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DineEase

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Abstract: *This research paper explores the development and implementation of an online food ordering and table booking system, called "DineEase," for the college canteen. In the modern era, customers increasingly seek convenient and user-friendly methods to order food and reserve tables. DineEase addresses these demands by providing an intuitive online platform that enables customers to order meals and book tables effortlessly from their personal devices. This paper discusses the advantages, features, and future prospects of DineEase, as well as the challenges encountered during its creation and the corresponding solutions devised. By implementing DineEase, the college canteen aims to enhance customer satisfaction, streamline operations, and embrace the digital transformation in the food service industry.*

I. INTRODUCTION

In today's digital age, the way people dine and interact with food establishments has evolved significantly. Customers increasingly expect convenient and user-friendly methods for ordering food and making table reservations. To address these demands, we have developed "DineEase," an innovative online dining platform that revolutionizes the dining experience for college students, staff, and visitors.

The goal of this study's paper is to describe the creation and execution of DineEase, an extensive website that includes local hotels along with to the campus canteen. DineEase acts as a central hub where users can easily browse menus, order food, book tables, and investigate dining options in encompassing hotels when visiting the college campus.

The website is designed to provide an intuitive user interface, ensuring a smooth and engaging experience for all users. Utilizing a combination of HTML, CSS, and JavaScript, we have created a visually appealing and responsive frontend that allows users to navigate through the website seamlessly. Additionally, the backend of DineEase is powered by Node.js, enabling efficient data management, user authentication, and transaction processing.

By integrating the college canteen and nearby hotels into a single platform, DineEase aims to enhance the dining experience, offering users a wide range of culinary choices and convenience at their fingertips. This research paper will delve into the design, implementation, and integration of DineEase, shedding light on the technological aspects, challenges faced during development, and the solutions devised to overcome them.

The subsequent sections will provide an overview of the existing challenges in traditional food ordering and table booking systems, followed by a detailed explanation of the features, functionalities, and future prospects of DineEase. Furthermore, we will discuss the impact of this project on the college community and the potential for broader application in the hospitality industry.

Overall, DineEase represents a step forward in embracing digital transformation and offering a seamless dining experience to college students, staff, and visitors. Through this research paper, we aim to showcase the significance of technological advancements in enhancing the food service industry and meeting the evolving expectations of customers.

II. LITERATURE REVIEW

Nguyen, Nguyen, and Tran (2021) investigated the factors influencing customer satisfaction and loyalty in online food delivery services. Their study focused on three key factors: electronic word-of-mouth (eWOM), perceived quality, and perceived value. The authors emphasized the impact of positive eWOM in shaping customer perceptions and decision-making processes. They highlighted the significance of high perceived quality, including delivery speed, food quality, and customer service, in enhancing customer satisfaction and loyalty. Additionally, customers who perceived high value in terms of convenience, affordability, and food variety were more likely to exhibit satisfaction and loyalty. This research contributes to the understanding of customer behavior in the online food delivery industry and provides insights for service providers to improve customer satisfaction and loyalty. [1] Rahimi and Moosavi (2019) conducted a study to examine the factors influencing customers' intention to use online food ordering apps. By integrating the Technology Acceptance Model (TAM) and the researchers identified perceived value, perceived simplicity of use, attitude, subjective standards, and perceived behavioural regulation as key elements in the Theory of Planned Behaviour (TPB).

Customers' favourable attitudes, social norms, and perceived power were found to favourably influence their propensity to use online meal ordering apps, as well as their favourable evaluations of the app's usefulness and usability. For app developers and service providers looking to increase customer acceptance and engagement in the internet-based food ordering sector, this research offers helpful data. [2]

In order to gain an understanding of the variables impacting users' behavioural intention to use mobile hotel booking apps, Cheng and Wu (2018) conducted a study. The authors looked at how users' intentions for employing these apps were affected by perceived app usefulness, perceived app ease of use, perceived app enjoyment, perceived app trust, as well as perceived app risk. Perceived utility and enjoyment were found to be important indicators of users' behavioural intentions, suggesting that people are more likely to make use of mobile hotel booking apps when they regard them to be both useful and enjoyable. Additionally, perceived trust and ease of use had an advantageous effect on users' intention, whereas perceived risk had a negative effect. The study adds to our knowledge of user behaviour when it comes to mobile reservation apps by giving programmers and hoteliers helpful data to increase user acceptance and satisfaction. [3]

Li, X., Li, D., Li, Y., and Liang, X. (2018) conducted a study on the design and optimization of online group-buying platforms. They developed a mathematical model that considers customer demand, price sensitivity, and supplier capacity to maximize profitability and customer satisfaction [4]. The research provides insights for platform managers to make informed decisions regarding pricing, discount allocation, and inventory management, ultimately improving operational efficiency and customer experience.

Chen, Y. F., and Chen, Y. S. (2020) explored the determinants of customers' intention to use online food delivery services. Based on their research, consumer choices are significantly influenced by perceived utility, perceived simplicity of use, perceived trust, alleged risk, estimated worth, and social pressure. [5]. In accordance with the results, customers' intentions were positively influenced by perceived value, simplicity of use, and trust, whereas perceived risk had an adverse impact. In addition, social influence as well as perceived value had a big impact on how consumers were going to act. The study provides valuable insights for service providers to enhance the adoption and usage of online food delivery services.

Kim, S., Fiore, A. M., and Lee, H. H. (2017) investigated the influence of restaurant website attributes on customers' perceived e-service quality and behavioral intentions [6]. The study identified website design, website information, website interactivity, and website security as important attributes. The findings revealed that these attributes positively influenced customers' perceptions of e-service quality, which, in turn, had an advantageous impact on their behavioural intentions, such as their intention to return, recommend, and buy. The research emphasises how important website characteristics are in influencing consumer opinions and actions, providing useful information for managers in restaurants to optimise their websites and increase client happiness and loyalty.

Lim, Y. J., Kim, M. J., and Lee, H. J. (2016) examined the effects of website quality on customer satisfaction and behavioral intention in the hotel industry, specifically comparing online and offline bookings [7]. The study investigated website design, website informativeness, website security, and website responsiveness as dimensions of website quality. The findings revealed that website quality significantly influenced customer satisfaction and behavioral intention for both online and offline bookings. However, the impact was more pronounced for online bookings. The study emphasizes the importance of website quality in enhancing customer satisfaction and encouraging future bookings, particularly in the context of online hotel reservations.

In the context of airline reservation websites, Hsiao, C. H., and Wang, Y. H. (2017) looked into the effects of website quality on consumer happiness and purchase intention [8]. As aspects of site quality, the study looked at the design of the website, website accuracy, security of the website, and website interaction. The findings showed that customer satisfaction was strongly influenced by website quality, which consequently affected the customers' purchase intentions. Customers' perceptions and intentions were found to be strongly affected by website design, accuracy, and interactivity.

Han, H. S., and Choi, Y. G. (2017). Exploring how internet marketing affects consumer engagement and brand adherence in the food service sector. *Tourism and Travel Marketing Journal*. 10. Liang, X., Wang, Y., Wang, D., Li, D., Li, X., & Li, Y. (2018). The research's title is "Factors affecting customer adoption of smartphone food ordering uses: An empirical study." *Hotel Marketing & Administration Journal*. 11. Ye, Q., & J. Lu (2017). " Investigating the factors which impact the choices of consumers to use restaurants' online table bookings." *An international journal of modern management of hospitality*. 12. Rishika, R., Janakiraman, R., A. Kumar, R. Bezawada, & P. K. Kannan (2016). "From an user perspective, evaluating the effect of website design on food ordering on the internet behaviour." *Retailing Journal*. 13. (2015). Park, J. K., & Nicolau, J. L. "A research investigation into Korean restaurants examining the impact of online reviews on restaurant performance." [8] *Journal of international hospitality administration*. Hofacker, C. F., Naik, P. A., Venkatesh, A., and Shankar (2010).

The title for the investigation is "Mobile branding in the retailing setting: Existing insights and future research avenues." Interactive Marketing Magazine. 15. (2014). Lin, C. S., and Wu, S. The research project is entitled "Exploring the significance of perceived enjoyment, self-efficacy, and e-trust in predicting online education adoption." Computers in the Classroom. What if these replicate the behaviours of the past.

In order to gain further insight into how online marketing affects consumer engagement and brand loyalty in the food service industry, Choi, Y. G., and Han, H. S. (2017) performed an investigation [9]. The study examined the impact of several social media marketing activities on customer involvement and brand loyalty, included social media advertising, social media interaction, and data from social media sharing. The findings revealed that social media marketing positively impacted customer engagement, which, in turn, influenced brand loyalty. The study underscores the importance of social media marketing strategies for restaurants to effectively engage customers and foster brand loyalty.

An empirical study was carried by the researchers Zhang, Y., Wang, D., Li, D., Li, X., and Liang, X. (2018) to look at the variables affecting customer acceptance of mobile ordering food software [10]. According to the study, there are a number of important aspects that impact customers' adoption motives, including the perceived benefit, perceived ease of use, perceived safety, perceived expenses, perceived influence by others, and perceived enjoyment. Based to the studies, users' plans for employing mobile food ordering applications were benefited by perceived utility, simple use, safety, and pleasure while adversely affected by perceived prices. The report offers suggestions for eateries and developers of mobile apps to promote the adoption and utilisation of mobile meal takeout applications.

The components which impact patrons' decisions to use establishments' online table reservations facilities were investigated by Lu, J., and Ye, Q. (2017) [11]. In order to figure out how consumer choices are affected, the study looked at variables such perceived utility, believed simplicity of use, perceived pleasure, alleged confidence, and real cost. The results demonstrated that perceived expenditure have a negative effect on the tendency of consumers to utilise internet table reserving services, whereas the perception of utility, straightforwardness of use, and pleasure had an advantageous affect. The intentions of consumers were also greatly influenced by a sense of confidence. Restaurant management can get significant data from the studies about what motivates patrons to use websites for booking tables.

In a study that appeared in 2016 [12], Kumar, A., Bezawada, R., Rishika, R., Janakiraman, R., and Kannan, P. K. evaluated the effects of the design of websites on users' attitude when purchasing cuisine digitally[12]. The research examined website design elements, including visual appeal, information quality, ease of navigation, and website interactivity. The findings revealed that website design significantly influenced customers' online food ordering behavior. Specifically, visual appeal, information quality, and ease of navigation were identified as important factors that positively affected customers' intention to order food online. The study highlights the importance of website design in creating a positive user experience and facilitating online food ordering.

A study by Park, J. K., and Nicolau, J. L. (2015) that concentrated on Korean restaurants studied into the effect of online consumer feedback on how they performed [13]. The study addressed the associations between reviews posted on the internet quality, amount, and restaurant metrics of performance including sales and participation. The results revealed that internet ratings had significant effects on restaurant execution, while greater review volume and ratings being associated with increased revenue and usage. The study stresses the importance that it is for restaurants to stay on top of internet reviews and keep an excellent online profile in order to enhance performance.

An in-depth evaluation of the use of mobile advertising in the context of commerce has been given by Shankar, Venkatesh, Hofacker, and Naik in 2010 [14], distilling the most recently discovered results and outlining prospective future study directions. The research covered a range of mobile promotional topics, including smartphone offers, mobile shopping, and mobile advertisement. It addressed how the successful outcome of mobile advertising methods is affected by things like consumer motives, concerns about privacy, and technological uptake.

The evaluation identified an assortment of topics in further studies that would further our understanding on mobile marketing & its impacts on retailing.

In order to gain a greater insight into how perceived pleasure, confidence, & e-trust effect the adoption of e-learning, Lin, C. S., and Wu, S. (2014) done a study [15]. The study looks into the variables that impact how individuals plan to use electronic learning platforms. The results of this study showed that three variables strongly influenced people's propensity to adopt e-learning: a sense of enjoyment, confidence in oneself, and e-trust. The investigation emphasises how crucial it is to create e-learning systems that foster fun, confidence in oneself, and trust with the goal to increase customer adoption and participation.

A. Software's Part In The Project

- 1) **HTML (Hypertext Markup Language):** The structure and content of web pages are created using HTML. It describes the page's components, including headers, paragraphs, graphics, forms, and more. The visual elements of a website are organised and displayed using HTML as the framework.
- 2) **CSS (Cascading Style Sheets):** To style and improve the visual appeal of HTML-based web pages. You can specify the elements' colours, typefaces, sizes, layouts, and other aesthetic features. In addition to enabling responsive design for various devices and screen sizes, CSS maintains consistency in the presentation of the website.
- 3) **JavaScript:** A scripting language that gives web pages liveliness and dynamic behaviour. It gives you the ability to build interactive features, manage user interactions, check form data, and send AJAX queries to servers to retrieve data without refreshing the entire page. JavaScript is necessary for adding functions like real-time updates, form validations, and user experience improvements.
- 4) **Backend Development (Node.js):** You can create the backend of your website using the server-side JavaScript runtime environment known as Node.js. It offers a framework for carrying out server-side logic, responding to client requests, managing databases, and carrying out more server-related operations. You can create APIs, manage data storage and retrieval, put user authentication in place, and guarantee safe communication between the frontend and backend with Node.js.

You can develop a powerful and engaging web application for online meal ordering and table reservations by utilising these software technologies. A frontend interface that is both aesthetically pleasing and user-friendly is provided by HTML, CSS, and JavaScript. The backend, Node.js, manages data and takes care of server-side operations.

It is significant to note that depending on your project's requirements and preferences, the specific implementation details and frameworks used may change. The technologies used for the project should be compatible with its goals and have the scalability and flexibility required for future improvements.

III. METHODOLOGY

Gathering Requirements: Recognise the precise needs and goals of the project. Determine the target market, the functionality required (such as food ordering or table reservations), and the preferred design.

- 1) **Planning and Design:** Establish a thorough strategy for the project that covers its general organisation, user interface layout, and navigational flow. Find out what technologies and equipment are needed for development.**HTML Markup:** Begin by constructing the website's fundamental HTML framework. Use HTML tags like "header," "nav," "main," "section," and "footer" to divide the text into logical sections. For better accessibility and search engine optimisation, make sure to use semantic markup.
- 2) **CSS Styling:** Use CSS styling to improve the website's visual appeal. Target individual HTML components with CSS selectors to apply font, colour, layout, and responsiveness styles. To simplify styling, think about utilising CSS frameworks or libraries like Bootstrap.
- 3) **JavaScript Functionality:** Use JavaScript to implement interactive features and functionality. AJAX queries for data retrieval, event handling, dynamic menus, form validations, and other client-side scripting chores may fall under this category. For more complicated applications, use JavaScript frameworks like React or Angular.
- 4) **Testing and Debugging:** Thoroughly test the website to make sure it functions correctly and is compatible with all major browsers and mobile platforms. Verify data management, form submissions, and all user interactions. Investigate any problems or mistakes made during testing.
- 5) **Backend integration:** If necessary, use tools like Node.js to connect the front end to a backend system. This enables safe user data handling, database interactions, and server-side processing. Use APIs to establish communication between the front end and the back end.**Deployment:** Get the website ready for installation on a web server. For better performance, optimise the code, minify the CSS and JavaScript files, and reduce the size of the images. Create a hosting environment, then deploy the project to allow people access.

IV. RESULTS

Improved User Experience: The website's user-friendly interface seeks to make it easy to order food and reserve tables online. The anticipated outcome would be a simple and smooth user experience that would make it simple for customers to explore menus, place orders, and reserve tables on the website.

- 1) *Greater Efficiency and Convenience:* By offering an online platform, the project hopes to simplify the procedure for placing meal orders and reserving tables. Users should experience more efficiency and convenience as a result, saving time and effort in comparison to conventional approaches. Enhanced Customer happiness: The project aims to improve customer happiness with a user-friendly interface, seamless functionality, and practical features. The anticipated outcome would be favourable user feedback suggesting that they found the website simple.
- 2) *Higher Conversion Rates:* By offering a streamlined ordering and booking experience, the project hopes to turn website visitors into consumers. An increase in conversion rate would be the anticipated outcome, with more website users successfully making orders and reserving tables.
- 3) *Increased Operational Efficiency:* The project intends to increase operational efficiency for the canteen or restaurants concerned. Smoother order management procedures, less manual errors, and better communication between the kitchen, staff, and clients are the outcomes anticipated.
- 4) *Increased Revenue Generation:* The project hopes to increase revenues by attracting more clients to its online platform. The anticipated outcome would be an increase in income production for the associated canteen or restaurants, as online ordering and reservation'
- 5) *Data Insights:* The project might gather information about consumer preferences, order trends, and feedback. The anticipated outcome would be insightful data on consumer behaviour that can be used to improve menu selections, marketing plans, and all other business activities.

V. FUTURE SCOPE

Integration with additional food establishments: Dine Ease can expand its reach by partnering with more college canteens, nearby restaurants, and hotels. This would provide a wider range of dining options for customers and increase the platform's user base.

- 1) *Mobile Application Development:* Developing a dedicated mobile application for Dine Ease can further enhance convenience for users. With the growing popularity of mobile devices, a mobile app would allow customers to easily access and use Dine Ease on their smartphones, enabling on-the-go food ordering and table booking.
- 2) *Loyalty Programs and Personalized Offers:* Implementing a loyalty program within Dine Ease can encourage customer retention and repeat usage. Additionally, offering personalized discounts, recommendations, and exclusive promotions based on customer preferences and past orders can further enhance customer satisfaction and loyalty.
- 3) *Integration with Payment Gateways and Delivery Services:* Integrating secure and convenient payment gateways within Dine Ease would streamline the payment process for evolving online food service industry customers. Furthermore, partnering with local delivery services can provide customers with the option for doorstep food delivery, expanding the convenience and accessibility of the platform.
- 4) *Data Analytics and Customer Insights:* Leveraging data analytics tools can provide valuable insights into customer preferences, popular menu items, and dining trends. This data can be used to optimize the platform, improve menu offerings, and personalize the user experience.
- 5) *Expansion to other Educational Institutions and Regions:* Beyond college canteens, Dine Ease can explore opportunities to expand its services to other educational institutions such as universities and schools. Additionally, considering expansion to different regions or cities would open up new markets and customer segments.
- 6) *Social Media Integration and Marketing:* Integrating social media platforms into Dine Ease can enhance engagement and marketing efforts. Leveraging social media for targeted advertising, customer reviews, and user-generated content can help increase brand visibility and attract a wider audience.
- 7) *Continuous Improvement and user Feedback:* Regularly seeking feedback from users and incorporating their suggestions for improvement will be crucial in ensuring the long-term success of Dine Ease. Continuously updating and enhancing the platform based on user feedback and market trends will help stay competitive in the By exploring these future avenues, Dine Ease can position itself as a leading online food ordering and table booking platform, providing enhanced dining experiences and convenience to customers.

VI. CONCLUSION

Our research on Dine Ease highlights the significance of an online food ordering and table booking system for college canteens and nearby hotels. Through our study, we found that Dine Ease offers convenience, efficiency, and enhanced customer satisfaction. By focusing on website quality, user-friendly features, and addressing customer preferences, Dine Ease has the potential to revolutionize the dining experience and contribute to the growth of the online food service industry. Further research and development in this field will be crucial to continuously improve the Dine Ease platform and meet evolving consumer expectations.

Furthermore, our study acknowledged the importance of integrating technology acceptance models and theories of behavior in understanding and predicting customer adoption of online food ordering and table booking services. By aligning with customers' preferences and addressing their concerns, Dine Ease can effectively encourage usage and generate positive word-of-mouth.

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