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Android Based Outdoor Equipment Rental Information System

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Abstract

Entering the modern era today, a lot of knowledge has been discovered related to technological development, both in theory and real evidence from the development of the world of technology, one example of a theory of technological development is "information systems". The use of information systems is very important in people's lives in Indonesia, many activities or jobs apply information systems to make it easier for people to interact and communicate, one use of information systems is in the business world, namely the outdoor equipment rental system, but many people still don't know about rentals. Outdoor equipment which is usually done manually can be done in an effective and efficient way, therefore research was made which will be discussed in the thesis is Android Based Outdoor Equipment Rental Information System.

Keywords: *Technology, Information Systems, Outdoor Equipment Rental*

1. Introduction

The development of modern technology is very necessary for companies because the existence of information technology will make the company's performance easier [1]. Current developments in information technology are not only used in large-scale agencies, but can be used by various groups of society to support the business or enterprises they manage. With the development of technology in this modern era, accurate information is needed in a business. Currently, there are many ways to access information that are not limited by distance and time, so that businesses can progress and run smoothly as desired, an effort is needed to utilize technology, one of which is by utilizing mobile technology. In this modern era, the flow of information runs very quickly and rapidly. This is characterized by the abundance of sophisticated and practical equipment [2].

Outdoor in English means outside, but in everyday use outdoor is an outdoor activity that is identical to camping and is carried out in natural locations, whether in the form of forests, mountains or beaches. These activities or activities are usually often carried out in nature to improve memory and high concentration, where doing it outdoors or camping requires special equipment, namely outdoor tools. Outdoor equipment is outdoor equipment used when carrying out camping or hiking activities, such as mountain bags (carriers), tents, mattresses and cooking equipment. To help in choosing outdoor equipment that is safe and comfortable, an information system is needed that can provide detailed information about the outdoor equipment [3].

One of the problems or obstacles that is often faced is that there is no online-based system that supports long-distance outdoor equipment rentals, which causes prospective renters to have to come directly to the shop, ordering systems or rental systems that still use paper, time management for returning equipment often takes a long time. Shop deadlines, the equipment cleaning process are quite long, and inaccurate bookkeeping and income data are still recorded in the rental register. To make it easier for prospective renters who want to camp but are still confused about determining each equipment, capacity, price type of outdoor equipment as well as helping shop performance, especially in the rental services sector, such as the KosAdventure Medan shop which is located on Jalan Alfalah Raya No.3 Glugur Darat I , East Medan, Medan City, North Sumatra 20238, the author would like to propose the title "Android Based Outdoor Equipment Rental Information System" as a place to determine outdoor equipment and camping equipment rental services in the city of Medan.

With this system, the author hopes to make all transactions efficient for both parties, namely the KosAdventure shop and prospective renters, make it easier for services to access and also dig up information about available equipment rentals, as well as increase turnover income from outdoor equipment rentals. The system was built using the Android-based Java programming language to make it easier for people who are generally used to using smartphones [4].

2. Research Methodology

In carrying out this thesis, the author took the research location at the Kosadventure Medan shop which is engaged in renting outdoor equipment and camping equipment which is located on Jalan Alfalaah Raya No.3, Glugur Darat I, East Medan, 20238. This research was carried out from January - April 2020.
These are the stages carried out in this research:

1. Data collection, there are 2 stages, namely observations and interviews. **Observation**, at this stage of the research, the researcher made observations and collected data at the Medan Kosadventure shop which is located on Jalan Alfalah Raya No.3, Glugur Darat I, East Medan, Medan City, North Sumatra 20238. The aim of collecting this data is to make it easier to build a system and strengthen research results. **Interview**, conducting interviews with the parties concerned to find out what problems are occurring and to obtain the data needed to become a sample in developing the system.
2. Literature Study, literature study is carried out to obtain all the theories that support the architecture used to design a system. At this stage the author looks for data and information sourced from various journals related to research material and also from books, such as understanding systems by Azhar Susanto (2004), information by Edhy Sutanta (2011), understanding information systems by Tata Sutabri (2005), rental by Sukron (2015), outdoor equipment by Nugraha (2018). Java programming language by Wahana (2010), understanding Android by Nasrudin Safaat (2011).
3. System Development, the way of working to build this system uses a research method based on system development to be able to collect data, namely the Waterfall Model which is a software development method generally carried out by system researchers. This method is used because each process has a sequential and orderly stage process, if you want to continue to the next stage you have to complete the previous stage to completion so that it will produce a good system. There are several stages in the waterfall method used in this research, namely:

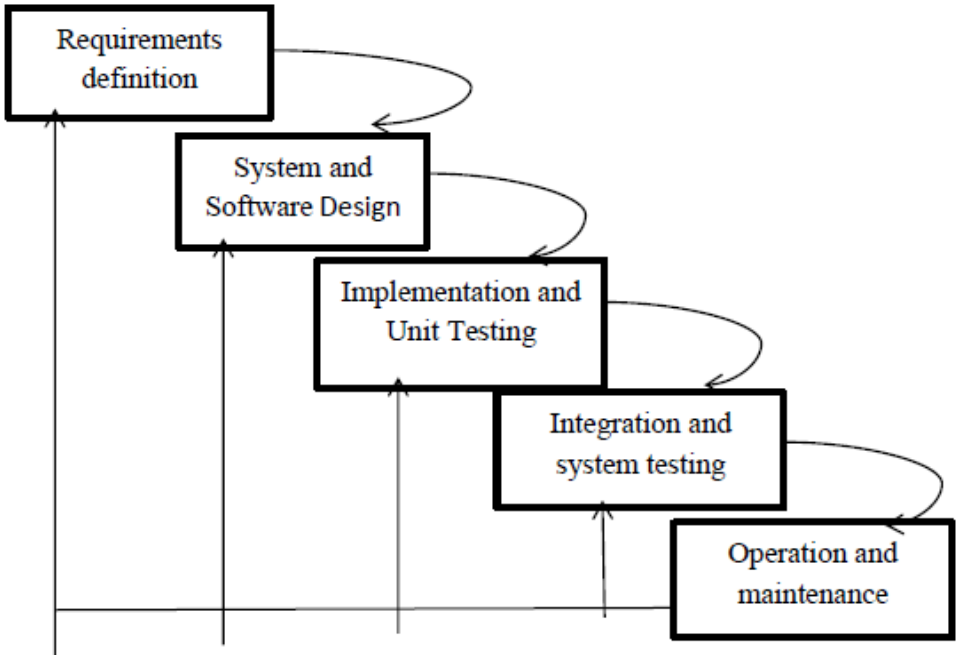

Fig. 1 : Waterfall Model

System requirements analysis, in this stage is an analysis of system requirements. Data collection at this stage usually involves conducting research, namely observation and interviews. The author will dig up information to get an overview of the system and collect data that will be implemented in the system.
System Design, in this stage the author describes what will be done, the flow of the application, and the appearance of the application design that will be created. The application designs that will be produced are the design of Use Case Diagrams, Class Diagrams, Sequence Diagrams and Activity Diagrams.
System Implementation, in this stage, the application is developed based on the design to be created. This stage is the stage of application work starting from designing the interface, creating a database, coding the program, and creating the application.
System Testing, in this stage, after completing the implementation of the application that has been created, testing is carried out on the user to find out whether the application is running well and is in accordance with the user's needs. One of them is by displaying the White Box and Black Box to test the process of the application where this test aims to show the function of the software, how it operates, whether the method used can run correctly and the application can be used by the user.
Maintenance, in this stage is the end of the waterfall method. At this stage, several improvements are made if there are system errors in the application. This maintenance must be carried out regularly so that the application can continue to run well.

2.1. Information Systems

An information system is a system within an organization that brings together daily transaction processing needs that support managerial organizational functions in the strategic activities of an organization to be able to provide certain external parties with the reports that will

be needed. An information system is a system that can include a number of human components, computers, information technology and work procedures, and there is something that is processed, namely data that becomes information to achieve a target or objective [5].

2.2. Basic Concepts of Information Systems

An information system is an information system that is an organized combination of people, hardware, software, communication networks, data resources that collects, changes, and disseminates information in an organization. The basic components of an information system are as follows [6]:

1. Hardware is a collection of several hardware devices such as processors, monitors, keyboards and printers that can receive data and information and process data and display the data.
2. Software is a collection of computer programs that can enable hardware to process data.
3. A database is a collection of files that are related to each other and organized into a collection of records that can store data and the relationships between them.
4. A network is a connected system to support shared use of resources between different computers.
5. People are the most important element in an information system, including people who can work with the information system or use the output.

There are several components contained in an information system, namely input components, model components, output components, technology components, database components and control components, namely [7]:

1. The input component is data that has been entered into the information system as a basic ingredient in information processing.
2. The model component is part of a combination of procedures, logic and mathematical models that can manipulate input data and data that has been stored in the database in a predetermined way in order to produce a desired output.
3. The output component is the result of information system output and documentation that is useful for system users.
4. Technology components are tools in an information system to receive input, run models, store, access data, produce and send output and assist in controlling the entire system.
5. The database component is a collection of data that is interconnected with each other and has been stored for the purpose of providing further information.
6. The control component can be needed to guarantee the quality of information produced by the information system and prevent damage and errors to the information system.

2.3. Rental

Rental is the use, borrowing of something by paying money, may be used, borrowing by paying money, money paid for using or borrowing something and lending something by asking for rent. Leasing is the transfer of the right to use goods, objects or services from the owner to the lessee within a predetermined period of time with the payment of money by the lessee to the owner of the goods or objects in accordance with the agreement agreed upon by both parties. Based on the definition above, it can be concluded that rental is an activity where an item is rented for a certain period of time with payment agreed upon by both parties, both the renter and the owner [8].

2.4. Outdoor Equipment

Outdoor equipment is outdoor equipment or equipment that is used when you want to carry out camping or hiking activities. Various types of equipment must be prepared in advance so that the camping activity can run well. When carrying out camping activities, a person must first know the purpose, what needs must be prepared, as well as the current conditions and situation. When someone wants to carry out camping activities, of course they need supporting equipment such as:

1. Mountain bag (Carrier), usually the mountain bag used for camping activities is a bag that has a large capacity, is light and waterproof. Because during camping activities there is usually a lot of steep and watery terrain that will be traversed, such as rivers, forests, hills and ravines.
2. Tent; there are several types of tents, ranging from scout tents, dome tents, to flysheets. Currently dome tents are more popular with many people, apart from being easy to set up, these tents are easier to carry everywhere. Dome tents have two layers of protection, namely the inner walls are made of breathable material or non-waterproof material. Scout tents are included in camping tents, this type of tent is quite difficult to disassemble and also difficult to carry. The advantages of scout tents are their strength and durability. The flysheet is made of waterproof material which functions as a tent protector from rain and weather. Flysheets also function as a substitute for tents in emergencies.
3. Mattresses, there are many types of mattresses that you can bring when camping. The materials also vary; there are folding mattresses, air-filled mattresses, and regular mattresses.
4. Sleeping Bag (SB), sleeping bag or sleeping bag is one of the mandatory equipment when camping. Sleeping bags are very useful as a barrier to cold temperatures when camping. Sleeping in a tent will feel very warm if you use a sleeping bag.
5. Stoves and Gas, currently there are lots of stoves and also types of gas specifically for use when camping. The shape and size are very efficient, making it easier to pack in a bag and lighter to carry.
6. Cooking Equipment (Nesting), nesting is cooking equipment made from aluminum alloy.
7. Flashlight (Headlamp), flashlight or headlamp is a tool for lighting at night. At night and in the dark, a flashlight and headlamp are important things to carry.
8. Jacket (Raincoat), the jacket functions to block the cold, while the raincoat (raincoat) functions if it suddenly rains.
9. Mountain Shoes, mountain shoes are usually used for camping and hiking activities to protect the feet from the danger of bites from wild animals when climbing.
10. Hammock, functions as a bed and a place to relax, made of cloth and tied at both ends.

3. Results and Discussion

Needs analysis is an outdoor equipment rental process that aims to reduce difficulties during the rental process and evaluate problems that occur. The problems that occur are:

1. The outdoor equipment rental process is still done manually by visiting the shop directly or using WhatsApp and recorded in a ledger
2. In the rental process, this is not yet optimal because the data search process and data storage for outdoor equipment rentals are not yet well structured
3. The process of reporting tenant data definitely takes a long time.

KosAdventure Medan, which is located at Jalan Alfalah Raya No.3, Glugur Darat I, East Medan, Medan City, North Sumatra 20238, is a business that operates in the field of quality outdoor equipment rental services at competitive prices such as mountain bags (carriers), tents. , mattresses, sleeping bags, cooking equipment and also sells various types of new outdoor equipment. KosAdventure was founded on March 18 2015, taken from Indonesian and English, where kos in Indonesian means boarding house, but in using the word kos, which should be written as Kost, has now been changed to Kos, while Adventure in English means adventure. So the meaning of the words Adventure boarding house is an adventure boarding house or it can also be called a boarding place for adventurers, and this name was created based on the fact that around Jalan Alfalah Raya there are lots of boarding house children whose hobby is going on adventures and the name KosAdventure is taken from the habits of friends around who really like camping and stay in nature.

Current system analysis is a development stage that begins with analyzing requirements. The analysis process starts with identifying overall user needs where the running system is studied in more depth, thereby producing information that becomes the basis for the new system to be built. Based on observations and observations that have been made by the author, the KosAdventure Medan store so far still uses a manual system to manage outdoor equipment rental data and the rental system still requires renters to go to the store directly and still have to look for information via social media, Instagram or send Message the admin to find out what equipment is still available and the rental costs for the outdoor equipment. From the results of data collection carried out at KosAdventure, the information system flow is formed.

The rental procedures at KosAdventure are as follows:

1. Consumers come directly to the KosAdventure shop to order equipment from the administration department.
2. The Administration Section provides information and serves consumers regarding equipment data to consumers until consumers determine equipment choices.
2. Then the Administration section provides equipment order data to the equipment section to be given to the warehouse section.
3. The Warehouse Department checks the inventory of equipment to be rented. If there is no inventory of equipment, the warehouse department will reject the rental confirmation to the Administration Department to be given to consumers. If there is a warehouse department, prepare the equipment to be rented to be given to the equipment department.
4. The equipment department provides equipment to the administration department to be given to consumers.
5. The administration section creates rental data from order data to be given to consumers.
6. The Administration Department provides equipment to be rented and rental data to consumers.
7. Consumers provide identification data as collateral to the administration department.
8. The administration section creates rental transaction reports from rental data to be given to management

The equipment procurement procedure for Paskapala outdoor rental is as follows:

1. The warehouse department provides data on the equipment you wish to purchase to the management for approval.
2. The leader provides approved equipment data to be given to the procurement department.
3. The Procurement Department provides approved equipment.
4. The Procurement Department provides the purchased equipment to the warehouse department to be stored in the warehouse.

From this running system, the author identified several problems that occurred in the system, including:

1. The current system is still very manual, that is, when renting outdoor equipment, customers or prospective renters have to go directly to the shop and record data on prospective renters who want to rent outdoor equipment still using paper forms or ledgers.
2. The process of storing data for customers or renters who have rented outdoor equipment still uses manual methods, and when needed at any time it takes a long time to look for the data in the ledger.
3. When collecting customer or renter data from boarding house shop employees, you have to look for renter data in a large book which of course has lots of records related to outdoor equipment rentals, in this case paper reports are very easy to cause damage and loss, slow down the work performance of employees.

After analyzing the current system, the author wants to design a new information system flow. This system is expected to make it easier for the parties involved in carrying out the process of the outdoor equipment rental system in a more efficient and better way than before. The following is a form of the proposed information system flow.

The system design proposed by the author for the rental system at the KosAdventure store is very different from the current system, which will be created by changing the processing of rental data originating from recording document files into an Android-based processing application and using a database to store relatively large amounts of data. Making it easier to store, change, delete and search data quickly and registration rental services can also be done online [9].

The information system flow proposed above is an information system procedure that is carried out as one of the first steps in solving problems in the outdoor equipment rental information system process that is being proposed. The following proposed procedures include:

1. Rental registration procedure, the renter registers the registration form as an initial registration in the system which automatically saves the renter's data to the customer database.
2. Equipment Ordering Procedure, the Renter selects the equipment to be rented in the equipment catalogue, the system will save it in the rental database.
3. Payment transaction confirmation procedure. This procedure will confirm to consumers who have made payments, the results of this confirmation are used as rental transaction data.
4. Equipment Order Procedure, This procedure is where the warehouse makes a request to the supplier according to the equipment needed. This equipment data is used for equipment data reports.

In general, a use case diagram functions to carry out certain work that describes the business processes in the system. The following is a use case diagram design in designing an Android-based outdoor equipment rental information system. In making this application, there

are five actors, namely Admin, Tenants, Warehouse Department, Equipment Department and Management with their respective activities that have been regulated in the system.

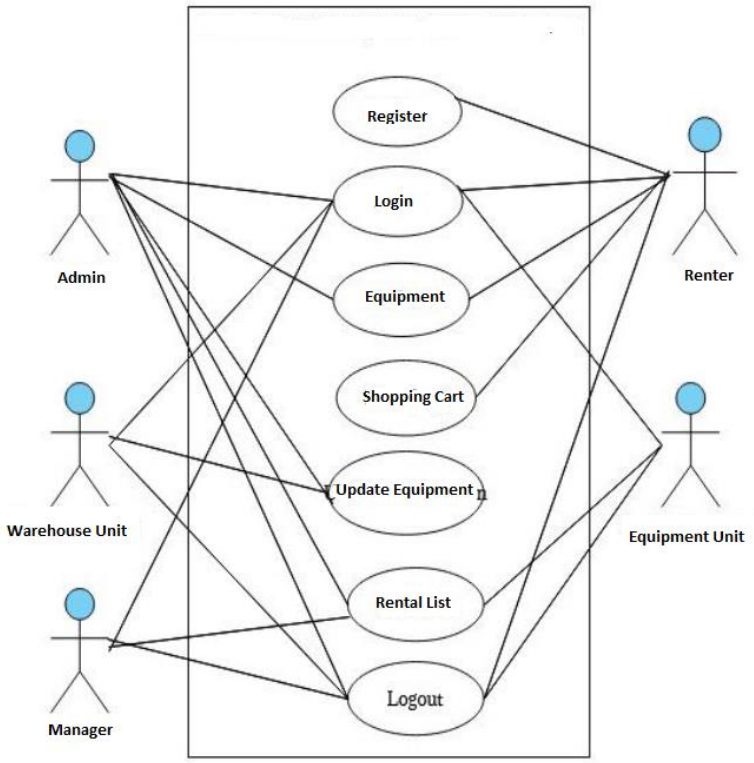

Fig. 2 : Use Case Diagram

System testing aims to ensure that the system is in a ready-to-use condition. The instrument used to carry out this test is by using the System Test Table.

Table 1: System Testing Table

No	Main Menu	Explanation	Information	Result
1	Register Button	Users click the register button first before entering the rental application	The system will display the Register Page	Valid
2	Login Button	User clicks the Login button to enter the rental application	The system will display the Login Page	Valid
3	Order Button	Users click the Order button to order equipment to be rented	The system will display the Rental Cart Page	Valid
4	Payment Button	Users click the Payment button to carry out the payment process after selecting the rental equipment	The system will display the Shopping Cart Page	Valid
5	Submit Button	Users can confirm payment by pressing the Submit button after filling in the payment data	The system will display the Payment Data Page	Valid

4. Conclusion

Based on the discussion in the previous chapters, the following conclusions can be drawn:

1. Based on the system created, namely "Android-based Outdoor Equipment Rental Information System", it can make it easier for renters to carry out the outdoor equipment rental process, so that renters do not need to go directly to the shop to rent equipment.
2. With this system, you can provide information via Android about outdoor equipment to renters at any time.

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