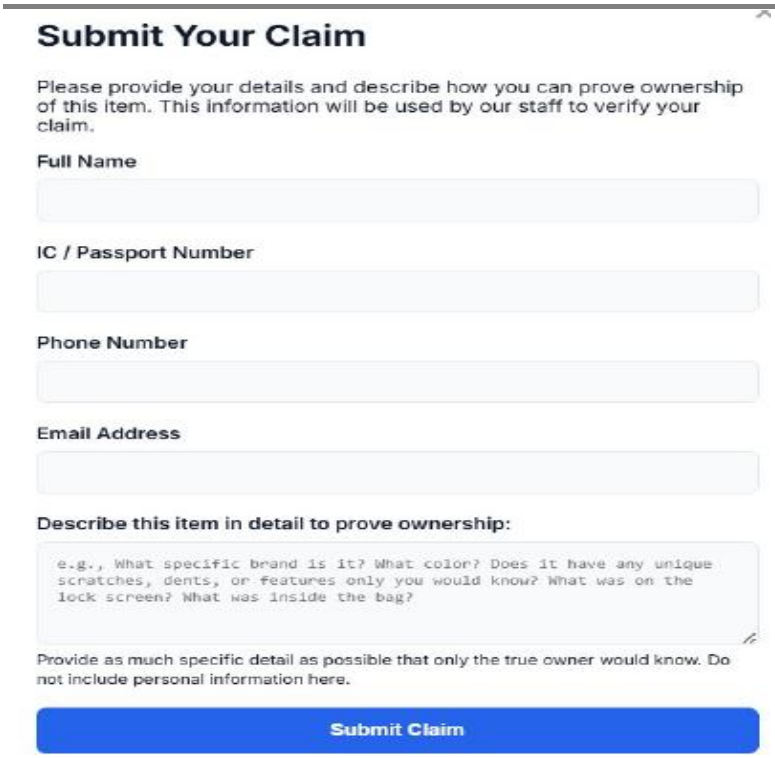

Fig. 6. Claim form page

Staff Administration Interface

The staff dashboard (Fig 7) provided authorized personnel with comprehensive management capabilities, displaying key metrics including "Pending Review," "Total Unclaimed Items," and "New Reports Today." Staff members could manually report found items through a dedicated form (Fig 8) and manage incoming reports through the View Reports interface (Figure 9), which included validation and promotion functionalities to transition reports to the main inventory (Figure 10).

The View All Items page (Fig 11) offered staff complete inventory oversight with advanced search and filtering options, while the detailed item view (Fig 12) provided comprehensive information including basic item details, finder contact information, and complete claims history. The Manage Claims interface (Fig 13) enabled efficient processing of ownership claims with approve/reject functionality and claimant verification features.

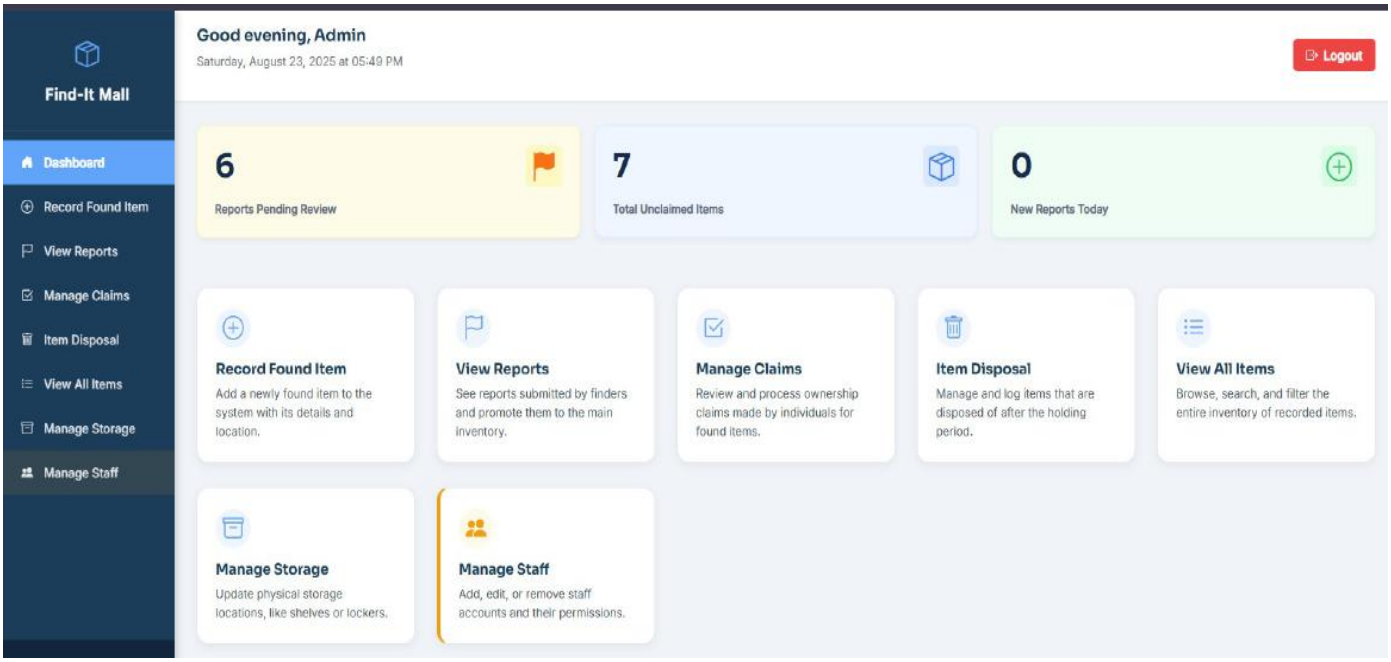

Fig. 7. Admin dashboard interface

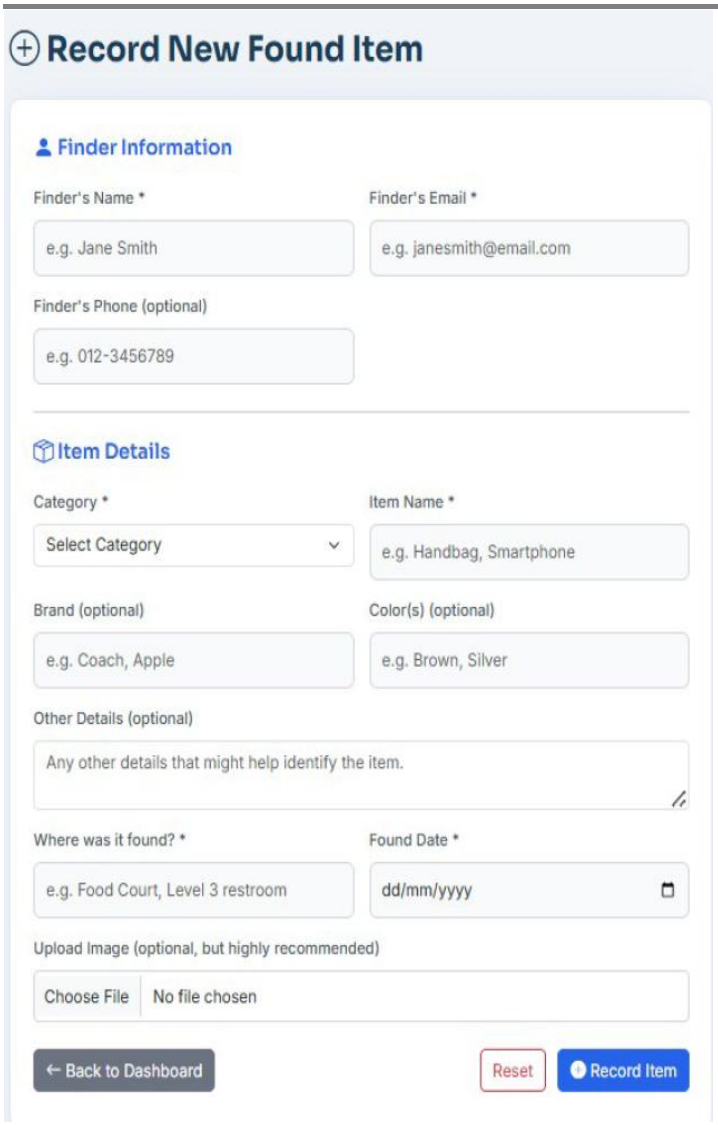

Fig. 8. Report form (staff) interface

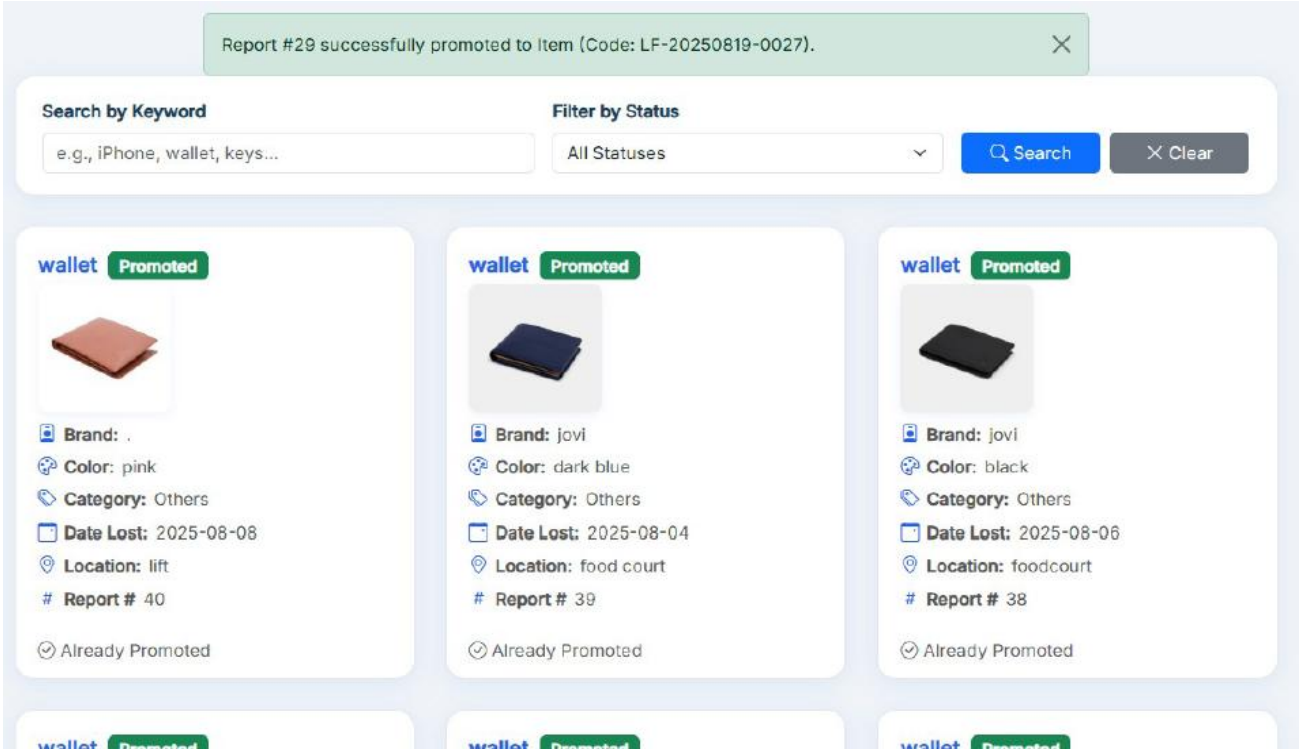

Fig. 9. Lost item view page

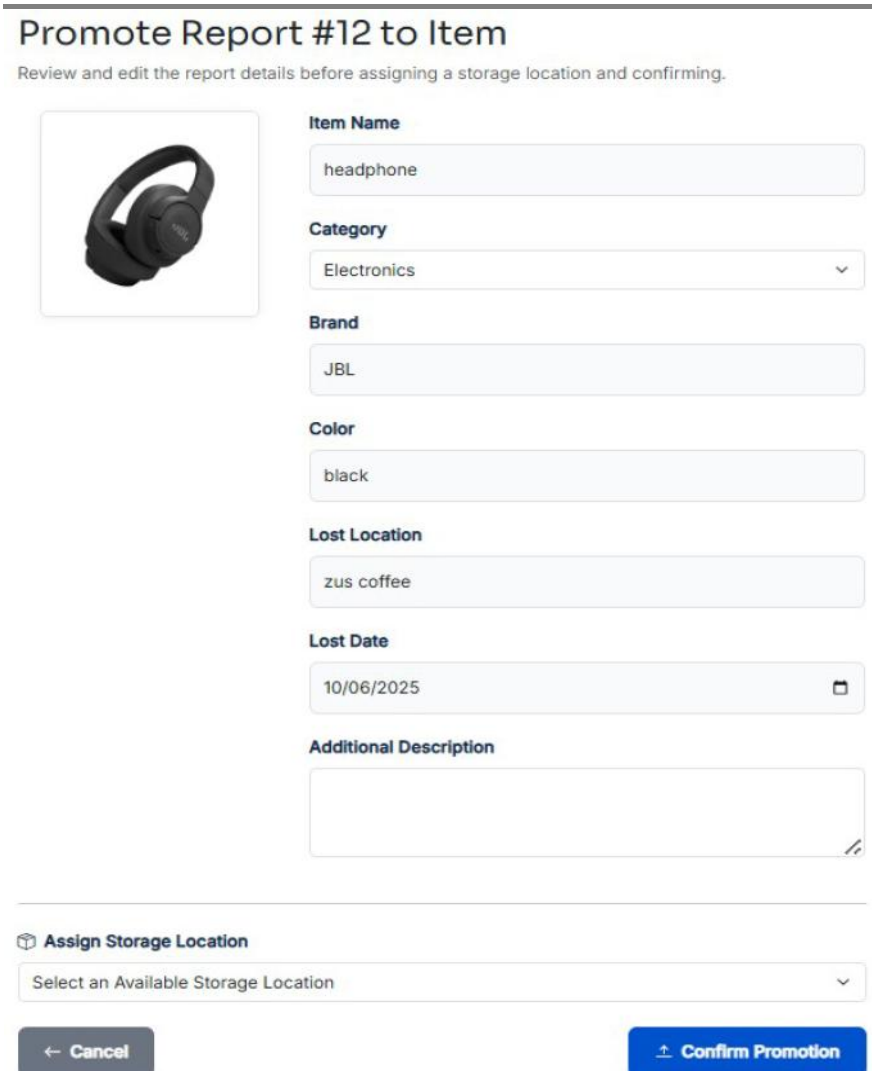

Fig. 10. Promote item page

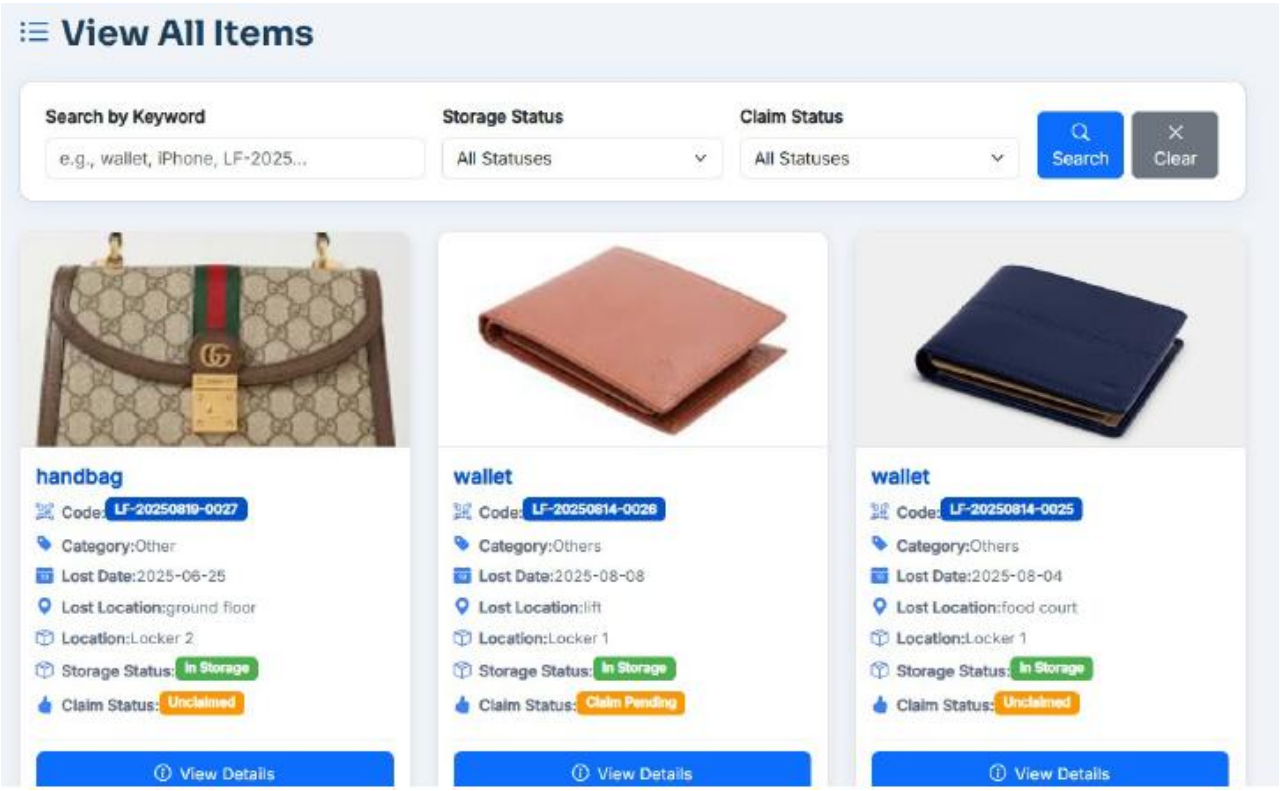

Fig. 11. Item list page

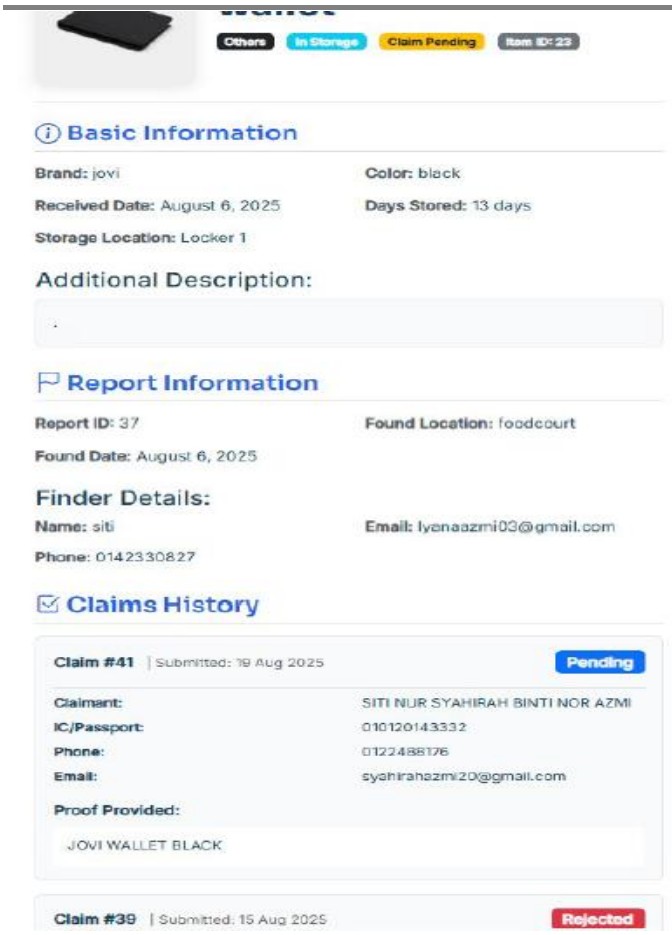

Fig. 12. Item detail page

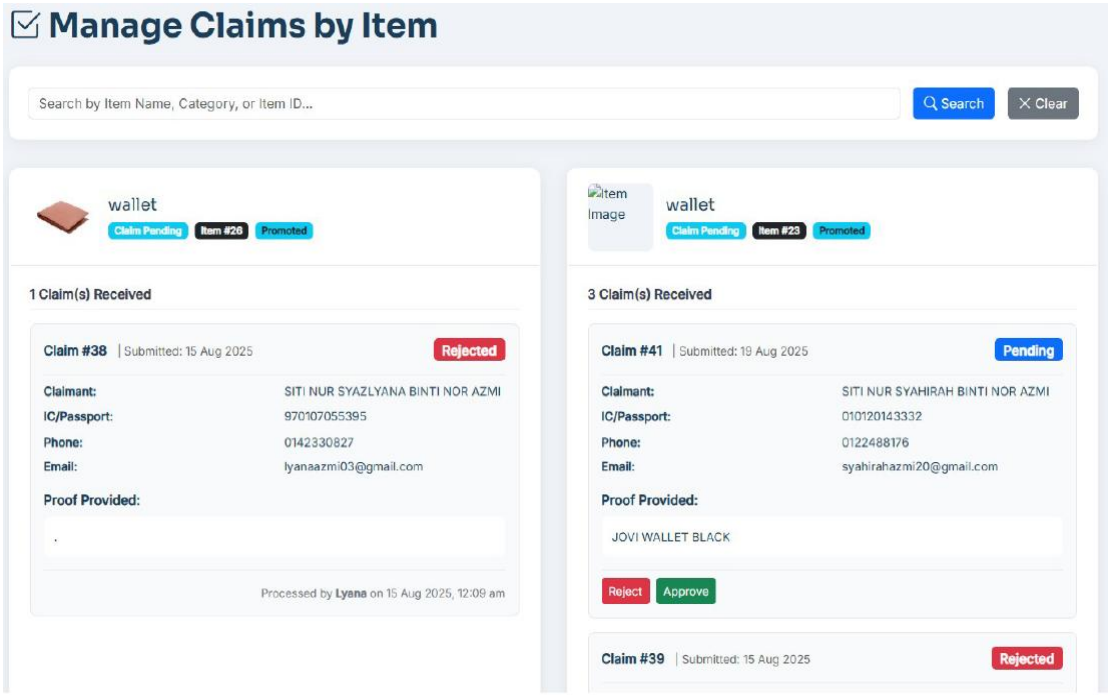

Fig. 13. Claims management page

Operational Management Interfaces

The system included specialized interfaces for operational management, including the Item Disposal page (Fig 14) for handling unclaimed items beyond their holding period, featuring disposal logging and undo capabilities. The Storage Management interface (Fig 15) provided complete control over physical storage locations, allowing staff to add, modify, and monitor storage availability while tracking item counts per location.

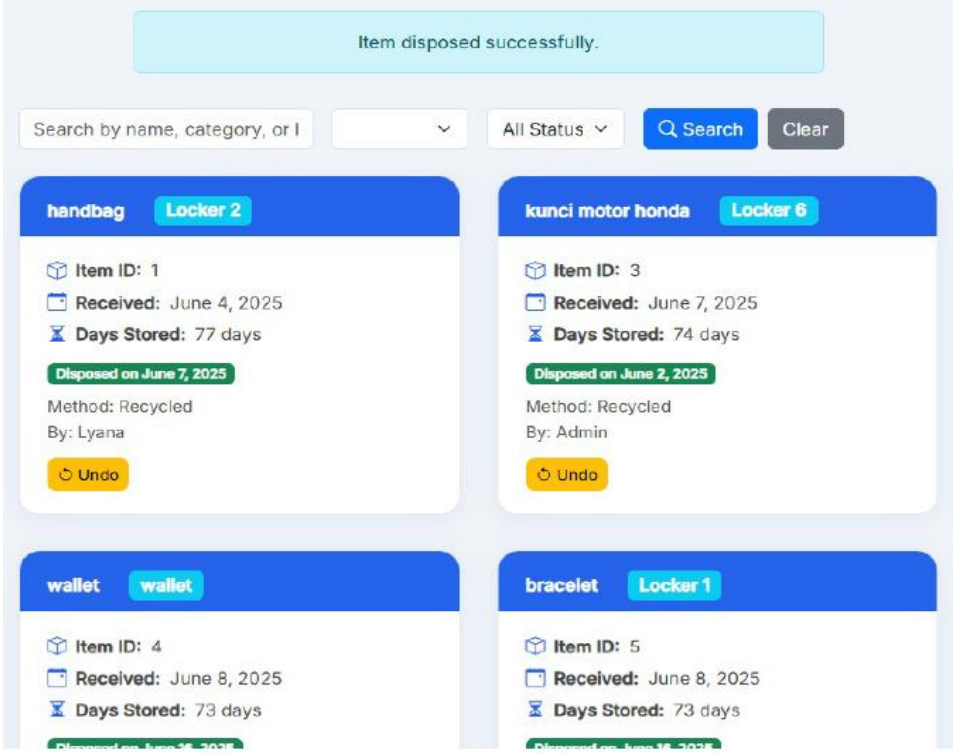

Fig. 14. Item disposal page

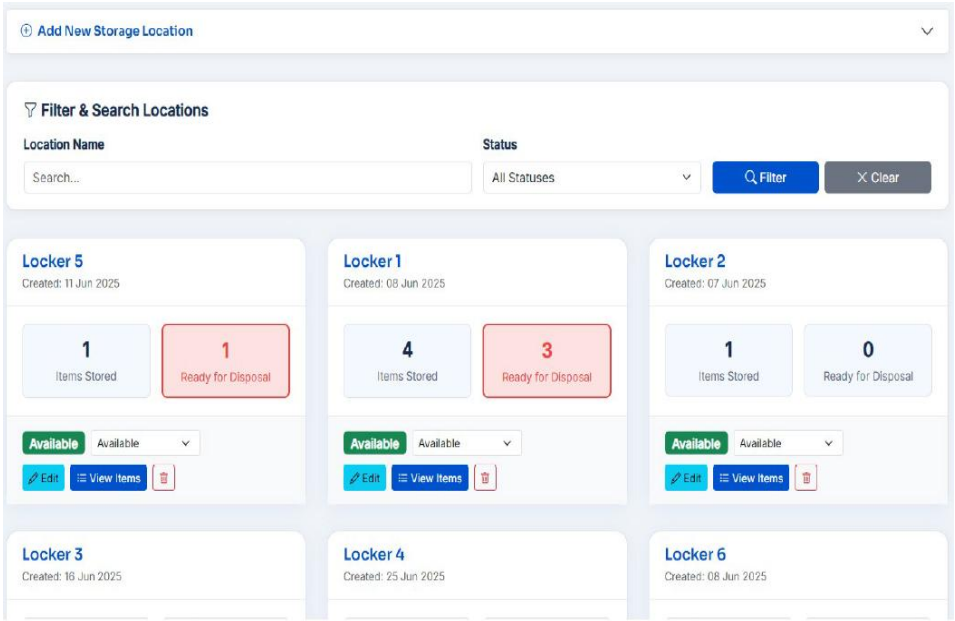

Fig. 15. Storage management page

CONCLUSION

The development of the Find-It Mall: Lost and Found Management System successfully addresses the long-standing inefficiencies of traditional, paper-based item recovery processes commonly used in Malaysian shopping malls. Through a comprehensive development cycle involving requirement analysis, system design, implementation, and testing, the project delivers a fully functional digital platform that enhances operational efficiency, transparency, and user satisfaction.

The system replaces vulnerable logbook records with a secure, centralized MySQL database and modernizes the item recovery workflow through web-based modules accessible to both the public and mall staff. Core features, including the public item gallery, online claim submission, automated notifications, staff dashboard, item disposal management, and storage tracking work together to ensure faster, more accurate, and user-friendly

lost-and-found operations. The testing and User Acceptance Testing (UAT) results further validate that the system performs reliably, meets its functional requirements, and provides a significant improvement over manual process.

Overall, Find-It Mall demonstrates how digital transformation can elevate customer service in high-traffic retail environments by improving communication, strengthening data integrity, and reducing administrative workload. The system not only fulfils its original objectives but also establishes a scalable foundation for future enhancements that can further support mall operations and enhance public trust in lost-and-found services.

Future Work

Future enhancements of the Find-It Mall system should focus on integrating context-aware technologies, advanced analytics, and stronger privacy protection mechanisms to further improve efficiency, user confidence, and operational scalability. One important direction involves expanding the system with proximity-sensing solutions such as Bluetooth beacons or RFID to automate the detection and logging of found items within mall premises. As demonstrated in recent smart retail studies, beacon-triggered interactions significantly improve user engagement and operational responsiveness, suggesting that similar proximity-based triggers could help streamline the item intake process, notify staff of new deposits, or guide users to collection points more effectively [16].

In addition to proximity sensing, the system can benefit from computer-vision-driven analytics to better understand item-loss patterns and optimize mall resources. Heatmap generation and object tracking using models such as YOLOv5 and DeepSORT have been shown to produce actionable insights for retail environments, enabling organizations to identify high-incidence locations and behavioural trends. Applying this approach to lost-and-found operations would allow management to make data-informed improvements, such as reallocating signage, improving surveillance coverage, or adjusting staff deployment in frequently affected zones [17].

At the same time, future versions of the system should consider integrating privacy-preserving identity verification mechanisms, especially for high-value claims that require credible ownership evidence. Blockchain-supported decentralized identity models and selective-disclosure techniques offer a more secure alternative to storing sensitive personal data directly. By adopting Merkle-tree-based proofs and AI-assisted verification workflows, the system can validate ownership with minimal personal information exposure, strengthening user trust and safeguarding against data breaches or unauthorized disclosures [18].

Finally, the platform's mobile experience should be enhanced with responsible push-notification strategies designed to improve user responsiveness without causing notification fatigue or negative psychological effects. Recent research highlights the importance of carefully managing smart push functions, as excessive or poorly timed notifications can lead to stress or compulsive smartphone behaviour. Integrating user-controlled notification preferences, context-aware timing, and relevance filters will ensure that updates, such as match alerts, claim status changes, or new item postings enhance convenience rather than disrupt user well-being [19].

Collectively, these future improvements—ranging from proximity sensing and computer-vision analytics to privacy-preserving verification and responsible mobile engagement will help evolve the Find-It Mall system into a more intelligent, secure, and user-centric lost-and-found platform capable of supporting large-scale, high-traffic environments.

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