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Android Based Information System Modelling: Case Study of Building Materials Sales

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Abstract. When a pandemic occurs, people are forced to carry out Large-Scale Social Restrictions (LSSR) set by the government. Therefore, everything must be done online to break in the chain of spreading the virus. In reality, many people have smartphones that are connected to the internet and companies took that fact as an advantage. One of the companies is WS supplier that can order building materials through an online application. The purpose of this study is to design an Android-based building material purchase application model. The method used in this research is the descriptive analysis method by making observations at the WS Supplier business premises as the object of research. In this application, the modelling used a project-oriented approach and a prototype system development method. The results showed that this application could help marketing and facilitate online-based ordering. With this application model, it is hoped that it can increase sales in the building materials sector so that it can continue to operate during a pandemic and post-pandemic. This research has produced a prototype design in the form of an application that can be used as media in a business field to increase sales amid the Covid-19 pandemic. With this research, it is hoped that it can be beneficial both in the same field and in others to help the economy of the community during a pandemic by adhering to health protocol. The WS Supplier application is designed to be a model application for building material service providers to make promotional and ordering materials accessible to customers via smartphone

Keywords: Android, Information System, Building Material Sales.

1. Introduction

The World Health Organization (WHO) officially stated on March 11, 2020 that Corona Virus Disease (Covid-19) is a pandemic [1]. One of the government's efforts to break the chain of spreading the COVID-19 case is by implementing Large-Scale Social Restrictions (LSSR). When LSSR is implemented, it affects all aspects of life, including the economic sector of field workers, one of which is the sale of building materials [2].

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Economic activities were obstructed by the LSSR policy, so that various activities have to be pended. In this condition, technology is a primary need for everyone. The majority of people now have smartphones with internet connections so that information is easy to obtain, especially workers. In this case, those whose job is to build buildings or people who work as contractors needed the information on how people would order building materials and respond to it [3]. Building materials store is a business that will always be needed by the community. In the future, people who would want to build a house will always exist and would need to buy materials such as stone, bricks, and sand. This study focuses on a building material ordering business in which a building material ordering system has been designed for consumers servicing in person. Therefore, a modelling application is made to facilitate the ordering process to be more efficient and effective [4].

A building materials shop needs a special platform to market its products. Selling online can increase the market reach of store owners which has a positive impact on the store's income. Therefore, the shop must design an online shopping mechanism for the sale of building materials [5-7]. In addition to the marketplace application for building materials stores, there are also home improvement service provider application designs for the builder. This application aims to make it easier for the general public to find mason or construction services in repairing damage or building houses [8,9].

Previous research only discusses the construction service providers and marketplace application in the building sector [5-9]. While this research focuses on designing a building materials shop application namely WS Supplier application which would be managed by the WS Supplier owner to receive an order. Several building materials can be ordered or purchased directly such as sand, stone, and brick. For sand, there are several types, namely red sand, which is usually used for cast material because it has coarser characteristics and the rocks are somewhat larger, the price is IDR 1.3 million per truck. Black sand has a characteristic that when it is clenched into a first it will clot and will not scatter again. This sand still has a mixture of soil and black in colour. This type of sand is not suitable for buildings and is only used for a concrete sand mixture so that it can be used for wall plastering or a mixture of concrete brick, the price for this sand is IDR 1.3 million per truck. River sand is not much different from black sand, which is finer than concrete sand. The characteristics when clenched in fists will not return to normal. River sand is usually used to mix concrete sand so that it is not too coarse so it can be used for wall plastering; the price of this sand is IDR 1.2 million per truck. Concrete sand is sand that is black in colour and the grains are quite fine. However, if it is clenched by hand is does not clot and will disperse again like the river and black sand. This sand is excellent for casting, wall plastering, foundations, as well as brick and stone installation. For stone types, there are building stones that are often used for house foundations with the price are IDR 1.1 million per truck and there is gravel, which is usually used for floor-casting with the price of IDR 1.4 million per truck. The red bricks sold at WS Supplier are 24 cm long, 10 cm wide, and 6 cm thick. The price per pcs is 500-700 rupiah and must be bought at least 2000 pcs. In a pandemic, prices can change at any time due to the decreased income. The size of the trucks itself has a length of 4 meters, 1 meter wide, and 1,5 meters in height. The truck also had a capacity of 10 tons and 8 cubic meters (m3).

The features provided in the application greatly simplifies the order process without having to meet in person while still ensuring deals and the desired delivery time. The purpose of this study is to design an application model to serve orders and purchases of building materials based on the Android system. The method used in this research is the descriptive analysis method by making observations at the WS Supplier store as the object of research. In this

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application, the modelling uses an object-oriented approach and prototype system development methods. The results showing that this application can help marketing and facilitate online-based ordering.

2. Method

This study used the descriptive qualitative method. The descriptive method is a way of researching an organization, an object, or an event in the present [10]. Data is an important source or basis in this research. There are two sources of data used, namely primary data and secondary data. The primary data source is the main research data source obtained by the author conducting direct research using observation and interview techniques to the object of research, namely WS Supplier store that sells building materials. Meanwhile, secondary data sources in this study were taken from articles, journals, and books that discuss the studied topic. The approach method used the object-oriented approach [11]. The system development method used is a prototype, which is a collection of what needs to be implemented in this information system [12]. The tools used in modelling this application use a flowchart to explain the application design from the user side. The prototype development method can be seen in Figure 1.

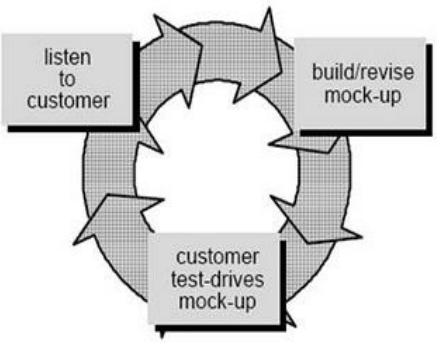

Figure 1. Prototype Model

3. Results and Discussion

3.1. W S supplier application

The WS Supplier is an application with the aim of becoming a platform for building material services providers. This application is intended for a business, namely WS Supplier store, which is engaged in the purchases of building materials ranging from stone, brick, and sand. The design of this application is made to meet the needs of suppliers in order to provide services to consumers, one of which is by providing an Android-based ordering platform. The features given to this WS Supplier include ordering stone, brick, and/or sand. To carry out the order process, the user can log in to the application to be able to place an order.

In the WS Supplier application, there are 3 main menus, namely Home, Order, and Notification. The Home menu displays the profile of the WS Supplier and also shows the shipping fleets used for this service. On this page, there are contacts if further information is needed. Furthermore, on the order page, the user can choose to order the building materials. After selecting, the user will be required to fill in information about the order then click order. After placing an order, a notification will appear on the notification page to make a payment

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then validation will be carried out by the WS Supplier. If it has been validated, the order goods will be sent.

3.2. Flowchart application

The use of the WS Supplier application is described in the flowchart in Figure 2.

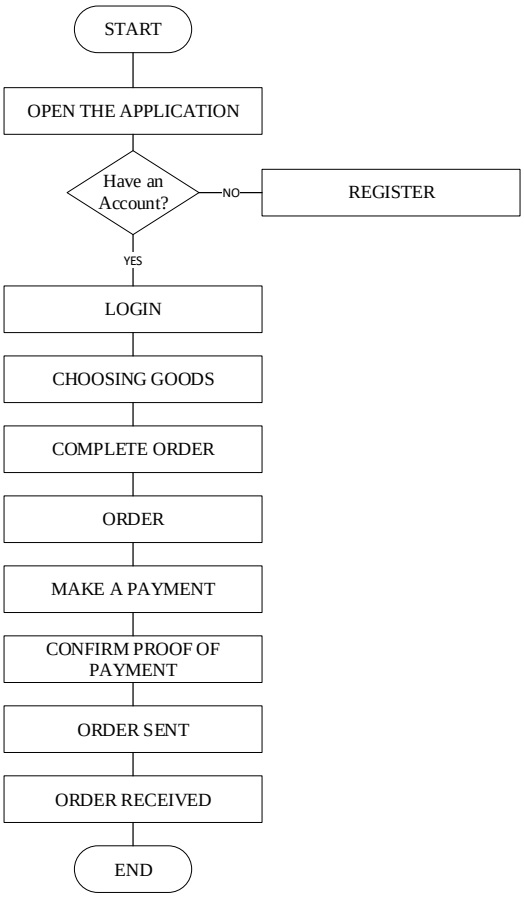

Figure 2. Flowchart WS Supplier Application

Figure 2 described the WS Supplier application flow from the schema before the user has an account. After getting an account, the user can make a building materials order transaction according to their choice. If the user placed an order, they would get information about the payment. They are also required to upload proof of payment. After the payment is validated, the order is sent according to the specified delivery date.

3.3. User interface design

The design of WS Supplier application is based on Android, which means the interface design is made according to Android. The trucking application interface design is shown in Figure 3-6.

3.4. Register and login pages

User can place their orders in the WS Supplier application if they have a registered account. If the user does not have an account, they will be directed to register on the register page (a). The user must fill in personal data starting from Full Name, Phone Number, Username, Password, and Confirm Password. After it is filled, click register to get an account. After

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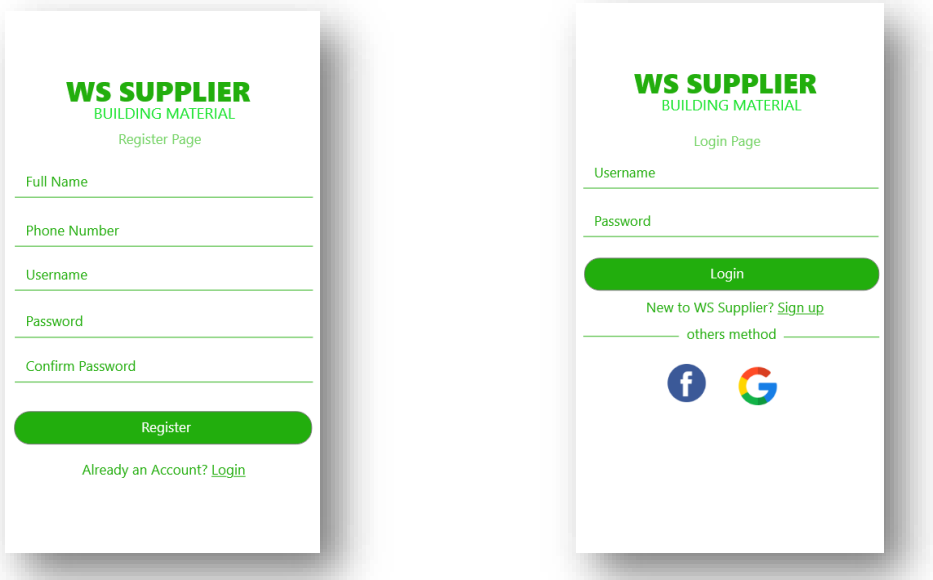
successfully registering, the user needs to login to the application using the username and password registered on the Register page (b) (see Figure 3).



(a) (b)

Figure 3. Register And Login Pages

When the user has logged in, it will go to the home page. On the Home menu, there is profile information from the WS Supplier along with contacts who can be contacted if you need further information. The WS Supplier application is also equipped with a notification menu if there in information about orders that has been made (see Figure 4).

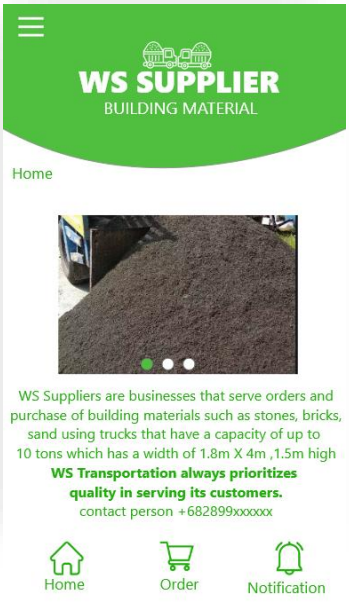


Figure 4. Home Page

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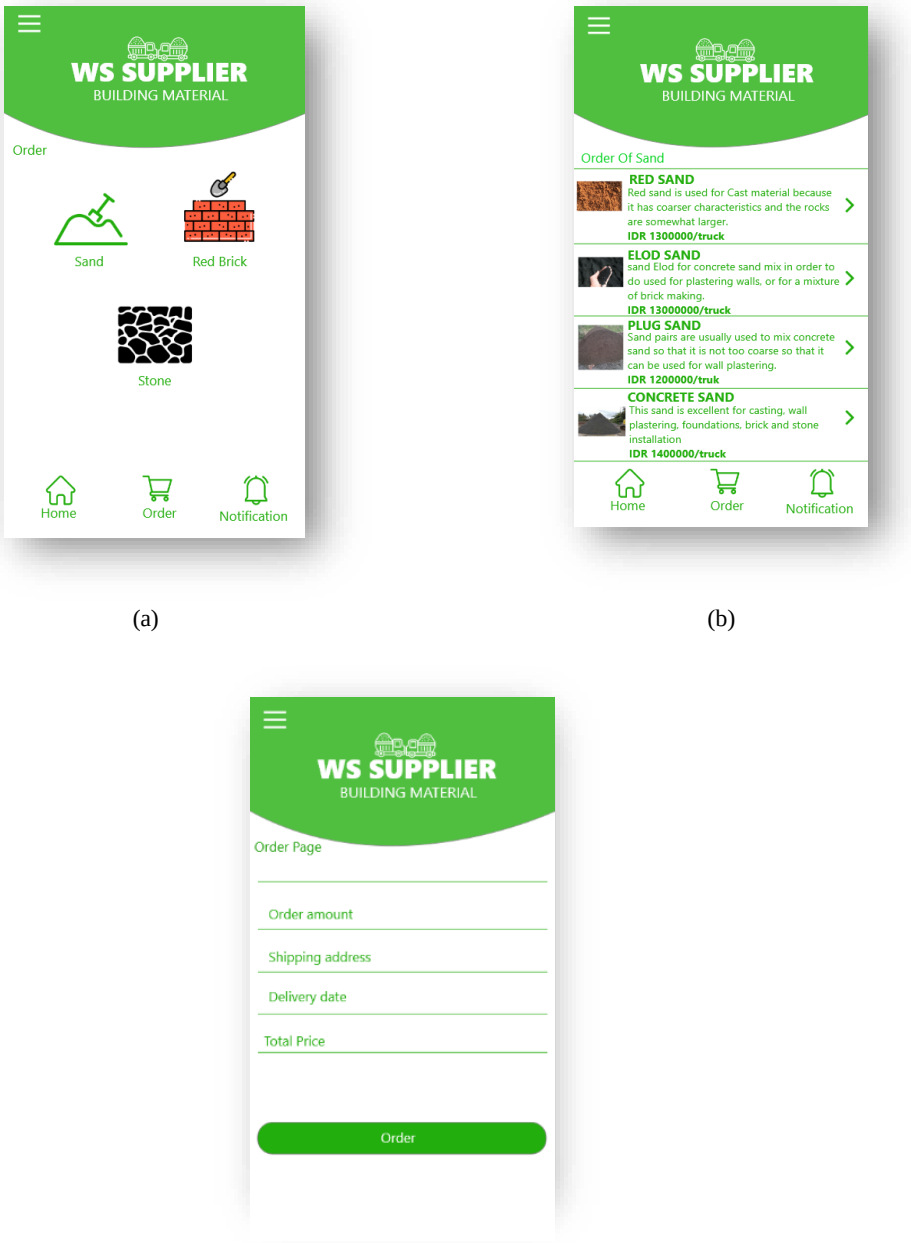
3.5. Order page

To place an order the user can select the Order menu. In the order menu, a selection of building materials that are provided by WS Supplier will be displayed (a). When choosing an item, the information about types and uses are displayed (b). To order, the user only needs to select the item icon the complete the required order data. On the order page, page user needs to fill in the required data such as address data, delivery date, and order quantity. Each item contains the type of materials (c). Each item has different types and price. For example, when choosing sand, the user will choose the type of sand to buy. If you choose red sand, the unit price is IDR 1.3 million, while for concrete sand, the unit price is IDR 1.2 million (see Figure 5).



(a) (b)

(C)

FIGURE 5. Order Pages

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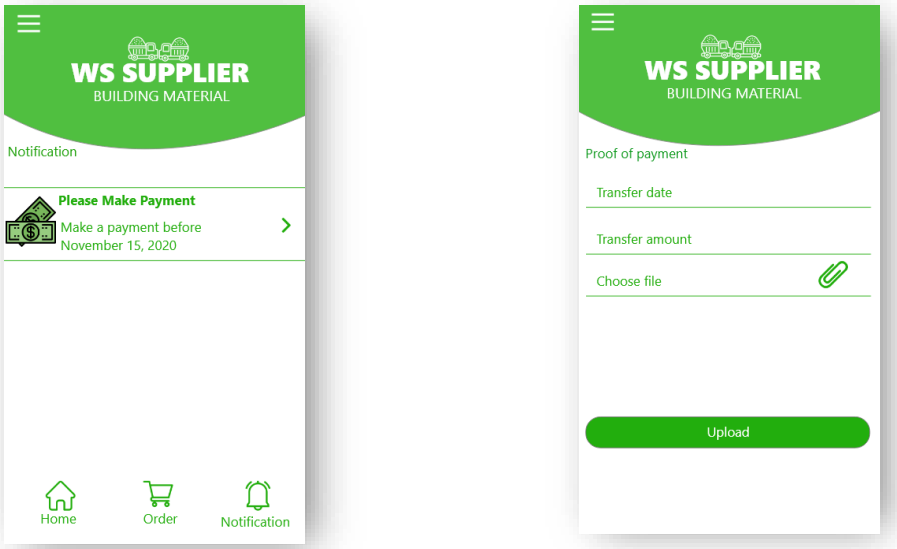
3.6. Payment page

After the user places an order on the previous page, there will be a notification in the application (a). The notification will provide information so that the user can make payments according to the time limit automatically given by the application. Users need to make payments via bank transfer then save the proof of payment in the form of an image file (jpg or png). In this application, because it is still in the form of modelling it is only modelled through bank transfers, although in its implementation, it can be developed up to the cooperation of Virtual Accounts that exist in the M-banking facility with certain banks. The coverage area is only within the scope of Bandung Raya (Bandung City and Bandung Regency). The shipping costs are included within the price details and only cover Bandung and Bandung Regency. Therefore, if the unit price is IDR 1.3 million and if the user orders 2, the shipping cost will cost twice. After making a payment, the user needs to upload the proof of payment. The page to upload proof of payment can be accessed on the notification menu the select the right direction on the payment notification; it will lead to the upload proof of payment page. On the payment proof upload page, the user is asked to fill in information such as date of transfer, transfer amount and to upload the image of payment proof (b) (see Figure 6).



(a) (b)

Figure 6. Payment Pages

WS Supplier application design is made according to the needs of the research object, namely WS Supplier. The features provided in this application are consulted with the WS Supplier as the implementation of the prototype method, namely the Listen to Customer [13-14]. The prototype that has been made was evaluated by the customer to determine its suitability with operational needs. The design of WS supplier application is object-oriented with the aim of facilitating prototyping so that it can be applied quickly and accordingly [15].

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4. Conclusion

The WS Supplier application is designed to be an application model for purchasing building materials with the aim of making promotional and ordering materials accessible to customers via smartphones. With the features provided, it makes the order process easier and without having to meet in person to confirm the order.

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