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Development of A Mobile-Based Application for Ordering House Interior and Exterior Designs

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Abstract: This study focuses on a design services company lacking a computerized information system for managing customer orders and financial calculations. The absence of a structured reporting system for daily, weekly, monthly, and annual periods hinder efficient operations. We employ a descriptive research method with an object-oriented and prototype development approach. The programming language used is Kodular, and Firebase is utilized for database storage. The research results in the creation of a mobile-based interior and exterior design information system. It aids in order management, allows customers to check order statuses, minimizes calculation errors, and facilitates report generation. This system significantly streamlines company operations and enhances productivity.

Keywords: Interior and Exterior Design; Design Order Management; Information System; UML.

1. Introduction

Interior and furniture design services are a field that aims to create works of art in a building with the aim of presenting solutions to problems of space, lines, shapes, colors, and textures. This affects the quality of human life in it. Furniture, as an important component in a room, is included in this design, and is often made from various materials such as wood, planks, leather, and others. In this rapidly developing era, the role of web technology is becoming increasingly important in this industry, especially for factories and companies in it. Even though they are actively operating, many factories/companies have not equipped themselves with computerized information systems. As a result, consumers have difficulty monitoring the status of their orders, while companies experience problems in managing order data and carrying out accurate financial calculations. In addition, structured reporting in daily, weekly, monthly, and annual periods have not yet been implemented. Sometimes, collecting historical data related to orders can be a complicated task. There are a few related studies that can enrich understanding regarding the development of interior and exterior design ordering information systems. Graha and Abadi (2017) created a web-based information system for ordering interior and exterior designs, showing the importance of web technology in overcoming similar problems faced by the company in this article [1]. Research by Supriyanti, Putra, and Gunasri (Unknown Year) discusses the design of a website for an interior and exterior design ordering information system for offices, which can provide relevant insights in the development of similar systems [2]. The next source is Rumah and colleagues (2022), which refers to the design and construction of interior and exterior design information systems. This can be used to support understanding of information systems development in this article [3].

Dwiyatno, Rakhmat, and Sari (2020) also reviewed Android-based interior and exterior ordering applications, providing insight into mobile-based application development in the context of interior design [4]. The article by Infito, Fajri, and Rahmatya (2014) discusses a web-based interior design and furniture ordering information system, which provides insight into the development of web-based information systems in the interior design industry [5]. Although there is no specific reference, the research by Hamdani (Unknown Year) may relate to a case study of an interior design project [6]. Pratiwi (2021) talks about the efata interior design transaction service information system, which can increase understanding of services and transactions in this industry [7]. Akbar, Wahyudi, and Sinaga (2023) discussed the application of the Order Quantity (EOQ) method in a web-based inventory control information system for interior and

exterior design goods. This information is relevant if you are discussing inventory control in the context of an interior design business [8]. Another research that can be used as a reference is that conducted by Nurjamil and Sembiring (2021), which discusses the design of a web-based information system for selling furniture manufacturing services with a focus on modern interior design concepts [14]. Likewise, Putri, Hernawati, and Ilmu (2020) reviewed the home interior design consultation and ordering application at Artprototo Interior Design Bandung, which can be a relevant reference [11]. All these research sources are used to strengthen the development of interior and exterior design ordering information systems. Therefore, this research aims to develop an information system for ordering interior design and furniture which is expected to be able to overcome the challenges above. It is hoped that this system will help companies manage order data and significantly increase operational efficiency.

2. Research Method

In this research, the research framework is a concept that allows detailed and systematic interconnections between relevant variables. Its function is to provide a clear structure and facilitate understanding of the relationships between research components. A research framework is an essential basis for planning, implementing, and presenting research coherently and in accordance with a predetermined path. In the context of preparing research reports, the research framework is an important element that ensures the presentation of research results well and facilitates understanding of the research journey. Therefore, before starting a more in-depth research stage, it is necessary to form a research framework which will be the main guide during the research process. This aims to ensure that the research can proceed according to plan and the results can be presented efficiently and effectively according to the predetermined path.

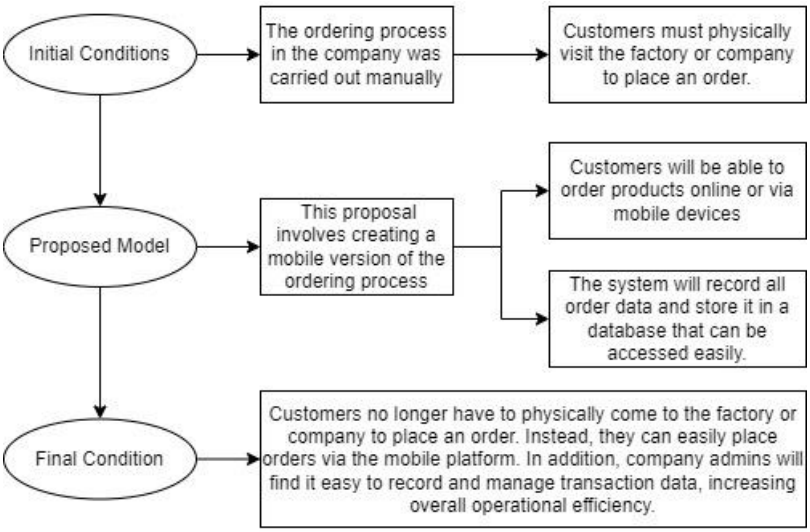


Figure 1. Research Stages

In the initial stages of the research, the author identified that the ordering process in the company was carried out manually, forcing customers to come directly to the physical location of the factory or company. This results in limitations in the accessibility and efficiency of the ordering process. However, in our proposed model, we propose a solution in the form of developing a mobile version to facilitate the ordering process. With this, customers can easily order products online via their mobile devices, and the system will automatically record and store order data in a database that can be accessed quickly and efficiently. By implementing this model, we hope to reach the final condition where customers no longer need to physically visit the factory or company to place an order. Company admins will also experience ease in recording and managing transaction data, increasing overall efficiency in company operations.

3. Result and Discussion

3.1 Results

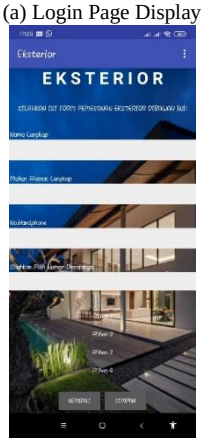
In this phase, the research achieved results in the development of a prototype application using the Kodular platform. The prototype application consists of four screens: the login screen, the main screen (home), the exterior screen, and the interior screen. Here are the results of the prototype:

3.1.1. Program Implementation

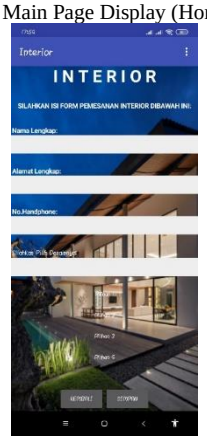
Figure 2.a shows the login page as the initial step for users to enter the application. Figure 2.b is the main page displaying all available features within the application, allowing access to all features. Furthermore, Figure 2.c and Figure 2.d represent examples of the exterior and interior screens, where customers can fill out forms and select desired designs.

(a) Login Page Display

(b) Main Page Display (Home)



(c) Exterior Page Display



(d) Interior Page Display

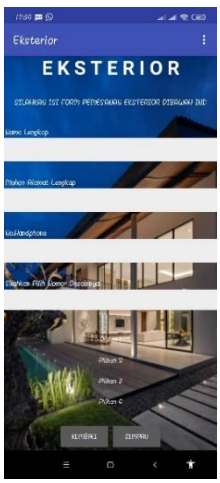
Figure 2. Program Implementation View

3.1.2. Testing

Testing was conducted on various Android devices with different specifications. Some tests were performed on the following devices:

1) Testing on Oppo Reno 5

This testing was conducted on the Oppo Reno 5 with Android 11 OS, 8 GB RAM, and 128 GB internal storage.



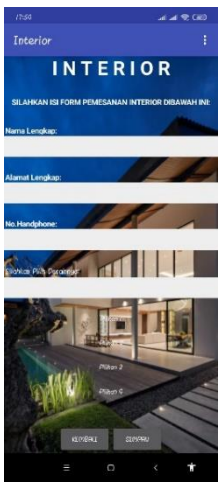


Figure 3. Testing on Oppo Reno 5

2) Testing on Oppo A12K
This testing was carried out on the Oppo A12K with Android 10 OS, 4 GB RAM, and 64 GB internal storage.

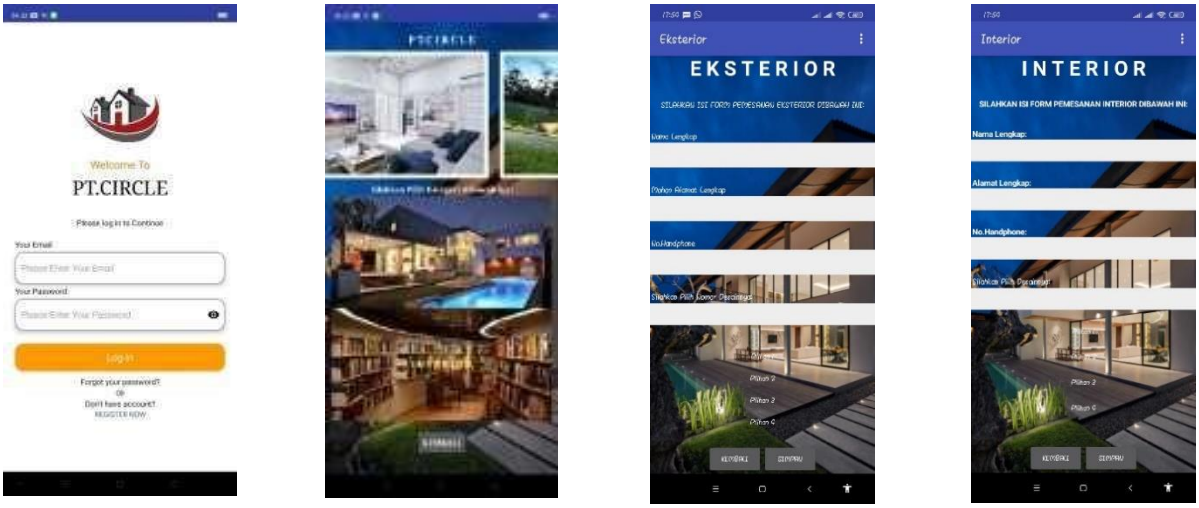


Figure 4. Testing on Oppo A12K

The results of the testing indicate that the Mobile-Based Interior and Exterior Design Ordering System application can be used on various smartphone brands with different Android operating systems, ranging from Android 9 to 11, and various device specifications.

3.2. Discussion

The success of prototyping using Kodular demonstrated the feasibility of developing a mobile-based platform for interior and exterior design orders. The four screens, including the login, home, exterior, and interior screens, provide a user-friendly interface for customers to navigate the application. This implementation is in line with the aim of increasing the accessibility and convenience of the ordering process. The testing phase aims to evaluate the application's compatibility with various Android devices, each of which has different specifications. The results show that the Mobile-Based Interior and Exterior Design Ordering System can run effectively on devices ranging from the Oppo Reno 5 with Android 11 to the Oppo A12K with Android 10. This versatility ensures that a wide range of potential customers can access and use the application. comfortably. Successful testing on different devices underscores the robustness of the app's design and its adaptability to various Android operating systems. This adaptability is an important factor in ensuring a broad user base and increasing the potential for widespread application in the interior and exterior design industry. Positive results from the implementation and testing phase of the program. The Mobile-Based Interior and Exterior Design Booking System shows its potential to revolutionize the way customers interact with interior and exterior design services, providing a more convenient and accessible way to place orders.

4. Related Work

Rizaldi Majid study (2017) conducted reliability assessments for the application, employing black box testing and alpha testing methodologies with a participant pool of 30 individuals. The outcomes underscored the user-friendliness of the information system and the commendable quality of its output [1]. The research by Dedeh Supriyanti *et al.* (2022) accentuated the system's capacity to support enterprises in generating various reports, encompassing order reports, payment documentation, raw material procurement records, and production documentation [2]. Ronald and Ghaniya's investigation (2022) underscored the paramount significance of swift, precise, efficient transaction processing and robust data archival in databases. These attributes facilitate expeditious transaction management and report formulation [3]. Saleh Dwiyatno *et al.* (2020) explored the meticulous construction of the application, facilitating swift, high-quality order placements by customers through their smartphones [4]. Alif and Myrna (2015) laid emphasis on the system's potential in ameliorating accuracy by minimizing computational inaccuracies within the ordering process [5]. Agus Umar Hamdani's antecedent inquiry (2015) accentuated the efficiencies attained in document creation. These efficiencies are engendered by a proposed system with computerized data arrangement [6]. Tika Pratiwi's exposition (2021) scrutinized a transaction service information system for EFATA Design Interior. While presenting its transactional streamlining and transaction data management capabilities, it noted the caveat that customers are required to furnish payment validation, potentially posing an efficiency constraint [7]. Dimas and Mikha (2021) introduced the application of the Economic Order Quantity (EOQ) methodology within inventory control for interior and exterior design merchandise. This strategic incorporation serves to minimize warehousing expenditures [8]. Wahyu Hidayat *et al.* (2015) proffered the conclusion

that an Audio-Visual (Video) Interior Design Media constitutes an imperative for PT. Wans Design Group, contributing to the enhancement of its corporate image and augmenting customer engagement with its products [9].

Widya Aprilia elucidation (2019) expounded upon the development of a sales information system for PT. Laserindo Metal Cikarang Ambassador. The system revolutionizes transaction data management and augments product promotional efforts [10]. Tri Agustina Putri *et al.* (2020) inaugurated a web-based interior design consultation service, thereby endowing consumers with increased convenience [11]. Marshel Sanoto *et al.* (2014) conducted a comprehensive study encompassing application design, implementation, and performance evaluation. The research highlights the alignment of the application with organizational business processes, adherence to accounting principles, the optimization of asset management, and the streamlining of reporting procedures [12]. Andi Kusniawan and Sardiarinto (2016) underscored the pivotal role of websites in presenting contemporary interior design models, enhancing accessibility for stakeholders [13]. Rifal and Valentino (2021) accentuated the transformative influence of information systems in modernizing interior design enterprises, underscoring the contemporary imperative of technological integration [14]. Fuad Aszril Syamil Bayasef *et al.* (2022) elucidated the triumphant development of a desktop-based payroll system catering to the specific needs of CV. Bonita Art & Interior Design. The system's instantiation is characterized by the fortification of data security, precision, and the establishment of a systematic payroll management framework [15].

5. Conclusion

The research conducted at the manufacturing company has yielded significant conclusions. Firstly, the development of a website functioning as an interior and exterior design ordering information system, while efficiently managing order data and providing customers with order tracking capabilities, represents a notable advancement in the industry. Secondly, the implementation of the interior and exterior design ordering information system is expected to greatly assist the company in generating a variety of reports, including order reports, payment documentation, raw material procurement records, and production reports. This system enhances operational efficiency and transparency, underscoring its potential to transform the industry by streamlining processes and improving the customer experience.

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