PROJECT MANAGEMENT IN PROTOTYPING AN ONLINE TABLE RESERVATION SYSTEM

Antonius Felix[1*]
Universitas Bunda Mulia, Jakarta Utara, Indonesia
L1726@Lecturer.ubm.ac.id

Vincentius Leornardo[2]
Universitas Bunda Mulia, Jakarta Utara, Indonesia
s32220065@student.ubm.ac.id

Melcelyn[3]
Universitas Bunda Mulia, Jakarta Utara, Indonesia
s35240195@student.ubm.ac.id

Deah Ananda[4]
Universitas Bunda Mulia, Jakarta Utara, Indonesia
s35220061@student.ubm.ac.id

Abstract

The rapid digital transformation in the food and beverage (F&B) industry has intensified demand for systematic and technology-driven approaches to restaurant operations, particularly in table reservation management. However, most restaurants continue to rely on manual reservation processes prone to miscommunication, double bookings, and operational inefficiency, while existing literature predominantly examines system development and project management in isolation. This study aims to design and implement a web-based online table reservation system for the F&B industry by integrating the Project Management Body of Knowledge (PMBOK) framework with the Systems Development Life Cycle (SDLC), thereby addressing the identified gap in the literature. A descriptive qualitative approach with a system development research design was employed; data were collected through observation, literature review, focus group discussions, and market analysis. The resulting system prototype incorporates features including online booking, QR-based check-in, secure digital payment, and real-time reservation management. Evaluation through scenario-based testing and User Acceptance Testing (UAT) indicates that the system reduces reservation errors, shortens waiting times, and improves user satisfaction compared to manual methods. Theoretically, this research contributes by demonstrating how PMBOK knowledge areas—including Scope, Time, Cost, Quality, and Risk Management—can be systematically mapped onto stages of digital system development. Practically, the study provides a replicable project management reference model for F&B businesses seeking to improve service quality and operational performance through structured digital transformation.

Keywords: Table Reservation, Online Website, Project Management, Industry F&B(food and Beverages), and Operational Effeciency

INTRODUCTION

Digitalization Phenomenon in the F&B Industry

The rapid digitalization of the food and beverage (F&B) industry has transformed how restaurants manage their operations and interact with customers. Digital platforms are increasingly used to support ordering, payment, and customer relationship management as part of a broader shift toward smart and data-driven service systems. This transformation accelerated after the COVID-19 pandemic, which pushed many F&B businesses to rely more heavily on online and contactless services to remain competitive and sustainable.

Problems in Manual Reservation Systems

Despite this ongoing digitalization, many restaurants still rely on manual methods to manage table reservations, such as phone calls, walk-in requests, or unstructured messaging applications. These manual processes often lead to miscommunication, double bookings, long queues, and difficulties in predicting demand during peak hours. As a result, customers may experience long waiting times and dissatisfaction, while restaurant owners struggle to optimize seating capacity, staff allocation, and raw material planning.

Previous Studies

Previous studies have examined online reservation systems and digital solutions for restaurant management, including web-based booking platforms, smart service technologies, and integrated restaurant management applications. These works generally focus on the design and development of reservation systems, the use of specific technologies, or the impact of digitalization on service quality and business performance. However, most of them discuss technological and managerial aspects separately and do not explicitly adopt a comprehensive project management framework to guide the development and implementation of online table reservation systems.

Research Gap

This situation creates a research gap in the systematic application of project management standards, such as the Project Management Body of Knowledge (PMBOK), to the development of online table reservation systems in the F&B sector. There is limited research that integrates system development (technical perspective) with project management knowledge areas (managerial perspective) in a single, coherent framework that addresses scope, time, cost, quality, risk, and stakeholder management simultaneously. Consequently, there is a need for a study that not only proposes an online reservation system but also demonstrates how such a system can be planned, executed, and controlled using a structured project management approach. These findings are consistent with Akyüz and Balkan (2024), who emphasize that smart service technologies in hospitality require not only robust technical design but also structured project management to achieve operational efficiency.

Research Objectives

In response to the background and research gap described above, this study aims to design a web-based online table reservation system for the F&B industry using a PMBOK-based project management approach. The specific objectives of this research are:

- To identify the factors that cause miscommunication and long queues in restaurant reservation processes.
- To analyze customer behavior related to table reservations in restaurants.

- To design a web-based online table reservation system for the F&B industry by applying the PMBOK project management framework.

REVIEW OF LITERATURE

The integration of IT into the Food and Beverage (F&B) sector has transformed business operations, especially in the areas of customer service and reservation management. Table reservation systems have become a key strategic requirement for modern eateries to improve operational effectiveness, increase customer satisfaction, and enhance business competitiveness (Akyuz & Balkan, 2024). When these systems are adopted, their integration into the existing business processes must follow a deliberate and methodical framework of project management so that integration can succeed.

The Project Management Body of Knowledge (PMBOK) framework has been successfully applied to IT project management in numerous sectors (C. M. & Muthukumar, 2024). The knowledge and use of PMBOK guides project management teams within the F&B sector in the development of online table reservation systems to address the systems integration and stakeholder participation challenges, and to meet the intended project goals within the desired time, budget and quality limits.

This chapter aims to cover the comprehensive literature pertaining to the use of project management techniques for designing and implementing online table reservation systems in the F & B sector from the year literature comprising 2022 – 2025. It has been structured in accordance to the knowledge areas in the PMBOK so as to facilitate a thorough understanding of the best practices and challenges and the key success factors in the deployment of online reservation systems.

As a result of the impact of the COVID-19 pandemic, the restaurant sector has been subjected to rapid digitization. Romero and Martin (2022) described several organizational and managerial characteristics that influence the level of digital transformation in a restaurant, including the entrepreneur's level of education, the size of the business, and the company's strategic goals. These findings show that the deployment of online reservation systems is also a function of the organization's willingness to embrace technological changes and the role of top management as the driver of the innovation.

Fainshtein et al. (2023) conducted interviews with business specialists and determined that those restaurants that demonstrated advanced levels of digitalization evidenced greater resilience during the period after COVID. Their study demonstrates that the expansion of digital capabilities coupled with strategic management are fundamental for any business to succeed and indicates that investments directed towards the implementation of online reservation systems should be considered within the larger context of digital strategy, rather than subsystem technological deployments. Akyüz and Balkan (2024) in their review of literature on smart technologies in service systems support this perspective, emphasizing the need for a systematic project management approach in the deployment of smart service technologies that are heavily dependent on online reservation systems.

Educational digitalization calls for the immediate development of digital literacy skills/specific competencies during the Online Learning Environment of the COVID-19 pandemic (Felix et al. 2025). The development of online table booking systems can be focused on the specification of the design and construction of the system and the interactive and responsive design of the booking systems and their interfaces (C. M. and Muthukumar

2024). The research work of Felix & Tarigan (2025) indicates that the primary reasons for consumers' migration from traditional marketplaces to the online market are the Ease of access and accessibility of the product. There is a growing body of research that indicates the availability of a product in a usable form }. This statement must be marked along with the Project Scope Matrix as one of the fundamental statements in defining the Project Scope Management area of the Project Management

Restaurants Management Platforms provide Satisfaction (Watthananon et al. 2022, Satisfaction, and Functionality. Usability) Compute Management Absence of Satisfaction in Functionality and Usability. This research work demonstrates the value of planning User Acceptance Testing & Compatibility (UAT) Testing & Compatibility Testing in Schedule Management & Quality Management. Other technical aspects include system architecture and the technologies used in online booking systems.

The authors cite Oghenekaro and Okafor (2023) who described a restaurant management system deployed in a web application and designed with a structured approach to system module analysis and identification of automation potential within system processes. This modular design enables a decomposition of system scope and sets the foundation for optimal resource illustration within the framework of PMBOK Resource Management. The table reservation system developed using an agile approach and designed within the technologies and frameworks of HTML/CSS/Bootstrap for the front end and PHP/MySQL for the back end presented from the perspective of reliability and security was described by Egigogo et al. (2024). The experience from the practical implementation of the system and the testing activities was a valuable input for the organization of the technical work packages and the quality control processes in the scope of Quality Management.

In the same context we can discuss the work of Patil (2025) outlining an innovative system architecture that incorporates user interface design, voice-activated virtual assistants, and machine learning for the management of a restaurant. This work, in particular, does not focus solely on reservations, but the voice and machine learning components, along with the integration of automation, can significantly contribute to the order and reservation management systems interfaces, particularly as they relate to Integration Management and Risk Management.

The digital transformation of the F&B sector benefits from the works of Industry 4.0, IoT, and AI. Ghildiyal et al. (2022) determined the Industry 4.0 technologies' impact on digital transformation in the hospitality industry and identified the conditions that need to be put in place to minimize the risks associated with digital innovations. This assists the project teams in the consideration of advanced technologies such as IoT and AI for the reservation ecosystem and in the planning of procurement as well as risk mitigation, which are crucial for Procurement Management and Risk Management.

Sultana et al. (2024) presented an IoT model for automation and order managing to enhance the effectiveness, accuracy, and confidentiality of food service operations. This helps the consideration of reservation systems for sensor-based capacity monitoring, table status, and real-time updates which are fundamental to Integration Management and Resource Management.

Business Intelligence and analytics improve decision-making and customize services for online bookings. Social media (and) influencer marketing (can) increase sales (Felix & Rembulan, 2023). Ebiesuwa et al. (2023) reports on how the combination of BI and analytics

improve decision making, flexible (or) dynamic pricing, and efficiency of processes within the operational system of the reservations. Their findings highlight the strategic importance of including BIA elements within the scope of a project during the planning phase, as opposed to treating them as afterthoughts, which often results in scope-widening. A higher rate of ROI and operational efficiency is achieved through enhanced demand forecasting, in pricing, and optimized allocation of available tables in the restaurant sector.

In the context of implementing online reservation systems, the role of stakeholder and change management is very important. According to Ye and Chen (2024), the adoption of new systems hinges on the employees' readiness and digital skills, which calls for training and adequate resource considerations. This also ties to communication strategies that are important for influencing customers and the adoption of reservation systems and their performance (Helal, 2023). Huang and Siao (2023) described the adoption of service innovations, like online food delivery, as a function of perceived benefits that are multifaceted and, thus, encourages the adoption of innovations as a driver of financial and non-financial performance improvements.

The application of PMBOK principles to the management of online table reservation system projects concerns a number of knowledge areas, particularly, Integration Management, Scope Management, Schedule Management, Cost Management, Quality Management, and Stakeholder Management. All of them contribute to the success of a project in one way or the other, whether through the successful integration of systems or managing stakeholder expectations. This way, integration of PMBOK leads to better organization of reservation systems projects and, consequently, a better chance to succeed and lower project failure rate.

While there are numerous studies on the digital transformation within the F&B sector, especially on the creation of online reservation systems, very little of that literature addresses the systematic use of the PMBOK framework concerning the establishment of online table reservation systems in restaurants. Much of the literature still looks at the technological and managerial facets in isolation, and there's very little that tries to incorporate the two in a structured framework of project management. Thus, this study attempts to address this gap by developing a PMBOK-based approach on the deployment of online table reservation systems that deals with the technological, organizational, and people challenges of the F&B sector. It is hoped that this study would be of practical assistance to both professionals and scholars in the field in appreciating and utilizing project management in the digital transformation of the hospitality industry.

RESEARCH METHOD

This study implements a quantitative approach with the survey method as the main instrument of data collection, referring to the positivistic paradigm in social research that allows objective and measurable analysis of variables (Sugiyono, 2020). The study population includes all customers from leading telecommunications companies who have interacted with customer service in the past six months, with a population of 150 active customers. The sampling technique adopts purposive sampling, allowing the selection of respondents based on specific criteria relevant to the research objectives (Laloan, 2024). The data collection instrument uses a structured questionnaire with a five-point Likert scale,

which has been validated through expert judgment and pilot testing. The validity of the construct was verified using confirmatory factor analysis, while the reliability was tested using Cronbach's alpha coefficient with a threshold of at least 0.7 as an acceptable indicator of internal consistency (Ardan et al., 2024). The data collection was carried out over a three-month period, starting from November 1, 2024 to January 31, 2025, focusing on four main variables: responsiveness, empathy, interpersonal communication, and customer satisfaction.

Research Design

This study applies a structured project management approach based on the Project Management Body of Knowledge (PMBOK) framework. The research uses a descriptive qualitative design with a system development focus, aiming to describe and model the planning, execution, and monitoring of an online table reservation system for the F&B industry. The system development follows the Systems Development Life Cycle (SDLC) model, integrated with PMBOK's 10 Knowledge Areas to ensure that the project meets its objectives regarding time, cost, quality, and stakeholder satisfaction.

Type and Approach of the Study

This research can be categorized as system development research, where the main output is a prototype of a web-based online table reservation system supported by project management documents (such as the Project Charter, Work Breakdown Structure, Gantt Chart, and budget plan). The study adopts a project-based approach that combines IT system development with project management practices, so that both technical and managerial aspects are planned and controlled in an integrated manner.

Data Collection Methods

To formulate the project requirements and scope, data were collected using the following methods:

1. Observation: Observing current operational inefficiencies in restaurants, such as long queues, manual reservation errors, and capacity management problems.
2. Literature Study: Reviewing previous research and journals related to online reservation systems, F&B digital transformation, and project management standards (including PMBOK and SDLC).
3. Focus Group Discussion (FGD) and Meetings: Conducting internal team meetings and expert consultations to define the project scope, Work Breakdown Structure (WBS), cost estimates, and potential risks.
4. Market Analysis: Analyzing market needs and competitor features to determine the functional and non-functional requirements of the website.

Research Stages

The research procedure is divided into several stages aligned with the SDLC and PMBOK Knowledge Areas:

1. Initiation: Preparing the Project Charter, identifying stakeholders, and defining project objectives and success criteria.
2. Planning: Developing detailed plans for Scope (WBS), Time (Gantt Chart), Cost (budgeting), Human Resources (team structure), Quality, Communication, Risk, and Procurement.
3. Execution: Designing the user interface (UI/UX) and developing the website features for online booking, payment, QR code check-in, and restaurant information.

4. Monitoring and Controlling: Conducting testing (including User Acceptance Testing), monitoring progress against the plan, and handling technical and managerial risks.
5. Closing: Finalizing the system prototype, documenting the project results, and reflecting on lessons learned for future implementation.

Data Analysis Technique

The data collected from observations, literature review, FGDs, and market analysis are analyzed qualitatively by comparing the identified problems and requirements with best practices from previous studies and PMBOK standards. The analysis results are used to construct the project management documents and to design the functional and non-functional specifications of the online table reservation system.

RESULTS AND DISCUSSION

System Design Analysis

The proposed online table reservation system was designed based on the functional and non-functional requirements identified during the data collection phase. Functionally, the system provides features for searching restaurants, filtering based on location, price, and reviews, making reservations, processing online payments, and displaying booking confirmations and notifications. Non-functional requirements focus on usability, responsiveness, data security, and system reliability to ensure that customers can access the service easily and safely.

From a PMBOK perspective, these requirements are translated into a clear project scope through the Work Breakdown Structure (WBS), which organizes development activities such as UI/UX design, back-end development, integration of payment gateways, and testing into manageable work packages. This structured design helps reduce ambiguity in system development and supports better control over time, cost, and quality during implementation.

These design choices align with the recommendations of Oghenekaro and Okafor (2023), who highlight the importance of modular and well-structured system architecture to support maintainability and efficient resource allocation. In this project, the use of a clearly defined WBS and PMBOK-based scope planning helps translate those architectural principles into concrete project deliverables that can be monitored and controlled throughout the development lifecycle.

Reservation System Evaluation

The prototype of the online table reservation system was evaluated using scenario-based testing and informal User Acceptance Testing (UAT) with potential users and team members. The evaluation focused on the ease of making reservations, clarity of information (such as restaurant details, available timeslots, and pricing), and the responsiveness of the interface. The results indicate that users can complete the reservation process more quickly compared to manual phone or walk-in reservations, and they perceive the system as more transparent in showing availability and confirmation status.

From an operational perspective, the system also supports restaurant management by recording reservation data in a structured database, which can be used to monitor peak hours, table utilization, and customer behavior patterns. This aligns with the objectives of improving operational efficiency and reducing miscommunication, as highlighted in the research background.

The evaluation results also support the findings of Watthananon et al. (2022), who show that usability and functionality are critical determinants of user satisfaction in restaurant management platforms. By improving ease of use, transparency of reservation status, and responsiveness, the proposed system operationalizes these factors and demonstrates how a PMBOK-guided project can directly enhance service quality in practice.

3. Comparison with Previous Studies

Compared to previous studies that mainly focus on the technical development of online reservation systems or restaurant management applications, this research emphasizes the integration of system development with project management based on the PMBOK framework. While earlier works often discuss features, technologies, or digital transformation impacts separately, this study demonstrates how knowledge areas such as Scope, Time, Cost, Quality, and Risk Management can systematically guide the planning and implementation of an online table reservation system.

This integration contributes to the literature by showing that the success of digital solutions in the F&B sector does not depend only on the technology used, but also on how the project is managed from initiation to closing. In addition, the findings support previous research on the importance of digitalization for service quality and operational performance in hospitality, while providing a concrete example of how project management practices can facilitate that digital transformation.

Moreover, the integration of PMBOK with SDLC in this research extends the work of Romero and Martin (2022) and Fainshtein et al. (2023), who underline that digital transformation in hospitality must be supported by strategic and well-managed implementation processes. The present study contributes by providing a concrete example of how project management knowledge areas can be mapped onto the development of an online table reservation system, thereby bridging the gap between conceptual digitalization strategies and operational system design.

Project Scope Management

Functional

Filtering and Searching

- Searching based on reviews, location, and recommendations for restaurants.
- Filters that would allow users to sort according to their preferences.

Booking and Payment

- Easy to understand and accessible ordering forms.
- Efficient, safe, guaranteed online payment.

Notifications

- Up-to-date notifications for booking confirmations and updates.

Restaurant Information

- Information about the restaurant from reviews, location, ratings, and prices.

NON-FUNCTIONAL

- Responsive display that is easy to use, and understand.
- Data Encryption that protects users' information.

-Use of appropriate and applicable technology to ensure optimal application performance.

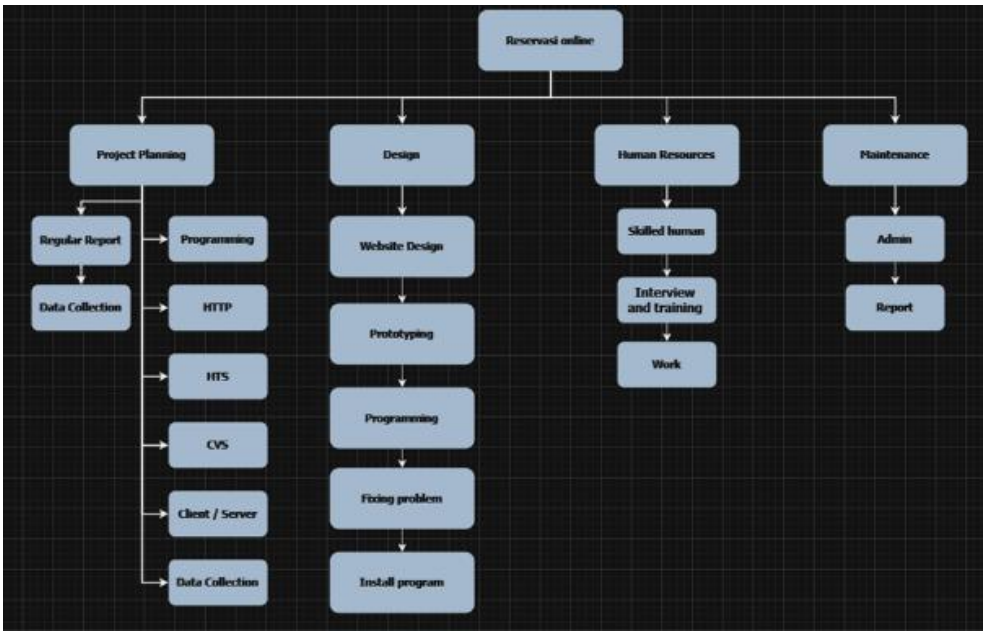
- Design of restaurant profiles to be informative as well as visually appealing.

- Data Storage that can accommodate all information about the users as well as the restaurants.
- Design of the homepage to be visually appealing while featuring a number of recommended restaurants nearby based on users' locations.
- Use of a third party as a payment system.

Work Breakdown Structure

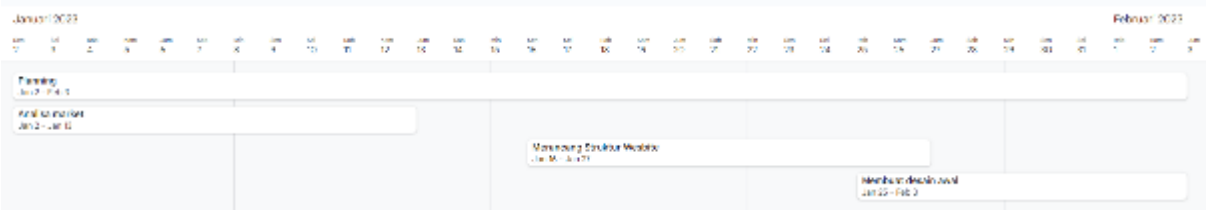
The Work Breakdown Structure or description of the work to be done for this project is taken from:

1. Input: this includes the Project Charter and the Project Management Plan developed in advance to identify the resource and cost needed for each element of the project. This aids the planning and cost estimation to be done in a more granular fashion.
2. In the Process Section: There have been several meetings discussing the project of this Work Breakdown Structure. We have gone into detail about the different types of tasks. We have also discussed among the project holders contained in the documents of Project Charter and Project Management Plan, and from the meeting and analysis, we produced the Work Breakdown documents.
3. Output: Work Breakdown Structure (WBS)



Project Time Management

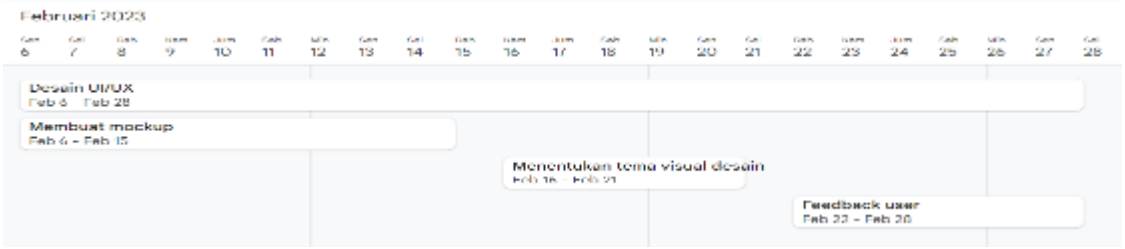
- **Planning**



Vol. 9. No. 2 (2026)
Page: 13325-13347

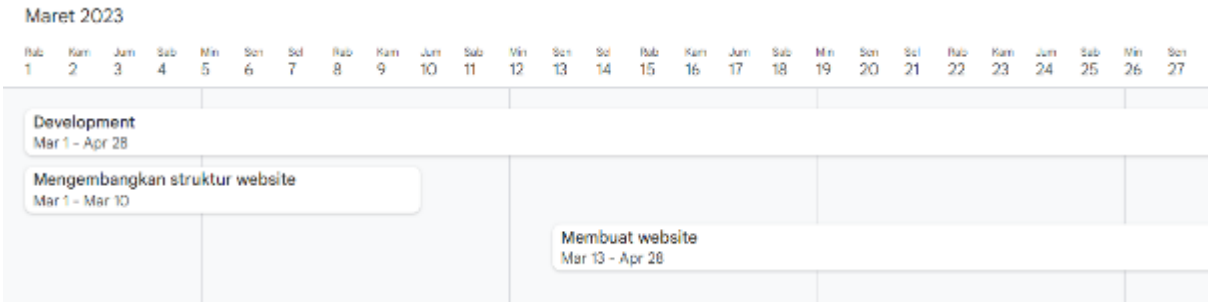
Planning: Comprising of 25 days and 51% progress, activities were planned from January 02 to February 03

- **Design Ui/Ux**



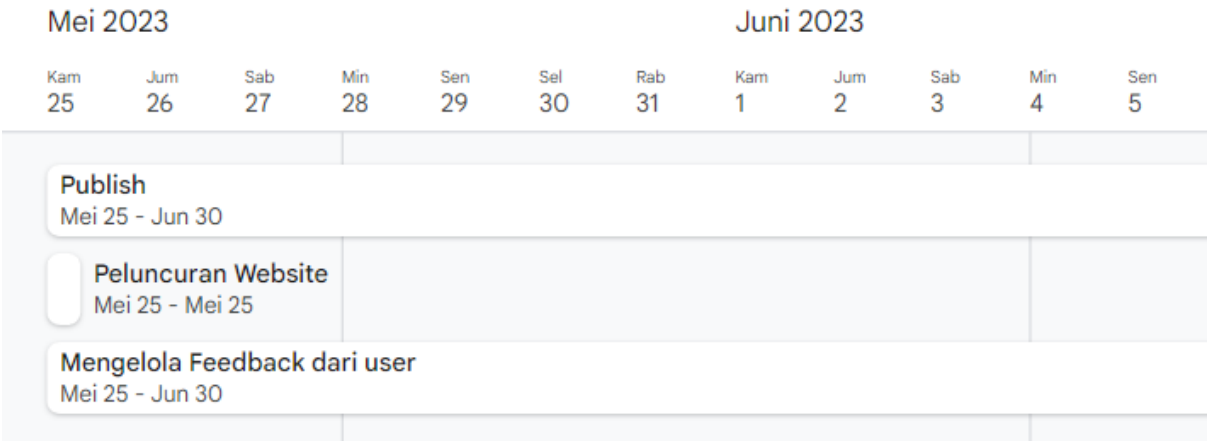
Design UI/UX: Compromosin gof 17 days and 89% progress, activities were planned from, February 06 to Februari 28

- ***Development***



Development : Compromosin gof 50 days and 79% progress, activities were planned from, March 13 to May19

- ***Publish***



Publish: Compromising gof 30 days and 99% progress, activities were planned from, May 25 to June 27

Project Planning Timeline

ID	Name	Start Date	End Date	Duration	Progress %
1	**Planning**	Jan 02, 2023	Feb 03, 2023	25 days	91
2	Analisa market	Jan 02, 2023	Jan 13, 2023	10 days	78
3	Merancang struktur website	Jan 16, 2023	Jan 27, 2023	10 days	99
4	Membuat desain awal	Jan 25, 2023	Feb 03, 2023	8 days	99
5	**Desain UI/UX**	Feb 06, 2023	Feb 28, 2023	17 days	89
6	Membuat mock up	Feb 06, 2023	Feb 15, 2023	8 days	98
7	Menentukan tema visual desain	Feb 16, 2023	Feb 21, 2023	4 days	80
8	Feedback user	Feb 22, 2023	Feb 28, 2023	5 days	85
9	**Development**	Mar 01, 2023	Apr 28, 2023	43 days	73
10	Mengembangkan struktur website	Mar 01, 2023	Mar 10, 2023	8 days	0
11	Membuat website	Mar 13, 2023	Apr 28, 2023	35 days	90
12	**Pengontrolan & Pengujian**	Mar 13, 2023	May 19, 2023	50 days	79
13	Control	Mar 13, 2023	Apr 28, 2023	35 days	99
14	Pengujian Website	May 01, 2023	May 05, 2023	5 days	98
15	Perbaikan	May 08, 2023	May 19, 2023	10 days	0
16	**Publish**	May 25, 2023	Jun 30, 2023	27 days	99
17	Peluncuran Website	May 25, 2023	May 25, 2023	1 day	99
18	Mengelola Feedback dari User	May 25, 2023	Jun 30, 2023	27 days	99

Project Cost Management

Management of project costs in the online table reservation site will be important because of the many details of the expenses incurred in the project.

1. Input
   In this input, studies the costs that will be spent on this project so that it can run effectively, efficiently, and optimally.
2. Process
   We have conducted project meeting discussing this project cost management based on time and budget analysis.
3. Output
   Cost Structure Document

Project Cost Estimates

PROJECT COST MANAGEMENT	MONTH						TOTAL
WBS Item	JAN	FEB	MAR	APR	MAY	JUN	
Pengembangan website							
Desain dan pengembangan Front-End	Rp 500,000		Rp 500,000				Rp 1,000,000.00
Pengembangan Back-End dan fungsionalitas	Rp 500,000		Rp 500,000				Rp 1,000,000.00
Integrasi sistem pemesanan	Rp 550,000			Rp 550,000			Rp 1,100,000.00
Keamanan							
Sertifikat SSL	Rp 300,000						Rp 300,000.00
keamanan website	Rp 700,000						Rp 700,000.00
Manajemen database							
Penyimpanan dan keamanan database	Rp 650,000			Rp 650,000			Rp 1,300,000.00
Backup rutin		Rp 250,000	Rp 250,000	Rp 250,000	Rp 250,000	Rp 250,000	Rp 1,250,000.00
Pengujian							
Uji fungsional dan keamanan			Rp 350,000				Rp 350,000.00
Uji penerimaan pengguna			Rp 350,000				Rp 350,000.00
Dukungan pelanggan							
Pelatihan staff		Rp 1,500,000					Rp 1,500,000.00
dukungan pelanggan		Rp 500,000					Rp 500,000.00
Pemasaran dan promosi							
Biaya kampanye pemasaran online			Rp 700,000				Rp 700,000.00
Biaya iklan digital			Rp 750,000				Rp 750,000.00
Pemeliharaan dan peningkatan							
Biaya pemeliharaan rutin dan pengembangan					Rp 250,000	Rp 250,000	Rp 500,000.00
TOTAL							Rp 11,300,000.00

Project Quality Management

- **Input**

Form Feedback

Creating forms for users to provide feedback after completing activities on our website can help us discover the level of satisfaction our customers experience when they use our website.

- Comments and suggestions from users

Accepting criticisms and suggestions from users is essential since we can learn about the shortcomings of our website so we can improve it in the future.

- **Process**

-Data Gathering

-Expert Judgement

In this phase of the process, expert assessment is needed to understand the shortcomings of this website. so that we can improve it to be better in the future.

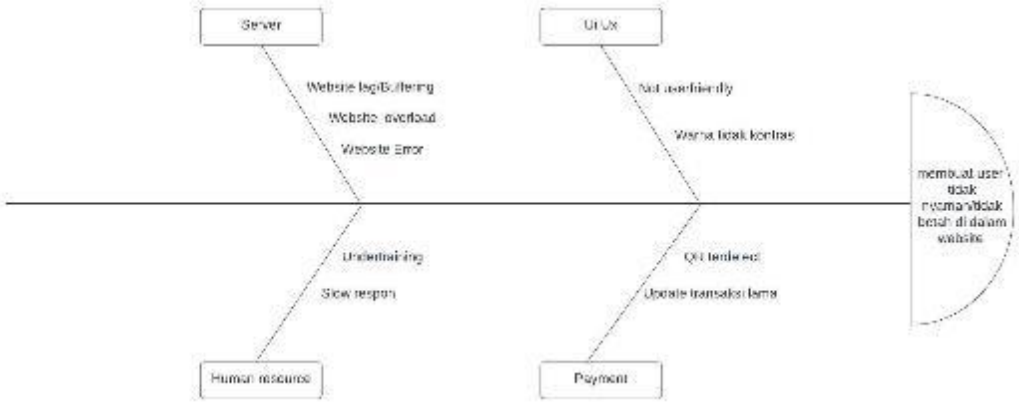
-Testing the Website

We conduct experiments on the website from the beginning, such as logging in, to the end, transaction update by the user on the website, so we can understand the shortcomings of the website when it is used by the user.

- **Output**

Cause & Effect

Fishbone Diagram Analysis



Explanation

➢SERVER

- Website Lag/Buffering

It has been found after performing website checks that the website keeps on having buffering issues whenever it is accessed. This could be resulting from too many users accessing the site or could likewise be attributable to poor network connectivity which is causing the buffering issues.

- Website Error

The next thing that is found is website error due to various reasons such as issues with the coding, server, or configurations.

- Website Lag due to Overload

This is something that tends to happen on a website quite frequently, when the amount of visitors or requests exceeds the capacity that can be handled by the server.

➢UI/UX

- Not User Friendly

The Ui/Ux of a website is really crucial as it helps to inform users what the website serves to address. However, during the test, some of the interfaces of the Ui/Ux of the website made it hard for users to understand what the purpose of the interfaces was.

- Color Not Contrasting

Good Ui/Ux makes users understand how to use the website. However, the determination of a theme and color of a site is also very important. There are some colors that can cause eye strain, and this happened with this site. Thereby the color of the website needs to be adjusted and improved greatly to more visually pleasing.

➢Human Resource

- Undertraining

Customer service for a website is a must because it can assist users to a higher degree of effectiveness and efficiency. However, it has come to our attention that the human resources of the website do not assist in solving the users' problem and therefore users become uncomfortable with the website.

- Slow response

When there is a problematic situation with users of the website, users expect that there is someone available to assist them with the problem. However, there has been evidence that customer service is slow to respond, and that has caused users to be a bit uncomfortable.

➢Payment

- Qr Code is not Detectable

Payments through “QR” is not able to be detected due to an error in the barcode that was inputted, or due to the method of payment, website, and signal quality which are all weak.

- Outdated Transactions

The fault of a payment transaction is taking too long, can be due to the technology in which it is being used is weak because there are too many users trying to do transactions on the website at that present time, therefore, the technical department needs to be active and update the software being used.

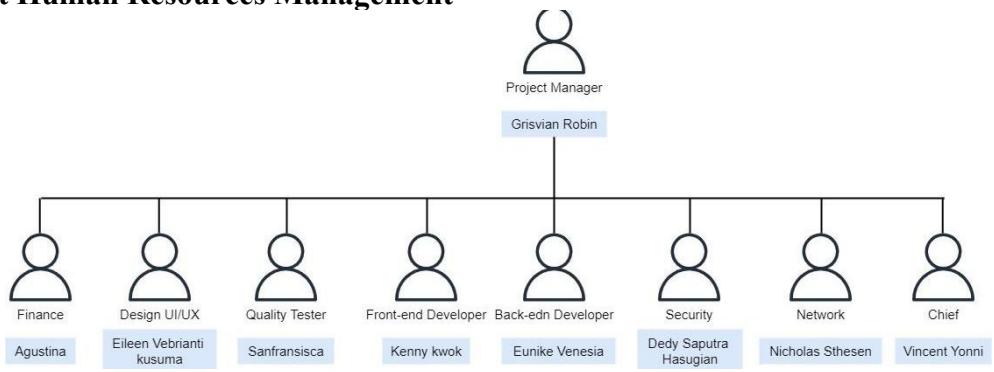
Analysis and Evaluation:

- Sometimes a user has a hard time using a web page because it lags and becomes hard to navigate. This is related to concerns about the server being overloaded. This causes a user to not want to use the site to make reservations.
- There is a user waiting, and when it happens, they do not give a response, which means that the complaint is slower.
- There is a missing web page that does not allow the user to be presented with a page that looks good. There is also an old icon that does not answer.

Proposed Solution:
- Recruiting and increasing the number of people on the team to decrease response time.
- Outer and inner replacements of the user interface.

Implementation:
- Buying a new server that has modules that can be updated to allow the bigger outer settings.
- Making it so they can manage and provide more Bandwidth.

Project Human Resources Management



Job Description

- ***Project Manager***
  - Establish goals and objectives and develop strategies for the company
  - Set and make strategic decisions
  - Manage executive team
  - Ensure the performance is financial

- **Finance**
  - **Manage the company's finance**
  - Handle financial reporting
  - Monitor cash flow and manage financial risk
  - formulate financial strategies

- **Design UI/UX**
  - Create user interface and make them captivating
  - Provide attractive and user-friendly website
  - Ensure the website is easily implemented

- **Quality Tester**
  - Conduct testing and ensure the website functions properly
  - Ensure it is free of bugs/errors
  - Ensure it meets quality standards
  - Ensure the website is of quality and secure

- **Front-End Developer**
  - Develop visual elements that are accessible to the user
  - Implement UI
  - Ensure the design is responsive on various devices

- **Back-End Developer**

  - Develop server and database
  - Responsible for the security of the system behind the website

- **Security**

  - Identify, prevent, and handle potential security risk
  - Provide protection from cyber attacks
  - Protect the website from any possible threats

- **Network**

  - Monitor network performance
  - Monitor network security
  - Optimize the network's speed and accessibility

- **Chief**

  - Establish the overall strategy for the website
  - Manage external relations
  - Responsible for the overall infrastructure

Task / Media	Whatsapp	Online Meeting	Offline Meeting
UI/UX		✅	✅
SERVER	✅		✅
PROJECT TASK	✅	✅	✅

Project Communication Management

Communication Objectives:
- Allocate understanding to each department within the company
- Ensure the project proceeds in accordance with the predetermined timetable
- Create collaboration and confidence within a team
- Provide solutions to the existing or occurring problems

Project Risk Management

Risk Description	Category	Probabilities	Impact	User Risk	Strategy Mitigation
Lack of technology	Teknis	high	high	Project Manager	Checking & Evaluating Technology
Application Slow Problems	Teknis	Medium	High	Technical team	update & check website

Inadequate project	Project Management	High	Medium	Team Project Management	Improve project quality
Failure in payment method	Project Management	High	High	Team Project	make the learning process easier

Risk Identity of Online-Based Applications

Mobile ticketing services provide an alternative for customers to purchase tickets without queuing and also assists ticketing companies in improving the quality of services offered to their customers. However, there are several risks that the application of mobile service ticketing faces which include:

1. Online ticket purchase reservation require people, particularly the elderly, who are not adaptive to technological advancements, to find it difficult to make reservations.
2. Online ticket purchasing opens the chances for you to erroneous make purchases by selecting the wrong date and/or time.
3. Insufficient clear information on ticket availability complicates situations for buyers and may lead to them leaving ticketless due to long queues.
4. Situations where ticket purchases are unsuccessful as not all servers are able to sustain and host users searching for the event.
2. Failed payments that affect users stuck in long loops of complicated internet systems and time-consuming reimbursement processes.

Project Procurement Management

Project Procurement Management in the design of an online reservation system involves several steps that need to be planned in order to achieve the goals of the project. This project involves complex processes in procurement management

- Input

1. Project Charter is to give a list of names of team members, because in the procurement process, we need the approval and intervention as well as the names of the team members in the Project Charter.
2. Project Management Plan, this is needed to find out how far the project has been running and to see the progress for which procurement is needed.
3. Organizational Process Assets, in this case the asset used is the template document for submission of procurement in the project.

- Process

1. Data Gathering, this is done by combining various company documents with data from previous projects. The data that has been collected will later be analyzed and a meeting will be conducted regarding this procurement.
2. Data Analysis, from the previous data gathering process, we have found several old files of the company regarding some people who were involved in the project. We will analyze and filter it.

- Output

I. Request for proposal

PT. Maju Jaya
Jl. Cengkareng Raya no 27
REQUEST FOR PROPOSAL

PT. Maju Jaya invites/ solicits qualified vendors to submit proposals for the procurement of additional servers. The purpose of this RFP is to select a partner who is genuinely willing to deliver and implement additional servers to meet our requirements.

II. This company was established in 2020 as a response to the increasing demand and interest of the public in online ticketing. By integrating a service provider with state-of-the-art technology, we aim to provide a better service to the public in online ordering.

III. Basic Requirement

Experience and exposure:

- Having the same experience as we need, in this case, is to do with servers
- Referred to by clients as a model of positive testimonial

● Technical Qualifications:

- Individuals and teams who are well-trained, as well as experienced in the implementation of this procurement project
- certified both for the hardware and the software

● Technical Specifications

- Able to provide servers that meet the predetermined specifications in terms of capacity, speed, and the like.
- The server must be compatible with existing IT.

● Reliability:

- Able to provide a server that is dependable and has a high degree of uptime.
- Assurance of problem response and support availability.

● Cost

- Cost negotiations should be reasonable and be within the budget provided.
- Willingness to accept additional costs, be it installation, maintenance, etc.

● Security:

- Clarification on the security policies regarding the provided servers.
- The security measures undertaken to protect clients' data and information.

● Contract policies:

- Payment policies, terms & conditions of contracts and agreements.
- The flexibility of the contract.

IV. Hardware and software environment

● Objectives of the procurement, are as follows:

- improving the system's capacity and performance
- assuring availability and usability of the services
- accommodating the growth and evolution of the organization

V. Description of RFP Process

● Eligibility criteria include but are not limited to:

- having a track record of procurement and implementation of servers in the past
- having the required technical and certification qualifications
- reviews and testimonials from previous clients

VI. Statement of Work and Schedule Information

- Deadline for the submission of the proposals (date and time)
- Proposal submission format and method (specifications of the desired format)
- Contact Information (details of the contact person to be reached)

VII. Possible Appendices

- Proposals will be evaluated and considered based on the following criteria:
  1. compliance with the technical specifications
  2. experience and qualifications of the vendors
  3. implementation plan and project schedule
  4. costs and expenses

Procurement Management Plan			
Project name:	**Creating an F&B Restaurant Reservation Website**	**Project Manager:**	Grisvian Robin
Updated by:	Eunike Venesia	Date:	7 December 2023
Project Desc:	Objective: To build a website that enables consumers to purchase tickets online seamlessly. Users will be able to make bookings based on their category, location, and/or cost. The users will also have the ability to submit booking queries, monitor their booking progress, and provide feedback.		

Procurement List

Item	**Request**	**Part**	**Time needed**
Storage	Kenny Kwok	Front-end developer	17 Oktober 2023
Domain	Eunike Venesia	Back-end developer	25 Oktober 2023
Internet	Nicholas Sthesen	Networking	4 November 2023
Ads	Grisvian Robin	Project Manager	28 November 2023

Project Stakeholder Management

Name	Position	Requirement	Project Role	Contact Information
Grisvian Robin	Project Manager	Making sure Project plan run Smoothly and finish in time	Project Manager	**grisvianrobin@gmail.com**
Eileen Vebrianti Kusuma	Team Member	Create and make Design choice approiately	UI/UX	**eileenvk@gmail.com**
Kenny Kwok	Team Member	Develop user interface UI/UX	Front-end developer	**kenny.kwok@gmailcom**
Eunike Venesia	Team Member	Managing databases to store and access information	Back-end developer	**eunikevnsia@gmail.com**
Nicholas Sthesen	Team Member	Making sure internet Connection to to the website is secured	Networking	**stesenn.nic@gmail.com**
Sanfransisca	Team Member	Making sure the website doesnt have bugs or glitch	Quality tester	**san.fransisca@gmail.com**
Agustina	Team Member	Managing finance and cashflow	Finance	**agustina@gmail.com**
Windy Margareth	Outsource	analyzing on Participant user needs	Expert Development	**WindyM@gmail.com**
Friska anastasia	Outsource	Perform performance testing, ensuring the website can handle user load	Tester	**FriskaAN@gmail.com**
Geva ricad	Outsource	Design and implement appropriate infrastructure	Network Administration	**Gev12@gmail.com**

Project Charter

Project Title	**:**	**Making Website Reservasi Resto F&B**
Starting day Project	**:**	27 September 2023
Last day Project	**:**	15 Januari 2024
Budget Information	**:**	Rp. 95.000.000,00
Project Manager	**:**	Grisvian Robin

Project Goal :

Vol. 9. No. 2 (2026)
Page: 13325-13347

To develop a website that allows for the purchasing of tickets online. This website allows the users to reserve tickets according to location, type, and price. This website also allows the users to send requests for bookings, track the status of the orders, and leave reviews.

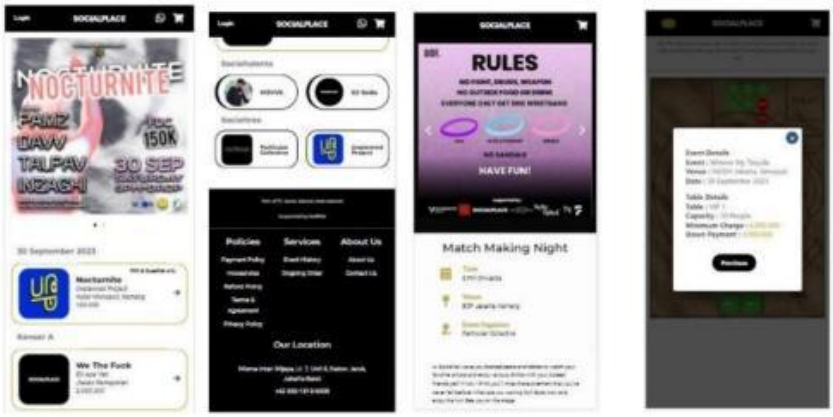
Role Responsibility

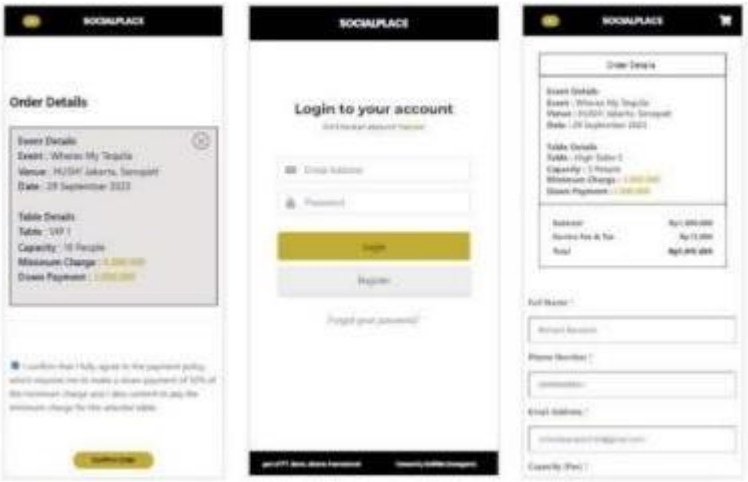
No.	Nama	Position	Role
1	Grisvian Robin	Project Manager	Project Manager
2	Agustina	Team Member	Finance
3	Eilleen Vebrianti Kusuma	Team Member	UI/UX
4	Sanfransisca	Team Member	Quality Tester
5	Kenny Kwok	Team Member	Front-end developer
6	Eunike Venesia	Team Member	Back-end developer
7	Dedy Saputra Hasugian	Team Member	Security
8	Nicholas Sthesen	Team Member	Networking
9	Vincent Yonni	Team Member	Chief

UI/UX

Social Place

(socialplace.id)





CONCLUSION

This study developed a web-based online table reservation system for the food and beverage (F&B) industry by integrating the Project Management Body of Knowledge (PMBOK) framework with the Systems Development Life Cycle (SDLC). The main findings show that the proposed system can reduce miscommunication in reservations, shorten waiting times, and provide more transparent information about table availability and restaurant details. The evaluation results indicate that users perceive the system as easy to use, responsive, and more reliable than manual phone or walk-in reservation methods.

Theoretically, this research contributes to the literature on digitalization in the hospitality and F&B sectors by demonstrating how project management standards can be systematically applied to the development of online reservation systems. The study shows that PMBOK knowledge areas—such as Scope, Time, Cost, Quality, and Risk Management—can be mapped onto concrete stages of system design and implementation, thereby bridging the gap between technological and managerial perspectives. This integrated

view enriches existing studies that often discuss system features or digital transformation at a more fragmented level.

Practically, the findings provide guidance for F&B businesses and system developers who plan to implement online table reservation solutions. The system design, evaluation insights, and project documentation (including WBS, Gantt Chart, and budget planning) can serve as a reference model for similar projects that aim to improve service quality and operational efficiency. By adopting a structured project management approach, restaurant managers can better plan resources, control implementation risks, and ensure that digital reservation systems deliver tangible benefits for both customers and business operations.

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