CampusTrade

Need & Feasibility analySIS report

Ananya kumar (102303598)

Gaurav malik (102303899)

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**1. Introduction**

At the end of each academic year, many final-year students leave behind usable belongings such as cooktops, textbooks, and personal items. These often go to waste due to limited time or lack of an organized exchange mechanism. Incoming students later repurchase similar items, leading to financial loss and environmental impact.

This recurring issue indicates the need for a structured, campus-specific digital platform that allows students to exchange items without monetary transactions. The proposed solution aims to establish a sustainable barter system accessible only to members of the campus community.

**1.1 Problems Faced by Students**

| **Situation** | **Impact on Student Life** |
| --- | --- |
| Limited notice during hostel clearance prevents organized resale. | Usable items are discarded prematurely. |
| Inter-hostel or off-campus transactions are difficult to coordinate. | Students incur unnecessary expenses. |
| Hostel security restrictions limit exchange opportunities. | Online sale posts receive attention but result in few actual trades. |
| Public trading platforms expose students to spam or fraud. | Safety and trust issues discourage participation. |
| Student clubs lack centralized access to reusable materials. | Project timelines are affected and resources underutilized. |

**1.2. Limitations of Existing Solutions**

* **Social Media Pages:** Poor search options and lack of structure make them inefficient for item exchange.
* **Messaging Groups:** Excessive message flow and irrelevant content make communication ineffective.
* **External Marketplaces:** Delivery costs make them unsuitable for low-value items.
* **Institutional Portals:** Designed for administrative functions; not intended for peer-to-peer trading.

**2. Need Analysis**

**2.1 Problem Statement**

There is currently no reliable, hostel-specific, and cash-free platform that enables students to:  
a) Upload and list an item conveniently from a mobile device,  
b) Find potential matches within the campus community, and  
c) Complete exchanges through barter instead of cash.

**2.2 Target Users**

* **Primary Users:** On-campus hostel residents (approx. 800) seeking to exchange or donate items.
* **Secondary Users:** Day scholars (approx. 200) in need of specific resources.
* **Tertiary Users:** Student clubs managing or reusing materials for events and projects.

**2.3 Functional Requirements**

* User registration and verification using institutional email.
* Search and filter functionality for ease of navigation.
* Barter offer/request system for item exchange.
* Notification alerts for new listings, offers, and successful matches.

**Detailed Descriptions of Functional Requirements**

**2.3.1 Functional Requirements for User Registration**

|  |  |
| --- | --- |
| **Purpose** | Ensures only authorized campus members can access the system, maintaining trust and data security. |
| **Input** | User enters name, institutional email, and password during registration. |
| **Processing** | System validates the institutional email domain, sends a verification link, and stores credentials securely. |
| **Output** | Verified user account created and access granted to the platform. |

**2.3.2 Functional Requirements for Search Functionality**

|  |  |
| --- | --- |
| **Purpose** | Enables quick and efficient discovery of desired items, improving user experience**.** |
| **Input** | User enters search keywords or applies filters such as category or hostel. |
| **Processing** | System queries the database based on parameters and ranks the most relevant results. |
| **Output** | Display of filtered, easy-to-navigate item listings. |

**2.3.3 Functional Requirements for Exchange System**

|  |  |
| --- | --- |
| **Purpose** | Facilitates seamless item exchange without cash transactions, promoting resource reuse. |
| **Input** | User selects an item and proposes an exchange or submits a barter request. |
| **Processing** | System checks compatibility, validates both parties’ interest, and logs the request. |
| **Output** | Notification sent to both users confirming the barter proposal |

**2.3.4 Functional Requirements for Notifications**

|  |  |
| --- | --- |
| **Purpose** | Keeps users informed of updates and opportunities, increasing engagement and responsiveness. |
| **Input** | System detects new user actions such as item upload, barter offer, or match confirmation. |
| **Processing** | Notification service retrieves relevant users and triggers app or email alerts. |
| **Output** | Real-time notifications sent to users. |

**2.4 Non-Functional Requirements**

* **Usability:** Intuitive, user-friendly interface accessible across devices.
* **Security:** Safe login system and strong data protection measures.
* **Performance:** Smooth browsing, minimal loading times, and efficient search.
* **Scalability:** Potential to expand to other campuses or institutions.
* **Reliability:** Consistent uptime and regular data backup.

**2.5 External Interface Requirements**

**1. User Interface (UI):** The system shall provide a responsive, web-based interface accessible via major browsers such as Chrome, Firefox, and Edge. The interface must automatically adapt to screens ranging from 5-inch mobile displays (720 × 1280 pixels) to 15-inch laptop screens (1366 × 768 pixels and above).

**2. Hardware Interface:** The platform shall function smoothly on standard computing and mobile devices with at least 2 GB RAM and 1.5 GHz processor speed. It should not require any specialized hardware or peripheral devices.

**3. Software and Communication Interface:** The system shall integrate with institutional authentication services (e.g., campus email verification) and utilize secure internet protocols (HTTPS) for data transmission.

**2.6 Performance Requirements**

* The system shall return search results and item listings within two seconds under normal server load.
* Images and media uploads (up to 5 MB each) shall load and display within three seconds on standard Wi-Fi and 4G networks.
* The platform shall support simultaneous access by multiple users (upto 200 concurrent users) without noticeable degradation in response time.

**2.7 Consequences of Inaction**

If the need for a barter platform remains unaddressed, students will continue to face:

* Unnecessary financial losses through repeated purchases.
* Environmental strain due to disposal of usable goods.
* Increased stress and reduced financial well-being.
* Missed opportunities for sustainability initiatives within the institution.

**2.8 Summary**

A dedicated campus barter platform offers a practical, sustainable solution for reducing waste, saving money, and promoting community interaction. By facilitating seamless, cash-free exchanges, the system aligns with institutional goals of sustainability and student welfare.

**3. Feasibility Analysis**

**3.1 Purpose of the Document**

* To evaluate the feasibility of developing a digital platform for campus-wide barter of goods and materials among students.
* To assess the technical, economic, financial, and legal aspects of implementing the proposed system.
* To provide a structured basis for decision-making regarding project initiation and resource allocation.

**3.2 Technical Feasibility**

* The system will be developed using **Python** and **Flask**, ensuring flexibility, maintainability, and rapid development.
* **PostgreSQL** will be used for secure, efficient, and reliable data storage of user accounts, listings, and transaction records.
* Deployment on **Render (Free Tier)** allows cloud-based hosting with minimal maintenance and scalability options.
* **GitHub** will be utilized for version control, supporting collaborative development, code tracking, and rollback.
* The proposed technology stack is open-source, well-documented, and compatible, minimizing implementation risk.

**3.3 Economic Feasibility**

* The project relies primarily on open-source technologies, reducing licensing costs.
* Free-tier hosting and cloud services minimize infrastructure expenses.
* Maintenance costs are minimal due to automated cloud infrastructure and low operational requirements.
* The platform supports long-term campus sustainability goals, providing non-monetary value for minimal expense.

**3.4 Financial Feasibility**

* No specialized hardware or paid software licenses are required, keeping financial requirements low.
* The project can be developed and deployed within the existing institutional budget.
* Future scalability can be supported through incremental upgrades to hosting plans without significant cost increases.
* Investment in the system is justified by benefits such as reduced waste, increased resource utilization, and improved student engagement.

**3.5 Legal Feasibility**

* Access will be restricted to verified campus users via institutional email, ensuring accountability and compliance with campus IT policies.
* Data handling and communications will utilize HTTPS encryption, safeguarding user information.
* The platform will not facilitate financial transactions, avoiding regulatory complications related to payments.

**3.6 Conclusion**

* The Campus Barter System is **technically, economically, financially, and legally feasible**.
* Implementation aligns with institutional objectives of sustainability, cost-efficiency, and community engagement.
* The project can be initiated immediately with minimal investment and scaled according to user adoption.