# Case Study Analysis

**1. Problem Statement** The university's current process for borrowing and returning teaching equipment is entirely manual, relying on paper forms and physical logbooks . This has led to several significant problems:

* **Data Inaccuracy:** Records are often lost, incomplete, or illegible.
* **Poor Equipment Tracking:** Devices are frequently unreturned or kept for extended periods without follow-up.
* **No Real-Time Visibility:** Staff and users cannot check equipment availability instantly.
* **Inefficient Reporting:** The IT department cannot easily generate statistics on equipment usage, damage, or trends.
* **Low Staff Efficiency:** Staff spend too much time on manual paperwork and verification.

**2. Key Requirements** The proposed "Equipment Borrowing Management System" must be a web-based platform that allows:

* Faculty and students to submit borrowing requests online.
* IT staff to manage a digital approval workflow.
* Real-time tracking of every item's status (available, borrowed, maintenance).
* Automatic email/system notifications and reminders for return due dates.
* Generation of reports for administrators.
* User management with different access levels (admin, staff, student/faculty).

# System Request Drafting

| **Field** | **Description** |
| --- | --- |
| Project Name | Equipment Borrowing Management System |
| Project Sponsor | IT Department |
| Business Need | The current manual, paper-based equipment borrowing process is inefficient, prone to data loss and inaccuracies , and provides no real-time visibility into equipment status. This results in lost equipment , low staff efficiency , and an inability to generate reports for planning. |
| Business Requirements | The system must be a web-based platform that provides:  • Online viewing of equipment and submission of borrowing requests.  • A digital approval workflow for staff.  • Real-time status tracking for all equipment.  • Automatic email reminders for due dates.  • A reporting module for administrators.  • Role-based user management |
| Business Value | This project will deliver:  • Improved operational efficiency by automating manual tasks.  • Improved data accuracy by replacing paper logs.  • Better resource utilization and reduced equipment loss through real-time tracking. • Enhanced decision-making through reporting and analytics.  • Support for digital transformation goals by reducing paper-based work. |
| Special Issues or Constraints | • The system must be web-based.  • Must be accessible to all faculty and students, likely requiring integration with existing university login systems.  • Staff will require training on the new digital workflow. |

# Feasibility Matrix

| Feasibility Type | Rating (High/Med/Low) | Justification |
| --- | --- | --- |
| Technical | High | The project is a web-based system with common features like online forms, workflows, and tracking . This is standard, proven technology. The university's IT Department is the sponsor, implying in-house technical staff and infrastructure are available. The technical risks are very low. |
| Operational | High | The system directly solves all the major problems (inaccuracy, inefficiency, no tracking) identified in the case study . It will streamline the process for both staff (approvals, tracking) and users (online requests). User acceptance is likely to be very high as it's more convenient. |
| Economic | High | The project's tangible benefits—such as reduced equipment loss and saved staff labor hours—are expected to strongly outweigh the one-time development and training costs. By automating inefficient manual processes, the system will provide clear, positive financial value over time. |
| Schedule | High | The project has a clear and well-defined scope . It is not an overly complex system. It can realistically be developed and deployed in a reasonable timeframe (e.g., a few months). No major dependencies or constraints that would risk the schedule are mentioned. |

# **FEASIBILITY REPORT**

## **Project: Equipment Borrowing Management System**

### **I. Executive Summary (Tóm tắt dự án)**

This report assesses the feasibility of developing a web-based **Equipment Borrowing Management System** for the university. The project is proposed by the IT Department to replace the current manual, paper-based process for borrowing and returning teaching equipment.

The current manual system is inefficient, prone to significant data errors, and results in lost or untracked equipment . The proposed system aims to automate the entire process, from online requests and digital approvals to real-time tracking and automated reminders .

This study evaluates the project's feasibility across four key criteria: Technical, Organizational (Operational), Economic, and Schedule. The analysis finds that the project is **highly feasible** in all four areas. The technology required is standard, the operational benefits are high, the economic value is positive, and the scope is clear and achievable.

The final recommendation is to **Accept Project**  and proceed with development.

### **II. Project Context and Needs (Bối cảnh và nhu cầu)**

**Perceived and Real Needs:** The IT Department currently manages all equipment borrowing (projectors, laptops, microphones) using paper forms and physical logbooks. This manual process has led to several critical business problems:

* **Data Inaccuracy and Loss:** Paper forms are often misplaced, illegible, or incomplete, leading to lost records.
* **Untracked Equipment:** Items are frequently kept for extended periods or not returned, with no effective follow-up system.
* **No Real-Time Visibility:** Staff and users cannot check which items are available or who has them without manually checking the logs.
* **Operational Inefficiency:** Staff must spend significant time handling paper requests, verifying availability, and manually updating logs.
* **Lack of Reporting:** It is extremely difficult to generate statistics on equipment usage, damage, or borrowing trends for maintenance and future purchasing decisions .

**Current Organizational Environment:** The current environment consists of IT Department staff managing this process for all university faculty and students. The reliance on manual work creates a bottleneck, drains staff resources, and provides a poor service experience for users.

### **III. Project Scope and Objectives (Phạm vi và mục tiêu)**

**In-Scope:** The proposed system will be a web-based platform that includes the following features:

* **Online Borrowing Requests:** Users (faculty/students) can log in, view available equipment, and submit borrowing requests online.
* **Approval Workflow:** IT staff can digitally approve, reject, or reschedule requests.
* **Real-Time Tracking:** The system will maintain an up-to-date status for every item (e.g., available, borrowed, under maintenance, reserved).
* **Notifications and Reminders:** Automatic email or system alerts will notify borrowers before their return due date and for overdue items.
* **Reporting and Analytics:** Administrators can generate reports on borrowing activity, popular items, and overdue returns.
* **User Management:** Different access levels will be provided for administrators, staff, and general users.

**Out-of-Scope:**

* This project does not include the procurement of new physical equipment.
* This project does not cover the physical repair or maintenance process itself (only tracking an item's "under maintenance" status).

**Stakeholders:**

* **Project Sponsor:** IT Department
* **Primary Users:** IT Department Staff
* **End Users:** University Faculty and Students

**Objectives (Business Value):**

* Improve operational efficiency by automating manual tasks.
* Improve data accuracy by eliminating paper-based logs.
* Improve resource utilization and reduce equipment loss through real-time tracking.
* Support digital transformation goals by reducing paper-based work.

### **IV. Evaluation Criteria (Tiêu chí đánh giá)**

The feasibility of this project was assessed using the following four criteria:

1. **Technical Feasibility:** The project is a web-based system with common features like online forms, workflows, and tracking . This is standard, proven technology. The university's IT Department is the sponsor, implying in-house technical staff and infrastructure are available. The technical risks are very low.
2. **Organizational (Operational) Feasibility:**The system directly solves all the major problems (inaccuracy, inefficiency, no tracking) identified in the case study . It will streamline the process for both staff (approvals, tracking) and users (online requests). User acceptance is likely to be very high as it's more convenient.
3. **Economic/Financial Feasibility:** The project's tangible benefits—such as reduced equipment loss and saved staff labor hours—are expected to strongly outweigh the one-time development and training costs. By automating inefficient manual processes, the system will provide clear, positive financial value over time.
4. **Schedule Feasibility:** The project has a clear and well-defined scope . It is not an overly complex system. It can realistically be developed and deployed in a reasonable timeframe (e.g., a few months). No major dependencies or constraints that would risk the schedule are mentioned

### **V. Feasibility Analysis (Phân tích khả thi)**

The project is rated **High** in all four feasibility areas.

* **Technical Feasibility (Rating: High):** The project is a web-based application. This is a standard, well-understood technology. The required features (online forms, workflows, tracking, notifications) are common. The university already has an IT Department, implying existing infrastructure (servers, network) and technical staff are available. The risk is low.
* **Organizational (Operational) Feasibility (Rating: High):** The project has high operational feasibility. It directly addresses all the significant problems (data inaccuracy, inefficiency, no tracking) identified in the case study . Both staff and users (faculty/students) will benefit. Staff workload is reduced, and users get a more convenient online system. User acceptance is likely to be very high.
* **Economic/Financial Feasibility (Rating: High):** The project's tangible benefits—such as reduced equipment loss (avoiding replacement costs) and saved staff labor hours—are expected to strongly outweigh the one-time development and training costs. By automating inefficient manual processes, the system will provide clear, positive financial value over time.
* **Schedule Feasibility (Rating: High):** The project has a clear and well-defined scope as outlined in Section III. The system is not overly complex. A project of this nature can realistically be designed, developed, and deployed within a reasonable academic or business timeframe (e.g., 3-6 months).

### **VI. Risk and Alternatives (Rủi ro và phương án thay thế)**

**Key Risks:**

1. **Technical Risk (Low):** The system may need to integrate with the university's existing single sign-on (SSO) login system. This is a common task but must be planned for.
2. **Organizational Risk (Low):** Staff will need to be trained on the new digital workflow. Mitigation: Schedule mandatory training sessions before launch.
3. **Data Risk (Low):** Deciding whether to migrate old paper log data. Mitigation: A clean start (no migration) is recommended to ensure data integrity from day one.

**Alternatives:**

1. **Maintain Current System (Do Nothing):** This is not a viable alternative. The current problems of data loss, inefficiency, and untracked equipment will only get worse as the university grows.
2. **Outsource (Purchase a COTS solution):** The university could buy a pre-built asset management system. This might be faster but could be more expensive and less flexible to the university's specific needs.
3. **Develop In-House (Proposed):** This is the recommended alternative. It allows for a custom-built solution that perfectly matches the university's workflow, leveraging the existing IT department.

### **VII. Findings and Recommendation (Kết luận và khuyến nghị)**

**Findings:** The proposed Equipment Borrowing Management System is a necessary and highly viable project. It directly solves critical operational problems, is based on standard technology, and is expected to provide a positive return on investment by reducing equipment loss and improving staff efficiency. The project has a high likelihood of success.