

**WOLKITE UNIVERSITY**

**COLLEGE OF COMPUTING AND INFORMATICS  
DEPARTMENT OF COMPUTER SCIENCE**

**PROJECT TITLE :**

**HOTEL BOOKING MANAGEMENT SYSTEM FOR YEJOKA HOTEL**

**PROPOSAL**

**GROUP MEMBERS**

Name Id

1. Amanual Degu……………….NSR/0210/13
2. Addisu Agarie………………..NSR/0150/13
3. Senessa Assefa……………….NSR/1872/13
4. Juma Miyen…………………..NSR/2537/13

**Advisor**

**Name: Firehiwot T.**

**Nov 06, 2023**

**Wolkite University,Wolkite, Ethiopia**

**Advisor Name Signature Date**

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**Examiner 1 Signature Date**

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**Examiner 2 Signature Date**

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**Examiner 3 Signature Date**

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# 1. Introduction

The hotel industry has a long colorful history beginning with inns, and lodges, and evolving into the hospitality industry. a tremendous change in the industry of tourism in the world brought many changes in the field of hotel business. This means that the expansion and development of travel had a significant impact on the development of the hotel industry. This industrial growth and development was not limited to developed countries, as our country is also the owner of natural, cultural and beautiful landscape, our country was also a part of this development.

Many different services must be performed in a hotel in order to satisfy guest needs. Failure to provide even a seemingly inconsequential service, or failure to maintain the standards of the service that are provided, can often result in a dissatisfied or, just as bad, an indifferent guest

Hotels are many things. They are businesses in a very competitive industry, and this affects how they need to be managed. And they are labor intensive business where many employees provide service to guests, and the service provided are a very personal nature.

Today’s, service providing companies are facing their toughest competition. and In this era of increased competition, the importance of achieving high levels of performance in service delivery and customer satisfaction has gained the attention of researchers and practitioners. This is especially the case why we focus on this problem area to study, as many companies are focusing upon service excellent improvement issues in order to drive high levels of customer satisfaction and loyalty. The hotel management system offers several benefits to various stakeholders involved in the hotel operations:

Firstly, the system greatly improves operational efficiency. It centralizes and automates essential processes such as reservations, check-in/check-out, billing, and housekeeping.

Secondly, the hotel management system enhances the guest experience. It enables personalized services and efficient handling of guest requests. With quick and accurate check-in/check-out processes, guests can enjoy a hassle-free arrival and departure. The system also facilitates effective communication between guests and hotel staff, ensuring prompt responses to inquiries and requests, ultimately resulting in higher guest satisfaction and loyalty.

Efficient resource management is another advantage of the hotel management system. It enables effective allocation and tracking of resources such as rooms, inventory, and staff.

Additionally, the system empowers data analysis and reporting. It collects and analyzes large volumes of data related to guest preferences, booking patterns, and operational performance.

Lastly, the hotel management system fosters effective communication and collaboration among hotel staff.

## 1.1. Brief Background of the Study Areas

Yejoka Hotel is located in Wolkite, a town in the Central Ethiopia Regional State, one of the leading tourist destinations of Wolkite. The hotel is designed to meet the contemporary customers’ expectations with regard to the interior and exterior designs.

### Mission:

Our mission is to deliver exceptional hospitality and personalized service that makes every guest feel valued and cared for during their stay. With a dedicated team committed to going above and beyond, we create an environment where guests feel at home and experience extraordinary moments. From the warm welcome at check-in to the attentive assistance throughout their stay, we strive to exceed expectations and leave a lasting impression. Our focus is on providing a truly exceptional experience, ensuring that each guest feels valued and appreciated throughout their time with us.

### Vision:

Our vision is to be the top choice for travelers seeking a luxurious and comfortable stay in Wolkite. We aim to offer unparalleled service, world-class amenities, and an unforgettable experience. By curating every detail, from our meticulously designed accommodations to our exquisite dining options and state-of-the-art facilities, we create an ambiance of sophistication and relaxation. We strive to set new industry standards by embracing innovation, staying ahead of trends, and continuously exceeding expectations. Our goal is to be more than just a place to stay; we want to be a destination that evokes wonder, comfort, and joy.

## 1.2. Statement of the Problem

Under the current system, every task is carried out by manually. Much of the task in the existing system needs physical contact.

The current system functions as follows:

When a guest wants to make a reservation, they typically contact the hotel via phone, email, or in-person. The staff manually records the guest's details, reservation dates, room preferences, and special requests. Room availability is checked manually by referring to physical records like room availability paper-based reservation logs. Once the reservation is confirmed, the receptionist receives a written confirmation so he/she will allocate gusts to the rooms.

During check-in, guests arrive at the hotel reception desk and provide their reservation details or identification. The front desk staff manually retrieves the guest's reservation information, checks room availability, and assigns a physical room key. The guest signs a physical registration form, providing necessary details. At check-out, the guest settles the bill through a handwritten or manually printed invoice, and the staff updates the room availability records accordingly.

Housekeeping and maintenance tasks are managed manually. Housekeeping staff update room readiness status on a physical board or log. Maintenance requests or repair needs are communicated verbally or through handwritten work orders. Housekeeping and maintenance activities are manually recorded.

Billing and accounting processes involve manual calculations of charges based on room rates and additional services. Invoices are handwritten or manually printed, and accounting staff enter transaction details into ledgers or spreadsheets for financial recording and reporting purposes.

Communication between hotel staff, departments, and guests is primarily done verbally or through written communication. Guest requests, inquiries, and complaints are handled manually, with staff members coordinating internally to fulfill guest needs. Feedback and resolutions are communicated in person and through written responses.

Reporting and analysis rely on manual compilation of data from various sources like reservation logs, billing records, and occupancy reports. Performance indicators, and trend analysis are performed manually using spreadsheets or other manual record-keeping methods.

using a manual system in a hotel can have several drawbacks. Firstly, the processes involved are often time-consuming, leading to slower operations and potential delays in guest service. Secondly, human errors are more likely to occur, such as incorrect data entry or miscalculations, which can result in guest dissatisfaction and financial discrepancies. Additionally, manual systems can struggle to handle increasing volumes of data and transactions, limiting the scalability of the hotel. Retrieving information from physical records or multiple spreadsheets can be inefficient, hindering decision-making and real-time updates. Effective communication and collaboration among staff may also be challenging, leading to miscommunication and delays. Manual systems typically lack robust reporting and analysis capabilities, making it difficult to extract meaningful insights for strategic decision-making. Security risks and compromised data integrity are also present in physical record-keeping. Overall, the guest experience may suffer due to slower processes, delayed responses, and potential errors. Recognizing these drawbacks highlights the need for an efficient and automated hotel management system to overcome these challenges and improve operations.

Using a manual system in a hotel can have several potential drawbacks:

* Time-Consuming Processes: Manual systems often require more time and effort to perform tasks.
* Staff members need to manually handle paperwork, record information, and perform calculations, leading to slower operations and potential delays in guest service.
* Increased Human Errors: Manual systems are prone to human errors, such as incorrect data entry, miscalculations, or misplaced documents. These errors can result in guest dissatisfaction, financial discrepancies, and operational inefficiencies.
* Limited Scalability: Manual systems can struggle to handle increasing volumes of data and transactions as a hotel grows or during peak seasons. The reliance on physical records and manual processes can become overwhelming and hinder the hotel's ability to scale operations effectively.
* Difficulty in Data Retrieval: Retrieving and accessing information in a manual system can be time-consuming and inefficient. Searching through physical documents or multiple spreadsheets to find transaction history, occupancy reports can lead to delays and errors.
* Lack of Real-Time Information: Manual systems often lack real-time updates and access to critical information. This can hinder decision-making, as hotel staff may not have immediate visibility into room availability, guest preferences.
* Inefficient Communication and Collaboration: Manual systems can impede effective communication and collaboration among hotel staff. Sharing information, coordinating tasks, and resolving guest issues may require physical movement or rely on verbal communication, leading to miscommunication, delays, and reduced productivity.
* Limited Reporting and Analysis: Manual systems typically lack robust reporting and analysis capabilities. Generating reports, analyzing data, and identifying trends require manual compilation and analysis, making it challenging to extract meaningful insights for strategic decision-making.
* Security and Data Integrity Risks: Physical records and documents in a manual system can be vulnerable to loss, damage, or unauthorized access. This poses security risks and compromises the integrity and confidentiality of guest information, financial records, and other sensitive data.
* Guest Experience Impact: Manual systems can result in slower check-in/check-out processes, delays in addressing guest requests, and potential errors in billing. These factors can negatively impact the guest experience, leading to dissatisfaction and reduced guest loyalty.

By recognizing these potential drawbacks, we know the need for a more efficient and automated system, to overcome these challenges and improve overall operations.

Overall, a manual hotel management system relies on physical documentation, manual data entry, and traditional communication channels. While this system may have served its purpose in the past, it can be time-consuming, prone to errors, and lacks the efficiency and automation offered by modern hotel management systems

## 1.3. Objectives of the Project

### 1.3.1. General Objective

The general objective of a hotel management system project is to develop and implement a comprehensive software solution that manages various aspects of hotel operations.

### 1.3.2. Specific Objective

The following specific objectives are set in order to meet the project's general objective:

* Develop and implement a centralized reservation system to enable guests to make reservations, and provide hotel staff with a system to manage and track reservations, room availability, and guest preferences.
* Develop and implement system that can manage the check-in and check-out process by implementing guest registration, room assignment, and billing procedures.
* Provide real-time updates on room status, housekeeping tasks, and maintenance requests to optimize room allocation, maintenance, and housekeeping operations.
* We will automate the billing processes for room charges and additional services, incorporating a payment method simulation feature. This automation will streamline the calculation and handling of financial transactions.
* Maintain guest profiles, preferences, and history to facilitate handling of special requests, inquiries, and complaints.
* Generate reports and analytics on occupancy rates, guest satisfaction, and operational efficiency.
* Implement security measures to protect guest data and ensure compliance with data protection regulations.
* Develop and implement a guest tracking feature that enables guests to easily locate the hotel by integrating our system with google map.
* Develop and implement enhanced system capabilities to detect and verify online registrations, ensuring that all registrations accurately capture complete and valid guest information to eliminate anonymous registration in our system in order to achieve this we will integrate our system with CAPTCHA that enable us to detect anonymous regstration.

## 1.4. Feasibility Analysis

In order to ensure a comprehensive analysis of the project's potential, we have carefully considered a wide range of factors, including economic viability, social implications, and technical dynamics, following a meticulous and in-depth evaluation process that included a comprehensive assessment of the project's feasibility.

The feasibility study is intended to be a preliminary review of the facts to see if it is worthy of proceeding to the analysis phase. We analyzed three different types of feasibility test.

### 1.4.1. Psychological Acceptability feasibility

In our country, there is a pervasive fear or aversion towards technology, which we have observed through our interactions and experiences. Despite the availability of automated systems, people tend to prefer using manual methods and processes. However, it is important to note that drawing general conclusions based on these observations requires extensive research and analysis.

The prevailing reliance on manual systems and the reluctance to embrace technology can have significant implications for the feasibility of proposed systems in the current environment. It may hinder the successful implementation and adoption of technological solutions that have the potential to improve efficiency, streamline processes, and enhance overall productivity.

Nevertheless, it is worth mentioning that the government is taking steps to encourage and even enforce the use of technology within society. By recognizing the positive outcomes that can be achieved through technology adoption, the government aims to overcome the existing technology phobia and promote a shift towards automated systems.

Given this premise, we have conducted an analysis of the project's feasibility in the social context. This analysis takes into account the current attitudes and behaviors towards technology, as well as the government's efforts to drive technological advancement and adoption.

While the prevailing technology phobia may present initial challenges, the government's push for technology adoption offers the potential for positive outcomes. By introducing and enforcing the use of technology, there is an opportunity to gradually change the societal mindset and overcome the barriers that currently hinder the acceptance of automated systems.

To assess the feasibility of the proposed project within the social context, it is crucial to consider various factors. These include conducting comprehensive research on the current perceptions, concerns, and barriers related to technology adoption. Understanding the cultural, historical, and socio-economic aspects that influence attitudes towards technology is also essential.

Ultimately, the feasibility of the project in the social context depends on a comprehensive understanding of the prevailing attitudes towards technology, effective change management strategies, and a long-term commitment to fostering a technology-friendly environment.

### 1.4.2. Technical Feasibility

Based on the technical feasibility analysis conducted for the hotel management system, we have evaluated various aspects and determined that the project is feasible in all technical aspects. Here is a summary of the analysis:

1. System Requirements: The technical requirements for the hotel management system have been clearly defined, including hardware specifications, software dependencies, operating system compatibility, database requirements, and network infrastructure. These requirements can be met within the existing technical resources.

2. Infrastructure Assessment: The evaluation of the hotel's existing technical infrastructure indicates that it is capable of supporting the proposed system. No major

upgrades or additions are necessary, ensuring cost-effectiveness and minimal disruption to the hotel's operations.

3. Technology Resources: The availability of skilled technical resources required for system development, implementation, and maintenance has been assessed. In-house expertise is available, and external vendors or consultants can be engaged if necessary. Technical support for the chosen technology stack is readily accessible, ensuring the successful implementation and ongoing support of the system.

4. Cost and Timeframe: The financial and time requirements for implementing the hotel management system have been evaluated. The project budget aligns with the expected costs, including software development, hardware upgrades, system integration, data migration, and ongoing technical support. The proposed timeframe is reasonable and aligns with the hotel's business objectives and constraints.

Based on the comprehensive technical feasibility analysis, the hotel management system project has been found feasible in all aspects. The analysis indicates that the project aligns with the hotel's existing technical capabilities, and any challenges or gaps have been addressed. The system is expected to deliver the desired functionalities, performance, security, and integration capabilities, providing substantial value to the hotel's operations.

### 1.4.3. Economic Feasibility

Based on the comprehensive technical feasibility analysis conducted for the hotel management system, we have determined that the project is economically feasible. Here is a summary of the economic analysis:

1. Development Costs: The costs associated with developing the hotel management system, including software development, hardware infrastructure, and any additional technology requirements, have been estimated. The budget aligns with the expected costs, ensuring financial viability for the project.

Cost Savings: The implementation of the hotel management system is expected to generate cost savings. These savings could result from increased operational efficiency, such as reduced labor costs due to streamlined processes, automated

1. billing, and improved resource allocation. The projected cost savings have been calculated and indicate a positive impact on the hotel's financial performance.
2. Return on Investment (ROI): A financial analysis has been conducted to calculate the projected return on investment for the hotel management system project. The analysis considers the expected costs, cost savings ,over a specific time period. The calculated ROI demonstrates the financial viability of the project and indicates a positive return on the initial investment.
3. Payback Period: The payback period, which indicates how long it will take for the benefits to offset the initial investment, has been calculated. The projected payback period demonstrates a reasonable timeframe for recovering the initial investment and starting to realize positive returns.

Based on the comprehensive economic feasibility analysis, the hotel management system project has been found economically feasible. The analysis indicates that the project aligns with the hotel's financial goals and objectives, and the expected benefits outweigh the costs. The system is expected to generate cost savings, increase revenue, and deliver a positive return on investment, contributing to the hotel's financial performance and long-term sustainability.

## 1.5. Scope and Limitation of the Project

### 1.5.1. Scope of the Project

* Reservation Management: Implement a robust reservation management system that allows guests to book rooms online, check availability, and make modifications or cancellations booking within the hotel's policy guidelines.
* Room and Inventory Management: Hotel managers can efficiently manage room assignments, track availability, and monitor room statuses. The system can also assist in managing other inventory items such as amenities, supplies, and equipment.
* Front Desk Operations: The system supports front desk operations, enabling receptionists to check-in and check-out guests, generate invoices, process payments, and handle guest requests or inquiries.
* Guest Profiles: The system maintains guest profiles, storing information such as preferences, stay history, and special requests. This data can be utilized for personalized guest services.
* Reporting and Analytics: The system generates reports and provides insights into key performance indicators (KPIs) such as occupancy rates, guest feedback, and other operational metrics. This data aids in decision-making, performance evaluation, and strategic planning.
* Integration with CAPTCHA: Integrate CAPTCHA (Completely Automated Public Turing test to tell Computers and Humans Apart) to detect anonymous users during the booking process. This feature helps ensure that the system captures valid and genuine guest information, preventing fraudulent or incomplete bookings.
* Guest Location Tracking: Integrate the system with Google Maps to enable guests to track the location of the hotel. This feature allows guests to easily navigate to the hotel and enhances their overall experience.

### 1.5.2. Limitation of the Project

Considering the aforementioned scope, certain limitations need to be acknowledged and minimized within the project. Firstly, although online payment gateways are commonly integrated into systems, it is important to note that commercial banks in our country do not permit online payments

Even if online payments were permitted, the procedures involved are often unclear, requiring extensive communication and negotiation with API providers. To overcome this limitation, the project will focus on utilizing alternative payment methods, such as PayPal or other available options, for billing and invoicing functionalities.

Another limitation revolves around reporting and analysis. The absence of compatible software products specifically designed for revenue-related analysis makes it impossible to enable such functionalities. The existing software solutions dictate strict adherence to their predefined structures, making it impractical to automate this aspect.

Lastly, the management of staff and task tracking, particularly concerning room cleaning schedules, presents notable challenges due to their inherent complexity and the constraints imposed by time and resources. As a result, these aspects will also be recognized as limitations within the project.

By acknowledging these limitations, the project team can effectively manage expectations and prioritize efforts accordingly, working within the given constraints. This approach ensures a realistic and achievable implementation within the designated timeframe and the available resources.

## 1.6. Significance of the Project

A hotel management system project holds significant importance in the hospitality industry. It provides a comprehensive software solution that streamlines and automates various operations within a hotel or a chain of hotels. Here are some key aspects highlighting the significance of a hotel management system project:

1. Efficient Operations: A hotel management system optimizes and automates various day-to-day operations, including reservation management, guest check-in/check-out,

room assignment, housekeeping, billing, inventory management, and more. By centralizing these processes, it enhances operational efficiency, reduces manual errors, and improves overall productivity.

2. Seamless Guest Experience: The system facilitates a seamless and personalized guest experience. It enables quick and hassle-free check-in/check-out procedures, manages guest preferences and special requests, sends automated notifications and reminders, and maintains a guest database for future reference. This improves guest satisfaction and builds customer loyalty.

3. Reservation: The system enables efficient management of room reservations, availability, and rates. It assists in forecasting demand, optimizing pricing strategies, through features like rate management, online booking integration, and real-time reporting. This helps hoteliers make data-driven decisions and improve profitability.

4. Inventory and Resource Management: The system helps in effectively managing hotel resources, including room inventory, housekeeping supplies, and other operational resources. It provides inventory tracking, stock alerts, and seamless integration with procurement processes, ensuring optimal inventory levels, minimizing wastage, and improving cost control.

5. Reporting and Analytics: A hotel management system generates comprehensive reports and analytics, providing insights into various aspects of hotel operations. These reports include occupancy rates, guest preferences, and more. Such information aids in strategic decision-making, identifying areas for improvement, and planning marketing and operational strategies.

## 1.7. Beneficiary of the Project

The beneficiaries of a hotel management system are various stakeholders involved in the operations and management of a hotel . These stakeholders can include:

1. Hotel Owners and Management: Hotel owners and management benefit from a hotel management system by gaining better control and oversight of their properties. They can monitor and manage operations, analyze performance metrics, and make informed decisions to improve profitability and operational efficiency.

2. Hotel Staff: The hotel management system benefits staff members by automating manual tasks and simplifying their daily operations. It streamlines processes such as reservation management, check-in/check-out procedures, housekeeping, billing, and

reporting, reducing the administrative burden. This allows staff to focus more on delivering excellent guest service and improving guest experiences.

3. Guests: The primary focus of a hotel management system is to enhance the guest experience. Guests benefit from streamlined check-in/check-out processes, personalized services, improved communication channels, and efficient handling of reservations and special requests. The system ensures a smoother and more enjoyable stay for guests, increasing their satisfaction and loyalty.

In summary, the hotel management system benefits hotel owners, management, staff, guests, revenue managers, sales and marketing teams, and accounting and finance departments. It improves operational efficiency, enhances guest experiences, optimizes revenue management, facilitates data-driven decision-making, and contributes to the overall success and profitability of the hotel.

## 1.8. Methodology of the Project

### 1.8.1. Data Collection Tools/Techniques

The following development methodologies and tools will be employed to develop the Hotel management system . The project team will spend a great deal of effort by conducting interviews, observations, and document revisions to obtain accurate data from the relevant party.

### 1.8.2. System Development Model

As the project manager of the hotel management system, The project team recognize the need for an Agile software development model  
Agile is a popular software development model known for its flexibility and iterative approach, making it a suitable choice for the hotel management system project. Here are some reasons why Agile can be a good fit for your project:

1. Iterative Development: Agile focuses on breaking down the project into smaller iterations or sprints, each delivering a usable product increment. This allows for continuous feedback and collaboration, ensuring that the hotel management system evolves based on changing requirements and stakeholder input.

adaptive nature makes it well-suited for accommodating changing requirements throughout the development process. It allows for regular reviews and adjustments, ensuring that the system meets the evolving needs of the hotel.

3. Stakeholder Collaboration: Agile encourages frequent collaboration and feedback from stakeholders, such as hotel management, staff, and guests. Through regular demonstrations and reviews, stakeholders can provide input, suggest improvements, and validate the system's functionalities. This collaborative approach helps align the system with stakeholders' expectations and enhances overall project success.

4. Rapid Delivery of Value: Agile emphasizes delivering working software increments at regular intervals. This allows the hotel management team to start realizing the benefits of the system early on. By prioritizing the most valuable features, the hotel can begin utilizing the system and achieving positive outcomes sooner.

5. Risk Mitigation: Agile's iterative and incremental approach provides opportunities to identify and address risks early in the development process. Regular feedback loops and testing during each iteration enable the discovery of potential issues and allow for timely course corrections, reducing overall project risks.

6. Enhanced Quality Assurance: Agile methodologies, such as Scrum, emphasize continuous testing and quality assurance throughout the development process. Regular testing and review cycles help identify and address any defects or usability issues, ensuring a high-quality and reliable hotel management system.

7. Transparency and Visibility: Agile frameworks promote transparency by making project progress, work completed, and upcoming tasks visible to the entire team. This transparency fosters better communication, collaboration, and accountability among project stakeholders, ensuring everyone is aligned and aware of the project's status.

### 1.8.3. Development Tools and Technologies

Database and Programming languages:

based on the current market in the technology we have selected the best language based on the following properties.

* Easy to learn and runs efficiently on the server side.
* Powerful tool for making dynamic and interactive Web pages.
* Supports a wide range of databases.
* It is free (open source).
* Cross platform.
* Rich in many frameworks

Front End: React JS

Back End: Node JS, Express JS as a frame work

Database: MySQL database

## 1.9. PROJECT PLAN AND BUDGET

### 1.9.1. Project Plan

|  |  |  |
| --- | --- | --- |
| **Month** | **Week** | **Activities** |
| November | Week 1 | Project Initiation |
|  | Week 2 | Requirements Gathering |
|  | Week 3 | Sprint Planning |
|  | Week 4 | Sprint Execution |
| December | Week 1-2 | Sprint Review and Retrospective |
|  | Week 3-4 | Iterative Development |
| January | Week 1-3 | Integration and Testing |
|  | Week 4 | Deployment and Release |
| February | Week 1 | Project Closure |

### 1.9.2. Project budget

|  |  |
| --- | --- |
| **Item** | **Estimated Cost (ETB)** |
| Software Development | 50,000 |
| Project Management | 10,000 |
| Requirements Gathering | 5,000 |
| Testing and QA | 7,000 |
| Infrastructure | 5,000 |
| Training and Support | 5,000 |
| Contingency | 5,000 |
| Total | 87,000 |

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